Perceptual Accuracy of Affect Identification and the Relationship to Representational System and Personality Type

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PERCEPTUAL ACCURACY OF AFFECT IDENTIFICATION AND
THE RELATIONSHIP TO REPRESENTATIONAL SYSTEM
AND PERSONALITY TYPE

by

Richard Andrew O'Leary

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Education
Department of Counseling and Personnel

Western Michigan University
Kalamazoo, Michigan
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The purpose of this study was to investigate accuracy of response to affectively laden stimuli across visual, auditory, and kinesthetic representational systems. This research was undertaken to assess subjects' individual response patterns and to distinguish possible differences in accuracy of response which subjects reported across representational systems. Subjects' response accuracy was correlated with their response frequency in subjects' representational systems. Subjects' most accurate representational system was, in turn, compared to subjects' personality type. Subjects were assessed by two instruments, a modified version of the Affective Sensitivity Scale and the Myers-Briggs Type Indicator.

Relevant literature was reviewed related to human information processing systems, Neurolinguistic Programming theory and research, and personality theory and research.

The research design was three fold. First, subjects' scores were classified by accuracy of scores obtained in their visual, auditory, and kinesthetic representational system. The $t$ test for mean differences was calculated. In the second part, the modified Affective Sensitivity Scale was scored for six variables: frequency...
of subjects' visual, auditory, and kinesthetic responses and accuracy of subjects' visual, auditory, and kinesthetic responses. The relationship between frequency and accuracy of subjects' responses were examined by means of a Pearson product-moment correlation. In the third part, subject's most accurate representational system was obtained and paired with subjects' personality type variables as determined by the Myers-Briggs Type Indicator scores. Chi-square analyses were conducted for the four personality dimensions, Extroversion/Introversion, Sensing/Intuition, Thinking/Feeling, and Perceiving/Judging.

The following is a summary of results of this study: (1) Subjects displayed a significant difference between their most accurate and least accurate representational system ($t$ test was employed, $p < .0001$). (2) Subjects displayed no significant relationship between frequency and accuracy of representational system utilized (Pearson product-moment correlations $p = ns$). (3) No significant relationship was found between subjects' most accurate representational system and personality variables Extroversion/Introversion, Sensing/Intuition, Perceiving/Judging (Chi-square analysis $p = ns$). (4) A significant relationship was found between subjects' most accurate representational system and personality variable thinking/feeling (Chi-square analysis $p < .01$).

This study concludes there is need for additional research related to representational systems. Further analysis of the variables of accuracy, frequency, and personality as they relate to representational systems is encouraged.
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Richard Andrew O'Leary
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CHAPTER I

THE PROBLEM

Introduction

It has been suggested that therapeutic communication involves how a person organizes his/her ongoing conscious experience into visual, auditory, and kinesthetic representational systems (Bandler & Grinder, 1975, 1976, 1979). Bandler and Grinder suggested that, people have a difference in use of representational systems and that the predominantly utilized representational system becomes a most highly valued system for organizing experience. Claims were made by Bandler and Grinder (1975, 1976, 1979) that therapeutic communication would be enhanced if a therapist matched his/her representational system with that of the client.

Our understanding of therapy outcomes may be enhanced by understanding representational systems employed in therapy (Bandler & Grinder, 1975). This understanding may be further enhanced by exploring accuracy of therapist representational systems and the relationship they have to personality type, since improving accuracy of therapy response has been demonstrated to enhance therapy effectiveness (Kagan, 1977). Representational systems utilized by therapists have also been demonstrated to improve therapeutic effectiveness as determined by positive client perception of therapy and statements related to client trust of therapist (Falzett, 1981;
Paxton, 1980). The personality type of therapist as measured by the Myers-Briggs Type Indicator also influences client perception of the effectiveness of therapy (Lawrence, 1982). It follows therefore, that assessing the relationship between these three variables would aid the assessment of therapist perceptual accuracy, their frequency of usage across representational systems, and how the data obtained might interact with their personality type.

Purpose of the Study

The purpose of this study was to analyze a segment of Bandler and Grinder's theory (1975, 1976, 1979) of independent representational systems. Measures of independent representational systems were compared to accuracy measures of subjects' visual, auditory, and kinesthetic responses. The most accurate representational system was determined for each subject and was related to measures of subjects' personality type. This study explored a missing component of the Bandler and Grinder model by measuring difference in subjects' perceptual accuracy, (using a modified version of the Affective Sensitivity Scale), in what is reported as subjects' most accurate representational system and their least accurate representational system.

Although many studies have researched Neurolinguistic Programming by matching predicates of therapists and clients, analyzing eye movements of subjects, and directing therapist attention toward modeling the visual, auditory, and kinesthetic representational systems (e.g., Beale, 1981; Dowd & Hingst, 1982; Falzett, 1981; Paxton, 1980; Thomason, 1980), none have yielded consistent results which validate objective
pathways or strategies for measuring the concept of independent representational systems.

Need for the Study

Neurolinguistic Programming research literature appeared to neglect an aspect in design in that these studies attended to the frequency of subjects' responses without also attending to the accuracy of subjects' responses. A review of the literature failed to find articles which investigated the accuracy of subjects' response as a variable while also investigating representational systems. Since accuracy of subjects' response had not been explored, the relationship between frequency of subjects' response and accuracy of subjects' response in a representational system had likewise been neglected. This study explored the relationship between the two variables of frequency and accuracy: frequency of subjects' response across representational systems and accuracy of subjects' response across representational systems when they both were blocked according to visual, auditory, or kinesthetic representational systems.

Since the model utilized by Bandler and Grinder (1975, 1976, 1979) is a current method for teaching counselors or therapists, labeled Neurolinguistic Programming, there was a need to further explore its basic tenets. By assessing the difference in accuracy of subjects' response between most highly accurate representational system and least accurate representational system, this particular research study has explored a key assumption not explicitly discussed in Neurolinguistic Programming literature.
Hypotheses of this Study

There are three hypotheses for this study. The first considers whether or not there is significant difference in accuracy of subjects' response across representational system utilized between the most accurate representational system and the least accurate representational system. The second hypothesis explored the relationship between a subject's accuracy of response scores as measured by the Affective Sensitivity Scale and the frequency of subject's responses when both are blocked by the specific representational system utilized. The third hypothesis explored the relationship between personality type of subjects as measured by the Myers-Briggs Type Indicator (MBTI) and the subjects most accurate representational system. The following hypothesis are stated in null form:

Null Hypothesis 1: There is no significant difference between subjects' most accurate representational system and their least accurate representational system in terms of accuracy of response as measured by the Affective Sensitivity Scale.

Null Hypothesis 2: There is no significant correlation between accuracy of subject's response scores and frequency of subject's response scores when comparing an individual across visual, auditory, and kinesthetic representational systems.

Null Hypothesis 3: There is no significant relationship between personality variables of subjects (Extroversion/Introversion, Sensing/Intuition, Thinking/Feeling, Judging/Perceiving) as measured by the

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Myers-Briggs Type Indicator, and their most highly accurate representational system, as measured by the modified Affective Sensitivity Scale.

Theoretical Orientation of the Study

Empathy has long been recognized as one of the core factors involved in the therapeutic communication of helping relationships (Berenson, Carkhuff, & Myers, 1966; Carkhuff, 1967; Carkhuff, 1969; Rogers, 1957; Rogers, 1962). One of the goals in the training of therapists is to promote greater trainee understanding of the components of empathy.

Various approaches to empathy training for therapists have led to improvement in the level of empathic responding (Bath, 1976; Carkhuff & Truax, 1965a; Carkhuff & Truax, 1965b). Carkhuff (1969), for example, expanded empathy training to include didactic learning of core conditions, the use of role-playing and videotaping counseling excerpts. This expanded training approach resulted in improved counselor skills (Berenson, Carkhuff, & Meyers, 1966; Carkhuff & Truax 1965a; Carkhuff, 1969).

Ivey's (1968) systematic training of therapists, which concentrates on attending, reflection of affect, and summarization of affect, is an example of a model which breaks down the process of empathy into component parts. Kagan's Interpersonal Process Recall model (IPR) (Kagan & Krathwohl, 1967) uses videotape to train counselor trainees to gain awareness of their own and client personal dynamics and of the dynamics of the counseling interaction. Research has exhibited the effectiveness

The recall process in IPR was most effective when...he or she actively encouraged the person, usually a student, to describe underlying thoughts and feelings rather than encouraging critique or self-confrontation. The facilitator's role required that he or she ask such questions as "Can you tell me what you felt at that point?" "Can you recall more of the details of your feelings...where did you feel these things, what parts of your body responded? and "What else do you think (the other) thought about you at that point?" The catalyst's role is that of an active inquiring colleague. ...The basic discovery then was not just of the value of videoplayback alone but of this unique combination of human role and technology. (pp. 262-263)

This present study integrated these questions asked in vignettes on Kagan's Affective Sensitivity Scale (Kagan, 1972) with questions presented from Neurolinguistic Programming (Bandler & Grinder, 1975, 1976, 1979). Specifically, the present study asked, how did you make your decision about the affective sensitivity response chosen? In searching your memory did you, the subject, react to something you saw, heard, or to an internal body reaction. This idea was well stated by Kagan's recaller in "...what parts of your body responded... (Kagan, 1980, p. 262). The overlay of inquiry about the three representational response categories into the process of assessing dimensions of accuracy involved in human relating, forms the basis of this dissertation.

The theoretical orientation of this study was as follows:
1. The manner in which we perceive is determined both by the process of perception and the structure of the representational system obtained to catalog and store information perceived.
2. Different people attend to and utilize different pieces of

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information in coming to a specific decision.

3. The process of understanding the qualitatively different ways individuals perceive is amenable to research scrutiny.

4. By scrutinizing one aspect of the attending process, accuracy of attention across representational system, generalizations may be drawn which will make that process amenable to change through re-education.

Summary

In the process of exploring the variables involved in effective counseling, empathy has received a significant amount of attention. This may be because research has demonstrated that by increasing empathy levels in therapists, counseling effectiveness is also increased (Bath, 1976; Carkhuff & Truax 1965a; Carkhuff & Truax 1965b; Ivey, 1968; Kagan & Krathwohl 1967; Kagan, 1980).

Greenson (1960) defined empathy as the ability to grasp subtle and complicated affect of people. Rogers (1957) stated that the fifth condition of therapeutic personality change is that

...the therapist is experiencing an accurate, empathic, understanding of the client's awareness of his own experience. To sense the client's private world as if it were your own, but without losing the "as if" quality...To sense the client's anger, fear, or confusion, as if it were your own, yet without your own anger, fear, or confusion getting bound up in it, is the condition we are endeavoring to describe. (p. 99)

In the attending process, Rogers (1957) emphasized being accurate, while sensing the client's world as if it were your own. A process that is involved in making decisions about how to respond to the client's affect is expressed in the theoretical propositions of this study. The
interest in accuracy of response as articulated by Rogers (1957) and developed more fully by Kagan (1972) in his Affective Sensitivity Scale instrument provides a means to test a variable proposed by Bandler and Grinder in the *Structure of Magic*, Volumes I and II (1975, 1976). In these works a theoretical blending of linguistics, thinking and problem solving was explicitly stated (Griz, 1982). For the purpose of this study, the focus was restricted to Bandler and Grinder's presentation on the internal linguistic representational system as a core component in information processing necessary for thought.

**Overview of the Research**

In Chapter II, theories of information processing are explored. The chapter begins with an historical overview of different persons and fields associated with attempts to present a model of how human information is attended to, processed, stored, and retrieved. Within these models special attention is paid to those theorists or researchers who have pointed to different representational systems as channels involved in information processing. Next, specific studies that involved Neurolinguistic Programming are reviewed. Various theories about accuracy of perception across representational systems are then delineated. Finally the orientation of this study, that there are differences in the accuracy levels across the representational systems, is articulated.

Described in Chapter III are subject sample, procedures, research hypotheses, instrumentation analysis, and experimental design of the study. The analysis of data and interpretation of results are presented.
in Chapter IV. Chapter V presents a summary of the research, a discussion of the findings, limitations of the present study, and implications for future research on therapeutic communication.

Definition of Terms

Representational Systems

The basic elements from which patterns of human behavior are formed are the perceptual systems through which the members of the species operate on their environment: vision (sight), audition (hearing), kinesthesis (body sensations) and olfaction/gustation (smell/taste). The neurolinguistic programming model presupposes that all of the distinctions that we as human beings are able to make concerning our environment (internal and external) and our behavior can be usefully represented in terms of these systems. These perceptual classes constitute the structural parameters of human knowledge (Dilts, Grinder, Bandler, Bandler, & DeLozier, 1980, p. 17).

Primary Representational System

Bandler and Grinder (1976) have indicated that human beings are constantly receiving data from the different senses: visual, auditory, kinesthetic, olfactory, and gustatory. Bandler and Grinder (1976) also note that the data will usually be organized as a representational system via visual, auditory, or kinesthetic sensory modes. Since an individual's behavioral options are guided by these maps, the range of behavior can be enhanced or improved by the limits of the sensory mode used. Because people are unable to process data through all their
sensory channels simultaneously, one will tend to be favored. The individual's experience will then be stored in a primary representational system (Falzett, 1981, pp. 305-306).

**Neurolinguistic Programming**

Neurolinguistic Programming is a model of human behavior and communication which stands for the basic processes that people have to organize and change their behavior: **Neuro** stands for the nervous system through which all experience is received and processed via senses or representational systems; **Linguistic** stands for language and non-verbal communication systems through which all neural representation are coded, ordered and given meaning. Because of this, language will echo and reflect internal processes; **Programming** stands for the process of organizing our communication and neurological systems to achieve specific desired outcomes (Bloom, 1982, p. 1).

**Perceptual Accuracy**

Perceptual Accuracy is apperception with the mind or the senses in a manner that is free from error or defect (Webster, 1981). In terms of the present study a perceptual accuracy score is the score an individual receives on the Affective Sensitivity Scale. Correct alternatives on the Affective Sensitivity Scale were generated from two sources: (a) what persons said they were actually experiencing at the time, and (b) by a panel of people, usually clinical supervisors, who were reputed to be highly accurate in assessing peoples' internal states or experiences (Schneider, Kagan, & Werner, 1977).
Accuracy of Response

For purposes of this study, accuracy of response is the mean percentage of the subjects' total accuracy scores on the Affective Sensitivity Scale as blocked across subjects' visual, auditory, or kinesthetic representational systems.

Personality Type

Pervin states that personality represents those structural and dynamic properties of an individual as they reflect themselves in characteristic response to situations (1975, p. 3). Webster defines type as a kind, class, or group as distinguished by a particular character (1981, p. 1671). For purposes of this dissertation personality type will be defined by the personality characteristics or types assessed by the Myers-Briggs Type Indicator (Myers, 1962). The Myers-Briggs Type was conceptualized independently of Jung's types and later adapted to the concepts of individual differences in personality type noted in Psychological Types (1953).

Limitations of the Study

Instrumentation

This study was limited to the dimension of perceptual accuracy as assessed by the Affective Sensitivity Scale, which is well-suited for identifying perceptual accuracy with respect to affective or empathic situations, and the Myers-Briggs Type Indicator which is designed to assess personality type.
Subjects

Since all subjects were master's level counseling students, generalizations apply most adeptly to master's level therapists. Generalizations outside the specific field of master's level therapists will therefore be limited.
CHAPTER II

REVIEW OF THE LITERATURE

Organization of Present Chapter

The organization of this chapter is as follows: A review of relevant historical material is presented. Specific research and theory on Human Information Processing is reviewed. Basic components of Neurolinguistic Programming (NLP), and the general theory of Independent Representational Systems are discussed. This is followed by a review of relevant research on NLP. Finally, research demonstrating the relationship between therapist personality characteristics and counseling is presented.

Historical Background

William James (Slobin, 1971) was aware that there existed within consciousness a system for representation of experiences, even if it were not easily apprehended. He used the example of a forgotten name to illustrate his point.

Suppose we try to recall a forgotten name. The state of our consciousness is peculiar. There is a gap therein; but no mere gap. It is a gap that is intensely active. If a wrong name is proposed to us, this singularly definite gap acts immediately so as to negate it. (p. 100)

Neurological studies (Cobb, 1958; Lezak, 1983; Navon & Gopher, 1979; Paap & Ogden, 1981; Posner, 1982; Rutter, 1983; Weiss, 1983) provided for the strong support for the idea of the mind having a
systematic process involved in its functioning. The exact idea that human faculties were localized in different organs or centers of brain was postulated by Franz Joseph Gall. Research in the matter was propelled by the work of Broca in 1861, in considering the role of the anterior lobe in speech. In 1874, Wernike made a major breakthrough in neurological research when he noted a difference in an auditory center containing sound images versus images for movement.

Lichtheim in 1885, devised a complex scheme intended to explain the underlying processes for seven types of speech and language disorders. Head in 1926 in studying linguistic performance in aphasics attacked localizationistic theories derived from the foundation laid by Gall. Lashley in 1938 supported Head’s shift away from localizationist theories with his work disproving the belief that engrams were localized. The new theories proposed out of these and similar works were more based on mass action theory. This model implies that the behavioral deficits in lesions depended on the amount of brain removed more than location of lesion. The trend towards a holistic versus localizationistic approach blossomed after the First World War (Heilman & Valenstein, 1979).

Flanagan (1954) empirically broke down the symboling process into visual, auditory and kinesthetic modes. He attempted to discern the relation of assimilation tendencies in these modes as measured by time error and compared to cognitive attitudes of leveling and sharpening. At some level, differences were determined for information processing times but, again, generalization from perception to appreceptive representation remained a big leap.
Overall, the second half of this century provided the technological advances which have reawakened interest in brain behavior relationships. New behavioral strategies such as dichotic listening and bilateral half-field viewing permitted psychologists to study normal individuals as well as those with brain trauma or pathology. Also advances in neurochemistry and neuropharmacology allowed greater mapping of brain activity and behavioral-chemical, behavioral-structural relationships (Heilman & Valenstein, 1979).

The model of a physical/structural mechanism involved in human processing systems was assisted in 1966 with the work of Noam Chomsky, which revealed a basic structure to language common to all languages. His inference was that logically there is no constraint to the structure of language. The fact that a structure does exist reduces the possibility that environmental forces propagate language and argues instead that it must in some way be neurologically programmed in the brain (Chomsky, 1966). The work of Chomsky and others in the late 50's and 60's brought renewed interest in integrating some of the reaction-time memory studies in experimental psychology with neurological and linguistic studies. These earlier works facilitated the building of a more complete theory of neural processing.

Luria (1972), a Russian neuropsychologist, restated the concept of a functionally related neural network with independent systems of neurotransmission linking into areas of incorporation. His two major works, The Working Brain (1973) and Higher Cortical Functions (1972), de-emphasized the role of verbal mediation as the unit of symbolizing experience and opened up the possibility of considering other non-verbal
representational systems.

Slobin (1971) pointed out the developmental quality involved in learning to use the senses. He stated that at first the child relies most heavily on proximity senses (smell, taste, touch) and that later on the distant senses (sight and hearing) become dominant.

Moscovitch (1973) discovered that subjects on letter matching tests, would sometimes match a visual letter against a visual image of an originally acoustic set letter. From this he postulated that some people may be better skilled in one system of representation than another.

Kohler's (1973) stated that whether we encode information through our eyes or ears, our relative experience with these modes of encoding must surely affect whether hearing or seeing is a more efficient strategy. He believes the means by which information is encoded affects our subsequent access and retrieval.

Kohler's statement was the basis of a common sense justification for the belief in independent representational systems. Posner (1982) stated that there is evidence that findings at the level of performance, subjective experience, and neural systems can be linked even though they are not yet reducible to a single theory.

Information Processing Theory

The field of human information processing becomes important as perception and cognition come to be viewed within a systems model. The key tenets of this model accept the mind as a system with finite capabilities and resources. Paap and Ogden (1981) noted that encoding
information, whether automatic or conscious in intent, will automatically activate different associated codes. This will occur even if the subject is not consciously aware that the process is going on, but as this happens resources will be utilized that will interfere with any secondary task.

Navon and Gopher (1979) discussed six assumptions that are a part of the human processing system:

1. The human system possesses at any one moment a finite amount of processing facilities (resources, effort capacity, and attention). (p. 214)

2. The human system will supply resources to meet the demand determined by the intended level of performance to the extent they are available. (p. 216)

3. In cases requiring joint performance, both tasks apply demands to the same pool of resources and get supplies in proportion that are related to their relative demands. (p. 216)

4. Given the structure of the task and the capabilities of the system, some levels of performance are possible and others are not. (p. 217)

5. In cases where the supply cannot equal the demand, the result is a subjective substitution which results in deterioration in performance. Either one of the tasks gets more and more severe whereas the impact of the concurrent improvement of the other becomes less and less beneficial. (p. 218)

6. At times there is a partial incompatibility of task which means that their outputs, processes, and preconditions conflict in
The impact of these propositions on the concept of representational systems is noteable. If independent sensory tied representational systems do exist, this model for the economy of the processing system would predict an individual difference in use of representational systems. When discussing the fact that interference occurs when perceiving simultaneous stimuli, Duncan (1980) had this to say:

Generally, performance decrements due to divided attention are usually marked whenever simultaneous stimuli (visual, auditory, kinesthetic) must be identified separately and independently. This is to be expected since under these circumstances all stimuli must pass through the limited capacity system to awareness. (p. 272)

In summary, human information processing research provided a sound rationale for approaching the issue of sensory-based representational systems. The fact that there is a limited capacity within the brain to encode, process, and store information coupled with the expanded notion of Chomsky (1966) and Luria (1973) defines a systematic structure for how a person processes information. These developments support the concept of systems of representation posed by Bandler and Grinder (1975, 1976, 1979).

Neurolinguistic Programming

Bandler and Grinder (1975, 1976) present Neurolinguistic Programming (NLP) as a model of human behavior and communication. Neurolinguistic Programming broken down into its component parts: "Neuro" stands for our nervous system through which all experience is received and processed via the senses or representational systems, i.e. visual (sight), auditory (sound) kinesthetic (feeling), olfactory
(smell), and gustatomy (taste). "Linguistic" stands for language and the entire communication system which all neural representation are coded, ordered, and given meaning. Because of this the key assumption is that language will reflect the internal processes involved in this processing. "Programming" stands for the process of bringing under conscious control the organization of communication and the neurological systems involved to achieve specific outcomes.

The field came into being as a result of the work of Richard Bandler and John Grinder (1975). They reviewed the works of Virginia Satir, Jay Hayley and Milton Erickson in an attempt to understand the structure involved in doing effective therapy. Out of this work came the books *The Structure of Magic*, Volumes I and II (1975, 1976) and *Frogs into Princess* (1979). Bandler and Grinder (1976) proposed that humans are continually receiving data from the different senses; sight, sound, tactile stimulation, smell and taste. These data will however be organized as representational systems via the visual, auditory, or kinesthetic sensory systems. Since an individual is directed by these systems, a strategy for decision-making can be enhanced or improved by the effectiveness of the sensory system utilized.

A key assumption in Bandler and Grinder's theory is that a primary representational system develops because persons are unable to process data through all of their sensory channels simultaneously (Falzett, 1981).

**Neurolinguistic Programming Research**

Paxton, (1980), examined the relationship between therapist and
client by matching predicates of clients and therapists in a specific representational system. This was based on a prior analysis of predominant client representational system. She found therapists who frequently use predicates reflecting a specific sensory representational system during the counseling session will produce a more positive client perception of the counseling relationship than will counselors who infrequently use predicates to reflect the sensory representational systems.

Falzett (1981) explored the Bandler and Grinder statement that trust in a relationship will be enhanced if the counselor matches the primary representational system (PRS) of the client. He used an eye-movement questionnaire to determine a subject's primary representational system. The interviewer then matched predicates based on the overall primary representational system scores for all subjects. The results of this study indicated that the primary representational system model could provide an explicit strategy for understanding clients and enhance client trust in the counseling relationship.

Beale (1980) tested the Bandler and Grinder claim that by observing eye movements and verbal predicates, psychotherapists and communicators can identify how a person will organize his/her ongoing conscious experience. He recorded 960 observations per stimulus and videotaped the eye-movements and predicate responses of the subjects. Hypotheses for the combined predictions of eye movements and verbal predicate were not substantiated. However, the verbal predicates responses were substantiated, confounding the results.

Thomason, Arbuckle and Cody (1980) investigated subjects' eye
movements in response to questions designed to elicit visual, auditory, and kinesthetic responses. A 75% consistency between question and eye movement was established. The results indicated that although eyes do move during questioning, the mode of sensory processing did not influence eye movement as hypothesized.

Shaw (1977), in researching how subjects responded to presentation of vignettes of representational systems, found that subjects did not respond differentially to the visual, auditory and kinesthetic items presented. Since the subjects' primary representational system had been identified in a previous study by using verbalization of predicates, eye-movements, and primary and secondary self-report, the results obtained were difficult to interpret.

Dowd and Hingst (1981) investigated the effects of predicate matching, predicate mismatching, and no-matching of predicates on perception of counselor social influence and the counseling relationship by clients in an initial interview. The results showed no significant predicate matching main effect.

Overall results suggest little support for the Neurolinguistic Programming model as an accurate way to match client and therapist representational systems. Yet an interesting piece of data emerges from these studies. Although the matching process is flawed, when client and therapist systems are matched, clients report greater trust, and a more positive perception of the therapy relationship (Falsett, 1981; Paxton, 1980). Schmelden (1981), using a simple strategy of counselor matching or mismatching predicate responses in a counseling interview, also reported that clients felt more empathy in the match than mismatch condition.
Research on Information Processing Theory, reaction-time research, and neuropsychological data would support the direction of Bandler and Grinder's claims, (Broadbent, 1971; Duncan, 1980; Ericsson & Simon, 1980; Heilman & Valenstein, 1979; Luria, 1972, 1973, 1980; Logan, 1979; Navon & Gopher, 1979; Neisser, 1967; Paap & Ogden, 1981; Posner, 1982; Slobin, 1971; Trissman 1964). The issue therefore is not so much whether Bandler and Grinder are correct in their model but rather, are their techniques the most efficient means to uncover and understand representational systems?

Personality

Personality variables play an important role in the process of therapy. Montgomery (1978) found that therapist commitment and personal style were more influential in producing client change than the specific theory on technique a therapist utilized. Strupp (1977) agrees in part with this research by stating:

the therapist's ability to understand the genetic origins and psychodynamics of feelings, attitudes and behaviors is not tantamount to an ability to produce therapeutic change. (p. 20)

Although few would state that personality dimensions of warmth or genuineness could replace effective training, it is important to note that in research a basic distinction should be made between the therapist personality and his/her actions', that is, between who the therapist is and what he/she does.

In reviewing research on personality and therapeutic effectiveness (Genther & Neuber, 1975; Grigg, 1977; Lazarus, 1978; Montgomery, 1978;
1978; Panyard, 1976; Strupp, 1977; Walton & Duncan, 1978; Wenegrat, 1976) it is clear that personality variables of therapists may not only influence how effective they are as therapists, but what type of therapist they may become.

Walton and Duncan (1978) measured personality variables and theoretical orientation of 126 male psychotherapists. They found that therapists did cluster together by orientation on some dimensions. Behaviorists were typically low in intuition, Rational Emotive Therapists were high in rationality; Psychodynamic therapists grouped together as either high in rationality, complexity and induction or low in all three; and eclectic therapists were generally low in rationality.

Panyard (1976) found that training, specifically participation in courses entitled Counseling Practicum, and Counseling Process and Case Problems, resulted in significant changes in measures of counseling skills but little or no personal growth as measured by the Personal Orientation Inventory.

In exploring the relationship of therapist characteristics to effective counseling Alexander, Barton, Shiavo, and Parsons, (1976) researched adolescents aged 13 to 16 and their families who were seen in counseling designed to change family communication patterns. Treatment was active and problem solution oriented. Therapist characteristics of relationship (affective behavior, warmth, and humor) and structuring (directiveness and self-confidence) dimensions were explored. The results indicated that treatment outcome as defined by reduced recidivism, improved family communication, and continuation in treatment were predicted by both the relationship and structuring dimensions of
the therapist.

Hess (1980), in presenting guidelines for training of therapists, pointed out the importance of increasing accuracy of trainee perception while at the same time building the confidence and interpersonal awareness of trainees. He predicts that successful feedback to trainees can help them become aware of their skills and personalities and assist trainees in working toward eliminating dehabilitating attitudes and behaviors that might distract from effective therapy.

Wenegrat (1976) found that therapists were most effective when they focussed on client feelings and related these to client actions through probes and questions. He found that therapists were least effective when they avoided client emotions and only focussed on their actions. The underlying personality dynamics differentiating persons who were able to label client emotions from those who did not were not explored.

In summary, personality variables of therapists do play an important, though not exclusive, role in therapeutic effectiveness. It may be as Hess (1980) has proposed, that training of therapists requires both a method to close the gap between self-report and actual behavior, and a need to focus on the relationships that foster working through personality issues which may block the therapeutic role.
Chapter III

METHOD

Chapter III includes a description of the sampling procedures of the study and a description of each instrument employed. The chapter is concluded by a description of the research design of the study and a summary of the hypotheses and the statistical analyses performed. This section gives a step-by-step narrative of the methodology used in this study.

The purpose of the present study was to investigate accuracy of response to affectively laden stimuli across visual, auditory and kinesthetic fields of representation. This research was undertaken to assess subjects' individual response patterns and to distinguish possible differences in accuracy of response which subjects reported across representational systems. Subjects' response accuracy was correlated with response frequency in subjects' representational system. Accuracy of response pattern, in turn, was compared to subjects' personality type. Subjects were assessed on two instruments, the Affective Sensitivity Scale and the Myers-Briggs Type Indicator.

Subjects

The subjects for this study were graduate students at the University of Maine, Orono, Maine and Western Michigan University, Kalamazoo, Michigan. They were students in master's degree
training programs in counseling. The aim of these programs is to train persons to become professionals in the helping fields. The students ranged in age from 20 to 55 and had diverse vocational interests and backgrounds. All students were enrolled in courses fitting the general description of Counseling Techniques. Research occurred within the graduate departments, Counselor Education at University of Maine at Orono and Counseling and Personnel at Western Michigan University.

Collection of Data

Five classes of master's degree students, totalling 67 subjects, served as subjects in this study. The week prior to collecting data students were requested to participate in a study measuring dimensions of affective sensitivity and its relationship to personality type. They were informed that participation was voluntary and would occur at the time of the next class meeting. On the date of data collection students were first requested to sign a consent to participate form (Appendix A). Students were then presented with a revised version of the Affective Sensitivity Scale, Form E-A-2, which was modified for purposes of this study. Administration of this instrument required 50-60 minutes of time. Subjects took the Myers-Briggs Type Indicator home and returned the completed instrument one week later. Research indicates no bias in results obtained from the Myers-Briggs Type Indicator (Myers, 1962).

Data were collected over a two-week period in the Fall of 1982. The subjects at Western Michigan University took the Affective Sensitivity Scale between September 21 and September 26, 1982, depending on which time the individual class met. Subjects at University of Maine...
took the Affective Sensitivity Scale between September 30 and October 5, 1982, depending on which time the individual class met.

**Instrumentation**

Two instruments were used in this study. A revised version of the Affective Sensitivity Scale, Form E-A-2 was used to measure the accuracy of sensitivity toward feelings of others (Kagan, Werner, & Schneider, 1977), (Appendix B). The Myers-Briggs Type Indicator, Form F was used to measure dimensions of personality type (Myers, 1962), (Appendix C).

**Scoring**

The Affective Sensitivity Scale and the Myers-Briggs Type Indicator were administered on computer-scan sheets, from which the data were read and transferred to the University DEC-10 computer. All data were analyzed on Western Michigan University computer, using programs from Statpak Statistical Package.

**Affective Sensitivity Scale, Form E-A-2**

The Affective Sensitivity Scale is a self-report test which measures interpersonal sensitivity. It consists of a series of filmed encounters between two or more persons. After viewing each film segment, each subject was asked to answer multiple choice questions about the people in the scene. The respondent was asked to select the response most likely to replicate the response which the individuals in the encounter were saying to themselves at the termination of the scene (Schneider, Kagan, Werner, 1977). Examples of items are:
What is he feeling at this point?

a. I may be smiling but I'm absolutely furious.

b. I feel cut off and angry when you close me out too.

c. I can accept that, really. I understand that you just have to do that.

What is he feeling about her at that point?

a. Sometimes I get angry at you for shutting me out, but I'm glad we're talking about it now.

b. That's good to know. Now I don't have to worry about you getting time alone.

c. I feel sad that I really don't understand you. You're so different from me.

For the purposes of this study the Affective Sensitivity Scale was revised. Kagan by personal communication gave permission to introject a question on how each respondent made their decision. Kagan reported introjections such as those described in this study did not significantly affect validity and reliability measures of the Affective Sensitivity Scale (Kagan, 1981). An example of the revised aspect of the Affective Sensitivity Scale is:

How did you make your decision? Was it...

a. Something you saw?

b. Something you heard?

c. A "gut feeling" or internal body sensation?

The first work on the Affective Sensitivity Scale was completed in 1962 (Kagan, Krathwohl, & Miller, 1983). The basic concept involved videotaping therapy sessions, selecting scenes from these videotapes,
and asking people viewing each scene to select from a multiple choice
list statements which most accurately described what they thought the
client or therapist actually felt (Kagan, Werner, & Schneider, 1977).

Eventually through a series of revisions, Forms D and E were
developed. The scale consisted of a series of personal encounters
between two or more individuals and were taken from actual interpersonal
contacts. Each film is in color. Each scale consists of 30 scenes
ranging from 8 seconds to 2 minutes and is followed by multiple choice
items. Item responses were developed based on Interpersonal Process
Recall (IPR) recall responses of the participants and ratings of highly
empathic persons in the field (Kagan, Werner, & Schneider, 1977).

A specific difference in Form D over the earlier forms (Kagan,
Krathwohl, Goldberg, Campbell, Schauble, Greenberg, Danish, Resnikoff,
Bowes, & Bundy, 1967) is that initially Kagan defined affective
sensitivity as the person's ability to detect and describe the immediate
affective state of another. In Form D this became the ability to infer
the covert thoughts of another, even when these thoughts are related to
a feeling state (Kagan & Schneider, 1977).

Large numbers of people were administered the Affective Sensitivity
Scale in the United States, Canada, and Australia. Internal consistency
was usually in the low .70's. Inter-item correlation was low, usually
around .13. Cronbach's alpha, for an N of 2,000 for Forms D is .75
(Schneider, Kagan, & Werner, 1977). Test-retest reliability with less
than one week intervening for medical and nursing students was .63
(Schneider, Kagan, & Werner, 1977).

The Danish and Campbell studies (1971) reported adequate reliability
indices for earlier versions of the scale, as well as correlation with external criteria for validation. Correlations between Form E and the original form is .76. Further research on Form E is still being planned (Kagan, 1977).

Cronbach's alpha designates a reliability of .66 for Form E (Kagan, 1980). Schneider, Kagan, and Werner (1977) found the Affective Sensitivity Scale accurately discriminates individuals who were designated by other criteria to be highly effective interpersonally. Danish and Kagan (1971) utilized the scale to measure growth in interpersonal sensitivity. They found the scale effective as an instrument in measuring short term counselor training programs as well as longer training programs. The Affective Sensitivity Scale would appear then to be an effective instrument for measuring an individual's ability to be sensitive to the feelings of others.

**Myers-Briggs Type Indicator, Form F**

The Myers-Briggs Type Indicator is a 166-item forced-choice questionnaire developed as a tool for using Jung's personality typology and it is a self-report inventory. The current version of the Myers-Briggs Type Indicator, Form F was published in 1962, and has been used in more than 400 studies (Carlyn, 1977).

The questions in the Myers-Briggs Type Indicator were chosen to represent the day to day differences in preferences which reflect Jung's more basic preference types. Jung (1926) believed that much apparently random variation in human behavior is actually orderly and consistent. The differences people experience in each other are caused by certain
basic differences in the way people approach life.

Each choice in the Myers-Briggs Type Indicator was designed to be attractive to the types most likely to use it. The items ask which of two equally desirable ways to function an individual would prefer. McCaulley and Natter (1974) noted the importance of recognizing the Myers-Briggs types as preference types. By this they meant that a type describes how a person prefers to use his processes of perception and judgment, not that he or she could not act different than their preferred type. Not being satisfied by work yet quite possibly preforming well, would be an example of a person "going against the grain" of their type in choosing employment.

The Myers-Briggs Type Indicator is scored for four personality scales. Since there are four preferences, a type can be identified by the four letters which demonstrate the way each person prefers to function. The four scales are: Extroversion-Introversion (E-I), Sensation-Intuition (S-N), Thinking-Feeling (T-F) and Judgment-Perception (J-P) (Appendix D). For each of the 16 Myers-Briggs Type Indicator types, the letters merely designates what a person states he prefers when requested to choose between the two poles of each preference (Carlyn, 1977).

The Extroversion/Introversion was designed to measure preferred orientation to life. Extroverted types are reported as being oriented to the outer world. They tend to like variety and action, are good at greeting people, and like to have people around. Introverted types have more of an inward orientation, tend to think a lot before they act, and work contentedly alone.
The Sensing/Intuitive scale was designed to measure preferred way of perceiving things. Sensing types focus on perception of the observable, by way of the senses. They may dislike new problems unless there is a standard way to solve them. Usually they reach a conclusion step by step and seldom make errors of fact. Intuitive types look at things by way of their meanings, relationships, and possibilities. These persons follow their inspirations whether good or bad, and dislike taking time for precision.

The Thinking/Feeling scale was signed to measure a person's preferred style for making decisions. Thinking types are skilled using a logical decision-making process aimed at impersonal objective findings. They tend not to show emotion readily and are often uncomfortable dealing with others' feelings. Feeling types, on the other hand, are skilled at understanding other peoples' feelings and often let decisions be influenced by their own, or other peoples' personal likes or dislikes. Decisions tend to be made in terms of a system of subjective personal values.

The Judging/Perceiving scale was designed to measure preferred way of dealing with the outer world. Judging types are organized and systematic. They work best when they can plan their work and follow their plan. They tend to be satisfied once they reach a judgment and may decide too quickly. Their goal is to regulate life and control it. Perceptive types adapt well to changing situations. They are more curious and open minded, tend to be more interested in process than outcome, and may procrastinate that which does not interest them (Myers, 1981).
In scoring the Myers-Briggs Type Indicator it is important to note that the questions were established to determine habitual choices between opposites and hence are set up in a forced-choice form. Each item has one answer weighted in one of eight preferences, and the other choice weighted in it's opposite preference (Myers, 1962).

A number of studies have researched the reliability of the Myers-Briggs Type Indicator. Some utilize scores as dichotomous categories, some as continuous data. With dichotomous scoring researchers have estimated the reliability of type categories using phi coefficients ranging from .55 to .65 (Extroversion/Introversion), .64 to .73 (Sensing/Intuitive), .43 to .75 (Thinking/Feeling), and .58 to .73 (Judging/Perceiving) (Hoffman, 1974; Myers, 1962; Webb, 1964). In estimating the reliability of continuous scores, Myers (1962) developed a split-half procedure involving product moment correlations. Webb (1964) used a split-half procedure, and Stricker and Ross (1962) used Cronbach's alpha. All procedures yielded similar results: coefficients ranging from .76 to .82 (Extroversion/Introversion), .75 to .87 (Sensing/Intuitive), .69 to .86 (Thinking/Feeling), and .80 to .84 (Judging/Perceiving). Overall continuous scores yield higher reliabilities because no data is lost, although both continuous and dichotomous scores are acceptable (Caryn, 1977).

Test-retest reliabilities have been reported by Strickers and Ross (1962) of .73 for (Extroversion/Introversion), .69 for (Sensing/Intuitive), .48 for (Thinking/Feeling), and .69 for (Judging/Perceiving). Levy, Murphy, and Carlson (1972) reported test-retest reliabilities of .815 for (Extroversion/Introversion), .74 for (Sensing/Intuition), .78
for (Thinking/Feeling), .81 for (Judging/Perceiving).

The validity of the Myers-Briggs Type Indicator is dependent on how well it measures what it reports to measure, which are the constructs of Jungian typology. Concurrent validity studies (Bradway, 1964; Stricker & Ross, 1964b) support the statement by Myers (1962) that both tests reflect Jungian opposites which they were designed to measure. Studies by Goldschmed (1967), Conary (1966), and Strickers, Schiffner, and Ross (1965) demonstrate the Myers-Briggs Type Indicator has moderate predictive validity in certain areas. Researchers using factor analysis investigated the relationship between constructs measured by the Myers-Briggs Type Indicator and constructs measured by other ability, interest, and personality instruments (Grant, 1965; Laney, 1949; Myers & Doves, 1965; Stricker, Scheffner & Ross, 1965). These studies of construct validity suggest that the Myers-Briggs Type Indicator measures the dimensions of personality quite like those postulated by Jung (Carlyn, 1977; McCulley & Natter, 1974).

Experimental Design

The research design is in three parts. In the first part the subjects' scores were classified by the accuracy of scores obtained in their visual, auditory and kinesthetic representational systems. This data is derived from the pairing of accuracy responses with the self-report representational system responses used in the Affective Sensitivity Scale, modified for purpose of this study. Categories of subjects' most accurate and least accurate representational systems were compared. The $t$ test for mean differences was calculated and the level
of significance was set at the .05 level. The first component of the
design is diagramed in figure 1:

<table>
<thead>
<tr>
<th>Variable</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>t</td>
</tr>
</tbody>
</table>

**Figure 1:** Experimental design of study: \( t \) test for mean difference

**Notes.** 1 = subjects' most accurate representational system; 2 = subjects' least accurate representational system.

In the second part, the Affective Sensitivity Scale was scored for six variables: frequency of subjects' visual, auditory, and kinesthetic responses, as well as accuracy of subjects; visual, auditory, and kinesthetic responses. Frequency scores were obtained as the mean score of subjects' self-reported frequency of usage in each representational system. Accuracy scores were obtained as the mean accuracy of subjects' responses blocked by representational system they reported to use. The relationship between frequency and accuracy of subjects' responses were examined by means of a Pearson product-moment correlation. The second part of the design is diagramed in figure 2:
Frequency

<table>
<thead>
<tr>
<th></th>
<th>V1</th>
<th>A1</th>
<th>K1</th>
</tr>
</thead>
<tbody>
<tr>
<td>V2</td>
<td>r</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>V2</td>
<td>-</td>
<td>r</td>
<td>-</td>
</tr>
<tr>
<td>K2</td>
<td>-</td>
<td>-</td>
<td>r</td>
</tr>
</tbody>
</table>

Figure 2: Experimental design of study: Pearson product-moment correlations

Note. r = Pearson product-moment correlation; V1 = visual accuracy; V2 = visual frequency; A1 = auditory accuracy; A2 = auditory frequency; K1 = kinesthetic accuracy; K2 = kinesthetic frequency.

In the third part, the subjects' most accurate representational system was obtained and paired with subjects' personality type variables as determined by the Myers-Briggs Type Indicator scores. Chi-square analyses were calculated for the four personality dimensions, (Extroversion/Introversion), (Sensing/Intuition), (Thinking/Feeling), (Judging/Perceiving), to determine the relationship between subjects' personality types and their most accurate representational systems. The third part of the design is diagramed in figure 3:
In summary, the study is structured by having three components to its design. The statistical analyses performed consists of a *t* test for mean differences, Pearson product moment correlations (*r*) and the chi-square test of independence. The design of the study is diagramed in figures 1, 2, and 3.

### Hypotheses

The hypotheses examined in the study were divided into three parts. The primary hypothesis was: There is a significant difference between the means of subjects' most accurate representational system, and subjects' least accurate representational system as measured by the modified Affective Sensitivity Scale.

The second hypothesis was: There is a significant correlation
between subjects' frequency of responses and subjects' accuracy of responses across their visual, auditory, and kinesthetic representational systems.

The third set of hypotheses were:

a. There is a significant relationship between subjects' most accurate representational system and their (Extroversion/Introversion) type on the Myers-Briggs Type Indicator.

b. There is a significant relationship between subjects' most accurate representational system and their (Intuitive/Sensing) type on the Myers-Briggs Type Indicator.

c. There is a significant relationship between subjects' most accurate representational system and their (Thinking/Feeling) type on the Myers-Briggs Type Indicator.

d. There is a significant relationship between subjects' most accurate representational system and their (Perceiving/Judging) type on the Myers-Briggs Type Indicator.
Chapter IV

ANALYSIS AND RESULTS

This chapter is composed of three sections. In the first section the statistical analyses of the data are explained. In the next section the hypotheses are evaluated according to the results of the analyses. Finally, the chapter is concluded by a summary of the hypothesis tests.

Analyses

The design for this study was presented in three parts (Figure 1, 2, & 3). In the first part the subjects' scores were classified by accuracy of scores obtained in their visual, auditory and kinesthetic representational systems. Categories of subjects' most accurate representational systems and least accurate representational systems were compared. The least accurate representational systems were compared. The t test for mean differences was calculated and the level of significance was set at .05 level.

Second, the Affective Sensitivity Scale was scored for six variables: frequency of subjects' visual, auditory, and kinesthetic responses, as well as accuracy of subjects' visual, auditory, and kinesthetic responses. All cells in the chi-square analyses had a theoretical value greater than five. If any of the cells had a theoretical value less than five the Yates correction coefficient would have been employed (Games & Klare, 1967). The relationship
between frequency and accuracy of subjects' responses were examined by means of a Pearson product-moment correlation. A Bonferroni Chi-Square Multiple Analysis was calculated for significant Chi-square values.

Third the subjects' most accurate representational system was obtained and paired with subject's personality type variable as determined by Myers-Briggs Type Indicator scores. Chi-square analyses were calculated for the four personality variables detailed in the Myers-Briggs Type Indicator to determine the relationship between subjects personality types and their most accurate representational system.

Results

In this section, the data are presented and then the hypotheses are evaluated according to the results of the analyses.

The data for the Affective Sensitivity Scale are summarized in Table 1. The total N = 67.

TABLE 1
Means and Standard Deviations for the Affective Sensitivity Scale

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Frequency</td>
<td>20.19</td>
<td>7.6023</td>
</tr>
<tr>
<td>Auditory Frequency</td>
<td>19.12</td>
<td>7.75285</td>
</tr>
<tr>
<td>Kinesthetic Frequency</td>
<td>25.46</td>
<td>9.9305</td>
</tr>
<tr>
<td>Visual Accuracy</td>
<td>0.5157</td>
<td>0.13336</td>
</tr>
<tr>
<td>Auditory Accuracy</td>
<td>0.5112</td>
<td>0.12303</td>
</tr>
<tr>
<td>Kinesthetic Accuracy</td>
<td>0.4739</td>
<td>0.10726</td>
</tr>
<tr>
<td>Total Accuracy</td>
<td>0.4998</td>
<td>0.07257</td>
</tr>
</tbody>
</table>
Table 1 reports the means and standard deviations for the data obtained from the Affective Sensitivity Scale. Analysis shows the data were distributed normally.

The data for the Myers-Briggs Type Indicator are summarized in Table 2.

<table>
<thead>
<tr>
<th>Personality Variable of the Myers-Briggs Type Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type Variables</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>E</td>
</tr>
<tr>
<td>I</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>T</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>J</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>INFJ</td>
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<tr>
<td>INFP</td>
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<td>ENFP</td>
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<tr>
<td>INTJ</td>
</tr>
<tr>
<td>INTP</td>
</tr>
<tr>
<td>ENTP</td>
</tr>
<tr>
<td>ENTJ</td>
</tr>
</tbody>
</table>

Note. E = Extroversion; I = Introversion; S = Sensing; N = Intuition; T = Thinking; F = Feeling; P = Perceiving; J = Judging.

Table 2 reports the type variables, the N and percentages obtained from the Myers-Briggs Type Indicator.
Tables 1 and 2 illustrate a discrepancy between the number of subjects responding to each instrument. The N for the Affective Sensitivity Scale is 67. The N for the Myers-Briggs Type Indicator is 62. Five subjects did not return the self-administered Myers-Briggs Type Indicator.

Analysis of Hypotheses

The first hypothesis was concerned with accuracy of subjects' scores obtained in their visual, auditory, and kinesthetic representational systems. Categories of subjects' most accurate and least accurate representational systems were compared.

I. H₀: There is not a significant difference between means of subjects' most accurate representational system and means of subjects' least accurate representational system.

Hₐ: There is a significant difference between means of subjects' most accurate representational system and means of subjects' least accurate representational system.

A t test analysis was obtained for mean difference in accuracy of representational system.

As shown in Table 3, the t obtained for mean difference is significant at the .0001 level. Analysis of skewedness for all variables used in this study shows the data were distributed normally.
TABLE 3
_t Test Between Most Accurate and Least Accurate Representational System

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>67</td>
<td>.6008</td>
<td>.0802</td>
<td>-12.53*</td>
</tr>
<tr>
<td>2</td>
<td>67</td>
<td>.3999</td>
<td>.1040</td>
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</tbody>
</table>

Note. Variable 1 = subjects' most accurate representational system; Variable 2 = subjects' least accurate representational system. *p < .0001

Hypothesis I was designed to test for differences between means of subjects' most accurate representational system and means of subjects' least accurate representational system. Since the analysis of mean difference was found to yield significant results, the null hypothesis of no difference was rejected in favor of the alternate hypothesis. This indicates subjects do demonstrate a significant mean difference between their most accurate and least accurate representational system.

The second hypothesis was concerned with the relationship between frequency and accuracy measures of subjects' visual, auditory, and kinesthetic representational systems.

II. H_0: There are no significant correlations between frequency and accuracy measures of subjects' visual, auditory, and kinesthetic representational systems.

H_a: There are significant correlation between frequency and accuracy measures of subjects' visual, auditory, and
kinesthetic representational systems.

A Pearson product-moment coefficient of correlation was obtained to determine the relationship between frequency and accuracy measures of subjects' visual, auditory, and kinesthetic representational systems.

In Table 4 no significant correlations were found. None of the correlations reached the critical $r$ value of .254 needed for significance at the .05 level. All of the variables correlated were normally distributed, with the exception of variable six, which was slightly skewed.

**TABLE 4**


<table>
<thead>
<tr>
<th></th>
<th>V2</th>
<th>V3</th>
<th>V4</th>
<th>V5</th>
<th>V6</th>
<th>V7</th>
</tr>
</thead>
<tbody>
<tr>
<td>V2</td>
<td>.125</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>V3</td>
<td>-</td>
<td>.175</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>V4</td>
<td>-</td>
<td>-</td>
<td>.125</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>V5</td>
<td>V6</td>
<td>V7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** V2 = Visual Frequency; V3 = Auditory Frequency; V4 = Kinesthetic Frequency; V5 = Visual Accuracy; V6 = Auditory Accuracy; V7 = Kinesthetic Accuracy.

Hypothesis II was designed to test for correlation between frequency and accuracy measures of subjects' visual, auditory, and kinesthetic representational systems. The null hypothesis may not be rejected.

The third set of hypotheses was designed to assess the relationship...
between subjects most accurate representational system and their personality type variables as determined by Myers-Briggs Type Indicator scores. Each personality type variable (Extroversion/Introversion, Sensing/Intuition, Thinking/Feeling, and Perceiving/Judging) was evaluated using a chi-square test of independence.

III. H₀: There is no significant relationship between subjects' (Extroversion/Introversion) personality type variables and subjects' most accurate representational system.

H₁: There is a significant relationship between subjects' (Extroversion/Introversion) personality type variables and subjects' most accurate representational system.

TABLE 5

Chi-Square Analysis of Extroversion/Introversion Across Subjects' Most Accurate Representational System

<table>
<thead>
<tr>
<th>Variable</th>
<th>Visual</th>
<th>Auditory</th>
<th>Kinesthetic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introversion</td>
<td>12</td>
<td>9</td>
<td>5</td>
<td>26</td>
</tr>
<tr>
<td>Extroversion</td>
<td>10</td>
<td>16</td>
<td>8</td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>25</td>
<td>13</td>
<td>60</td>
</tr>
</tbody>
</table>

The obtained $\chi^2$ was 1.80, the critical $\chi^2$ was 5.99 with 2 df, $p = ns$, therefore a significant chi-square was not obtained. Since the chi-square comparisons yielded nonsignificant results, the null hypothesis of no difference may not be rejected.

IV. H₀: There is no significant relationship between subjects' (Intuition/Sensing) personality type variables and subjects' personality type variables as determined by Myers-Briggs Type Indicator scores. Each personality type variable (Extroversion/Introversion, Sensing/Intuition, Thinking/Feeling, and Perceiving/Judging) was evaluated using a chi-square test of independence.
most accurate representational system.

Ha: There is significant relationship between subjects' Intuition/Sensing personality type variables and subjects' most accurate representational system.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Visual</th>
<th>Auditory</th>
<th>Kinesthetic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intuition</td>
<td>14</td>
<td>17</td>
<td>8</td>
<td>39</td>
</tr>
<tr>
<td>Sensing</td>
<td>8</td>
<td>8</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>25</td>
<td>13</td>
<td>60</td>
</tr>
</tbody>
</table>

The obtained $x^2$ was 1.853, the critical $x^2$ was 5.99 with 2 df, $p = ns$, therefore a significant chi-square was not obtained. Since the chi-square comparisons yielded nonsignificant results, the null hypothesis of no difference may not be rejected.

V. H₀: There is no significant relationship between subjects' (Thinking/Feeling) personality type variables and subjects' most accurate representational system.

Ha: There is a significant relationship between subjects' (Thinking/Feeling) personality type variables and subjects' most accurate representational system.
TABLE 7
Chi-Square Analysis of Thinking/Feeling Across Subjects' Most Accurate Representational System

<table>
<thead>
<tr>
<th>Variable</th>
<th>Visual</th>
<th>Auditory</th>
<th>Kinesthetic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thinking</td>
<td>5</td>
<td>13</td>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td>Feeling</td>
<td>17</td>
<td>12</td>
<td>3</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>25</td>
<td>13</td>
<td>60</td>
</tr>
</tbody>
</table>

The obtained $x^2$ was 10.13, the critical $x^2$ was 5.99 with 2 df, $p < .01$, therefore a significant chi-square was obtained. The null hypothesis of no difference was therefore rejected in favor of the Alternate hypothesis. There is a significant relationship between subjects (Thinking/Feeling) personality type variables and their most accurate representational system.

VI. $H_0$: There is no significant relationship between subjects' (Perceiving/Judging) personality type variables and subjects' most accurate representational system.

$H_a$: There is a significant relationship between subjects' (Perceiving/Judging) personality type variables and subjects' most accurate representational system.
TABLE 8
Chi-Square Analysis of Perceiving/Judging Across Subjects'
Most Accurate Representational System

<table>
<thead>
<tr>
<th>Variable</th>
<th>Visual</th>
<th>Auditory</th>
<th>Kinesthetic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception</td>
<td>13</td>
<td>13</td>
<td>6</td>
<td>32</td>
</tr>
<tr>
<td>Judging</td>
<td>9</td>
<td>12</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>25</td>
<td>13</td>
<td>60</td>
</tr>
</tbody>
</table>

The obtained $x^2$ was .580, the critical $x^2$ was 5.991 with 2 df, $p = \text{ns}$, therefore a significant chi-square was not obtained. Since the chi-square comparisons yielded nonsignificant results, the null hypothesis of no difference may not be rejected.

Summary

Six hypotheses were tested to examine the relationship representational systems have to subjects' frequency of usage, subjects' accuracy of usage, and subjects' personality type variables. Analyses involving $t$-test, Pearson product-moment correlations and chi-squares were employed.

The following is a summary of the results of the hypotheses tests:

1. Hypothesis I predicted no differences between subjects' most accurate and least accurate representational systems. The $t$ test for mean-difference yielded a significant difference at the $\text{.0001}$ level. The null hypothesis of no difference was therefore rejected in favor of the alternate hypothesis,
indicating that subjects displayed a difference between their most accurate and least accurate representational systems.

2. Hypothesis II predicted a relationship between subjects' frequency and accuracy of representational systems utilized. The Pearson product-moment correlation yielded no significant relationship. The null hypothesis was not rejected.

3. Hypothesis III predicted a significant relationship between subjects' (Extroversion/Introversion) personality type variables and subjects' most accurate representational system. The chi-square test yielded no significant relationship at the .05 level. The null hypothesis of no significant relationship was not rejected.

4. Hypothesis IV predicted a significant relationship between subjects' (Sensing/Intuitive) personality type variables and subject's most accurate representational system. The chi-square test yielded no significant relationship at the .05 level. The null hypothesis was not rejected.

5. Hypothesis V predicted a significant relationship between subjects' (Thinking/Feeling) personality type variables and subjects' most accurate representational system. The chi-square test yielded a significant chi-square value at the .01 level. The null hypothesis of no relationship was therefore rejected in favor of the alternate hypothesis, indicating that subjects displayed a relationship between (Thinking/Feeling) personality type variables and subjects' most accurate representational system.
6. Hypothesis VI predicted a significant relationship between subjects' (Perceiving/Judging) personality type variables and subjects' most accurate representational system. The chi-square test yielded no significant relationship at the .05 level. The null hypothesis was not rejected.

In Chapter V a summary of the study is presented. Conclusions are drawn based on the results of the analyses. Finally, the limitations of the study are discussed and implications for future research are proposed.
Chapter V

SUMMARY AND CONCLUSIONS

The major purpose of this study was to explore and assess specific hypotheses related to subjects' representational systems. In this chapter, a summary of the study is presented. Next a discussion of the study is offered and conclusions based on the analysis of the data are drawn. Finally, limitations of the study and implications for future research are discussed.

Summary

The purpose of this study was to analyze a segment of Bandler and Grinder's theory (1975, 1976, 1979) of independent representational systems. Measures of independent representational systems were compared to accuracy measures of subjects' visual, auditory, and kinesthetic responses. The most accurate representational system was determined for each subject and was related to measures of subjects' personality type. This study addressed a component of the Bandler and Grinder model not yet explored by measuring difference in subjects' perceptual accuracy in what is reported as subjects' most accurate representational system and their least accurate representational system.

Four related areas of the literature were reviewed in the current study: historical background, information processing theory, Neurolinguistic Programming Theory and research, and personality.
theory and research. Four propositions were derived from the review of the literature to summarize the theoretical orientation of the study:

1. The manner in which we perceive is determined by both the process of perception and the structure of the representational systems used to catalog and store information obtained.

2. Different people attend to and utilized different pieces of information in coming to a specific decision.

3. The process of understanding the qualitatively different ways individuals perceive is amenable to research scrutiny.

4. By scrutinizing one aspect of the attending process, accuracy of attention across representational systems, generalizations may be drawn which will make that process amenable to change through re-education.

A total of 67 volunteers, who were students in master's degree training programs in counseling at the University of Maine and Western Michigan University participated in this study. The study was designed to assess six specific hypotheses related to subjects' representational systems.

Two instruments were utilized to assess accuracy and frequency measures of subjects response across representational systems.

The Affective Sensitivity Scale was utilized as a test to measure accuracy of interpersonal sensitivity. For purposes of this study six variables were assessed: visual frequency, auditory frequency, kinesthetic frequency, visual accuracy, auditory accuracy and kinesthetic accuracy. Subjects were asked to respond via paper and
pencil assessment to filmed encounters, vignettes of actual counseling sessions. Representational system responses were assessed by using a subject self-report strategy. There were 65 total frequency responses and 65 total accuracy responses possible on the modified Affective Sensitivity Scale.

The Myers-Briggs Type Indicator was utilized as a method of assessing measures of subjects' personality type variables. Subjects were assessed on four scales or types, Extroversion/Intuition, Sensing/Intuition, Thinking/Feeling, Perceiving/Judging. This instrument is derived from Jung's theory of personality types. Subjects received a four letter score which represented their personality type. Scores as defined by this instrument.

The results of the study were:

1. Significant differences were found between subjects' most accurate and least accurate representational systems.

2. No significant correlations were found between the subjects' frequency and accuracy measures across subjects' representational systems.

3. No significant relationship was found between subjects' most accurate representational systems and personality type variables Extroversion/Introversion, Sensing/Intuition, Perceiving/Judging.

4. A significant relationship was found between subjects' most accurate representational system and personality type variable Thinking/Feeling.
Conclusions

This study showed that there is a significant difference between subjects' most accurate and least accurate representational system. The study demonstrated that it is possible to explore both the dimensions of accuracy and frequency of subjects' representational systems. This study also demonstrated a relationship between subjects' most accurate representational system and subjects' personality type variables, thinking/feeling. Overall this study adds additional support to the proposition that the qualitatively different ways individuals perceive, process, and store information is amenable to research scrutiny. The present study serves to broaden understanding of how representational systems interact over the dimensions of accuracy and frequency of subjects' responses and subjects' specific personality type variables.

The fact that this study demonstrated a significant difference between most accurate and least accurate representational systems has numerous experimental implications. To date no studies have measured a difference in accuracy across representational systems, only differences in frequency of utilization. Frequency of subjects' responses were related to accuracy of subjects' responses but the magnitude of the relationship was not significant. Neurolinguistic Programming literature (Bandler & Grinder, 1975, 1976, 1979) stressed improved accurate therapeutic communication through the use of the Neurolinguistic Programming model. Therefore one might logically assume there would have been a stronger relationship between the frequency and accuracy of subjects' responses. This study did not find this relationship to be the case.
In exploring subjects' personality types, the personality variable thinking/feeling was related to subjects' most accurate representational systems. Therefore subjects most accurate in their visual representational system were shown to be more feeling dominant. Subjects most accurate in their auditory representational system were split evenly between thinking or feeling dominant. Subjects most accurate in their kinesthetic representational system were shown to be thinking dominant.

One way to conceptualize the significant personality type results related to thinking/feeling is through using an information processing system model coupled with object relations theory. What is labeled as personality variables may in fact be related to individual styles of taking in, relating to, and processing experience. A person's inclination to focus on thoughts or feelings may be influenced by his/her chosen representational system. Thinking, for example has been considered by some researchers to be an auditory task (Duncan, 1980; Navon & Gopher, 1979; Papp & Odgen, 1981). In this study, subjects most accurate in their auditory representational system were split between being thinking or feeling dominant. By using the concept of internal dialogue presented by Ellis (1973) or Trembley (1979) the results obtained would be interpreted as a person covertly focussing on thoughts or feelings in a self-talk manner through their auditory representational system.

In this study subjects who were most accurate in their visual representational system were shown to be feeling dominant. By linking the object-relations theory of Kernberg (1980), to an information
processing/representational system model, a mechanism for conceptualizing the relationship of feeling dominance to visual representational system may be established. Feeling dominance may lend a personal identification to images being processed, thereby producing a sharper distinction between figure and ground, ultimately aiding individual memory retention.

By using the same link between object-relations theory and an information processing representational system model, it becomes more plausible to conceptualize persons who are most accurate in their kinesthetic representational system as thinking dominant. Thinking dominance would allow most accurate in their kinesthetic representational system persons to gain the necessary separation between figure and ground, ultimately aiding information processing and individual memory retention. The whole system of checks and balances involved in processing and retaining experience merits additional research.

Overall, this study represents a strong contribution to information processing research. Representational systems were analyzed in a manner not yet undertaken with results that should encourage much more extensive research in this area.

Limitations of the Study

The method and design of this study were weakened by factors which often impede research. Questions may be raised related to subjects, validity, instrumentation, and generalizability of results.
Subjects

Subjects in this study were volunteers who agreed to participating in educational research. Thus volunteerism introduced a selection bias into the sampling procedure. This sampling bias was magnified somewhat because subjects needed to self-administer and return the Myers-Briggs Type Indicator, (a second voluntary agreement). Overall participation was high 87%, only 10 students in the five classes surveyed did not participate in the administration of the Affective Sensitivity Scale. Another five subjects did not complete the second part of the study, the Myers-Briggs Type Indicator, introducing another potential bias. Since the nature of this research was neutral with regard to individual subjects selected, subject bias is not expected to significantly affect the overall results obtained.

Validity of Instrumentation

A second potential bias has to do with validity of test instruments. Both instruments, the Affective Sensitivity Scale and the Myers-Briggs Type Indicator, tend to have good content validity (Kagan, 1977, Myers, 1962). For purposes of this specific research there are legitimate questions related to criterion validity. Utilizing the Affective Sensitivity Scale to yield measures of representational systems is risky. Ericsson and Simon (1980) minimize this risk by noting important facts involved in self-report related data, since generally self-report data can be highly unreliable. Since subjects by self-report recorded which representational system they used in making their decisions, the statements made by Ericsson and Simon become
valuable guides to assessing overall criterion validity of instruments.

Ericsson and Simon demonstrated that verbal reports, elicited with care and interpreted with full understanding of the circumstances under which they were obtained, are a valuable and thoroughly reliable source of information about cognitive processes (1980, p. 247). A study similar to the present study asked pilots returning from combat to describe intense encounters during training and what each pilot saw, felt, or heard, related to experience.

This style of research was labeled critical incidence technique. Ericsson and Simon stated that data so obtained as being closely related to data taken directly from the subjects' actual sequence of thought processes. They suggested that one way to guard against subject subjectivity of response was to supply the subject with a fixed set of alternative responses (Ericsson & Simon, 1980, p. 221).

Since the present study followed this same strategy, the risk for errors associated with criterion validity question should be minimized.

Instrumentation

Another potential bias or limitation has to do strictly with instrumentation. The Affective Sensitivity Scale was selected after a lengthy search for an instrument amenable to the critical incidence technique as described by Ericsson and Simon (1980). Kagan (1981) has utilized the Affective Sensitivity Scale for similar tasks and reports no overall biasing effect on individual subject scores. Therefore one would expect little bias. Until numerous studies have been done using the Affective Sensitivity Scale in the exact manner, with the exact
procedures demonstrated in this study, questions may legitimately be raised regarding instrumentation biases.

Generalizability of Results

The strategy involved in this study is logically sound, and the principles involved in the critical incidence technique have been demonstrated successfully elsewhere (Ericsson & Simon, 1980). It is therefore, logical to assume that the results obtained indicating that master's degree counseling students sampled demonstrate a significant difference in accuracy, between most accurate and least accurate representational system, should generalize to other master's degree counseling students. Likewise, the findings obtained relating frequency and accuracy of subjects' representational systems should generalize to the broader population of master's degree counseling students. Also the results obtained linking personality variables co subjects' most accurate representational system should logically generalize to the broader population of master's degree counseling students.

To fully remove any questions related to generalizability of this sample to a broader population of master's degree counseling students, more research will be needed. That limitation will remain until additional research is completed.

Implications for Future Research

The results obtained in this study provide the first step in documenting the feasibility of assessing accuracy and frequency measures of representational systems. These results also provide the first step
in relating these data to other variables such as personality types. However, more research in the area is needed. As shown in table 2, which outlined personality variables of the Myers-Briggs Type Indicator, 61.29% of all subjects were Introvert dominant, (Extroversion/Introversion), 66.13% of all subjects were Intuitive dominant, (Sensing/Intuitive), 66.13% of all subjects were feeling dominant, (feeling/thinking) and 54.84% of all subjects were perceiving dominant, (perceiving/judging). For purposes of this dissertation analysis was conducted at the level of interpreting the main types presented in the Myers-Briggs Type Indicator. In future research if appropriate N's are collected for each four letter type grouping (sixteen types possible) a more detailed analysis of the relationship between representational system and personality type variable as measured by the Myers-Briggs Type Indicator, may be accomplished. This should shed more light on the overall relationship between personality type and representational system.

Within the theoretical framework of this study, questions remain to be answered by future research. Specifically instruments will need to be refined to further assess the dimensions of accuracy and frequency of representational systems. Additional study may lead to refined curricula with the strategy of helping students understand what specific representational systems they rely on most heavily and which of those representational systems are in turn most accurate. This could be followed by instruction designed to increase student accuracy in representational systems in which they might need additional skill development. Other strategies could be employed to increase frequency
of student utilization in representational systems in which they are most accurate. Personality variables in addition to those examined in the present study might be related to student styles of utilization of specific representational systems. Exploration of this dimension might lead to a broader understanding of the role that personality has on individual styles of information processing.

Overall, the strongest hope for future research would be to encourage development of new mechanisms to assist future therapists in expanding their awareness and insight into the therapy process. This study addresses the issue of representational systems, exploring dimensions of accuracy, frequency and personality type. Future research should re-address these issues, hopefully integrating the findings established in this study to an ever increasingly practical application to the education of future therapists.
APPENDICES
APPENDIX A

Consent Form for Project on Affective Sensitivity and Relationship to Representational System and Personality Type

I __________________________________________ understand that participation in this project is voluntary. I also understand that no person other than the researcher shall be allowed to obtain any individual's scores or any other data without the express permission of that individual. The information obtained will be utilized only for educational research purposes. I also know that if requested, results of the research will be available to me.

Knowing this I give my informed consent to participate in this project.

(sign here)
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These consist of pages:

Appendix B, pages 65-95 (Affective Sensitivity Scale, Form E-A-2)
Appendix C, pages 96-107 (Myers-Briggs Type Indicator)
Appendix D, pages 108-109 (Understanding the Type Table)