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The Relationship Of Cognitive Style To Social Problem-solving And Empathy In Counselors-in-training

Anne Louise Cummings

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The Relationship of Cognitive Style to Social Problem Solving and Empathy in Counselors-in-Training

by

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Submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

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Abstract

The goals of this study were, first, to study the relationship between cognitive style (field dependence-independence) and the counseling skills of empathy and social problem solving in an adult learner sample, and second, to examine in detail, through protocol analysis, components of the social problem-solving process. The study was done with a sample of adult learners, namely 70 elementary and secondary teachers in training to become school guidance counselors. Social problem solving, in this context, refers to the solving of ill-defined personal problems, the kind of problems that school counselors face daily. The statistical design for the study was a 3 x 2 factorial design with repeated measures on one factor. The between-subjects factor consisted of three levels of cognitive style: field-dependent, mid-range and field-independent. The within-subjects factor consisted of two types of problem situation: interpersonal (dealing with other people) and intrapersonal (dealing with one's self). Both analogue and *in vivo* measures of problem solving and of empathy were obtained in both interpersonal and intrapersonal situations for all subjects.

The results of the first part of the study provided little support for hypothesized relationships between cognitive style and the two counseling skills of problem solving and empathy. In the case of empathy, situational

factors had more influence on subjects' performance than did cognitive style. It was found that subjects at all levels of field independence scored significantly higher on intrapersonal analogue empathy items than they did on interpersonal items. No main or interaction effect of cognitive style was found. With respect to problem solving, the predicted interaction of cognitive style with situation did not materialize, and the obtained main effect of cognitive style reflected an unanticipated U-shaped relationship between field independence and problem solving. Follow-up analyses showed that field-independent subjects generated more strategies on interpersonal analogue problems than did field-dependent subjects. In addition, they tended to use a sequential problem-solving process, while field-dependent and mid-range subjects tended to utilize a wholistic process.

Very little research has investigated the process people use to solve ill-defined problems. Social problem solving was analyzed in depth in this study through protocol analysis. It was found that subjects utilized eight different problem-solving elements or skills (problem statement, analysis, strategy, elaboration, evaluation of strategy, evaluation of self, reason, and feeling), three different problem-solving styles (analytical, affective, and behavioral), and three different problem-solving processes (sequential, wholistic, and simultaneous).

Analyses of social problem solving elements, regardless of cognitive style, indicated that subjects utilized more analysis and evaluation of self on intrapersonal problems, while displaying more evaluation of strategies on interpersonal problems. When problem-solving items were classified as simple versus complex, it was found that subjects generated more strategies, elaborations, and problem descriptions with relatively simple problems, while they generated more analyses, evaluations, and feeling statements with relatively complex problems. When problem-solving styles were investigated, subjects were found to use a behavioral style more often for interpersonal problems than for intrapersonal problems. Thus, situational variables had a powerful influence on subjects' problem-solving behavior whereas previous analyses with cognitive style had found no significant impact on problem-solving behavior. Situational variables did not, however, significantly influence problem-solving processes utilized by subjects. Most subjects used one process predominantly, regardless of the type of problem.

This study contributes to our understanding of the role of cognitive style in an adult learner population. It appears that cognitive style may be less useful for describing and explaining individual differences among adult learners than some educators (Cross, 1982; Lovell, 1980) have hoped. A further contribution of this study is its detailed analysis of how subjects solve social

problems. The elements and styles used by subjects varied depending on the type of social problem, indicating the importance of situational factors in understanding human behavior.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Introduction

The field of counselor education has grown steadily over the last 25 years as the public has become more aware of the need for trained helping professionals. One of the helping professions that has experienced a change of focus during this time period is guidance counseling within the school system. School guidance counselors are no longer concerned only with testing, career planning, and course selection. They also are required to possess skills for counseling students with personal concerns.

A number of authors (Carkhuff, 1983; Egan, 1982; Gazda, Asbury, Balzar, Childers, & Walters, 1984) view empathy and problem solving as two essential skills needed by all helping professionals in dealing effectively with clients. Egan (1982), in particular, conceptualizes the helping model within a problem-solving framework. The goal of counseling, from this perspective, is to help clients solve problems of daily living. To do this, counselors utilize empathic responding and problem-solving skills to guide clients through the problem-solving process. For purposes of the present study, empathy is defined as the accurate reflection of client feelings (Gazda et al., 1984b), while problem solving refers specifically to social problem solving, defined by D'Zurilla and Goldfried (1971) as the process used by people to cope effectively with the problematic situations of everyday life.

When adult learners are taught the counseling skills of empathy and problem solving, individual differences in such learners become an important factor. Different people learn in different ways and thus need to be taught in different ways. This is thought to be particularly true with adult learners, the population of interest in the current study (Brundage & Macheracher, 1980; Weathersby & Tarule, 1980). The term "adult learner," in this context, refers to people who are older than the 18-22 year old university undergraduate population.

One approach to individual differences in adult learners that is receiving increasing attention in the literature is that of cognitive style (Brundage & Macheracher, 1980; Cross, 1982; Knox, 1977; Lovell, 1980). Generally, a cognitive style is defined as "an individual's typical mode of processing when perceiving, remembering, thinking, and problem solving" (Knox, 1977, p.477). This definition implies individual differences and preferences in both qualitative and quantitative ways of gathering, storing, and processing information.

A number of different cognitive style models have been investigated by researchers. Messick (1976) identified at least eleven distinct models of cognitive style that have received empirical or theoretical attention over the last twenty years. Of these, the model of cognitive style involving field dependence and field independence, as described by Witkin (1948), has the strongest research

base. Much of this research has occurred in the educational field, covering a wide variety of educational issues that are applicable to the adult learner.

The present study served two major purposes. The first purpose was to investigate the relationship between cognitive style and the two counseling skills of empathy and social problem solving in a sample of adult counselor trainees. The second purpose was to investigate the process of social problem solving itself by gathering data on how people actually solve problems of daily living. Very little research to date has been directed to clarifying the styles and processes adults use in dealing with ill-defined social problems.

With the above as a brief overview, the remainder of this chapter will review relevant research relating to cognitive style, problem solving, and empathy in turn. Then the general rationale and hypotheses for the current study will be presented.

Field Dependence and Independence

The cognitive style model of field dependence and independence evolved from research by Witkin in the late 1940's and early 1950's on how people locate themselves in space and find embedded figures in complex designs. The most commonly used measures of this construct are the Embedded Figures Test (EFT), the Group Embedded Figures Test (GEFT), the Children's Embedded Figures Test (Witkin,

Oltman, Raskin, & Karp, 1971), and the Rod and Frame Test (Witkin, Lewis, Hertzman, Machover, Meissner, & Wapner, 1954).

On the embedded figures tests, subjects must locate a simple figure, such as a square or rectangle, within a more complex geometric design (see Appendix A for examples). Some people are able to locate the simple figure quite easily, while others have greater difficulty. This test measures the extent to which subjects are able to perceive an object accurately without being influenced by the surrounding field. Witkin found that individuals demonstrated consistency across situations in their styles of perception. On the basis of these consistencies, he developed the constructs of field dependence, in which perception is heavily influenced by the surrounding field, and field independence, in which perception tends to be relatively separate from the surrounding field.

More specifically, the field-dependent cognitive style is characterized by global perception, use of external frames of reference, an interpersonal orientation, and a superiority in learning social content. Conversely, field-independent individuals are conceptualized as using more articulated perception, imposing structure on ambiguous material, using an analytical, hypothesis-testing approach to concept attainment, employing an internal frame of reference, and learning abstract, theoretical concepts readily (Witkin, Moore, Goodenough, & Cox, 1977).

Subsequent research from the 1950's to the present has linked these cognitive styles to a much broader range of areas (Witkin, 1976; Witkin, 1979; Witkin & Goodenough, 1981; Witkin, Goodenough, & Oltman, 1979; Witkin, Moore, Oltman, Goodenough, Friedman, Owen, & Raskin, 1977). Personality characteristics and interpersonal styles have been added to the original cognitive factors. These characteristics are summarized in Table 1.

In addition to these characteristics, Witkin et al. (1977) identified several basic principles underlying their cognitive style model. First, cognitive style is concerned with the form and process of cognition rather than its content. When the terms field-dependent and field-independent are used to describe this process, they represent tendencies of varying magnitudes of strength toward one or the other ends of a bipolar continuum. Witkin et al. (1977) emphasize that they make no claim about the existence of two distinct types of people. In the present study, "field-dependent" refers to subjects at the lower third of the continuum, "field-independent" indicates subjects at the upper third of the continuum, and "mid-range" is the term used for subjects in the middle third of the continuum.

A second principle stated by Witkin et al. (1977) is that field dependent-independent modes of functioning are assumed to be stable over time and to be distributed normally in the general population. Consequently, most

Table 1

Cognitive and Interpersonal Characteristics of Relatively Field-Dependent and Field-Independent People

Field-Dependent	Field-Independent
Perceives field as a whole global	Sees items as discrete from background
Leaves materials "as is"	Imposes structure on ambiguous material
Clusters concepts into large groups	Clusters concepts into small tight groups
Learns social content better	Learns abstract content better
Global experience of self	Experiences self as separate from nonself
Attentive to social frames of reference	Not sensitive to social undercurrents
Likes to be with people	More individualistic
More use of external sources to define feelings	More use of internal frame of reference

Note. Adapted from "Field-Dependent and Field-Independent Cognitive Styles and Their Educational Implications by H. A. Witkin, C. A. Moore, D. R. Goodenough, & P. W. Cox, 1981, Review of Educational Research, 47, 1-64.

people will fall in the middle of the continuum and not be very different from each other. Individuals at opposite ends of the continuum, though, will be very different from each other.

Third, Witkin and his colleagues believe that these cognitive styles are not value-laden. That is, one style is no better than the other. On the contrary, each style has functional value in certain situations, with the field-dependent style being more functional in interpersonal, social settings, and the field-independent style being better suited to analytical contexts.

The majority of research with cognitive styles has been performed with children and undergraduate populations, with very little research focusing on the adult learner. The research that does exist with adult samples has tended to deal either with the effect of age on GEFT performance (McIlvried, 1980; Panek, Funk, & Nelson, 1980; Peterson & Eden, 1981; and Petrakis & Hanson, 1981) or with instructional preferences of adult learners (Samers, 1982; Simpson, 1981).

Much additional research is needed on cognitive style differences in adult learners. The general implications of Witkin's theory suggest that adult learners will learn differently, process information differently, and interact with others differently based on their cognitive styles. Specific areas of counselor performance in which cognitive

style differences might be expected to be manifested are those of problem solving and empathy. Each of these areas is considered in more detail below.

Problem Solving and Cognitive Style

Recent research investigating the relationship between field independence and problem solving has yielded differing results. Swanson (1980) expected that field-independent subjects with their analytical problem-solving tendencies would solve Tower of Hanoi puzzles (well-structured problem solving) more easily than field-dependent subjects. However, no differences were found between the two groups in problem-solving efficiency. With verbal word problems, Wyatt (1983) varied the amount of structure available to subjects for solving problems. She found no relation between cognitive style and the ability to utilize varying degrees of structure in problem solving

In a similar vein, Noble (1984) examined the relationship between field independence and cognitive restructuring ability in solving anagrams. The results indicated that field-independent subjects were no more efficient than field-dependent subjects at providing an inherently disorganized field with a new organization.

Considering just one aspect of the problem-solving process, Neuhaus (1980) reported that cognitive style was unrelated to the data-gathering strategies of occupational

therapy students in clinical problem-solving situations (simulations). In the field of nursing, Gunning (1981) also utilized simulations to test clinical problem-solving and reported a weak but significant correlation ($r = .279$) with field independence. Gunning also reported a significant correlation ($r = .370$) between field independence and critical thinking, as measured by the Watson-Glaser Critical Thinking Appraisal.

The measures of problem solving used in prior research have often been standardized tests such as the Problem-Solving subtest of the McGraw-Hill Basic Study System Skills Test. With this measure, Cagley (1983) found that field independence was not a strong predictor of problem-solving ability.

On the other hand, Heller (1982) employed a standardized mathematics problem-solving test and found that field-independent people tend to do better on problem-solving tasks that require the extracting of pertinent information from a larger field of information. Witkin et al. (1977) reported that this requirement is a critical test of field-independence ability.

Quite a different aspect of problem solving was studied by Maloney (1981), who tested Gagne's rule-transfer conceptualization of problem solving. Maloney found that field-independent subjects outperformed field-dependent subjects when solving novel problems (vertical

rule-transfer), and applying rules to new situations (lateral rule-transfer).

It is difficult to interpret the variation in extant results on the relationship between problem solving and cognitive style. Five studies did not find the predicted relationship between these variables whereas three studies did support such a relationship. One of the difficulties in synthesizing these studies is that problem solving has been conceptualized and measured in very diverse ways across the various studies.

A further limitation of previous research on problem solving, both in general and in relation to cognitive style, is that it has focused solely on well-structured, impersonal problems (Frederiksen, 1984). Such problems have a single correct solution, and can usually be solved with information present in the problem statement and/or information in a problem solver's long-term memory, such as mathematical rules. Conversely, the types of problems confronting counselors, the population of interest here, are ill-defined social problems, such as family conflicts or decisions about one's future. Simon (1979) describes ill-defined problems as those that are more complex, have less specific criteria for knowing when the problem is solved, and do not supply all of the information required for solution.

While previous studies have dealt mainly with well-defined, relatively "impersonal" problems, the present study is concerned with ill-defined, social problem solving. This type of problem solving has been examined by Spivack, Platt, and Shure (1976), who purport that effective social problem solving consists of the following abilities: (1) recognizing the large range of problematic situations that one can confront in the environment, (2) generating potential solutions to social problems, (3) specifying the necessary steps to solve the problem effectively, (4) evaluating the consequences of one's actions, and (5) being aware of the motivational aspects of one's actions.

To assess the social problem-solving process, Platt and Spivack (1975a) developed the Means-Ends Problem-Solving Procedure (MEPS), a series of ten story stems in which an individual must achieve a specific goal. The subject must fill in the "means" or steps involved in reaching the goal. Platt and Spivack believe that this type of "means-ends" thinking is a very significant skill in mediating adjustment in adults.

The MEPS is one of the most used and researched instruments in the social problem-solving field. Much of the original research with the MEPS was concerned with comparing the problem-solving abilities of juvenile delinquents versus nondelinquents or psychiatric versus nonpsychiatric populations. More recent research has

examined other populations. For example, several researchers (Gotlib & Asarnow, 1979; Mitchell & Madigan, 1984; Wierzbicki, 1984; Zemore & Dell, 1983) have utilized the MEPS to compare the social problem-solving skills of depressed and nondepressed university students. While the focus of each of these studies was slightly different, they all found that depressed subjects generated significantly fewer relevant means for problem situations than did nondepressed subjects.

In a different area, Bruch (1981) hypothesized that unassertiveness might result from a deficit in strategies for organizing behavior into assertive action. He employed the MEPS to measure ability to organize and generate plans of action for achieving a social goal. However, no significant differences were found between assertive and nonassertive subjects on this measure.

In a study with 282 adult university students, Lemoncelli (1984) examined the relationship between social problem solving, as measured by the MEPS, and several personality variables. From a canonical analysis, he discovered a significant negative relationship between problem-solving ability and a set of variables consisting of low self-efficacy, high distress, high state anxiety, and low state curiosity.

Some researchers have modified the MEPS to fit their particular research problems. For example, to study how

young couples cope with the transition to parenthood. Alpert (1980) used five of the MEPS problem situations and then added problems dealing with difficulties due to the arrival of a new baby. In a study by Sarason (1984) examining the characteristics and effects of social support, five MEPS stories were scored for the degree to which the protagonist thought about an action before taking it.

In summary, the MEPS is being utilized increasingly as a measure of social problem solving with normal populations and has been modified in a variety of ways. In the present study, an adaptation of the MEPS was used to examine differences in problem-solving performance and process for field-dependent, mid-range, and field-independent guidance counselors in interpersonal and intrapersonal problem situations. Interpersonal situations refer to problems involving the subject in relation to other people, such as family, friends, neighbors, or coworkers. On the other hand, intrapersonal situations refer to problems that are more focused on the individual, such as being dissatisfied with life and wanting to improve one's teaching.

Empathy and Cognitive Style

Empathy has been defined in numerous ways in the literature. In the present study, the emphasis is on the skill of empathic responding, described by Gazda et al. (1984b) as the counselor's ability to reflect accurately the feelings of the client.

Much of the research on empathy has been concerned with empathy as a perceived general quality or characteristic rather than with the actual skill of empathic responding. Empathy has usually been measured either by a self-report personality scale such as Hogan's Empathy Scale (1969), or by a simple rating scale devised by the investigator (Barnett & Harris, 1984; Conoley & Beard, 1984; Loeb & Curtis, 1984; Richmond, 1984; Suit & Paradise, 1985; Yanico & Hardin, 1985).

Very little research has been directed at the relationship between cognitive style and empathy. Of the available research, two studies (Martin & Toomey, 1973; Wightman, 1982) measured the quality of empathy, while two studies (Anstandig, 1979; Carlino, 1972) measured the skill of empathy. Martin and Toomey (1973) correlated field independence with scores on Hogan's Empathy Scale (1969). Hogan conceptualized the empathic person, like the field-independent person, as more capable of complex, differentiated responding and more able to view the self as separate from others. Consistent with this view, Martin and Toomey found a statistically significant correlation of .34 between field independence and empathy.

In a study with women, Wightman (1982) defined field-independent subjects as those who were at least 0.5 SD units above the group mean, and field-dependent subjects as those who scored at least 0.5 SD's below the group mean. With this grouping, field-independent subjects scored

significantly higher than field-dependent subjects on the Affective Sensitivity Scale (Kagan & Schneider, 1980), a multiple-choice empathy test.

In the first of two studies measuring empathic responding directly, Anstandig (1979) gave empathy training to graduate students in a master's counseling program. Students were divided into three groups: high, medium, and low field independence. All groups improved from pretest to posttest in reflecting client feelings. However, the middle group had the highest posttest scores, with field-independents second and field-dependents third. It is not known whether the middle group had the largest gain score, though, as the pretest values were not reported.

A second study examined cognitive style and empathy in a sample of trained counselors. With this group, Carlino (1972) found no relationship between cognitive style and accurate empathy on actual taped interviews as measured by the Truax Accurate Empathy Scale (Truax & Carkhuff, 1967). Carlino hypothesized that more experienced counselors might be better able to overcome any limitations that are part of their particular cognitive style and thus respond with the level of empathy required.

It is interesting that when empathy scores are derived from self-reports or multiple-choice tests, field-independent subjects tend to score higher than field-dependent subjects. However, this superior

performance is not duplicated in studies that measure actual empathic responding.

One of the more skill-oriented measures of empathy is the Index of Responding (Gazda, Asbury, Balzar, Childers, Haynie, & Walters, 1984). It is one of the few empathy instruments that requires subjects to write an actual empathic response as opposed to choosing a multiple-choice item or rating one's self on personality characteristics. For this reason, the Index of Responding was used in this study.

A number of different studies have utilized the Index of Responding as a measure of empathy (Bellucci, 1980; Black & Phillips, 1982; Casey & Roark, 1980; Haynie, 1982; Hurt, 1977; Schmidt, 1981). All of these studies were conducted in the educational field, and all found that subjects improved in their measured empathic responding after receiving training in empathic responding.

Empathy and Social Problem Solving

Only one study, to date, has examined the relationship between empathy and social problem solving. Kramer, Rappaport, and Seidman (1979) used a sample of undergraduate women who were taking a practicum course in human services. The subjects were first rated by observers for empathy, warmth, and openness, using the Group Assessment of Interpersonal Traits (Goodman, 1972). High and low scorers were then selected for training in a

five-step social problem- solving interview procedure based on the problem-solving model of D'Zurilla and Goldfried (1971). Interviewers were rated by observers and their clients for their problem-solving skill on the five problem-solving steps, using a 7-point scale of effectiveness. No relationship was found between empathy and problem solving variables as measured by these investigators. While these researchers did not find a relationship between these two variables, this may be because they measured the perceived qualities of empathy and problem solving rather than measuring the specific skills.

General Rationale for the Present Study

As stated earlier, this study served two purposes: (1), to investigate the relationship of cognitive style to the counseling skills of empathy and social problem solving; and (2) to examine and describe various aspects of social problem solving itself. The statistical design used for the first of these purposes was a two-factor (3 x 2) design with repeated measures over one factor. The between-subjects factor consisted of three levels of cognitive style (field-dependent, mid-range, and field-independent). The within-subjects factor consisted of two types of problem situation (interpersonal and intrapersonal). Analogue and *in vivo* measures of both empathy and problem solving were obtained for subjects under all six treatment conditions. Thus, the independent

variables in this study were cognitive style and interpersonal versus intrapersonal situation, whereas the dependent variables were analogue and in vivo measures of both empathy and problem solving (four measures in total).

The construct of field dependence-independence has stimulated a great deal of research, with over 4000 reports published by 1981 (Cox & Witkin, 1978; Cox, 1980; Cox & Call, 1981). However, very little of this research has concerned the adult learner, and even less has focused on the adult in counselor education. With adult education theorists such as Cross (1982) and Lovell (1980) recommending the use of cognitive style theory for understanding differences in adult learners, it is necessary to provide empirical support for the relevance of this construct to adult educators. Consequently, one of the purposes of this study was to expand research on cognitive style with the adult learner.

The majority of research on cognitive style has used a median-split to divide subjects into field-dependent and field-independent groups for comparison purposes, or has employed quartiles to compare subjects in the top quarter (field-independent) with those in the bottom quarter (field-dependent). Both of these techniques ignore people in the middle of the field dependence-independence continuum. While some clear differences have been found between extreme-scoring groups, characteristics of people in the mid-range are not as evident. Lau, Figuerres, and

Davis (1981) and Lovano-Kerr (1983) recommend that more investigation be done with this mid-range population who may be using strategies of both styles. Therefore, subjects in the present study were divided into high, medium, and low field independence in an attempt to gather information about all three groups of people.

The foregoing review of research on cognitive style and empathy revealed inconsistent results. While it is possible to understand Martin and Toomey's (1973) reason for hypothesizing that field-independent people will be more capable of differentiated responding (empathy) than their field-dependent counterparts, it is equally plausible to imagine that field-dependent people will be more effective at responding empathically, because of their greater orientation to other people and their greater sensitivity to social undercurrents. The latter hypothesis is congruent with studies showing that field-dependent therapists are more interactive with clients, while field-independent therapists tend to adopt noninvolving or more directive approaches to therapy (Witkin et al., 1977). It may be that both field-independent and field-dependent people can learn the skill of empathy, but the two cognitive styles are differentially suited to empathic responding in different situations. To examine this possibility, the present research incorporated the influence of situational factors in addition to person variables. This approach is recommended by Mischel (1973).

who believes that behavior in social contexts can be better understood by accounting for the interaction between person and situation. The two situations of interest here are interpersonal (dealing with other people) and intrapersonal (dealing with one's self), as defined previously.

The first hypothesis of the present research was that field-independent subjects would be more empathic than field-dependent subjects with intrapersonal client concerns, while field-dependent subjects would be more empathic than field-independent subjects with interpersonal client concerns. This hypothesis is based on research by Witkin and Goodenough (1981) which has shown field-independent subjects to be more individualistic and more likely to use an internal frame of reference. Thus, field-independent subjects might be expected to respond better to client intrapersonal concerns. Conversely, field-dependent subjects have been found to rely more on social frames of reference and to have an interpersonal orientation. Hence, they might be expected to respond better to client interpersonal concerns.

In contrast to previous problem-solving research, this study examined cognitive style in relation to ill-defined social problem solving, a relationship that has not been explored in the research literature but one of importance to counselor education. The second experimental hypothesis was that field-independent subjects would be better problem solvers with intrapersonal problems, while field-dependent

subjects would be better problem solvers with interpersonal problems. An important aspect of better problem solving, in this case, refers to generating more strategies in an ill-defined problem situation. Using number of strategies as a measure of better problem solving is based on Platt and Spivack's (1975a) view that the generation of means (strategies) is a key element in social problem solving. As with empathy, this hypothesis is based on previous research indicating that field-independent people have a more internal frame of reference and therefore might be expected to generate more strategies on intrapersonal problems. Field-dependent people, on the other hand, have a more social frame of reference and thus might be expected to generate more strategies on interpersonal problems.

Problem solving and empathy were measured in interpersonal and intrapersonal situations by two different methods. One method employed structured analogue measures, namely the Index of Responding and MEPS, as measures of empathy and problem solving respectively. The other method employed more individualized in vivo measures of the same two constructs, namely counseling tapes and problem solving with a client concern respectively. The in vivo measures were included in an attempt to approximate more closely the real-life empathic and problem-solving skills of subjects. This approach was recommended by Butler and Meichenbaum (1982) as one means of improving research on social problem solving.

When considering the two skills of empathic responding and social problem solving, it is possible to postulate possible similarities between the two. As described by Egan (1982), both skills require the counselor to take the perspective of the client. Also, both are enhanced by flexibility in generating a number of possibilities (feelings and strategies). Therefore, it would seem reasonable to predict that a person who could respond at a higher level of empathy would also be able to generate more strategies in social problem solving. As stated earlier, while Kramer et al. (1979) did attempt to relate empathy to social problem solving, they only measured global, perceived qualities of empathy and problem solving, rather than specific skills. The relationship between empathy and problem solving skills requires further study. Therefore, the third experimental hypothesis was that there would be a positive correlation between intrapersonal empathy and intrapersonal problem solving, and between interpersonal empathy and interpersonal problem solving.

Thus far, hypotheses pertaining to problem-solving have been based on exploring which subjects will be better at generating a larger number of relevant strategies, the traditional method of utilizing data from the MEPS. The assumption is made that better problem solvers produce more strategies while poorer problem solvers produce fewer strategies. However, when one considers the intricacies of social problems, it is not necessarily true that developing

a large number of strategies is more effective than generating one appropriate strategy. Therefore, instead of thinking solely in terms of better problem solving, it would seem beneficial to think also in terms of how people differ in their approach to solving social problems. By adopting a more process-oriented approach to social problem solving, the number of strategies then becomes just one element among many other elements in the overall process. The scoring procedure then becomes qualitative as well as quantitative.

Very few studies have examined actual processes of social problem solving. The majority of seemingly relevant studies have dealt with self-appraised problem-solving ability and have provided no information about how people actually solve social problems (Heppner, Hibel, Neal, Weinstein, & Rabinowitz, 1982; Heppner & Petersen, 1982; Heppner, Reeder, & Larson, 1983; Nezu, 1985; Phillips, Pazienza & Ferrin, 1984). Other research has examined the effectiveness of programs that teach social problem-solving skills, but again, has not addressed the underlying processes involved (D'Zurilla & Nezu, 1982; Jannoun, Mumby, Catalan, & Gelder, 1980; Kramer, Rappaport, & Seidman, 1979; Nezu & D'Zurilla, 1979, 1981a; 1981b).

To examine social problem-solving processes more fully, the Means-Ends Problem-Solving Procedure was utilized in the present study. One of the advantages of the MEPS is that by having subjects write between a

paragraph and a whole page for each problem situation, enough material is provided to differentiate among different types of processes and different types of styles utilized by subjects as they solve social problems. Therefore, in addition to the original MEPS scoring categories, the present study employed protocol analysis to delineate different problem-solving elements, processes, and styles. Ericsson and Simon (1984) advocate protocol analysis of subject reflections as a method for generating a more complete model of problem-solving processes than can be inferred from outcome scores alone. By adding these problem-solving categories, the central research question changes from "Are field-independent subjects better problem solvers in some situations than are field-dependent subjects?" to "How do field-independent and field-dependent subjects differ in their approaches to solving social problems?"

The fourth experimental hypothesis was that field-independent subjects would use a more systematic, step-by-step problem-solving process (sequential), while field-dependent subjects would use a more wholistic process. This prediction is based on research by Witkin et al. (1977) indicating that field-dependent people tend to perceive the field as a whole, in a global way, while field-independent people are better able to discriminate individual items within the whole and to cluster concepts into tight groups, as required in a systematic, sequential

approach.

In addition to problem-solving process, problem-solving style was also examined in the present study. Research has shown that field-independent subjects learn abstract, theoretical content better and use a hypothesis-testing approach to concept attainment (Witkin, Goodenough, & Oltman, 1979). Thus, it is reasonable to expect that field-independent subjects might tend to use a more analytical problem-solving style that includes evaluation and analysis, whereas field-dependent people who are more attentive to the feelings of others, may tend to use a more affective problem-solving style that emphasizes feelings in relation to the problem. Therefore, the fifth experimental hypothesis predicted that field-independent subjects would tend to use an analytical problem-solving style, while field-dependent subjects would tend to use an affective problem-solving style.

Besides these five hypotheses relating to cognitive style, this study had a second main goal, namely to examine and describe, in detail, the various elements and processes of social problem-solving. As stated earlier, counseling can be conceptualized as a problem-solving process. While a number of authors (Carkhuff, 1984; D'Zurilla & Nezu, 1982; Egan 1982; Gazda et al., 1984) have proposed ideal problem-solving models describing how counselors should help clients solve their problems, very little research has investigated the actual steps and processes used by people

as they attempt to solve problems of daily living. Do all people use a similar approach with social problems? Does that approach vary depending on the type of social problem? What are the elements or skills used by people to tackle such problems? Do these elements differ according to problem situation?

These were the type of questions investigated through protocol analysis. More specifically, eight problem-solving elements, three problem-solving styles, and three problem-solving processes were identified, all of which are described in detail in the next chapter and in Appendix G. These elements, styles, and processes were compared in the two situations of interpersonal and intrapersonal problems to determine whether problem situation influenced subjects' social problem-solving processes. In addition, problem situations were classified as complex versus simple, and problem solving elements, style, and processes were examined in relation to these two types of problems.

In summary, on the basis of prior research and theory, the following hypotheses were stated in relation to the present study:

> 1. Field-independent subjects will be more empathic than field-dependent subjects with intrapersonal client concerns, whereas field-dependent subjects will be more empathic than field-independent subjects with interpersonal client concerns.

2. Similarly, field-independent subjects will be better problem solvers than field-dependent subjects with intrapersonal problems, while field-dependent subjects will be better problem solvers than field-independent subjects with interpersonal problems.

3. There will be a positive correlation between intrapersonal empathy and intrapersonal problem solving, and between interpersonal empathy and interpersonal problem solving.

4. Field-independent subjects will tend to use a sequential process for problem solving while field-dependent subjects will use a wholistic process.

5. Field-independent subjects will tend to use an analytical problem-solving style while field-dependent subjects will utilize an affective problem-solving style.

6. Differences in problem-solving elements, processes, and styles are expected for subjects in different problem-solving situations.

Method

Subjects

The subjects were 70 elementary and secondary school teachers participating in an Ontario Ministry of Education summer certificate program in guidance counseling. The subjects were obtained from four different class sections meeting in either London or in Kitchener, Ontario. Of approximately 130 students present in classes when participation was solicited, 106 students volunteered to take part in the study by signing consent forms. Of these, 70 completed all of the research instruments.

The sample consisted of 35 women and 35 men ranging in age from 25 to 55 years. The breakdown for marital status was 54 married, 12 single, and 4 divorced or widowed. Educational level was very homogeneous with 66 having bachelor's degrees, 2 having Master's degrees, and 2 having a teaching certificate but no university degree. The ratio of secondary to elementary school teachers was approximately 2:1, with 45 secondary teachers and 25 elementary teachers. Years of teaching experience ranged from 1 to 25 years.

Measure of Cognitive Style

The Group Embedded Figures Test (GEFT), developed by Witkin et al. (1971), was used to measure field independence, the major independent variable. On this test, subjects must locate and trace a simple geometric figure that is embedded

and obscured within a larger, more complex geometric figure (see Appendix A). Field-independent people are assumed to be quite competent at this perceptual disembedding task, while field-dependent individuals are assumed to be influenced by the surrounding field and thus to have greater difficulty in extracting the figure.

The test is divided into three timed sections. On the first section, for practice only, subjects have two minutes to trace seven simple figures. Most people easily find all of these figures and this section of the test is not scored. The final two sections consist of nine figures each, for a total of 18 figures. Subjects are allowed five minutes for each of these two sections and a subject's score is the total number of figures correctly traced. Field-independent subjects usually obtain a score in the 16-18 range, while field-dependent subjects score in the 0-9 range.

Split-half reliability, reported in the GEFT test manual, is .82 (Witkin et al., 1971). Panek, Frank, and Nelson (1980) calculated split-half reliability for people of different ages across the lifespan in their sample of 175 women aged 17-72. Their values ranged from .57 to .90 with a mean of .80. They also checked for internal consistency by correlating the two parts of the test with the total score. These values ranged from .88 to .98 with a mean of .96.

Test-retest reliability was established by Chalip (1979) with an adolescent sample. With testings six months apart, he

obtained a correlation of .82. Similarly, Kepner and Neimark (1984) found correlations of .88 and .81 for 10-day and 6-week retest intervals respectively with undergraduate university students. Both researchers concluded that the GEFT showed adequate reliability.

Measures of Empathy.

Index of Responding. A slightly modified version of the Index of Responding developed by Gazda, Asbury, Balzar, Childers, Haynie, and Walters (1984) was used as the analogue measure of empathy. This test consists of eight client statements to which the subject must respond as a helping person. These responses are then scored for their degree of empathy. To fit the present research design, one of the eight client statements was changed so that there were four interpersonal and four intrapersonal statements in alternating order (see Appendix B). The four interpersonal situations were as follows: (1) native student who accuses teacher of picking on her; (2) student complimenting teacher; (3) teacher who is wondering how to handle a student; (4) teacher who is angry at another teacher. The four intrapersonal situations were as follows: (1) student who is pleased with his study efforts; (2) student who is happy about moving to a new town; (3) student who is mixed up about home situation; (4) student who does not want to study history.

The Index of Responding was scored using a 4-point empathy scale proposed by Gazda et al. (1984b). The Gazda et al. book was used by students as a textbook in their

counseling course, and the empathy scale was part of their counseling training. On this scale, 1.0 is a hurtful or irrelevant response; 2.0 is subtractive empathy, a response that only partly communicates an awareness of the surface feelings of the helpee; 3.0 is interchangeable empathy, the accurate reflection of surface feelings; and 4.0 is additive empathy, the reflection of underlying feelings. This scale is essentially the same as the one developed by Carkhuff (1969), except that his scale contains an additional fifth level of empathy: a significant addition of feeling and meaning to the client's expression. Because this level of empathy is rarely achieved by beginning counselors, it was not needed in this study.

Three raters who were naive as to the research hypotheses scored the empathy measures. Two raters had Master's degrees in guidance counseling and experience in teaching empathy to teachers. The third rater was a graduate student in a counseling program. A scoring manual with examples was developed by the investigator for training purposes, based on material from Gazda et al. (1984b). The purpose of this manual was to present a number of guidelines and examples to help in standardizing the scoring of the three raters. (see Appendix C). The raters received eight hours of training from the investigator and 15 hours of practice over a 4-week period.

Index of Responding protocols of students who did not volunteer as research subjects were used for practice during

training. At the beginning of training sessions, reliability data were collected from raters' scores on the protocols for that week. Training sessions then consisted of the trainer and raters discussing discrepancies in ratings on the protocols until consensus was achieved. At the end of the session, raters received a new batch of protocols to score during the next week. Based on Wilson and Griswold's (1985) research on the effectiveness of different training approaches for empathy raters, the emphasis in this study was on training for accuracy. Raters were also made aware of the "central tendency error" and how to avoid committing it. The central tendency error refers to the tendency of raters to overuse the midpoint of a rating scale. Training was discontinued when a high level of reliability had been achieved. Raters then scored the protocols individually.

On the Index of Responding, the four intrapersonal items were averaged to obtain a single intrapersonal score, and the four interpersonal items were averaged to obtain a single interpersonal score. Also, all eight items were averaged to obtain a total empathy score, resulting in three scores for each subject on this instrument.

The split-half reliability coefficient reported in the Index of Responding test manual is .77 (Gazda et al., 1984a). The authors believe that this value would have been higher if there had not been a restricted range of scores. Restricted range was also a problem in establishing test-retest reliability. The sample of respondents had scores ranging

from 1.4 to 2.4 on a 4.0 scale, with correspondingly small standard deviations of .23 and .22. Thus a special formula (McNemar, 1969) for restricted range was utilized. This resulted in a corrected retest reliability of .90, in comparison to an uncorrected reliability of .52.

Empathy tapes. For the in vivo measure of empathy, subjects turned in two 25-30 minute audio tapes of themselves counseling a fellow student, once with an interpersonal concern and once with an intrapersonal concern. During the course, subjects audio-taped 6-8 interviews as part of their course work. Subjects (counselors) obtained permission from their clients (fellow students) to use the tapes for research purposes before taping their interviews. Subjects were asked to turn in their last two tapes, one with an interpersonal client concern and one with an intrapersonal concern. To help students in the client role, a suggestion sheet was prepared with ideas for both interpersonal and intrapersonal concerns (see Appendix D). For these interviews, students used their own personal concerns as opposed to playing roles.

The order of presentation of interpersonal and intrapersonal conditions was counterbalanced across subjects such that one-half of the high, medium, and low field-independent subjects did an interpersonal interview as counselor first and one-half did an intrapersonal interview first. This was done to control for possible order effects.

The same raters scored the tapes as scored the Index of Responding, using the same Gazda empathy scale. The training procedures for the tapes were the same as for the Index of Responding. In scoring the experimental tapes, raters first set their tape recorder counters at 0, then rated the first response (statement or question) made by the counselor to the client that occurred after 50 feet of tape. This distance was selected because the first 50 feet of an interview are usually taken by the client to explain the problem, with the counselor having little need or opportunity to say anything. Raters then continued rating counselor statements or responses that fell roughly at 50-foot intervals after the first response. Rating responses in this way meant that some counselor responses were skipped. However, sampling counselor reponses over an entire tape was chosen over scoring every response in one section of the tape because the former method was more likely to give a representative sample of a subject's empathic ability. For a 25-minute interview, 7 responses would be rated, because a 25-minute interview corresponds to approximately 350 feet of tape. These scores were averaged to give one score per tape. Raters wrote down the exact responses they rated so that the second rater could score exactly the same responses. Full instructions to raters are shown in Appendix E.

As a manipulation check, each tape was also rated by an individual rater on a 7-point scale for the degree of interpersonal or intrapersonal content, where 1 =

interpersonal, 4 = equally interpersonal and intrapersonal, and 7 = intrapersonal. If a tape was equally interpersonal and intrapersonal in content, it was not used in further analyses.

Measures of Problem Solving

Means-Ends Problem-Solving Procedure. The analogue measure of problem solving was the Means-Ends Problem-Solving Procedure (MEPS). The test was adapted from Platt and Spivack (1975a) to fit the particular needs of this study. The adapted version of the test (reproduced in Appendix F) is composed of eight problem situations, the same number as are included in the Index of Responding. As with the latter measure, there are four interpersonal and four intrapersonal situations. On each MEPS item, subjects are given both a problem and an outcome. For example, "You come home after shopping and find that you have lost your watch. You are very upset about it. You eventually find your watch and feel good about it. You begin where you find that you have lost your watch." Subjects were instructed to solve this problem by connecting the beginning to the ending of the scenario by writing at least one paragraph. Each problem appeared on a separate page to encourage subjects to express themselves fully.

The four interpersonal situations on the MEPS were as follows: (1) making friends in a new neighborhood; (2) meeting a new person in a restaurant; (3) spouse leaving after an argument; (4) resolving conflict with principal.

The four intrapersonal situations were as follows: (1) trying to find a lost watch; (2) obtaining more money; (3) improving teaching performance; (4) dissatisfaction with life.

A number of adaptations were made to the original MEPS situations to suit better the purposes of this study. The first modification, as in Gotlib and Asarnow (1979), was that the situations were changed from the third person to the second person. This was done to focus subjects' attention more on how they would actually solve each problem.

Second, the general instructions were changed from "In this procedure we are interested in your imagination" to "In this procedure we are interested in your problem solving." This is based on D'Zurilla and Nezu's (1982) criticism that asking subjects to demonstrate their imagination will not necessarily induce a problem-solving set. In order to assess a subject's actual problem-solving process, instructions should elicit a problem-solving set.

Third, instead of utilizing a male and female form, the language was changed slightly in each situation so that it could apply to either sex (e.g., "girl" was changed to "person" and "husband" was changed to "spouse").

Fourth, two of the situations on the MEPS were dropped because of their inapplicability to most adults ("gaining revenge on an SS trooper" and "stealing a diamond"). Butler and Meichenbaum (1981) suggest that stimuli for social

problem-solving measures should have relevance to the life experience of the subjects. For this reason, the situation concerning conflict with a boss was changed to conflict with a principal for the present sample of teachers.

Finally, because this research focused on two types of social problem solving (interpersonal and intrapersonal), three new intrapersonal situations were added to give four situations in each condition. These were alternated so that an interpersonal situation always followed an intrapersonal situation.

To score the MEPS, a scoring manual based on one written by Henshaw (1979) was developed using protocols from people who were not part of this study (see Appendix C). The manual specifies procedures for unitizing protocol sentences into scorable units of analysis, and for assigning these units to categories.

The problem solutions written by subjects were first divided into scorable units. Then each protocol was scored for several categories suggested by Platt and Spivack (1975a): number of relevant means, irrelevant means, no response, and a relevancy ratio. Platt and Spivack view the generation of means as a key social problem-solving ability across all ages of subjects. A relevant means is any discrete step which is effective in helping the subject resolve the problem, while an irrelevant means is a step that is not effective within the context of the problem. If the subject leaves a situation

blank or does not reach the goal, a no response is scored. For example, one subject wrote, "I can't in my wildest dreams imagine myself in this situation." Once all of these categories were scored, a relevancy ratio was calculated giving the proportion of relevant means to total means.

In addition, the protocols were scored for the presence or absence of eight different elements that better capture the total process of social problem solving: (1) stating the problem; (2) analyzing; (3) strategies; (4) elaborations; (5) reasons; (6) evaluations of strategies or of the situation; (7) evaluations of self; and (8) feelings. These elements are defined briefly below and in more detail in Appendix G.

Stating the problem refers to the subject describing the problem or "setting the stage" before taking any action. An example from the Neighbors Problem is, "Well, here I am. The last box just unpacked and discarded. I sat on my bed and looked around." Analyzing is defined as the problem solver either directly or indirectly analyzing the problem before taking other steps - for example, "I first must assess the situation and figure out how soon I need the money." Strategies are units which express an idea, action, or approach for solving the problem. This definition is consistent with the definition given by Platt and Spivack (1975a) for relevant means. The term, "strategies," will be used in this study because it is less ambiguous than the term "means," with its multiple denotations and connotations.

Elaborations describe in more detail a particular strategy or give added description about people within the problem situation. Platt and Spivack (1975a) refer to this as enumeration of means. The next category, reasons, refers to subjects giving explanations for a strategy, feeling, or evaluation - for example, "I decided to borrow money from the bank (strategy) because the interest rates were better than at the finance company" (reason for strategy). Two types of evaluations were included in the categorization system. The first type is defined as judging the feasibility or desirability of a strategy or of the problem situation - for example, "I spent time outdoors (strategy) to maximize chance meetings (reason for strategy). This was too slow a process for my liking" (evaluation of strategy). With the second type of evaluation, problem solvers judge themselves in the problem situation - for example, "Making friends has not proven to be easy for me in the past." The last category, labeled feelings, occurs when subjects report how they feel about the problem, a strategy, or the outcome of solving the problem - for example, "I feel lonely as I sit in my new apartment." A frequency count for each element on each problem was collected. These were then totalled for the four interpersonal problems, the four intrapersonal problems, and for all eight problems.

After completing the above categorization of elements, each problem solution was further categorized as exhibiting one of three problem-solving styles: analytical, affective,

or behavioral. The analytical style is characterized by a cognitive approach that does not include feelings. The problem solver analyzes the problem, gives reasons for strategies, and evaluates more often than in the other two styles. There is evidence of mental work occurring during problem solving. With the affective style, the problem solver's feeling or affective state is included as part of problem solving. In contrast to both of these styles is the behavioral style. This style has neither the analysis or evaluation of the analytical style nor the feeling of the affective style. Instead, the problem solver simply reports one strategy after another with the emphasis on action or behavior rather than on analysis or feelings. Examples of each of these styles are given in Appendix C.

In addition to problem-solving elements and styles, each problem solution was categorized as exhibiting one of three problem-solving processes: sequential, wholistic, or simultaneous. The sequential process is a step-by-step procedure that lists several different strategies in temporal order. The steps only make sense in the order given. With the simultaneous approach, several strategies are presented at the same time with no indication that they need to be in any sequential order. It is a more multi-pronged approach to a problem. The wholistic process, on the other hand, is a more simplistic process, focusing on only one strategy or approach to a problem, as compared to several strategies in the other two processes.

These coding categories for problem-solving styles and processes, plus the eight categories of problem-solving elements discussed earlier, were developed by the investigator after studying MEPS protocols of nine graduate students and university staff. Ericsson and Simon (1984) recommend this type of pilot work as a necessary component of protocol analysis.

After each of the eight problem solutions on the MEPS were categorized for type of problem-solving style and problem-solving process, subjects were categorized for style and process of problem solving on the four interpersonal problems combined and on the four intrapersonal problems combined. For example, if a subject was scored as analytical on three of the intrapersonal problems and behavioral on one, he or she would be categorized as analytical for intrapersonal problems. If the subject had two behavioral and two analytical problems, the subject was scored as mixed. The mixed category was an arithmetic, not a theoretical, category. Subjects were also categorized for total problem-solving style and process. If a subject received a score of six behavioral, one analytical, and one affective out of eight problem situations, he or she was categorized as behavioral with respect to total problem-solving style. If, however, the subject scored four analytical, three behavioral, and one affective, the subject was scored as mixed. On the <u>in vivo</u> problem solving measure, subjects were also categorized for interpersonal style and process and for intrapersonal style

and process.

The scoring of the problem-solving protocols was done by two raters. One of the raters was the investigator; the other rater was a graduate student in counseling who was also one of the scorers for the empathy measures. The first phase of training consisted of dividing the problem solutions on the protocols into scorable units (unitizing) on the basis of guidelines in the scoring manual. Protocols of people not involved in this study were used for practice. Once high reliability between raters was achieved on unitizing, the second phase of training was begun. This involved coding the units for problem-solving elements and then coding the solution, as a whole, for problem-solving style and process. The same practice protocols were used for this purpose. Raters received eight hours of training and 20 hours of practice over a 4-week period. Training consisted of discussion and clarification of discrepancies in scoring until consensus was reached on the scoring categories. As with the empathy training, reliability data were gathered each week at the beginning of the training session. Training was discontinued after a high level of reliability was reached. Raters then coded the protocols individually.

Split-half reliability values for the original MEPS, as reported in the test manual (Platt & Spivack, 1975a), range from .80 to .84. Test-retest reliability values range from .43 to .69, but they were obtained from studies with very small N's (11, 15, 47). In any case, the number of changes

made with the MEPS in this study may have altered the test sufficiently for these reliability values to be inapplicable.

Problem solving a client concern. After subjects finished counseling a fellow student, as described above, they completed a standardized in vivo problem-solving measure, which asked them how they would solve their client's problem if it were their own problem. In this way, both the in vivo empathy measure and the in vivo problem-solving measure were obtained for each counselor with respect to the same client concern. Subjects filled in two sheets, one for the interpersonal client concern and one for the intrapersonal client concern. As with the MEPS, subjects wrote one page per problem, thus allowing comparison between responses to the interpersonal and intrapersonal contexts.

The purpose of the in vivo measure was to investigate subjects' problem-solving styles and processes with real-life problems, as opposed to the more hypothetical problems on the MEPS. As stated earlier, it is assumed that the closer problems approximate the life experiences of the problem solver, the better they will be as a sample of typical problem-solving processes (D'Zurilla & Nezu, 1982). The same raters scored the in vivo measure as scored the MEPS using the same scoring procedures. Because there were only two pages per subject on the in vivo measure, both raters coded all of the protocols and then resolved differences through discussion for a concensus rating.

Procedure

On the first day of the summer guidance program, the investigator and a research assistant outlined the general purpose of the study to the four classes and solicited volunteers. Subjects were given a general information sheet about the research and what would be expected of them (see Appendix H). At that time, they chose code names or numbers which they then used on all instruments.

The Group Embedded Figures Test was administered that day. All other measures were dependent measures and were taken in the last two weeks of the course. The MEPS is a self-administered test and was completed by subjects at home. The Index of Responding was given during class time at the end of the course.

On the last day of class, after all measures had been completed, subjects were debriefed orally about the nature of the research. They were given their score on the GEFT, the only instrument that could be scored before the end of the course, and a summary sheet of cognitive style characteristics (see Appendix I).

Results

A number of different types of analyses were performed on the data collected in this study. First, the research instruments themselves were examined with respect to reliability and factor structure, using SPSS computer programs (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975). Second, hypothesized relationships between cognitive style and counselor empathy and problem solving skills were investigated by multivariate analyses of variance, using the BMDP4V computer program (Dixon, 1985). Finally, various statistical tests were carried out to provide a descriptive analysis of the social problem-solving data. These three types of analyses are reported in turn below.

Analyses of Research Instruments

Group Embedded Figures Test

One of the secondary purposes of this study was to obtain normative data on the Group Embedded Figures Test for a sample of adult learners. Thus, the first step in data analysis was to examine the distribution of scores on the GEFT to determine cutoff points for low, medium, and high field-independence groups. Normative data and descriptive statistics for the total sample and by gender are given in Table 2. The median scores of 13.75 for men and of 12.00 for women are identical to those obtained by

Table 2.

Tertile Distribution and Descriptive Statistics for Group Embedded Figures Test

Tertile	All Subjects		Men		Women	
	Range	N	Range	N	Range	N
1 (FD)	3-10	20	3-10	11	3-9	12
2 (Mid)	11-15	25	11-15	9	10-13	11
3 (FI)	16-18	25	16-18	15	14-18	12
Total Group						
Number		70		35		35
Mean		11.96		12.49		11.23
SD		4.59		4.71		4.49
Median		12.50		13.75		12.00
Skewness		-.53		-.65		-.39

Witkin et al. (1971) in their normative sample of university students reported in the GEFT test manual. The breakdown of scores for the total group was used in this study to categorize subjects for further analyses. As may be noted in Table 2, 20 subjects were classified as field-dependent, 25 as mid-range, and 25 as field-independent.

Few researchers report the skewness of their sample with the GEFT. Chalip (1979) encouraged the reporting of the skewness coefficient to indicate whether the sample is skewed toward one end or the other of the field-independence continuum. In two testings with an adolescent sample, Chalip obtained skewness coefficients of -.13 on the pretest and -.57 on the posttest six months later. A similar skewness value of -.53 was obtained in the present study, indicating a somewhat skewed distribution toward the field-independent end of the continuum.

In Witkin et al.'s (1971) normative study of the GEFT, undergraduate men scored significantly higher than women. The slight difference between men and women in the present study was not statistically significant. An uncorrelated t-test yielded a nonsignificant t of 1.14, $p = .26$. This result is consistent with other recent studies with undergraduate samples that have found no significant sex differences in GEFT performance (Di Nuovo, 1984; Guthrie, 1985; Lusk & Wright, 1983; Myer & Hensley, 1984;

Renninger & Snyder, 1983)

The internal consistency for the GEFT was determined from correlations between the two scored sections and the overall test score. The correlation between Part 1 and the total score was .94, whereas that between Part 2 and the total score was .91. These values are comparable to data reported by Panek et al. (1980).

The split-half reliability of the GEFT was calculated by correlating the two subsections of the test and then adjusting for length by the Spearman-Brown formula. The resulting reliability coefficient of .83 is comparable to values of .85 found by De Sanctis and Dunikoski (1983) and .82 reported in the test manual (Witkin et al., 1971). This result would seem to indicate that the two halves of the GEFT are roughly equivalent in terms of rank ordering of subjects, as intended by the test developers. However, when one examines the absolute level of performance of subjects on each half of the test, it is apparent that, with this sample, the two parts are not equivalent in terms of difficulty. The mean score for Part 1 was 4.91 while the mean for Part 2 was 6.94, out of a possible 9.0 for each part. This difference was significant, as shown by a correlated t-test, $t(69) = 8.74$, $p < .001$. A similar result was obtained from pilot data with 106 subjects. The mean score of 5.15 on Part 1 was significantly lower than the mean of 6.76 for Part 2, $t(105) = 9.11$, $p < .001$.

Three previous studies (Lusk & Wright, 1981; Panek et al., 1980; Renna & Zenhausern, 1976) have also reported significant improvement in scores between first and second sections of the test. While some researchers interpret this change as a practice effect, this is not necessarily the case. It is possible that the figures in the second half of the test are simply inherently easier to solve. After the administration of the GEFT in the present study, numerous subjects spontaneously commented that they found the figures in Part 2 to be easier than the figures in Part 1. Renna and Zenhausern (1976) arrived at this same conclusion. However, Kepner and Neimark (1984) counterbalanced the order in which subjects took the two parts of the test in their test-retest study and found no significant order effect. Therefore, while the two parts of the test do not appear to be equivalent in performance, the reason for this is not certain.

Empathy Measures

Interrater reliability coefficients were calculated at the end of training for the empathy ratings on both the Index of Responding and the audio counseling tapes. Both Tinsley and Weiss (1975) and Mitchell (1979) advocate the use of the intraclass correlation for establishing interrater reliability because it demonstrates the stability and consistency of individual differences among subjects as well as interrater agreement. At the end of training, the estimated reliability coefficient for a

single rater, based on intraclass correlation analysis of the three raters, was .91 for the Index of Responding and .92 for the practice tapes. The reliability coefficient for the Index of Responding is slightly higher than the value of .88 reported by Bellucci (1980).

Mitchell (1979) and Tinsley and Weiss (1975) argue that researchers should report interrater agreement in addition to interrater reliability. Therefore, interrater agreement was also calculated at the end of training before raters began scoring the data actually used for this study. Lawlis and Lu (1972) suggest using a flexible criterion for determining interrater agreement on scales. For this study, agreement among the three raters was defined as being within .5 of each other on the 4-point scale used for empathy ratings. With this criterion, the interrater agreement was 100% on both the training tapes and Index of Responding at the end of training.

To determine the internal consistency of the Index of Responding, Cronbach's Alpha coefficient was calculated. The resulting value of .76 provides evidence of adequate internal consistency for this instrument.

A principal-component factor analysis was performed on the subjects' empathy scores on the eight items on the Index of Responding. From this analysis, one pervasive, wide-loading factor emerged in the unrotated factor analysis as shown in Table 3. In addition, a varimax

Table 3

Results of Unrotated and Rotated Factor Analysis of the Index of Responding

	Unrotated Factor Loadings	Rotated Factor Loadings	
Factor 1		Factor 1	Factor 2
Item 1	.31	-.07	.67
Item 2	.71	.43	.61
Item 3	.61	.24	.68
Item 4	.57	.18	.70
Item 5	.64	.77	.06
Item 6	.70	.79	.12
Item 7	.69	.65	.28
Item 8	.60	.65	.13

rotation yielded two factors. The first factor, with an eigenvalue of 3.07, accounted for 38% of the total variance; while Factor 2, with an eigenvalue of 1.17, accounted for 14.6% of the variance. Factor 1 consists of the last four items of the test whereas Factor 2 consists of the first four items. Each factor includes two interpersonal and two intrapersonal situations. The fact that interpersonal and intrapersonal items did not load on separate factors argues against one of the major assumptions of this research project, namely, that interpersonal and intrapersonal empathy are functionally distinct. Although not distinct to individual differences terms, the possibility remains, however, that these two types of empathy may relate differently to other variables of interest, such as field independence.

When the two resulting empathy factors are examined, clear patterns are evident in the makeup of the items. The first factor is composed of four situations in which the client is either confused ("I don't know what to do.") or angry. Thus, this set of items could be labeled a Negative Affect factor. For example, two of the situations are as follows: (1) teacher to counselor, "I feel like one of my students is using some kind of drug. I don't know whether to talk to him, or the principal, or his parents." and (2) teacher to another teacher, "I'm really burned up! Bill Jones lets his students run wild in his class. Then they come into my class thinking they can do the same thing."

In these situations, the client or speaker expresses some form of negative emotion, such as uncertainty or anger.

In contrast, the situations composing Factor 2 each contain two explicit or implicit contrasting feelings. Thus, these items could be labeled a Contrasting Affect factor. For example, two of the situations are as follows: (1) native student to teacher, "Why do you always pick on me in class? You know, I used to think you were a fair person, but lately I get the feeling you are picking on me because I'm a native;" and (2) student to teacher, "You're the best teacher I've ever had. You were the only teacher who didn't make me feel like I was in terrible trouble if I didn't get everything perfect." In the first situation, the contrast is between the student previously feeling trust for the teacher and currently feeling anger. In the second situation, the contrast is between the student feeling inadequate with other teachers and confident with this teacher. It may be noted from Table 3 that the native student item loaded on both factors. This is not surprising because the item contains both negative and contrasting affect.

To the knowledge of this investigator, no previous factor analysis has been performed on the Index of Responding. Further factor analyses are needed to determine whether the two factors reported above are replicable.

To control for the possibility that doing either an interpersonal or intrapersonal taped interview first might be easier, the order in which subjects did these interviews was counterbalanced across subjects. No significant difference was found in interpersonal interview scores of those who did the interpersonal interview first versus second, $t(68) = .94$, $p > .05$. Nor was there any difference on the intrapersonal interview scores between these same groups, $t(68) = 1.63$, $p > .05$. Both these results indicate no order effect.

Problem-Solving Measures

Scores on the two measures of problem solving (i.e. the MEPS and client problem) were based on nominal or categorical rather than interval scales. Thus, Cohen's (1960) coefficient of interjudge agreement was employed to indicate the proportion of agreement between the two raters after chance agreement has been removed.

On the MEPS, three different coefficients of agreement were calculated at the end of training for the three different scoring scales: (1) units of the protocol analysis: problem statement, analysis, strategy, elaboration, evaluation of strategy, evaluation of self, reason, feeling; (2) problem-solving style: analytical, affective, behavioral; and (3) problem- solving process: sequential, wholistic, simultaneous. Coefficients for these three measures were .80, .92, and .91 respectively. Interrater agreement, calculated for dividing the protocols

into scorable units, was 90%.

The second set of problem-solving data consisted of a single sheet on which subjects attempted to solve a client's intrapersonal or interpersonal problem. These were scored using the MEPS scoring categories. Both raters scored all of these forms and came to consensus agreement on any discrepancies in the scoring. Levine (1974) refers to this consensus agreement as the adversary model for psychological research. No reliability coefficient could be calculated for this measure.

To determine the internal consistency of the MEPS, Cronbach's Alpha coefficient was calculated. The resulting value of .80 indicates adequate internal consistency for this instrument.

A principal-component factor analysis was performed on subjects' total number of strategies on the eight problems of the MEPS. The factor analysis yielded a single factor with an eigenvalue of 3.47, accounting for 43% of the total variance. The factor loadings of the 8 problem situations ranged from .53 to .78 with a median of .67, as shown in Table 4. These values are consistent with the factor loadings of .31 to .77 obtained by Platt and Spivack (1975b) who similarly found one factor accounting for 37% of the variance in their data. They labeled this factor "means-ends cognition," the ability to state step-by-step means to reach a goal in interpersonal situations.

Table 4

Results of Factor Analysis of the MEPS

Items	Item Loadings
Factor 1	
Watch	.55
Neighbors	.68
Money	.78
Restaurant	.53
Teaching	.75
Spouse	.69
Life	.69
Principal	.60

An interesting aspect of finding only one factor is that interpersonal and intrapersonal items on the MEPS did not form separate factors. Obtaining one factor seems to indicate that if subjects did well on interpersonal problem solving, they also tended to do well on intrapersonal problem solving. Thus, there was no support, in a correlational or individual differences sense, for the assumption that intrapersonal and interpersonal situations represent two distinct types of social problem solving. However, once again, it is possible that these two types of problems are functionally distinct in other ways.

Besides a score for total number of relevant means, a relevancy score was calculated from the MEPS responses. This score was obtained by dividing the number of relevant means by the number of relevant means plus the number of irrelevant means and no-response answers. The resulting mean relevancy ratio was .98, which is the same value obtained by Gotlib and Asarnow (1979) for their nondepressed group. This is a high value, indicating very few irrelevant means or no-response answers.

There were no significant correlations between the relevancy ratio and the main variables in this sample. Thus it was not used in further analyses. The relevancy ratio is most likely a more sensitive measure with depressed or juvenile delinquent subjects than it is with more normal populations, such as nondepressed subjects and teachers.

Cognitive Style in Relation to Empathy and Problem Solving

Cognitive Style and Empathy

The first hypothesis predicted that field-independent subjects would be more empathic in response to intrapersonal situations, while field-dependent subjects would be more empathic in response to interpersonal situations. To test this hypothesis, a multivariate analysis of variance was performed with analogue and *in vivo* empathy scores on the Index of Responding and tapes as the two dependent variables. A MANOVA was chosen instead of a series of ANOVA's to help protect against Type I error resulting from alpha inflation over a series of separate ANOVA's (Tabachnick & Fidell, 1983). The three levels of cognitive style represented a between-subjects variable, whereas intrapersonal versus interpersonal situations was a within-subjects variable (see Note 1).

There was no main effect of cognitive style on the empathy scores, and the predicted interaction of cognitive style with intrapersonal versus interpersonal situation was similarly nonsignificant. However, there was an overall main effect of intrapersonal versus interpersonal situation, $F(2,68) = 18.72$, $p < .001$. Subsequent univariate analysis yielded no significant F due to situation for the taped empathy measure alone. However, on the Index of Responding, a significant univariate F value was evident, F

= 37.92, $p < .001$. As can be seen in Figure 1, all groups scored higher in the intrapersonal condition than they did in the interpersonal condition.

Subjects seemed to find two of the interpersonal items to be particularly difficult, which may account for the poorer performance overall in the interpersonal condition. The means for these two items were 2.0 and 2.2 as compared to the overall mean of 2.5 for all eight items. When these two items were examined, they were both found to require immediacy, which is described by Gazda et al. (1984b) as a higher level of empathic responding wherein the counselor reflects the client's feelings about the relationship with the helper in the present moment. This is more threatening and difficult for beginning counselors, which most likely contributed to subjects doing poorly on items requiring such an advanced form of empathic responding.

Interestingly, on one of these items (student complimenting teacher, as quoted above), field- independent subjects scored significantly higher than the other two cognitive style groups, $t = 2.61$, $p = .01$. The means on this item were FD = 1.69, Mid = 1.91, and FI = 2.30. It may be that on this item it was more difficult for field-dependent subjects to disembed the more complex feelings of the client from the total situation. Subjects who did poorly on this item tended to respond only to the compliment and ignored the last sentence, "You were the only teacher who didn't make me feel like I was in terrible

Figure 1

Empathy Scores on Interpersonal and Intrapersonal Items of the Index of Responding as a Function of Cognitive Style

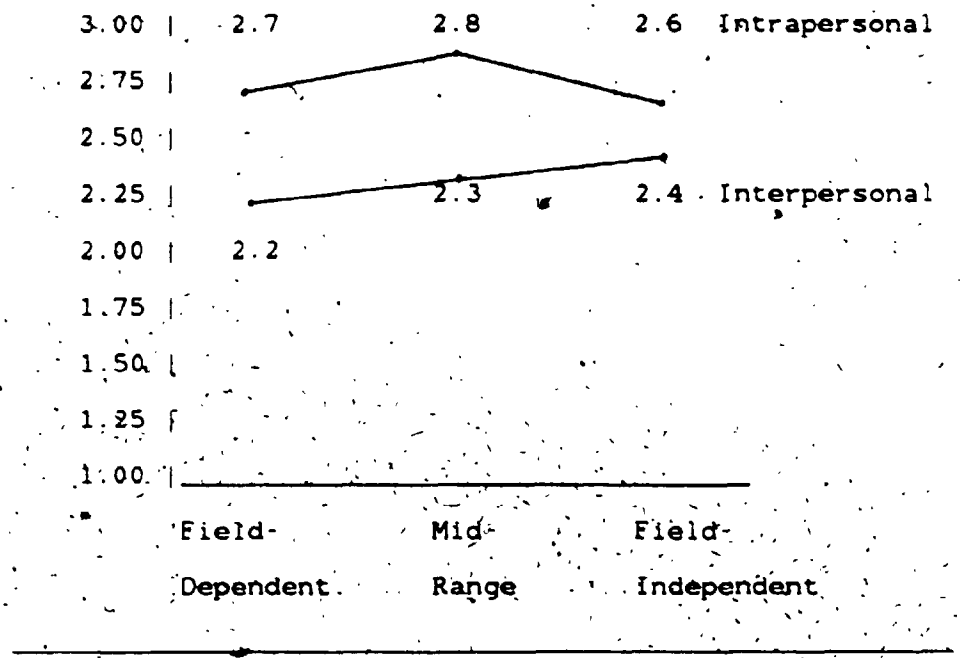


Table 5

Means, Standard Deviations, and Bonferroni T-Tests on the Index of Responding

	Field-Dependent		Mid-Range		Field-Independent	
	M	SD	M	SD	M	SD
Intrapersonal	2.7	.63	2.8	.51	2.6	.51
Interpersonal	2.3	.65	2.3	.62	2.4	.60
Bonferroni t	4.0, p <.001		5.7, p <.001		1.32, p >.05	

trouble if I didn't get everything perfect."

As noted above, there was no overall interaction effect of cognitive style and interpersonal versus intrapersonal condition on empathy scores. However, separate univariate tests for each empathy measure were performed to investigate what trends might be present in the data. A significant univariate F occurred for the cognitive style x situation interaction on the Index of Responding measure $F(2,69) = 3.35$, $p = .04$. Referring again to Figure 1 and Table 5, one can see that field-dependent and mid-range subjects did better on intrapersonal items than on the interpersonal items, while field-independent subjects did about equally well on both sets of items.

Three Bonferroni t-tests were performed to determine whether these differences were significant. Two of the tests achieved lower alpha levels than the required level. Field-dependent subjects performed significantly better in the intrapersonal condition than they did in the interpersonal condition, $t(19) = 4.0$, $p < .001$; as did the mid-range subjects, $t = 5.68$, $p < .001$. There was no significant difference between situations for field-independent subjects, $t = 1.32$, $p > .05$. However, in the absence of a significant multivariate F, the significant univariate F should be interpreted tentatively. Its main value is in suggesting directions for future research (Tabachnick & Fidell, 1983).

When subjects' performance in actual counseling interviews was considered, there were no significant main or interaction effects on the taped empathy measures. All groups were very close to the overall mean of 2.4 on both interpersonal and intrapersonal tapes.

In summary, no support was obtained for the first hypothesis. Cognitive style did not significantly influence subjects' empathic responding in different situations. The most interesting finding was that subjects overall were more empathic on intrapersonal analogue items than on interpersonal items.

Cognitive Style and Social Problem Solving

The second hypothesis predicted that field-independent subjects would be better problem solvers (i.e. would generate more means or strategies) on intrapersonal problems, while field-dependent subjects would generate more strategies on interpersonal problems. A multivariate analysis of variance (MANOVA) was performed with cognitive style as a between-subjects variable, interpersonal versus intrapersonal situation as a within-subjects variable, and problem solving scores on the MEPS and *in vivo* client problem as dependent variables. A significant main effect due to cognitive style was found, $F(4,132) = 2.48$, $p = .047$, reflecting an overall relationship between cognitive style and the combined social problem-solving measures. However, contrary to expectation, there was no interaction between cognitive style and the intrapersonal versus

interpersonal conditions, nor was there any main effect of the intrapersonal versus interpersonal condition. In addition, there were no significant univariate main or interaction effects for the two dependent measures considered separately.

To understand better the significant main effect of cognitive style, the relevant means may be examined in Figure 2 and Table 6. From the figure, it appears that when scores on the instruments are combined a curvilinear relationship results between cognitive style and number of generated strategies. Field-dependent and field-independent subjects generated more strategies than mid-range subjects in both interpersonal and intrapersonal conditions. As can be seen from the figure, the predicted interaction between cognitive style and situation did not occur. This interaction would have shown field-dependent subjects to be superior on interpersonal problem solving and field-independent subjects superior on intrapersonal problem solving. If anything, the results were directly opposite to this prediction. However, it should be emphasized that this reverse trend was not statistically significant.

To gather more information about the relationship between cognitive style and social problem solving, simple correlations were performed between cognitive style and the various problem-solving scores. The only significant correlation between cognitive style and problem solving

Figure 2

Mean Problem-Solving Scores on Analogue and In Vivo Measures Combined

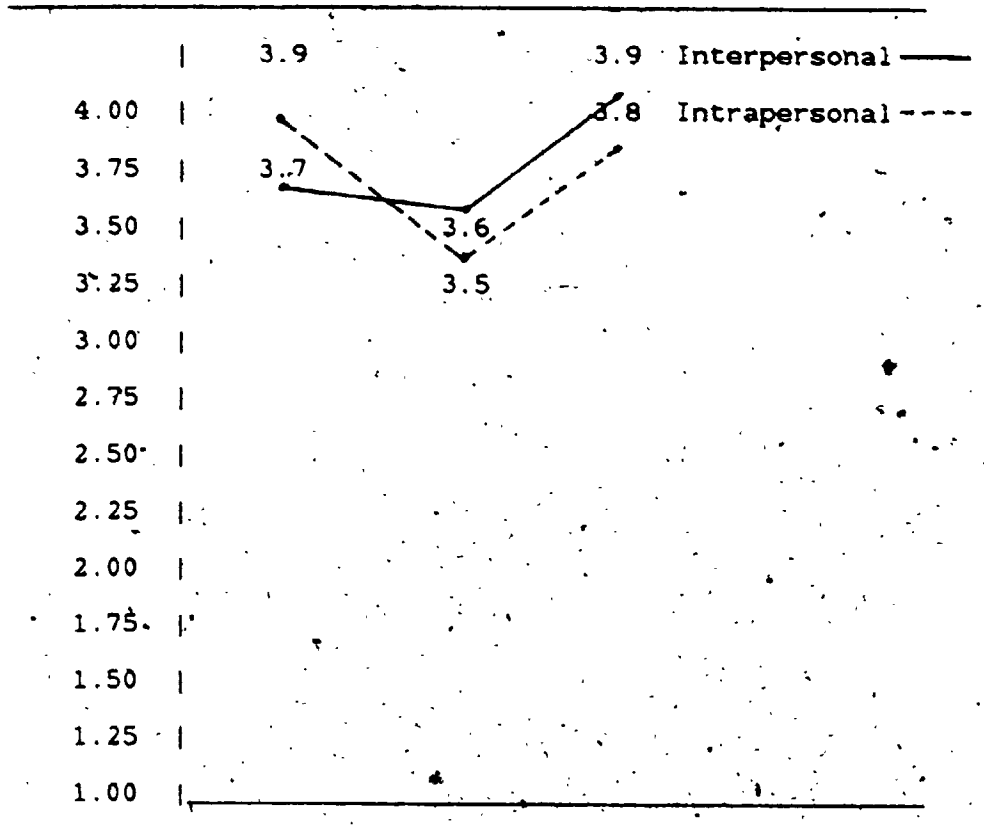


Table 6

Means and Standard Deviations on the Analogue and In Vivo Problem-Solving Measures Combined

Condition	Field-Dependent		Mid-Range		Field-Independent	
	M	SD	M	SD	M	SD
Intrapersonal	3.9	1.8	3.5	1.9	3.8	2.3
Interpersonal	3.7	1.4	3.6	1.4	3.9	2.0

occurred with the interpersonal problem-solving score on the MEPS $r(68) = .24$, $p = .022$, indicating a tendency for field independent subjects to generate more strategies than field dependent subjects. It may be noted that this post-hoc result is contrary to the prediction that field independence would correlate negatively with problem solving in the interpersonal condition. There were no significant correlations between cognitive style and the intrapersonal MEPS score or between cognitive style and intrapersonal and interpersonal in vivo measures.

In summary, there no support was found for the second hypothesis. From the significant multivariate main effect, there appears to be an overall U-shaped relationship between cognitive style and problem-solving on all measures combined. This result was not anticipated. When only one of the instruments is considered (MEPS), the correlation between cognitive style and interpersonal problem-solving score suggests a weak, but significant trend for the number of generated strategies on interpersonal problems to increase as field independence increases. As noted above, this finding runs counter to prediction.

Social Problem Solving and Empathy

The third hypothesis predicted a positive relationship between intrapersonal empathy and intrapersonal problem solving, and between interpersonal empathy and interpersonal problem solving. This hypothesis was supported by weak but significant correlations for the

following measures: (1) analogue intrapersonal empathy and analogue intrapersonal problem-solving scores, $r(68) = .26$, $p = .015$; (2) analogue interpersonal empathy and analogue interpersonal problem-solving scores, $r(68) = .21$, $p = .038$; and (3) total analogue empathy and problem-solving scores, $r(68) = .26$, $p = .014$. One-tailed tests were used for these analyses because a directional, a priori hypothesis had been proposed. No similar relationships were found for the in vivo measures of empathy and problem-solving. Thus, the results provide some evidence for the view that counselors who show higher levels of written empathy in reflecting client feelings also demonstrate higher levels of problem-solving skill.

Cognitive Style and Social Problem-Solving Processes

The fourth hypothesis predicted that field-independent subjects would be more likely to use a sequential process, while field-dependent subjects would be more likely to utilize a wholistic process in social problem solving. All problem-solving measures were scored for one of three possible processes: sequential, wholistic, and simultaneous. A MANOVA could not be used to analyze these data because scores obtained on the MEPS for the three problem-solving processes were ipsative or linearly dependent. For example, given that 7 of 8 MEPS problem situations were scored as sequential, the remaining categories were restricted to values of 0 to 1. In lieu of MANOVA, separate correlations were calculated between GEFT

total score and scores in each of the above categories.

Support was found for both predictions. Total score on the GEFT correlated significantly with number of problems on the MEPS exhibiting a sequential process, $r(68) = .26$, $p = .01$. The means for the three cognitive style groups were FD = 3.35, Mid = 3.64, and FI = 4.48, out of a maximum of 8.0. There was a significant difference between field-dependent and field-independent groups, $t(43) = 2.04$, $p = .048$. This result indicates that field-independent subjects tended to use a sequential process more often than did field-dependent subjects.

On the other hand, there was a significant negative correlation between GEFT score and the frequency of use of a wholistic problem solving process, $r(68) = -.21$, $p = .04$, indicating that as GEFT score decreased toward the field-dependence end of the scale the number of problems showing a wholistic process increased. The mean for field-dependent subjects was 2.85, while that for field-independent subjects was 2.12. In this case, the uncorrelated t-test was not significant, $t(43) = 1.28$, $p = .207$. This result indicates a weaker connection than was expected between field dependence and a wholistic problem-solving process. It should be noted that a wholistic process was evident on less than half of the problems for field-dependent subjects. It seems that, as a group, field-dependent subjects utilized a greater mixture of different problem-solving processes, and thus cannot be

classified as wholistic problem solvers overall.

Interestingly, results for the in vivo problem-solving measures differed from those for the analogue measures. There was only one in vivo intrapersonal situation and one interpersonal situation, as compared to four for each situation on the MEPS. Because subjects were placed in three different categories for problem-solving process on each measure, the only analyses that could be done were chi-square tests, one for the interpersonal and one for the intrapersonal task. Each chi-square test involved three levels of cognitive style and three categories of problem-solving process.

A significant chi-square was obtained for the intrapersonal in vivo measure, $\chi^2(4) = 11.88$, $p = .018$. Table 7 shows the relevant cell frequencies contributing to this result. Data on this measure were available for only 64 of the 70 subjects. Cramer's V, an omnibus test of association, was also calculated. The resulting value of .305 indicates that approximately 9% of the variance in problem-solving processes on this problem was due to cognitive style. Post-hoc comparisons with phi coefficients were then calculated to determine which section(s) of the contingency table shown in Table 7 contributed most to the significant chi-square. Of the various possible comparisons, all those that included the mid-range, wholistic cell (cell frequency = 15) were significant at the .05 or .01 level, while all comparisons

Table 7

Frequency of Subjects Exhibiting Various Problem-Solving Processes on In Vivo Intrapersonal Measure as a Function of Cognitive Style

Cognitive Style	Problem-Solving Process			
	Sequential	Wholistic	Simultaneous	Row Total
Field-Dependent	7	4	8	19
Mid-Range	2	15	6	23
Field-Independent	5	6	11	22
Column Total	14	25	25	64

72

that did not include this cell were not significant. The largest significant phi coefficient was .54, $p < .01$, which occurred for the upper left hand 2 x 2 section of the table. This section shows that 15 (65%) of the mid-range subjects used a wholistic process whereas only 4 (21%) of the field-dependent subjects used a wholistic process. Of the nine cells in the table, the mid-range, wholistic cell showed the largest difference between observed and expected values. All of this gives support to the view that mid-range subjects used a wholistic process more than the other two groups, although there was no tendency for the same process to be associated with field dependence, or for a sequential process to be associated with field independence. However, one must be careful not to attribute a significant chi-square solely to one or two cells in a multi-celled matrix. This is similar to the problem of a Type IV error discussed by Marascuilo and Levin (1970). Chi-square analysis of results for the interpersonal in vivo problem showed no significant relationship between cognitive style and problem-solving process, $\chi^2(4) = 5.23$, $p > .05$.

In summary, the results provide limited evidence in support of the fourth hypothesis, which predicted a significant relationship between cognitive style and problem-solving process. Clear cut support for the hypothesis was obtained with the MEPS measure, in that field-independent subjects tended to use a sequential

process, and there was a tendency for the wholistic process to increase in occurrence as field-dependence increased. On the other hand, the predicted relationships between cognitive style and problem solving were not found for the In vivo measure of problem solving, the only significant result being a tendency for mid-range subjects to use a wholistic problem-solving process.

Cognitive Style and Social Problem-Solving Styles

In addition to scoring for problem-solving process, all of the problem-solving measures were scored for three problem-solving styles: analytical, affective, and behavioral. A fourth category, mixed, resulted from an equal combination of any two of the three styles. The fifth hypothesis predicted that field-independent subjects would tend to exhibit an analytical problem-solving style, while field-dependent subjects would tend to demonstrate an affective problem-solving style. As with problem-solving process, separate correlations were calculated between GEFT total score and scores on each of the problem-solving style categories. No significant correlations resulted on either the MEPS or the in vivo measures. In summary, no support was obtained for the fifth hypothesis.

Descriptive Analyses of Social Problem-Solving Data

The second major purpose of the present research was to gather descriptive information on the elements, styles, and processes of social problem solving. Very little research has focused on how people actually solve ill-defined problems, or what is involved in solving social problems. Do people vary in their approach to such problems? Do situational constraints influence the approach taken by people? Protocol analysis of the MEPS yielded useful information on these issues.

Social Problem-Solving Elements

In the protocol analysis, each problem solution was first scored for eight possible elements of the problem-solving process: stating the problem, analysis, strategies, elaborations, reasons, evaluating strategies, evaluating self, and feelings. Descriptive statistics for these eight elements were examined to clarify patterns occurring in the data. Not all subjects utilized all eight elements in their solutions. Table 8 presents the number and percentage of subjects who employed the different problem-solving elements overall on the eight MEPS problems, plus the frequency of use for each element. From these data, a few general trends for social problem solving can be discerned. Strategies were the only element used by all subjects. It was also the most frequently occurring

Table 8

Number and Percentage of Subjects Utilizing Each of Eight Problem-Solving Elements on all MEPS Problems and Mean Frequency of Use for Each Element

Elements	Number of Subjects	Percentage of Subjects	Mean Frequency of Elements
State Problem	31	44%	1.51
Analysis	55	79%	2.21
Strategy	70	100%	31.94
Elaboration	45	64%	2.27
Evaluation of Strategy	65	93%	9.30
Evaluation of Self	49	70%	3.66
Reason	62	89%	4.50
Feeling	39	56%	2.80

element (M = 31.94) on the eight problem solutions. Other elements employed by most subjects were evaluation of strategies (93%), reasons (89%), and analysis (79%). About 2/3 of the subjects included evaluation of self (70%) and elaboration (64%), while fewer subjects included feelings (56%) and stating the problem (44%). Therefore, with this sample, social problem solving could be characterized in general as being composed mainly of a number of strategies combined with evaluation of those strategies, reasons, and analysis. To a lesser extent, some subjects also included evaluation of self, elaboration, and feeling in their problem solutions.

The data were also separated into various types of problems. Table 9 lists the frequencies and percentages of subjects who employed the different elements on various types of problems. As can be seen from this table, once again strategies were the only element used by all subjects on all types of problems. At least 74% of the subjects used evaluation of strategies and reasons for all types of problems, while analysis was used by 27%-74% of subjects depending on the type of problem. Stating the problem, elaboration, and feelings were used by less than half of all subjects on all types of problems. It should be noted that the frequencies in Table 9 for number of subjects who used the elements on different types of problems are less than the overall frequency for a particular element in Table 8. This is because some subjects employed a

Table 9

Frequency and Percentage of Subjects Utilizing Each of Eight Problem-Solving Elements on Various Types of Problems on the MEPS

Elements	Types of Problems			
	Intrapersonal	Interpersonal	Simple	Complex
Stating Problem	25(36%)	27(39%)	29(41%)	14(20%)
Analysis	52(74%)	31(44%)	19(27%)	54(77%)
Strategy	70(100%)	70(100%)	70(100%)	70(100%)
Elaboration	25(36%)	35(50%)	36(51%)	25(36%)
Evaluation of Strategy	57(81%)	59(84%)	60(86%)	55(79%)
Evaluation of Self	43(61%)	34(49%)	31(44%)	51(73%)
Reason	55(79%)	52(74%)	53(76%)	56(80%)
Feeling	34(49%)	32(46%)	28(40%)	38(54%)

particular element for only one type of problem. For example, 21 subjects used stating the problem on both interpersonal and intrapersonal problems. An additional 4 subjects used it only on intrapersonal problems (25 subjects in total), while an additional 6 subjects used it only on interpersonal problems (27 subjects in total). This resulted in an overall total of 31 different subjects who used the element of stating the problem.

From the data in Table 9, patterns could be detected among the types of elements used on different types of problems. To test whether any of these patterns were significant, two different MANOVA's were performed. The first MANOVA was performed with three levels of cognitive style as a between-subjects variable, intrapersonal versus interpersonal problems as a within-subjects variable, and scores on the eight elements as dependent variables. The main effect of cognitive style and the interaction effect between cognitive style and situation were both nonsignificant. However, there was a significant overall main effect of situation on scores on the problem-solving elements. This effect appears to be traceable to scores on the problem-solving elements of analysis, evaluation of strategies, and evaluation of self, as indicated by mean values shown in Figure 3 and significant univariate F values in Table 10.

It may be noted that subjects utilized significantly more analysis and more evaluation of self with

79

Figure 3

Significant Differences in Mean Number of Problem-Solving Elements on Intrapersonal Versus Interpersonal Problems

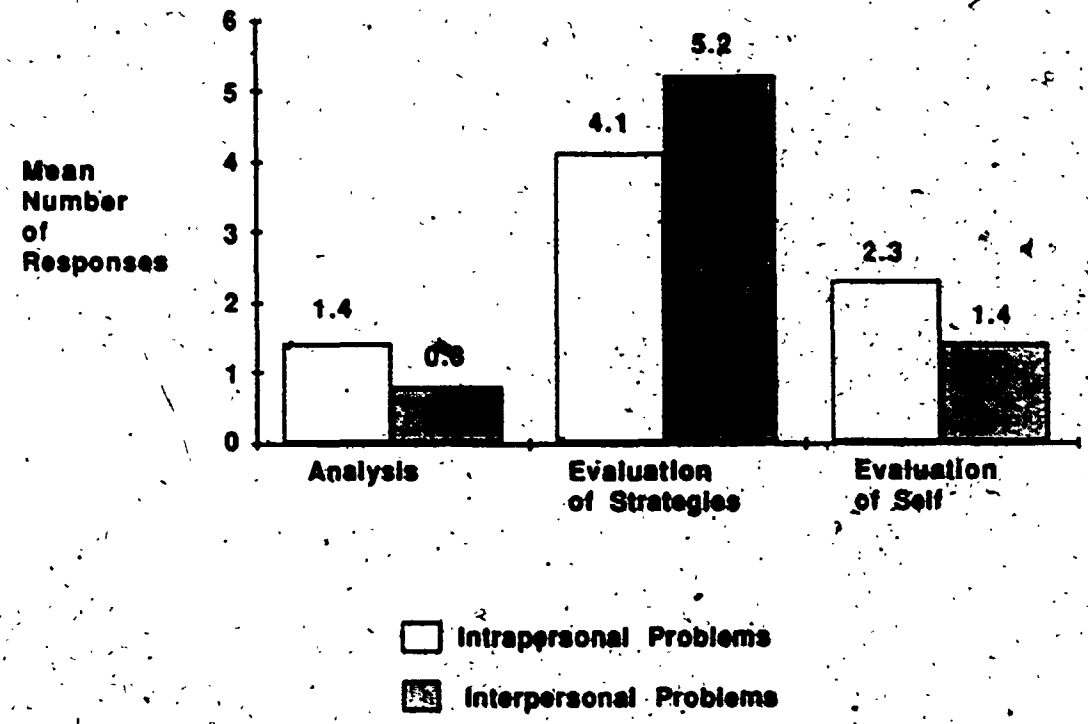
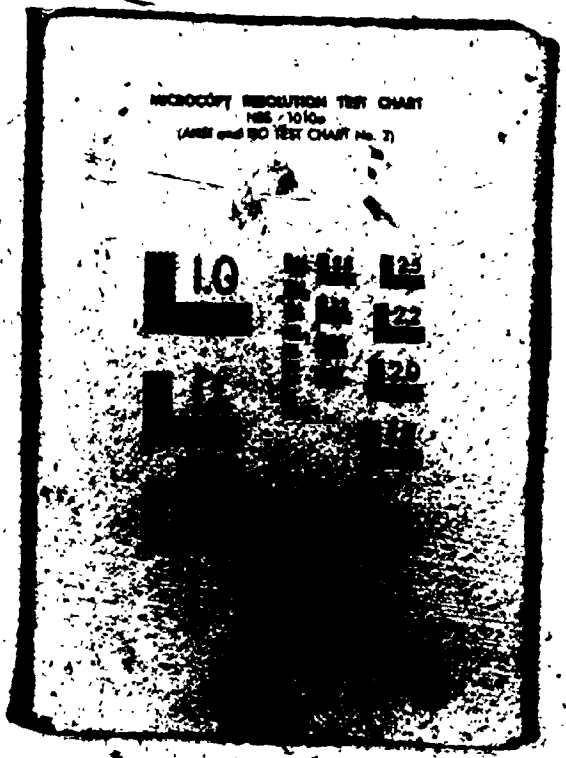


Table 10

Main Effect of Interpersonal Versus Intrapersonal Situations in Multivariate Analysis of Variance of Problem-Solving Elements on the MEPS

Variables	MS	df	F	p
All	5.26	8	4.71	.001*
Stating Problem	.32	1	.74	.890
Analysis	12.19	1	11.86	.001*
Strategies	5.63	1	.53	.468
Elaboration	2.84	1	1.07	.306
Evaluation of Strategies	45.78	1	10.38	.002**
Evaluation of Self	29.72	1	11.35	.001*
Reasons	2.98	1	1.52	.222
Feelings	4.24	1	2.99	.088


2


MICROCOPY RESOLUTION TEST CHART
NBS / 1010a
(ANSI and ISO TEST CHART No. 2)
1.0
1.1
1.25
1.4
1.8
2.2
2.0

intrapersonal problems, $F(1,67) = 11.86$ and 11.35 respectively, $p < .001$ in each case. These results indicate that subjects were more likely to begin solving a self problem by writing something similar to the following: "First, I would sit down and try to analyze what was dissatisfying about my life" (analysis). When working on intrapersonal problems, subjects were also more likely to include statements like the following: "I usually do better as soon as I start to take a closer look at problem areas" or "Am I being fair or pressing too hard or am I a push-over with my students?" (evaluating self).

On the other hand, subjects showed significantly more evaluation of strategies (and evaluation of the situation) with interpersonal problems than with intrapersonal problems, $F(1,67) = 10.38$, $p = .002$. For example, subjects were more likely to write statements like the following: "The indirect approach with this principal might be more effective" (evaluating a strategy), or "As far as meeting your neighbors, friendships take time and are an ongoing process" (evaluating the situation).

When these types of statements are considered, one can see the logic of subjects employing more evaluation of things outside of themselves (the situation, the other person, the approach they are taking) when solving interpersonal problems, because these problems by their very nature involve more of the outside world. Similarly, one can understand the reasonableness of subjects engaging

in more internal analysis and questioning of themselves when addressing intrapersonal problems.

The eight problem situations on the MEPS had been divided a priori into four interpersonal and four intrapersonal problems. However, a posteriori content analysis of the MEPS revealed that subjects were responding differently to another type of grouping of the eight problems. More specifically, subjects appeared to be differentiating between four relatively simple or superficial problems (finding a lost watch, getting more money, making new friends with neighbors, meeting a stranger in a restaurant) and four more complex problems (improving one's teaching, having a spouse leave, being dissatisfied with life, not getting along with one's principal).

Therefore, a second MANOVA, with cognitive style and problem complexity as independent variables was performed on scores for the eight problem-solving elements. There was no main effect of cognitive style and no interaction effect between cognitive style and problem complexity. However, there was a main effect of problem complexity on problem-solving elements. Results, shown in Table 11 and Figure 4, included significant univariate F values for 7 of the 8 problem-solving elements.

It may be noted that in solving superficial or simple problems, subjects utilized more strategies. ($F(1,67)$ =

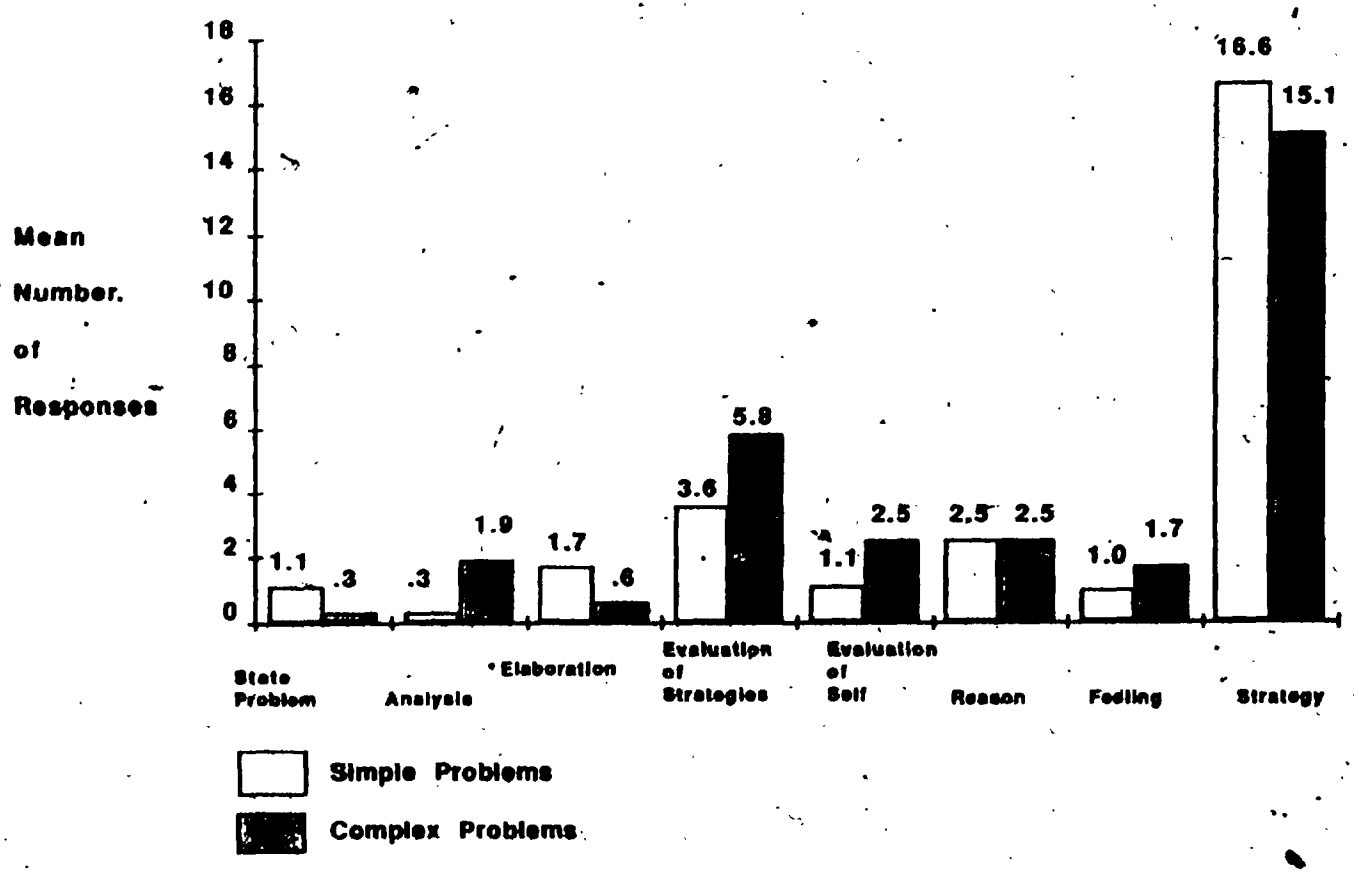
Table 11

Main Effect of Complex Versus Simple Problems in Multivariate Analysis of Variance of Problem-Solving Elements on the MEPS

Variables	MS	df	F	p
All	12.59	8	11.28	.001*
Stating Problem	23.27	1	21.22	.001*
Analysis	90.09	1	61.05	.001*
Strategies	81.38	1	8.19	.006*
Elaboration	39.38	1	9.06	.004*
Evaluation of Strategies	157.05	1	12.95	.001*
Evaluation of Self	75.48	1	18.20	.001*
Reasons	1.12	1	.42	.517
Feelings	16.96	1	7.09	.009*

Figure 4

Mean Number of Problem-Solving Elements on Complex Versus Simple Problems



8.19, $p = .006$; more elaboration, $F(1,67) = 9.06$, $p = .004$; and more problem stating $F(1,67) = 21.22$, $p < .001$, than with complex problems. Both of the last two categories involved giving detailed descriptions, either about the problem at the beginning (setting the stage) or about a particular strategy. Thus, subjects were more "chatty" when engaged in simple everyday problems. They also generated more strategies, probably because it is easier to think of a larger number of strategies for simpler problems.

On complex problems, subjects employed more analysis, $F(1,67) = 61.05$, $p < .001$; more evaluation of strategies, $F(1,67) = 12.95$, $p < .001$; more evaluation of self, $F(1,67) = 18.20$, $p < .001$; and more exploration of feelings, $F(1,67) = 7.09$, $p = .009$. Subjects gave approximately the same number of reasons to support their ideas on both types of problems. Again, it is understandable that complex problems would require more analysis and evaluation and that subjects would have more feelings about them than they would about superficial problems. It is also reasonable that subjects might find it harder to generate as many strategies for complex problems.

Social Problem-Solving Style

After the protocols were scored for problem-solving elements, subjects were categorized for problem-solving style (analytical, affective, behavioral, mixed). In terms

of overall problem-solving style on the MEPS, subjects were distributed as follows: 13 (18.5%) analytical, 6 (8.5%) affective, 34 (49%) behavioral, and 17 (24%) mixed. As shown in Table 12, only 4 of 70 subjects (6%) used the same style (behavioral) for all eight problems. Most subjects used more than one style on the eight problems. For 76% of subjects, one style predominated on at least 5 of 8 problems, while 24% had an equal mixture of two of the three styles.

When problems were separated into interpersonal and intrapersonal, the patterns shown in Figure 5 and Table 13 emerged. Each subject was tested in both intrapersonal and interpersonal situations, and Table 13 shows data for the same subjects in both situations. For interpersonal problems, subjects tended to use a behavioral style, while for intrapersonal problems they tended to use an analytical style or a mixture of styles. Not all subjects, however, changed styles for different types of problems. Thirty-two subjects (46%) maintained the same style for both types of problems. This figure of 32 comes from adding the diagonal entries in Table 13 (7 + 1 + 17 + 7). Of the 38 subjects (54%) who changed styles, half of them changed from analytical or mixed on intrapersonal problems to behavioral on interpersonal problems. Another 10 subjects (14%) changed from analytical on intrapersonal problems to affective or mixed on interpersonal problems. In other words, the most common type of change was from an

Table 12

Frequency and Percentage of Subjects Utilizing Different Problem-Solving Styles on the MEPS

Number of Problems with Same Style	Number of Subjects	Percentage	Type of Predominant Style
8 of 8	4	6%	Behavioral
7 of 8	8	11%	7 Behavioral
			1 Analytical
6 of 8	19	27%	12 Behavioral
			6 Analytical
			1 Affective
5 of 8	22	32%	11 Behavioral
			6 Analytical
			5 Affective
Less than 5 of 8	17	24%	Mixed

88

Figure 5

Frequency of Problem-Solving Styles Utilized by Subjects on Intrapersonal Versus Interpersonal Problems

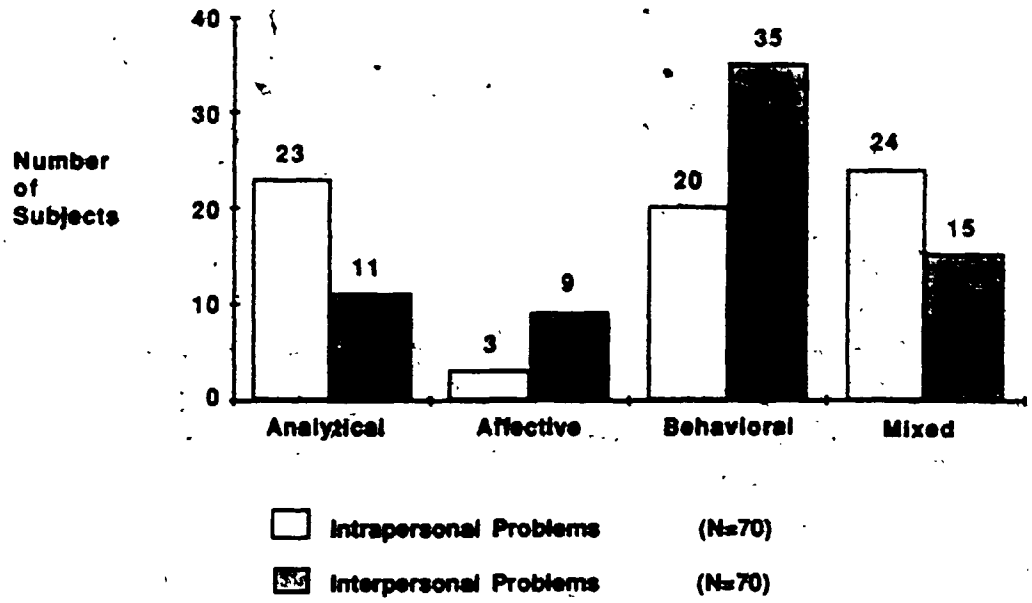


Table 13

Frequency of Subjects Exhibiting Various Problem-Solving Styles as a Function of Interpersonal or Intrapersonal Problems

Intrapersonal / Interpersonal	Analytical	Affective	Behavioral	Mixed	Row Total
Analytical	7	5	6	5	23
Affective	1	1	1	0	3
Behavioral	0	0	17	3	20
Mixed	3	3	11	7	24
Column Total	11	9	35	15	70

analytical style on intrapersonal problems to one of the other styles on interpersonal problems.

To investigate whether problem-solving style varied significantly for interpersonal versus intrapersonal situations, several analyses were performed. Because the data were categorical and ipsative, a MANOVA could not be performed. Instead, a combination of chi-square and McNemar's test of the significance of a difference between correlated proportions was employed (Ferguson, 1976) First, a chi-square was performed on the 4 x 4 contingency table shown in Table 13. A significant chi-square value resulted, $\chi^2(9) = 21.51$, $p = .01$. This result shows that the distribution of problem-solving styles differed for interpersonal versus intrapersonal situations. McNemar's test was then used to compare each of the four problem-solving styles in interpersonal versus intrapersonal conditions. The values compared are shown in Figure 5. For example, to compare the proportion of subjects choosing the analytical problem-solving style in each situation, the relevant marginals from Table 13 are 23 and 11, and the relevant cell frequency is 7, the latter indicating that 7 subjects used the analytical style in both situations. Using these numbers, a 2 x 2 table, similar to that shown in Table 14, was constructed. The term "other" in Table 14 refers to the number of subjects choosing problem-solving styles other than the one under test. Only one of four such 2 x 2 comparisons was

Table 14

Frequency of Subjects Exhibiting An Analytical Problem-Solving Style Compared to Other Styles on Interpersonal Versus Intrapersonal Problems

		Interpersonal		
		Analytical	Other	
Intrapersonal	Other	16	43	59
	Analytical	7	4	11
		23	47	70

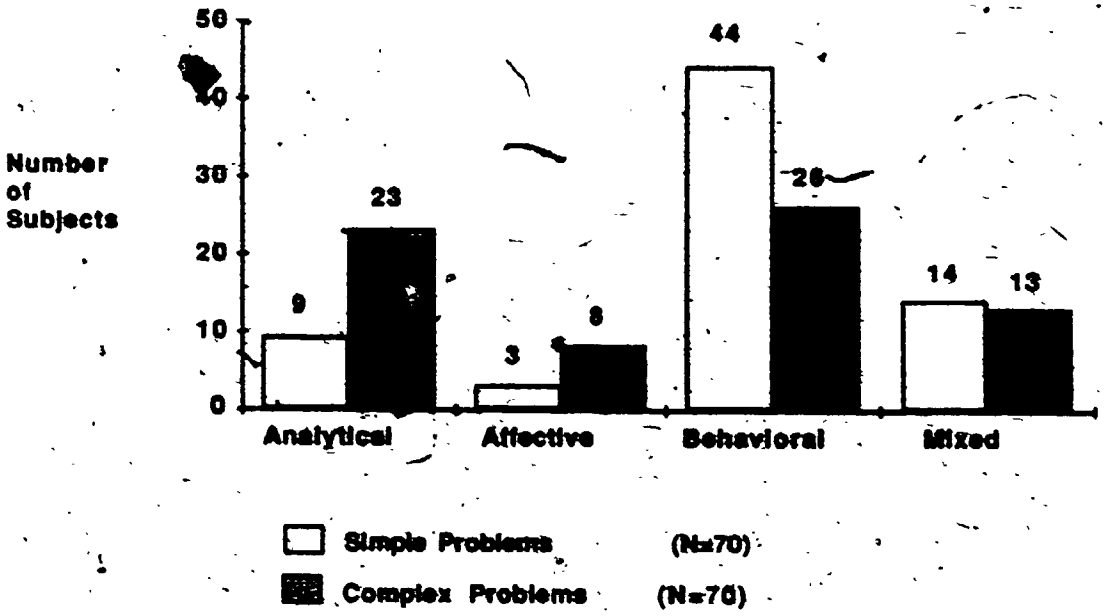
significant. Because four comparisons were performed, the alpha level of .05 was divided by 4. From the comparisons, a significant difference was found in the number of people using a behavioral problem-solving style for interpersonal problems compared to intrapersonal problems, $Z = 3.38$, $p < .01$. Finding that a greater proportion of subjects used a behavioral problem-solving style on interpersonal problems is not surprising when one considers that interpersonal problems occur in the world outside of the individual, and thus could easily be thought of in terms of the behaviors needed to solve them.

In a manner similar to the above, problem-solving style was examined for the four simple problems and the four complex problems. From examination of Figure 6, it appeared that there might be differences in the styles utilized by subjects on complex and simple problems. As in the previous analysis, an overall chi-square was calculated, but the resulting value was not significant, $\chi^2(9) = 12.63$. Thus, post-hoc comparisons were not justified. The results of post-hoc comparisons suggested that subjects tended to use a behavioral style more for simple problems than for complex problems. However, because no a priori hypotheses were stated for these variables, the most judicious conclusion is that this study has failed to demonstrate a relationship between problem-solving style and problem complexity.

93

Figure 6

Frequency of Problem-Solving Styles Utilized by Subjects on Complex Versus Simple Problems



Problem-Solving Style and Gender

When problem-solving style on the MEPS was considered in relation to gender of subjects (female = 1, male = 2), a significant negative correlation was found between gender and total number of problems scored as affective style, $r(68) = -.41$, $p < .001$). The mean number of affective style problems was higher for women ($M = 1.90$ out of 8) than for men ($M = 0.54$). This was a significant difference, $t(68) = 3.70$, $p < .05$. There was also a significant correlation between gender and the total number of problems scored as behavioral, $r(69) = .28$, $p = .01$. Men had significantly more problems scored as behavioral ($M = 4.70$) than women ($M = 3.5$); $t(68) = 2.38$, $p = .02$. There was no significant correlation between gender and the number of problems scored as analytical, with each group having a mean of 2.60.

While women did have significantly more affective problems than men, one cannot necessarily conclude that women are more affective problem-solvers overall in that their mean of 1.9 affective problems was lower than their mean of 3.5 behavioral problems.

Problem-Solving Process

Problem-solving process categories (sequential, wholistic, simultaneous) were also examined in detail. Overall, the distribution of categories across subjects was 29 (41%) sequential, 10 (14%) wholistic, 4 (6%)

simultaneous, and 27 (39%) mixed. Table 15 shows that, as with problem-solving style, most subjects employed a variety of problem-solving processes. Only 3 of 70 subjects used the same process (sequential) for all eight MEPS problems. For 61% of subjects, one process predominated on at least 5 of 8 problems, while 39% had a mixture of processes.

When problems were separated into interpersonal versus intrapersonal, and into simple versus complex categories, there were no apparent differences between these conditions with respect to sequential, wholistic, and simultaneous problem-solving processes. The frequencies for these conditions are shown in Table 16. The sequential process was used most often for all types of problems with the other two styles being employed relatively equally.

Problem Solving and Age

Further interesting results were obtained when age was examined. There were significant correlations between age and number of strategies, $r(68) = .26$, $p = .016$; evaluation of strategies, $r(68) = .29$, $p = .008$; and evaluation of self; $r(68) = .23$, $p = .027$; indicating that as age increased so did the frequency of use of certain problem-solving elements. By using a median split of 37 years to divide the sample into older and younger subjects, the two groups could be compared on these problem-solving elements. Older subjects showed significantly more evaluation of strategies than younger subjects ($M = 11.67$

Table 15

Frequency and Percentage of Subjects Utilizing Different Problem-Solving Processes on the MEPS

Number of Problems with Same Process	Number of Subjects	Percentage	Type of Predominant Process
8 of 8	3	4%	Sequential
7 of 8	7	10%	5 Sequential 2 Wholistic
6 of 8	8	11%	6 Sequential 2 Wholistic
5 of 8	25	36%	15 Sequential 6 Wholistic 4 Simultaneous
Less than 5 of 8	27	39%	Mixed

Table 16

Frequency and Percentage of Subjects Utilizing Different Problem-Solving Processes on Interpersonal, Intrapersonal, Simple, and Complex Problems

Type of Problem	Type of Process			
	Sequential	Wholistic	Simultaneous	Mixed
Intrapersonal	29(41%)	14(20%)	11(16%)	16(23%)
Interpersonal	30(43%)	21(30%)	4(6%)	15(21%)
Simple	32(46%)	11(16%)	11(16%)	16(23%)
Complex	33(47%)	19(27%)	10(14%)	8(12%)

versus 6.79), uncorrelated $t(68) = 2.34$, $p = .022$, and significantly more evaluation of self ($M = 4.97$ versus 2.26), $t(68) = 2.54$, $p = .013$. There was not a significant difference in number of strategies ($M = 33.67$ versus 30.11), $t(68) = 1.44$, $p = .15$. It may be that older subjects are more likely to show evaluation skills because they have been able to gain a more critical perspective from increased life experiences. This idea is consistent with the fact that younger subjects in this sample were more likely to show a behavioral problem-solving style on the MEPS, a style lacking in evaluation. This relationship is indicated by a significant negative correlation between age and number of behavioral problems, $r(68) = -.33$, $p = .002$.

Summary of Major Results

1. Contrary to the predicted outcome, field-independent subjects did not score significantly higher on intrapersonal empathy and field-dependent subjects did not score higher on interpersonal empathy. However, subjects at all levels of field independence scored significantly higher on intrapersonal analogue empathy than they did on interpersonal analogue empathy.

2. Contrary to the predicted outcome, field-independent subjects did not generate more strategies on intrapersonal problems and field-dependent subjects did not generate more strategies on interpersonal problems. Instead, there was a U-shaped relationship between

cognitive style and problem solving, with field-dependent and field-independent subjects generating more strategies than mid-range subjects in both intrapersonal and interpersonal situations. Also, there was a tendency for field-independent subjects to generate more strategies on the interpersonal MEPS items than field-dependent subjects.

3. There were significant positive correlations between the analogue measures of problem-solving and empathy.

4. Field-independent subjects tended to use a sequential problem-solving process, while field-dependent and mid-range subjects tended to utilize a wholistic process.

5. Subjects employed more analysis and evaluation of self on intrapersonal problems, and more evaluation of strategies on interpersonal problems.

6. On complex problems, subjects tended to utilize analysis, evaluation, and feelings; while on simple problems, subjects tended to utilize strategies, elaboration, and statement of the problem.

7. Subjects used a behavioral problem-solving style more often for interpersonal problems than for intrapersonal problems.

Discussion

The two major purposes of this study were first, to investigate the relationship between cognitive style and the counseling skills of empathy and problem solving in a sample of beginning counselors, and second, to examine the components of social problem solving itself. Findings relating to each of these two areas are discussed below, and in each case, comparisons are drawn with applicable previous research. Implications of this research for counselor education are explored and suggestions are made for future research with these variables.

Cognitive Style and Empathy

The first hypothesis predicted that field-independent subjects would be more empathic than field-dependent subjects in intrapersonal situations, while field-dependent subjects would be more empathic than field-independent subjects in interpersonal situations. Support was not found for this prediction. From the multivariate and univariate F comparisons, there was no evidence of significant differences between field-independent and field-dependent subjects in either intrapersonal or interpersonal situations, regardless of whether empathy was measured by an *in vivo* or by an analogue procedure. The one significant univariate interaction effect for the cognitive style and situational variables on the Index of Responding can only suggest directions for future research

because the corresponding multivariate F was not significant.

When previous research with empathy and cognitive style is considered, it is difficult to make comparisons with the present study because no previous studies included situational variables. The results of this study are perhaps closest to those of Carlino (1972) who also measured empathic responding directly. He found no relationship between cognitive style and empathy on taped interviews.

There are several possible reasons for the lack of relationship between cognitive style and empathy in the present study. Originally, it was thought that field-dependent subjects would be more empathic with interpersonal situations because of previous research (Witkin, 1978; Witkin & Goodenough, 1977) indicating their tendency to pay attention to social cues and be sensitive to the feelings of others. Of course, upon reflection, these characteristics are also required for empathic responding with intrapersonal concerns, and thus it may be that field-dependent beginning counselors are able to demonstrate empathic responding in either intrapersonal or interpersonal situations, as occurred on the in vivo empathy tapes. With the field-independent group, it was predicted that they would be more empathic in intrapersonal contexts because of their tendency to use an internal frame of reference. However, it may be that this internal frame

of reference provides them with the flexibility to respond empathically in both types of situations.

Of additional interest was the finding that subjects at all levels of field independence showed significantly higher levels of empathy in intrapersonal situations than in interpersonal situations on the Index of Responding. Upon reflection, it seems that interpersonal concerns are often more ambiguous and less predictable than intrapersonal concerns because the former include the interaction of two people, while the latter include only one person (the client). This greater unpredictability might be the reason for the poorer performance (i.e. less empathy) of all subjects on interpersonal items. Another possible factor is that two of the interpersonal items were more complex and difficult because of the inclusion of immediacy (dealing with the relationship between the client and counselor) in the situation.

It is interesting to note that the field-independent subjects performed significantly better than field-dependent subjects on one of the two more difficult immediacy items ("You're the best teacher I've ever had. You were the only teacher who didn't make me feel like I was in terrible trouble if I didn't get everything perfect"). Again, while this post-hoc finding can only suggest possibilities for future research, it may be that on more complex items, novice field-independent counselors are better able to disembed the information needed from the

client in order to make a more empathic response. On this item, many subjects responded only to the surface compliment given by the student to the teacher. The field-independent subjects were more likely to respond to the underlying feelings of inadequacy that were implied by the student. Therefore, it seemed that field-independent subjects tended to think and respond more completely to this more complex item.

There is some support for field-independent subjects being more cognitively complex than field-dependent subjects in the cognitive style literature (Lawson, 1980; Thibodeau, 1980), especially within the framework of Piagetian stages. In Lawson's (1980) sample of 41 undergraduates, all of the 11 field-independent subjects had reached the formal operations stage, while only two of the 15 field-dependent subjects were formal operational, lending credence to the idea that field independence may be a component of formal operational reasoning, a more complex level of development than concrete operations. Lawson reported a correlation of .60 between cognitive style and the Piagetian task used in his study. Thus, it may be that field-independent subjects responded with higher empathy on the immediacy item because they were more likely to have formal operational reasoning that facilitated them in dealing with this more complex situation.

In summary, cognitive style does not appear to influence the empathic responding of beginning counselors.

Instead, situational factors seem to exert a greater influence on the level of demonstrated empathy than cognitive style, with subjects performing better on intrapersonal items than on interpersonal items. This result has implications for counselor education. Novice counselors had more difficulty being empathic on written interpersonal items and in particular on items that involved a situation of immediacy between the counselor and client. This finding indicates that counselor training may need to focus more on helping beginning counselors to understand the intricacies of interpersonal interactions that involve themselves, so that they will then be better able to respond with facilitative empathy in counseling contexts.

Cognitive Style and Social Problem Solving

The second hypothesis predicted that field-independent subjects would generate more strategies than field-dependent subjects on intrapersonal problems while field-dependent subjects would generate more strategies than field-independent subjects on interpersonal problems. No support was found for this hypothesis. As with empathy, cognitive style and situational factors were not interactively related to quantitative problem-solving skill. There was, however, a significant main effect of cognitive style. This reflected a curvilinear relationship between cognitive style and the combined problem-solving measures, with field-dependent and field-independent

subjects generating more strategies than the mid-range group. Also, directly contrary to prediction, there was a significant post-hoc trend on the interpersonal analogue measure (MEPS) for field-independent subjects to generate more strategies than the other two groups.

It was originally thought that field-independent subjects would not be as good at interpersonal problems because cognitive style research (Witkin et al., 1978) suggests that field-independent people tend to be more individualistic, aloof, not as skilled with people, and less willing to accommodate others' views. While this explanation may be quite plausible with a general population, it is perhaps less applicable to the present sample of counselor trainees. These individuals as a group are presumably very interested in the feelings of others and are very personable, rather than being aloof. Thus even the more field-independent subjects in the present sample may have been very socially oriented, and thus capable of generating strategies for either interpersonal or intrapersonal problems.

What may have more explanatory power for the better performance of field-independent subjects on interpersonal problems are their cognitive characteristics, rather than their personality characteristics. It may be that their ability to be more articulated and to separate items from a field make them better able to generate strategies when the situation or problem involves more than one person. Heller

(1982) came to a similar conclusion when she found that field-independent subjects tended to do better on mathematical problem-solving tasks that require extracting information from a larger field of information. Certainly more research is needed to corroborate this finding.

Social Problem Solving and Empathy

As predicted, a significant but weak relationship was found between social problem solving and empathy. Such a relationship was predicted because these two counseling skills are believed to share in common both perspective taking and generating possibilities (feelings and strategies). Therefore, one might expect that individuals who responded at higher levels of empathy would also be able to generate more strategies in a problem situation.

It should be noted that the significant correlations between empathy and problem solving occurred only for analogue measures, whereas there was no significant correlation between in vivo measures of empathy and problem solving. Perhaps no relationship was found on the in vivo measures because of the greater complexity of factors present in an actual client-counselor interaction, as compared to those present on more structured, written exercises.

Finding a relationship between these two skills is contrary to the findings of Kramer, Rappaport, and Seidman (1979). However, Kramer et al., measured and compared

empathy and problem solving as global qualities or characteristics rather than as specific skills. The present study suggests that there is a relationship between the specific skills of empathy and social problem solving, at least in a written, analogue context.

Cognitive Style in Relation to Social Problem-Solving Processes and Styles

The problem solving findings discussed above relate solely to the number of relevant strategies generated by subjects, the unit of analysis most frequently used with the MEPS. In utilizing the number of generated strategies as the measure of social problem solving, the assumption is made that better problem solvers produce more strategies while poorer problem solvers produce fewer strategies. However, when one considers the nature of social problems, it is not necessarily true that developing a large number of strategies is more effective than generating one highly appropriate strategy. Butler and Meichenbaum (1981) raise this same concern about the MEPS. Instead of a quantitative scoring procedure, they suggest qualitative assessment as a useful new development for social problem-solving measurement.

Thus, instead of thinking solely in terms of better problem solving, it would seem more beneficial to think in terms of how people differ in their approach to solving social problems. By adopting a more process-oriented framework for how people solve social problems, the number

of strategies then becomes just one element among many other elements in the overall process. To assess qualitative problem solving, protocol analysis was used to examine the various processes and styles employed by subjects in the present study.

The fourth hypothesis stated that field-independent subjects would tend to utilize a sequential problem-solving process while field-dependent subjects would utilize a wholistic process. Limited support was found for this hypothesis. As predicted, field-independent subjects demonstrated a sequential process on 56% of the MEPS problems, while field-dependent subjects showed this type of process on only 42% of problems, a significant difference. Concurrently, field-dependent subjects exhibited a wholistic process more often than field-independent subjects (36% versus 27%), although this was not a statistically significant difference. On the in vivo intrapersonal problem-solving measure, however, results were less clearcut, the only significant outcome being a tendency for mid-range subjects to use a wholistic process more than the two other groups.

From the data, then, there appears to be some support for a relationship between cognitive style and types of social problem-solving processes. However, one must question why the results differed for the two types of measures, analogue and in vivo. It may be that the more structured, impersonal nature of the analogue measure made

it easier for field-independent subjects to use a logical, step-by-step, sequential approach. In contrast, the real client problems tended to be harder, more insolvable problems that did not lend themselves as well to a sequential process. There was also greater variability in the in vivo problems. They ranged from simple, superficial problems, such as lack of time for completing assignments, to deeper problems, such as trying to decide about pregnancy or considering separating from a spouse. This greater variability could have made it more difficult to obtain the expected results.

The fifth hypothesis stated that a relationship would be found between cognitive style and problem-solving style (analytical, affective, and behavioral). It was predicted that field-independent subjects would tend to use an analytical problem-solving style while field-dependent subjects would use an affective problem-solving style. No support was found for this hypothesis. One of the difficulties in finding an association between field dependence and affective style was that very few subjects (8.5%) demonstrated an affective problem-solving style. This is a reasonable finding when one considers that a problem-solving "set" is more likely to induce cognition and behavior than feelings. A larger sample size would be needed to obtain enough subjects to ascertain more fully the likelihood of field-dependent subjects utilizing an affective problem-solving style. More surprising was the

fact that field-independent subjects did not consistently demonstrate an analytical problem-solving style. This finding may indicate that other variables are more influential than cognitive style in determining the problem-solving style selected by subjects. This possibility will be discussed more fully below.

Summary of Cognitive Style Findings

Overall, this study yielded weak and generally nonsignificant findings concerning the relationship of cognitive style to counselor empathy and problem solving. When support was obtained for predicted relationships, the correlations were in the .21-.26 range, indicating that cognitive style accounted for only about 6% of the relevant variance in counselor performance. These low correlations are perhaps not entirely surprising, however, when one considers previous research with cognitive style. In the area of problem solving, five of eight studies did not find a significant relationship with cognitive style. Moreover, the one study that did find a significant relationship (Gunning, 1981) reported a correlation of only .279, a value comparable to correlations obtained in the present study.

In the area of empathy, the two studies that measured empathy by self-report or multiple-choice test (Martin & Toomey, 1973; Wightman, 1982) found a significant relationship with cognitive style. However, in the two studies that measured empathic responding (Anstandig, 1979;

Carlino, 1972), field-independent subjects did not perform significantly better than field-dependent subjects as predicted. This finding is consistent with the results of the present study.

One needs to question why a stronger relationship was not found between cognitive style and empathy and social problem solving. When past cognitive style research is examined, clear patterns emerge as to which studies do and do not obtain large correlations. Studies which report strong correlations with cognitive style include those investigating (1) memory (Berger & Goldberger, 1979; Shaha, 1982), with correlations of .43-.74; (2) intelligence (Goldstein & Blackman, 1978; Lawson, 1982), with correlations of .30-.60; and (3) academic achievement (Crow & Piper, 1983; Hansen & Stansfield, 1982; Hart, Payne, & Lewis, 1981; Savage, 1983), with correlations of .30-.43. On the other hand, studies dealing with personality variables (Bergum & Bergum, 1980; Nedd & Marsh, 1979) have yielded correlations of .22 and .17, while studies investigating learning atmosphere (variety and pace) have obtained correlations of .26 and .22 (Avolio, Alexander, Barrett, & Sterns, 1979; Stone, 1979).

It appears that cognitive style, as measured by perceptual disembedding, correlates more with cognitive abilities such as intelligence, memory, and achievement that are measured in very structured ways, than it does with more nebulous entities such as personality and

learning atmosphere. To perform well on an embedded figures test, the subject must use convergent thinking to obtain the one, right answer. It may be that the further one moves away from areas that require similar convergent thinking, the lower will be the correlations. When social problem solving is considered, one can postulate that these types of problems will require more divergent thinking because of the complexity and lack of structure involved in the situations. This divergent thinking may be far enough removed from the convergent thinking required on the embedded figures test to result in low correlations between cognitive style and social problem solving.

Some researchers view the high correlations found between cognitive style and intelligence as evidence that cognitive style is not the pervasive domain claimed by Witkin. Guilford (1980) views cognitive style as just one factor in his model of intelligence, namely Convergent Production of Visual Transformations. Similarly, Cronbach and Snow (1977) think field independence is either partly or wholly the same as fluid intelligence, because it correlates between .40 and .60 with the three subtests of the Wechsler that measure fluid intelligence (block design, object assembly, picture completion), while not correlating with other subtests. Witkin et al. (1971) counter this claim by saying that these three subtests are essentially identical to the field dependence-independence dimension. Because the other subtests of the Wechsler are not related,

Witkin argues that field-independence can be seen as distinct from intelligence.

This controversy over intelligence and cognitive style highlights the difficulty of determining exactly what field-dependent and field-independent cognitive styles are. At times, they appear to be perceptual or learning styles, while at other times they appear to be a spatial ability. Evidence for field independence being essentially the same as spatial ability was obtained by MacLeod, Jackson, and Palmer (1986). They employed LISREL-V to assess a factor model relating the field-independence trait (measured by the EFT and the RFT) to the spatial ability trait (measured by the Spatial Relations subtests of the Multiple Aptitude Test and the Block Design subtest of the WAIS). They found a correlation of 1.0 between the field-independence and spatial ability traits.

Another criticism of cognitive style theory concerns the way in which cognitive styles are measured. The GEFT is clearly biased toward the field-independent style, with analytical ability required in a nonsocial, objective test format. The special skills of the field-dependent subject (intuitive, interpersonal) are not measured and, thus, a field-dependent score results by default. Cronbach and Snow (1977) suggest that as a result of the design of the GEFT field dependence is actually a deficit rather than a "style." If this is the case, it is not surprising that many of the significant research findings with the GEFT

occur only with the field-independent group.

In essence, field-independence is measured by the GEFT in a very simplistic, unitary manner, with the only required skill being perceptual disembedding. From research with this measure, Witkin describes cognitive style as a very pervasive domain, including information processing, perception, personality, and social interaction, and certainly a domain more extensive than intelligence. And yet, the GEFT and other measures of field independence are much less complex than most measures of intelligence.

When all of these criticisms are taken together, it seems questionable as to whether Witkin's cognitive style theory is comprehensive enough to account for differences in how adult subjects demonstrate the skill of social problem solving. If, in fact, the styles represent simply one facet of intelligence, they might not be expected to be complex enough in themselves to explain differences in approaches to social problem solving.

In addition, it may be that cognitive style theory is not suitable in general for explaining the diversity present in a population of adult learners. The research base with the adult population is too small at present to know whether the large correlations obtained in cognitive style studies with children and undergraduates can be replicated with adults. However, when one considers that

adults (more than younger populations) are required to adapt increasingly to more complex social environments, it seems likely that many adults would be able to adapt and compensate for limitations of their particular cognitive style. For example, many adults who score field-dependent on the GEFT may be capable of being analytical when the situation requires it. In other words, "situations" rather than "person variables" may be the dominant determinant in the adult learner's behavior, at least in relation to the role of cognitive style.

Nisbett and Ross (1980) believe that researchers in the past have underestimated the causal role of environmental influences on behavior. They refer to the "fundamental attribution error" which is the tendency to attribute behavior to dispositions or traits (cognitive style, in this case), while ignoring the influence of the specific situation. They report that research has shown that individual differences in social behavior are not highly consistent across situations and small changes in situations can cause large differences in the behavior of individuals within those situations. This argument does not imply that cognitive style is simply a trait. However, it does appear that Witkin has commited an attribution error in assuming that the behavior of a particular cognitive style is going to be relatively stable and consistent regardless of the situation.

In a similar vein, Mischel (1981) and Bandura (1986) stress the importance of focusing on what individuals do, cognitively and behaviorally, in relation to different conditions, rather than focusing on what individuals are like (traits). Instead of viewing people as situation-free, one needs to consider the interactions between situation and cognitions. Thus, if social problem solving is considered from this perspective, it may be reasonable to expect that how adults solve the problem will be influenced more by situation than by cognitive style. This position was supported by the analysis of the social problem-solving data for this study, as discussed below.

The Nature of Social Problem Solving

Through protocol analysis, three aspects of social problem solving, namely elements, processes, and styles were examined in this study. The first aspect of social problem solving to be examined was the elements or components that people employed in solving the various social problems used in this study.

While a number of models of ideal problem solving have been proposed, very few studies have investigated what elements individuals actually employ in solving problems in applied contexts. Subjects used eight uniquely different elements in solving social problems (stating the problem, analysis, strategies, elaboration, evaluation of strategies, evaluation of self, reasons, and feelings). They employed these elements differently depending on the

type of problem confronting them. On intrapersonal problems subjects showed significantly more analysis and evaluation of themselves. This finding indicates that with problems that focused only on the self, subjects used more internal, introspective elements. They analyzed, assessed, evaluated and questioned themselves before or during the action phase.

Conversely, on interpersonal problems subjects utilized significantly more evaluation of strategies and evaluation of the problem situation itself. When the problem involved other people, subjects were less likely to analyze or evaluate themselves. Instead, they evaluated the situation for what was needed and evaluated the effectiveness of their actions in working on the problem. In summary, with intrapersonal problems, subjects exhibited more internal problem-solving elements, while with interpersonal problems, they were more concerned with the world outside of themselves.

When the problem situations were divided on the basis of complex versus simple, a different configuration of problem-solving elements emerged. On simple problems, subjects generated more strategies and gave more descriptive detail. On complex problems, subjects did not give as many strategies, but instead used more analysis, evaluation of both themselves and the situation, and statement of feelings. Again, these are sensible findings. For more superficial problems such as finding a lost watch,

subjects used a more simple approach. They did not evaluate and analyze as much as they took strategic action. On the other hand, with more complex problems such as dissatisfaction with life, subjects were more contemplative in terms of evaluating and assessing themselves and the problem situation.

Therefore, the kind of problem situation influenced the type of elements subjects included in their problem solving. While type of situation did not influence subjects to perform <u>better</u> in problem solving (generating more strategies), it did influence them to <u>differ</u> in how they solved the problems. Both types of situations, interpersonal versus intrapersonal and complex versus simple, were important in determining which cognitive skill elements subjects used in their problem solving.

One interesting facet of the protocol analysis of problem-solving elements is noted when the results obtained are compared to ideal models proposed by social problem-solving researchers. Two prominent models of applied problem-solving are those described by D'Zurilla and Goldfried (1971) and Spivack, Platt, and Shure (1976). D'Zurilla and Goldfried's model consists of five cognitive steps: (1) general orientation or problem-solving "set", (2) problem definition, (3) generation of alternatives, (4) decision making, and (5) verification or evaluation of solution outcomes. Spivack et al. (1976) also specify five steps in their model: (1) recognition of the range of

problematic situations, (2) generation of solutions, (3) specification of necessary means for solving problems, (4) evaluation of consequences, (5) awareness of motivations of self and others. Even though there are differences in wording and classification, D'Zurilla and Nezu (1982) believe that the five steps of the Spivack et al. model are included in the D'Zurilla and Goldfried model. Thus, the D'Zurilla and Goldfried steps will be used as the basis of comparison for the eight problem-solving elements identified in the present study.

The eight elements of this study can be easily collapsed to six elements. Evaluation of self and evaluation of strategies can be combined to form evaluation in general. Elaborations can also be combined with strategies because most often elaborations consist of added detail about the strategy. The resulting six elements can then be compared to the D'Zurilla and Goldfried model as follows: (1) problem statement is similar to D'Zurilla and Goldfried's general orientation, (2) analysis is included in their problem definition, (3) strategies are identical to their generation of alternatives, (4) evaluation is included in their decision making and verification, and (5) reasons are included in their decision making. That leaves only the category of feelings as not fitting into their model.

From the above comparison, it can be seen that there is similarity between the elements or cognitive skills

actually utilized by subjects in the present study and those proposed as ideal for training programs in social problem solving. No claim is made here, though, that all subjects used all of the above skills. Some subjects only generated strategies without using any analysis or evaluation. However, over half of the subjects used analysis, strategies, evaluation, and reasons, which is consistent with the D'Zurilla and Goldfried model.

In addition to the eight problem-solving elements, three problem-solving styles were also investigated, namely, analytical, affective, and behavioral. Once again, it was interesting to find that subjects, as a group, demonstrated a variety of styles as they approached social problems. However, as individuals, subjects tended to utilize one particular style predominantly, regardless of the type of problem. Seventy-five percent of subjects had at least 5 of 8 problems scored as the same style, while 24% had an equal mixture of behavioral and analytical styles, and to a lesser extent, the affective style. This information is beneficial for increasing our understanding of how subjects approached social problem solving. One of the questions posed by the present study was whether all people solved social problems in the same way. With this sample, it appears that subjects did not have a unitary problem-solving style. This is shown by the breakdown of scores: 49% behavioral, 18.5% analytical, 8.5% affective, and 24% mixed.

When type of situation was considered, there were no significant differences in problem-solving style when complex and simple problems were compared. However, when interpersonal and intrapersonal problems were compared, situation did influence the style used by subjects. On interpersonal problems subjects demonstrated a behavioral style significantly more than the other two styles. This means that on interpersonal problems, subjects concentrated more on action in the external world than they did on analysis in the internal world. For intrapersonal problems, subjects employed a greater variety of problem-solving styles.

The third aspect of social problem solving to be investigated was problem-solving process (sequential, wholistic, simultaneous). As with problem-solving style, the majority of subjects (61%) used one process predominantly (at least 5 of 8 problems), while 39% used a mixture of processes. However, the three processes investigated in this study were not found to be influenced by situation. It seems that subjects were more consistent with the type of process utilized regardless of situational factors. More research is needed to discover what factors affect the use of sequential, wholistic, or simultaneous problem-solving processes.

Of interest to counselor educators is that subjects, as a group, used three distinct processes for solving social problems. Again, this indicates that subjects did

not approach problems in the same way. In addition, while most subjects, as individuals, had one predominant process, most subjects also used more than one process. Therefore, as with problem-solving style, there was variety in how subjects approached social problems.

One last finding of interest from the problem-solving data concerned the relationship between age and problem solving. Older subjects showed significantly more evaluation of strategies and evaluation of self. This suggests that the approach to social problem solving changed with age in this sample. The more life experience subjects had, the more likely they were to evaluate strategies for their feasibility and question themselves in problem situations. These findings are further corroborated by younger subjects having significantly more problems scored as behavioral, indicating that they tended more toward action and less toward introspection and evaluation. This relationship betweeen age and problem-solving elements is consistent with Sinnott's (1983) evidence that social understanding is a cognitive process that increases across adulthood.

At this point one might ask whether the social problem-solving findings from the present study differ from findings with well-structured problems. In a review of the problem-solving literature, Gick (1986) identifies several components of the problem-solving process that appear consistently in research with well-structured problems.

The first component is problem representation which is the problem solver's view of the problem. This is very similar to the element of stating the problem in the present study. Gick (1986) includes analysis as part of problem representation. The second component is searching for a solution and involves both the generation and evaluation of strategies.

When these components are compared to the problem-solving elements of the present study, there appear to be similarities. The same four elements (stating the problem, analysis, strategy, and evaluation of strategy) are present in both well-structured and social problem solving. While Gick does not mention the elements of reason and elaboration specifically, when one examines protocols of well-structured problem solving (Bhasker & Simon, 1977; Chi, Feltovich, & Glaser, 1981), these two elements are present. There appear, however, to be some differences between the two types of problem solving. The subjects in the present study employed the additional elements of evaluation of self and feelings, particularly with intrapersonal and complex problems. It seems reasonable that subjects would be more inclined to include these two elements on problems that involved themselves than they would on more impersonal, well-structured problems. Thus, one of the differences between problem solving with well-structured problems and with ill-defined, social problems may be that subjects are more introspective

with their feelings and self-evaluations on some types of social problems.

Gick (1986) also describes two different problem-solving processes that appear in the literature. With schema-driven problem solving, the problem solver activates a schema (equation or postulate) that leads directly to the problem solution. The other process is search-based problem solving which often involves means-ends analysis (comparing the problem state to the goal state) or dividing the problem into subproblems and then searching for suitable strategies and an appropriate order for completing the subproblems. When these two processes are compared to the processes employed by subjects in the present study, the schema-driven process seems similar to the wholistic process in that both focus on one major solution to the problem. In addition, the search-based process seems similar to both the sequential and simultaneous process in that all three processes employ a number of strategies to arrive at a solution. Thus, there appear to be similarities between problem-solving processes for well-structured and ill-defined, social problems.

One aspect of social problem solving, however, that does not seem to be accounted for in the well-structured problem-solving literature is problem-solving style. This absence of problem-solving style in the literature may be due to lack of direct assessment of style in previous

studies. On the other hand, it may be that well-structured problems lend themselves more readily to one style (analytical) and thus differences in problem-solving style have not been noted. It seems likely that the complexity of social problems would stimulate a greater variety of styles, including behavioral and affective, than would be present in well-structured problem solving.

In summary, while there appear to be some similarities between the elements and processes utilized by subjects for both types of problem solving, there are also differences. Social problem solving in the present study appears to include more evaluation of self and feelings, plus a greater variety of styles for approaching the problem. These similarities and differences, however, were not measured directly in this study and further research is needed to corroborate these ideas.

Overall, the results of this investigation suggest that with an adult counselor sample, situational variables have more explanatory power for empathy and social problem solving than does cognitive style. While cognitive style appears to relate to a number of different variables with younger populations, it is questionable whether it has as much influence on adult counseling behavior, with its greater diversity and complexity. In addition, this study clarified the many components of the social problem-solving process and provided empirical support for the D'Zurilla and Goldfried (1971) model of social problem solving. From

analyzing the social problem-solving elements, styles, and processes, it is clear that subjects approached social problem solving in different ways. From this finding, one can postulate that it makes more conceptual sense to investigate how subjects differ in their approaches to social problems than it does to focus on which subjects are better problem solvers. When there are so many possible solutions and approaches to a social problem, it seems more beneficial to examine the process involved rather than the specific outcome.

Suggestions for Future Research

When directions for future research with these variables are considered, several possibilities emerge. First, as indicated above, there appear to be serious difficulties with the way in which the cognitive styles of field dependence and field independence are measured, especially in relation to social problem solving in an adult population. If cognitive style is truly a pervasive domain that cuts across cognitive, personality, and interpersonal aspects of the adult, then it needs to be measured in a variety of ways, as is done with intelligence testing (verbal, spatial, numerical), rather than with a single, spatial perception measure. Messick (1984) recommends employing interpersonal skill measures of field dependence in addition to embedded figures tests. Then field dependence versus field independence could be determined by an intraindividual contrast between social

skill and analytical skill.

In recent years, Witkin et al. (1979) have developed a more complex theory of psychological differentiation in a broader framework that encompasses field independence. Psychological differentiation has at its core three types of differentiation: a distinction between self and nonself, a segregation of psychological functions, and a segregation of neurophysiological functions. The field-independence construct is placed in the self-nonself category as a process variable. It appears that Witkin et al. realized some of the limitations of the field-independence construct and thus developed psychological differentiation as a higher-order construct that could better account for phenomena that could not be accommodated by the lower-order construct of field independence.

Most research continues, however, to measure only one aspect of this theory: field independence. What is clearly needed is a variety of measures that will tap other aspects of psychological differentiation. It may be that psychological differentiation will prove to be more effective in explaining individual differences among adults than cognitive style alone.

In addition, more research needs to be conducted with the adult learner population to verify the applicability of cognitive style findings from younger populations. As

research with adults continues to increase, the inadequacies of some theories developed with younger populations are becoming apparent. Most notable is adult research based on Piagetian theory in which a fifth, "relativistic" stage is proposed that better explains adult reasoning than the previous final stage, formal operations (Commons, Richards, & Kuhn, 1982; Labouvie-Vief, 1982; Pascual-Leone, 1983; Sinnott, 1983). The same situation may be repeated with cognitive style. Increased research with adults may lead to theory revision.

The above recommendations for future research with cognitive styles also apply to further research with social problem solving. Knowledge about social problem solving would be increased by measuring it in a variety of ways. In this study, it was assessed by observing and analyzing verbal responses and then inferring cognitive processes from those responses (analysis, evaluation). This type of measure provides information about how individuals typically think about social problems.

One of the limitations of this approach, however, is that because subjects' thoughts are condensed into written form, a full picture of their thinking process is not obtained. To counteract this problem, think-aloud procedures have been proposed in the research literature on problem solving (Ericsson & Simon, 1984; Giambra & Arenberg, 1980). With this procedure, subjects' statements are recorded verbatim as they repeat aloud their thoughts

during the process of problem solving. The resulting protocols provide a great deal of information about subjects' cognitive processes, emotions, and self-awareness levels during problem solving.

The think-aloud procedure also allows for another level of cognition to be studied, namely metacognitions. Butler and Meichenbaum (1982) describe metacognitive knowledge as the individual's awareness of cognitive rules, their own cognitive ability, and their regulation of their cognitive processes. These metacognitions are believed to have a significant impact on problem-solving performance and, thus, warrant further study.

In addition to investigating further the cognitions and metacognitions that are assumed to underlie social problem-solving, actual in vivo problem-solving behavior needs to be examined. This would require the addition of observational methods in naturalistic settings to assess whether social problem solving cognitions do in fact mediate problem-solving behavior. To accomplish this goal, Butler and Meichenbaum (1982) highlight the need for the development of innovative techniques for studying the complexity of variables that may mediate the translation of problem-solving thinking into "real-life" behavior in problem situations. The techniques of thought-listing and prompted recall in in vivo contexts are two such innovative assessment methods that are increasingly being utilized for this purpose (Merluzzi, Glass, & Genest, 1981).

There is also a need to study the development of social problem-solving skills and cognitions over the life span in order to further the understanding of adult problem-solving behavior. Realizing this objective will require the development of comparable but age-appropriate measures of social problem solving for different age groups to be used in longitudinal research projects (Butler & Meichenbaum, 1982).

As with cognitive style, social problem solving is a complex process and it is unlikely that it can be adequately measured and understood with only one type of assessment method. Therefore, future research needs to utilize a variety of techniques simultaneously to assess better the full dimension of social problem solving.

Besides increasing the types of assessment tools, though, researchers also need to increase the number of factors they examine as influential variables in the problem-solving process. In this study, two variables, cognitive style and situation, were examined for their influence on social problem solving. However, there are many other variables besides these two that impinge on social problem solving and they need to be included in future research.

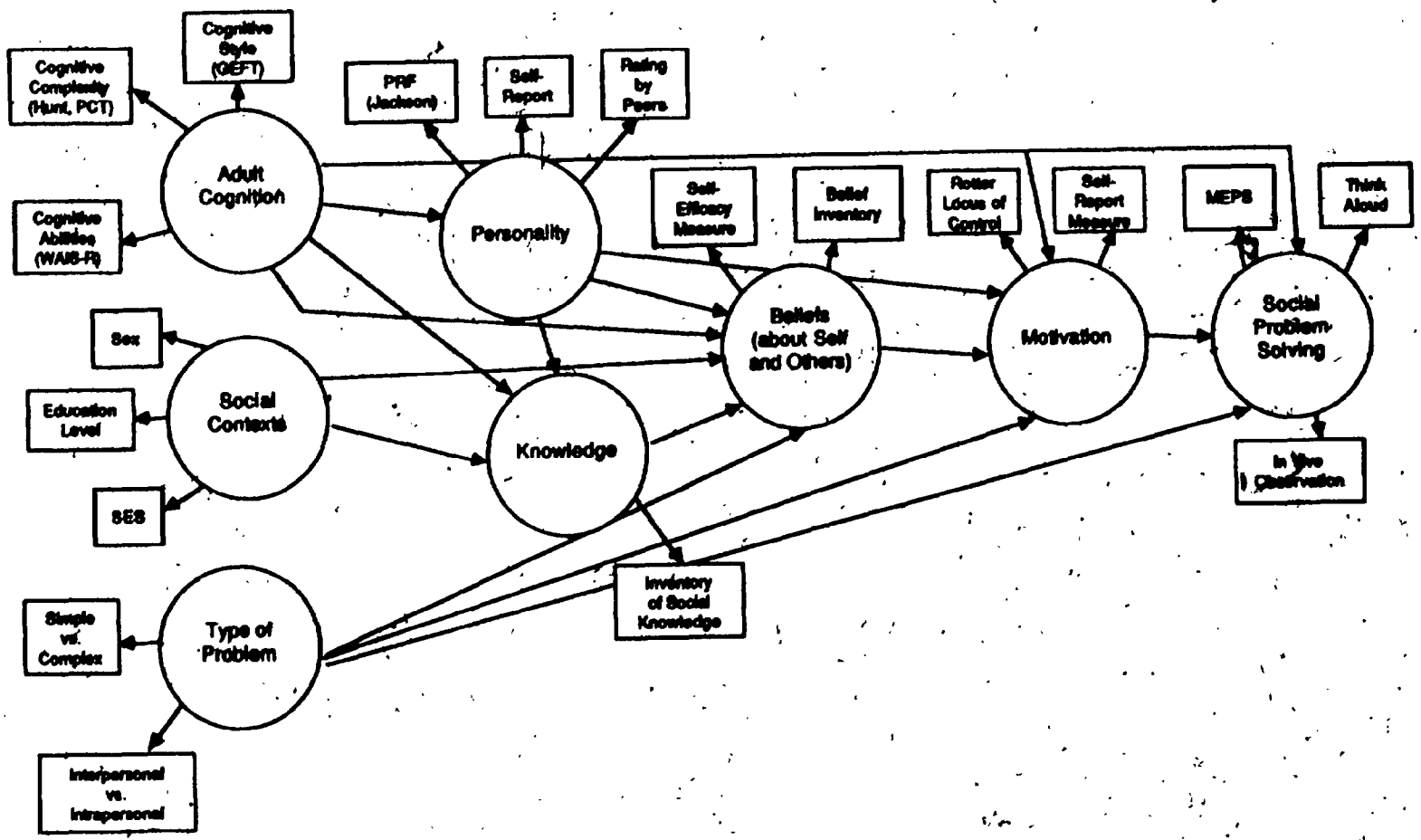
Cavanaugh, Kramer, Sinnott, Camp, and Markley (1985) suggest that one way of accounting for a number of problem-solving variables, both theoretically and

empirically, is through causal modeling (Bentler, 1980). Causal modeling has several advantages. Through its use, the researcher is able to consider sets of multivariate relationships and examine complex interrelationships among hypothetical constructs. For example, it allows the researcher to use several measures of each construct as has been recommended above with cognitive style and social problem solving. It also clarifies the underlying implications of the research by making hypothesized theoretical interrelationships among variables explicit in a directional way.

Cavanaugh et al. (1985) propose a complex causal model for strategy selection, one aspect of social problem solving. This model has been modified by the present investigator to include the variables in this study plus additional variables that describe more completely some of the possible influences on social problem solving. The model, presented in Figure 7, suggests an interconnection of postulated causal relationships among a number of constructs. Briefly, social problem solving at any one point in time is hypothesized as being determined by one's cognitive skills, social contexts, knowledge, personality, beliefs about one's abilities, level and type of motivation, and the type of problem to be solved.

Each of these constructs could then be measured in a variety of ways. For adult cognition, the GEFT could be combined with measures of cognitive complexity (Hunt,

Figure 7
Causal Model for Social Problem Solving



Butler, Noy, & Rosser, 1976) and cognitive ability (Wechsler, 1983). In a similar manner, personality could be assessed through an objective measure, such as the Personality Research Form (Jackson, 1974) as well as through evaluation by peers. Lastly, social problem solving could be measured by the MEPS, think-aloud procedure, and in vivo observation. Most likely a model of this nature would be better able to explain the multiple influences on social problem solving.

Conclusions

As stated earlier, adult educators (Brundage and Macheracher, 1980; Cross, 1982; Lovell, 1980) have advocated the inclusion of the cognitive styles of field independence and field dependence as a way of describing and understanding individual differences present in the adult learner population. It appears, however, that cognitive style may not be as helpful as these authors had hoped. In the present study, situational variables had a more powerful influence on subjects' behavior (empathy and problem solving) than did cognitive style. No claim is made, however, that situational variables are all that is needed to explain all differences present in adult learners. The likelihood is small that any one theory or variable could explain adult behavior. The complexity of adult behavior requires a number of different theories and models to provide a comprehensive enough framework for effectively delivering instruction and facilitating the

learning process in the field of counselor education. Therefore, it is recommended that counselor educators conceptualize the adult by using a multiplicity of theories and constructs, rather than relying on any single concept to explain individual differences.

35

Note

1. Pedhazer (1982) argues against categorizing variables such as field independence and recommends the utilization of regression analyses for such variables. Therefore, regression analyses were performed on the same variables that were included in each of the MANOVA's in this study. Because the same pattern of results were obtained from both the regression analyses and the MANOVA's, only the MANOVA results are presented.

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Appendix A

Scoring Sheet for Group Embedded Figures Test

GEFT-SCORING KEY

THIRD SECTION

1
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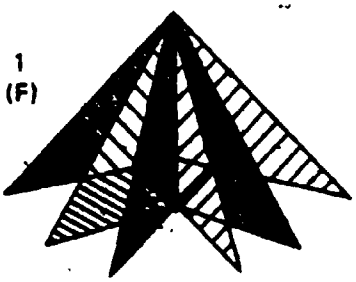

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(G)

3
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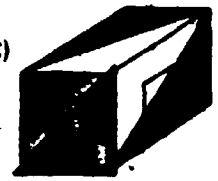

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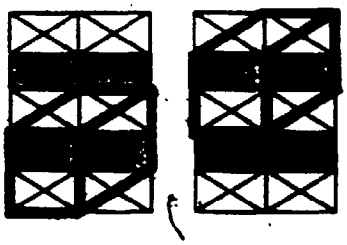

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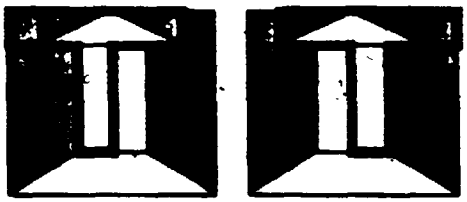

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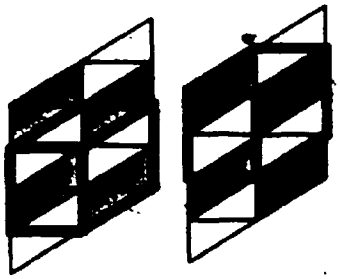
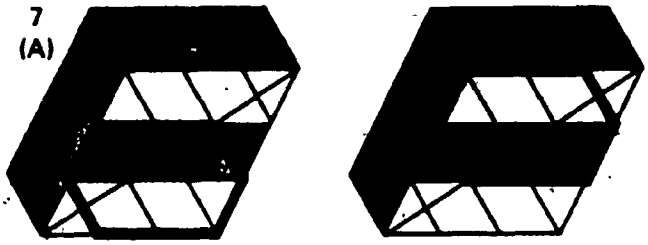
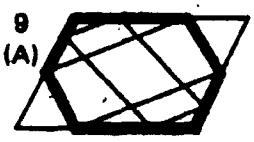


7
(A)



8
(C)

9
(A)



Appendix B

Index of Responding

Index of Responding

The following index contains eight different situations representing a person talking to someone else (you) about things personally meaningful to the speaker.

Each situation is a separate event. Do not attempt to relate one to the other. You may consider the different speakers to be persons who have come to see you in a time of need. He or she has turned to you for understanding, assistance; in short, for a helpful response.

For each statement assume that you are the helping person (facilitator) and write your response exactly as you would say it to the person seeking help. You are to use the description below by Carkhuff (1969) of a helping person (facilitator) to guide you in formulating your responses to the stimulus statements in the Responding Index.

> The facilitator is a person who is living effectively himself and so discloses himself in a genuine, constructive fashion in response to others. He communicates an accurate empathic understanding and a respect for all of the feelings of other persons and guides discussions with those persons into specific feelings and experiences. (p. 121)

Situation I - (Comments of student to his chemistry teacher)

I spent all weekend working on my chemistry equations and you know, I really understand them now. I left school Friday feeling really depressed, but the work I did over the weekend paid off. I feel just great now!

Write what you would say:

Situation II - (Native student to white teacher after school)

Why do you always pick on me in class? You don't do that to the other kids. You know, I used to think you were a fair person but lately I get the feeling you are picking on me because I'm a Native.

Write what you would say:

Situation III - (Student to teacher)

I sure am happy since we moved to this town. It is just great! I have met so many nice people and I go to parties now. I'm ten times as happy as I've ever been!

Write what you would say:

Situation IV - (Grade Twelve student to teacher)

You're the best teacher I've ever had. It's been great being in your class! You were the only teacher who didn't make me feel like I was in terrible trouble if I didn't get everything perfect.
Write what you would say:

Situation V - (Student to teacher)

I don't know why I act up in class. I'm pretty mixed up right now about what's going on with me and what I'll be doing after high school.
Write what you would say:

Situation VI - (Teacher to counselor)

I feel like one of my students is using some kind of drug. He sleeps through classes and really acts kind of "doped up." I don't know whether to talk to him, or the principal, or his parents. I don't know how to handle this.
Write what you would say:

Situation VII - (Student to teacher)

I don't want to study history. It has no meaning to me. It's hard and I can't see how it's ever going to help me earn a living.

Write what you would say:

Situation VIII - (Comments of one teacher to another)

I'm really burned up! Bill Jones lets his students run wild in his class. Then they come into my class thinking they can do the same thing.

Appendix C

Scoring Manual for Index of Responding

General Guidelines for Assigning a Response Rating

1.0

An irrelevant or hurtful response that does not appropriately attend to the surface feelings of the helpee. However, in instances where content is communicated accurately, it may raise the level of the response.

1. No awareness of client feelings or content.
2. Put downs.
3. Inappropriate question for information.
4. Inappropriate change of focus.
5. Focus on 3rd party.
6. Cliche.
7. Advice, pontificating.
8. Inappropriate self-disclosure.

2.0

A response that only partially communicates an awareness of the surface feelings of the helpee. When content is communicated accurately, it may raise the level of the response; it may lower the level of the response when communicated inaccurately.

1. Jumping to conclusions.

2. Misinterpreting client feelings.
3. Distorting client's meaning.
4. Judgments.
5. Content only without accompanying feeling.
6. Information giving.
7. Parroting.
8. Vague response.
9. "How do you feel about that?"
10. Weak or partial reflection of feelings.
11. Wordy 3.0.
12. Premature 4.0.

3.0

A response conveying that the helpee is understood at the level he/she is expressing himself/herself; surface feelings are accurately reflected. Content is not essential, but when included, it must be accurate. If it is inaccurate, the level of the response may be lowered.

4.0

A response conveying that the helpee is understood beyond his/her level of immediate awareness; underlying feelings are identified. Content is used to complement affect, in adding deeper meaning. If content is inaccurate, the level of the response may be lowered.

Scoring Manual for Index of Responding

Sample Responses for Items

Situation I - (Comments of student to his chemistry teacher)

I spent all weekend working on my chemistry equations and you know, I really understand them now. I left school Friday feeling really depressed, but the work I did over the weekend paid off. I feel just great now!

1.0 It's about time you started working on your chemistry.

2.0 If you spend a lot of time studying, you will find out how exciting chemistry can be.

3.0 Hard work over the weekend really paid off for you. You not only understand your work, but your depresssion lifted, too.

3.0 Investing time in your studies has really made you feel proud of yourself.

4.0 You were really worried whether you understood the chemistry equations, but your hard work was rewarded and now you feel more confident.

4.0 You were doubting yourself on Friday, but after your hard work, you have more faith in yourself.

Situation II -- (Native student to white teacher after school)

Why do you always pick on me in class? You don't do that to the other kids. You know, I used to think you were a fair person, but lately I get the feeling you are picking on me because I'm a Native.

1.0 Now you know, son, that I am completely fair with everybody. Everyone who needs to be corrected is corrected in class, no matter who they are.

1.0 You're just going to have to shape up or ship out. Either do the work or pay the consequences.

2.0 I can see that you are upset, but I don't understand what I've done to affect you this way.

2.0 You feel I'm being unfair to you because you're Native?

3.0 You're upset because you feel I've treated you unfairly.

3.0 You're angry because you feel I'm discriminating against you when you didn't think I was before.

4.0 You're feeling pretty angry and disappointed with me because I seem to not care about you.

4.0 Sometimes you feel you can trust me and sometimes you think I'm just as bad as other white people.

Situation III - (Student to teacher)

I sure am happy since we moved to this town. It is just great! I have met so many nice people and I go to parties now. I'm ten times as happy as I've ever been.

1.0 Don't be too sure all these parties are good for you. All of the teachers have heard about what goes on at high school parties.

2.0 Going to parties is something new for you.

2.0 I guess you're saying you have never been this happy in other towns.

3.0 You're really happy since you moved here, happier than you've been for a long time.

3.0 You're feeling elated that life is falling into place for you.

3.0 You feel accepted and comfortable in your new community now and no longer want to return to where you lived before.

4.0 It sounds like you are finally feeling some self-confidence and are pleased with how well you are fitting in.

4.0 You're enjoying making a new beginning. It sounds like you were feeling lonely before.

Situation IV - (Grade twelve student to teacher)

You're the best teacher I've ever had. It's been great being in your class! You were the only teacher who didn't make me feel like I was in terrible trouble if I didn't get everything perfect.

1.0 Oh, I'd have done that much for anybody.

2.0 It was a pleasure having you in my class. I enjoy all of my students.

2.0 Thank you for telling me that. You've made my day.

2.0 Thank you! You felt really comfortable being in my class and I enjoyed having you.

3.0 It seems that you've been under a lot of pressure to be the perfect student.

3.0 You get annoyed when everyone expects that you must have everything perfect.

4.0 You're grateful that I never gave you heck and made you feel inadequate if you made a mistake.

4.0 You've enjoyed my class because you felt I accepted you as you were and didn't try to make you into something you're not.

Situation V - (Student to teacher)

I don't know why I act up in class. I'm pretty mixed up right now about what's going on with me and what I'll be doing after high school.

1.0 Well, that's no excuse for you not acting well in class.

1.0 Things will straighten out if you give them time.

2.0 So, you don't know why you're acting up in class.

2.0 It seems that things aren't going very well right now for you.

3.0 The future has you confused and unable to explain why you're acting this way in class.

3.0 Trying to decide what to do after high school is upsetting for you.

3.0 You're unsure whether your confusion about yourself and your future is affecting your behavior in class.

4.0 Your concern about the future is pretty disturbing to you and is putting you in a turmoil.

4.0 The mess inside of you makes you feel awful and like you want to strike out anywhere.

Situation VI - (Teacher to counselor)

I feel like one of my students is using some kind of drug. He sleeps through classes and really acts kind of "doped up." I don't know whether to talk to him, or the principal, or his parents. I don't know how to handle this.

1.0 You know as well as I do that drug abuse is against the law. Call the kid's parents and let them straighten him out.

2.0 I can understand how you feel. Have you thought about who could best answer your questions?

2.0 This is a problem for a lot of teachers since some students really don't trust them.

2.0 Well, maybe we could look at some of your alternatives.

3.0 You're quite concerned about this student and although you want to do the right thing for him, you are not sure what the right thing is.

3.0 You feel mighty darn helpless as a teacher, wanting to help but not knowing how.

4.0 You're angry as hell at this kid who sits there and sleeps and then you're held responsible!

4.0 You're caught in the middle and you expect that you should know what to do, but it's scary to talk to parents without having some answers for them.

Situation VII - (Student to teacher)

I don't want to study history. It has no meaning to me. It's hard and I can't see how it's ever going to help me earn a living.

1.0 There's more to life than just earning a living, young man.

1.0 Ancient history can have much meaning to you. Present events can be understood better with historical perspective.

2.0 I guess you're just sick of history.

2.0 What is it about history that you don't like?

2.0 You really think history is a useless subject.

3.0 You seem to find ancient history unnecessary and difficult, and it doesn't seem to be related to any job you will ever have.

3.0 You're wondering why you should have to study something that doesn't have any meaning for your life now.

4.0 It sounds like you resent having to study a subject that doesn't seem to have any payoff for you.

4.0 You're really upset that you have to study something that seems so valueless to you.

Situation VIII - (One teacher to another teacher)

I'm really burned up! Bill Jones lets his students run wild in his class. Then they come into my class thinking they can do the same thing.

1.0 You can't blame him for their behavior in your class.

1.0 I suppose we all have different methods of discipline.

2.0 That sure is a problem to have the kids running wild.

2.0 That's tough. Maybe we can think of some ways to deal with it.

3.0 You're angry that you have to "clean up" after Bill.

3.0 You're upset with the way Bill runs his class because it affects their behavior in your class.

3.0 That must be really frustrating for you to have to continually set standards in your class.

4.0 You resent having to work extra hard because he's gooling off.

4.0 You'd like to do something about it but are fearful that talking to Bill or the principal will just make it worse for you.

Appendix D

Suggestion Sheet for Client Concerns

Suggestion Sheet for Client Concerns

During the practicum part of the course, you will be asked to be a client a number of different times. Sometimes it is difficult, at first, to know what kind of concerns to discuss as a client. Here are a number of different ideas to get you started. They are organized under "self" concerns and interpersonal concerns because we are interested in counselors having experience dealing with both kinds of issues and because each of you as a counselor will be asked to turn in your last two taped interviews: one with an interpersonal client concern and one with a client "self" concern.

Interpersonal

Interpersonal issues are concerned with you and any other person in your life (family member, friend, peer, boss). The issues may involve conflict or they may just be concerned with wanting to improve a particular relationship. Sometimes it is problematic to figure out compromises between the conflicting demands of spouse and children or between work and family. All of these and others are ideas for interpersonal client concerns.

Self

Self issues are more focused on just yourself, apart from others. This can involve wanting to

explore, understand, and maybe change or accept a part of yourself that is problematic, for example, your procrastination, loneliness, stubbornness, anger, or shyness. It may be focused on internal conflict, for example, when you want two conflicting things at once or when you both want and don't want something. Or you could assess your life so far and explore goals you would like to set you yourself for the next five years. These are just a few of many possible topics you could discuss that focus on you as opposed to concerns that are more interpersonal in nature.

Appendix E

Instructions for Rating Tapes for Empathy

Instructions for Rating Tapes for

Empathy

1. Set tape recorder counter to 0.

2. Rate the first ratable counselor response after 50 feet (see next page for unratable responses).

3. Write the responses and their footage on a separate sheet of paper, one sheet for each tape.

4. Rate the following counselor responses at 50 feet intervals after the first response that you rate. However, if the first response is at 50 feet, still score the next ones at about 100, 150, etc.

5. If a response is not ratable for empathy, skip it and move to the next response.

6. Score 7 responses and write out each of these responses on a separate sheet of paper. For long responses, put only the first and last sentence.

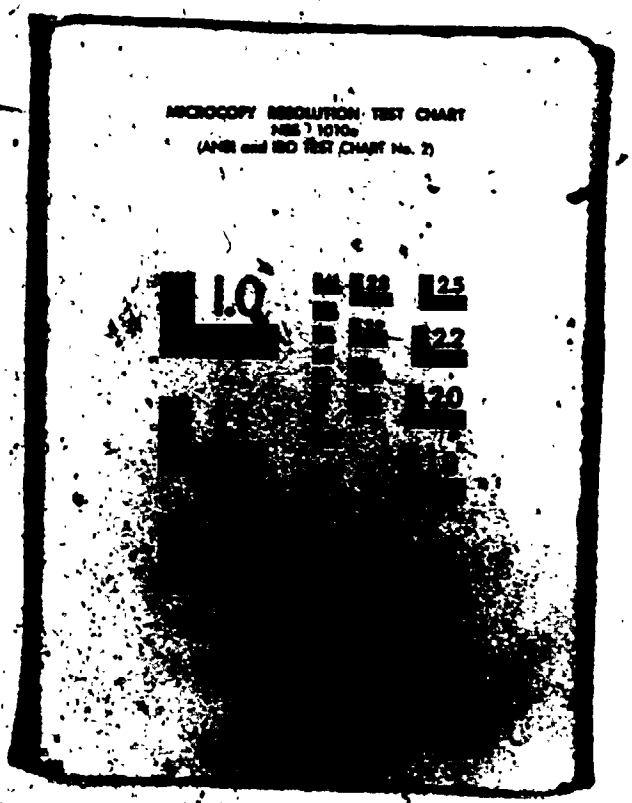
7. Record the ratings for each response on the recording sheet and average them.

8. Do either the "self" side of all of your tapes first or the interpersonal side first. Record your ratings and do not look at that rating sheet again. Then go back and rate the other side of your tapes. Write down the responses on the reverse side of the sheet of paper with each tape and record your ratings on a new recording sheet.

intrapersonal problems. $F(1,67) = 11.86$ and -11.35 respectively, $p < .001$ in each case. These results indicate that subjects were more likely to begin solving a self problem by writing something similar to the following: "First, I would sit down and try to analyze what was dissatisfying about my life" (analysis). When working on intrapersonal problems, subjects were also more likely to include statements like the following: "I usually do better as soon as I start to take a closer look at problem areas" or "Am I being fair or pressing too hard or am I a push-over with my students?" (evaluating self).

On the other hand, subjects showed significantly more evaluation of strategies (and evaluation of the situation) with interpersonal problems than with intrapersonal problems, $F(1,67) = 10.38$, $p = .002$. For example, subjects were more likely to write statements like the following: "The indirect approach with this principal might be more effective" (evaluating a strategy), or "As far as meeting your neighbors, friendships take time and are an ongoing process" (evaluating the situation).

When these types of statements are considered, one can see the logic of subjects employing more evaluation of things outside of themselves (the situation, the other person, the approach they are taking) when solving interpersonal problems, because these problems by their very nature involve more of the outside world. Similarly, one can understand the reasonableness of subjects engaging


MICROCOPY RESOLUTION TEST CHART
NBS 1010a
(ANSI and ISO TEST CHART No. 2)
1.0
2.5
2.2
2.0

Guidelines for Unratable Responses

If any of the following responses fall at the 50-foot interval, do not rate them, but go on to the next counselor response.

1. Minimal encouragers:

"Uh uh; oh; yes; yeah; I see; right."

2. When the client asks the counselor a question and the counselor responds to that question.

3. Requests for more information or clarification that are appropriate and not an avoidance of feelings:

"Is Ed your brother or husband?"

"Tell me more about that."

"I'm not sure what you mean by that."

4. Responses of concreteness that are appropriate and not an avoidance or change of topic:

"Could you give me an example of when you have been out of control with anger?"

"You said you think you turn people off. What makes you think that?"

"What is your anxiety all about?"

5. Structuring or focusing responses that are

appropriately timed:

"Maybe we could look at this in more detail."

"You talked earlier about being lonely. How does that fit with what you are telling me now?"

6. Sometimes what appears to be 2-3 counselor responses is really one response broken up by the client agreeing. Treat these as one response and give one rating for the entire segment taken together:

Co: So, you're feeling confused about this.

Cl: Ya, right.

Co: And you're finding that it is negatively affecting your work.

Cl: Ya, that's true.

Co: And you want to get it settled soon.

Appendix F

Means-Ends Problem-Solving Procedure

Means-Ends Problem-Solving Procedure

In this procedure we are interested in your problem solving. You will be given eight problem situations and told the outcome of each situation. Your job is to write how you would solve this problem by connecting the beginning that is given to you with the ending that is given to you. Write at least one paragraph for each situation.

1. You come home after shopping and find that you have lost your watch. You are very upset about it. You eventually find your watch and feel good about it. You begin where you find that you have lost your watch.

2. You have just moved into a new neighborhood and do not know anyone. You want to make friends in this neighborhood. The situation ends with you having good friends and feeling at home in the neighborhood. You begin the story in your room immediately after arriving in your new home.

3. You need money badly and must get more. The situation ends when you succeed in getting the money you need. The situation begins when you realize how badly you need the money.

4. One day you see a wonderful person you have never seen before while eating in a restaurant. You are immediately attracted to this person. The situation ends with you getting married to each other. You begin by first noticing the other person in the restaurant.

5. You are feeling that your teaching is not going well and would like to make some improvements. The situation ends with you feeling good about teaching. You begin when you first realize that your teaching is not going well.

6. You love your spouse (or significant other) very much, but you have been having many arguments. One day your spouse leaves you. You really want things to be better between the two of you. The situation ends with everything being fine between you and your spouse. You begin with your spouse leaving you after an argument.

7. You are finding lately that your life is not as satisfying as you would like it to be. The situation ends with you feeling more satisfied with your life. You begin when you first realize that you are feeling dissatisfied.

8. You are having trouble getting along with your principal and are unhappy about this. The

situation ends with your principal liking you. You begin where you are not getting along with your principal.

Appendix G

Scoring Manual for Problem-Solving Protocols

185

Scoring Manual for Problem-Solving Protocols

Unitizing Rules

I. Separate units are denoted by the following:

A. Sentence structure.

B. Changes of content within the sentence.

II. Sentence Structure

A. Set off as a separate unit any sentence which identifies one complete thought.

Example (units noted by slash marks):

1. Watch problem

"I have tried to retrace my steps for the immediate past./ Nothing occurs to me."/

III. Changes of Content Within the Sentence

A. When a conjunction such as "and, but, because, although, because, so, or since" appears, check the statement to see if there are two separate units on each side of the conjunction. If the conjunction is followed by an action verb, most often (not always) it will begin a separate unit.

Example: Restaurant Problem

"I would get someone else to introduce us/ or I would get in an activity with him where it would be natural to introduce myself."/

B. In some cases, the presence of a conjunction does not denote separate units.

186

1. Do not unitize when the conjunction is in a list that accompanies one action verb.

   Example: Money problem

   "I started by listing my income sources, day-to-day expenses, and present debts."/

2. Do not unitize when the meaning of statements joined by the conjunction requires that they stay as one unit to be understood. Often, even though there are two action verbs, they constitute one complete action.

   Example: Money Problem

   "I sit down with pad, pen, and calculator to rearrange my budget."/(one unit)

3. Do not unitize when the statements on each side of the conjunction have the same meaning.

   Example: Teaching Problem

   "I talked to a few of the students in the class and asked them for suggestions to make things better."/(one unit)

4. Do not unitize statements that contain, or are preficed by, the conjunction "if" denoting suppositions or hypothetical conditions.

   "After a few months, if it was going well, I would want to live together for a year."/

Scoring Manual for Problem-Solving Elements

After the protocols have been unitized, each unit needs to be placed in a scoring category. These scoring categories represent aspects of the problem-solving process. They are mutually exclusive in that one unit can be placed in only one category. The eight scoring categories are labeled as follows:

1. State the problem (P)
2. Analyze the problem (A)
3. State a strategy (St)
4. Elaborate the strategy (El)
5. Evaluate the strategy or situation (Ev St)
6. Evaluate the self (Ev Self)
7. Reason for strategy (R St)
8. Statement of feelings (F)

I. State the Problem (score "P")

A. The subject describes the problem or "sets the stage" before taking any action, doing any analyzing, or assessing the problem.

Example: Restaurant Problem

188

"I was traveling on business and I usually eat alone./(P) I went to a Japanese restaurant one night for a change."/ (R)

B. If the statement goes beyond a description of the problem, do not score it "P."

Example: Teaching Problem

"Once I realized that things were not going well, I had to identify my weaknesses."/ (Analysis)

II. Analyze the Problem (score "A")

A. Units which directly or indirectly indicate that the problem solver is analyzing the problem before taking other steps or action are scored "A." With analysis, the subject is doing mental work before taking action.

Examples: Unsatisfying Life Problem

"I would first try to analyze what isn't satisfying about my life right now."/(A)

"I sat down by myself and considered each area of my life in turn."/ (A)

B. Units which indicate that the subject is simply remembering information are not scored as analysis.

Example: Watch Problem

"I'd think about places I had been that day."/(Strategy of recall, not analysis)

III. State a Strategy (score "St")

189

A. Units which describe a strategy, an approach, an idea, or an action that can be used with the problem situation are scored "St."

Examples: Principal Problem

"I prepared a list of specific things I did not like about my relationship with my principal."/ (St)

"I would talk to a few other teachers about their reactions."/ (St)

B. Strategies are not only behavioral actions, but also include cognitive strategies.

Example: Unsatisfying Life Problem

"After tolerating this state for some time, I finally decided that I have to do something to change things."/ (St)

C. Strategies can also emanate from people in the problem situation other than the problem solver. This is particularly true in the stories dealing with meeting people.

1. Neighbors Problem

"Being shy, I might wait for the neighbors to say something to me."/ (St)

2. Restaurant Problem

"I'd wait for him to ask me for a date or for my phone number."/ (St)

IV. Elaboration (score "El")

A. Units which are not a separate strategy in

190

themselves, but rather describe in more detail a strategy or approach are scored "E1."

Example: Watch Problem

"I'd then call the stores that I'd been in since the last time I remember seeing my watch./ (St) If they didn't find my watch, I'd not go and look myself."/ (E1)

B. Units which give more descriptive detail about the story situation are also scored "E1."

Example: Neighbors Problem

"I just plugged the kettle in for a cup of tea; would you like to join me?"/ (E1)

V. Evaluate a Strategy or the Problem Situation (score "Ev St")

A. Units which evaluate or judge the feasibility, effectiveness, or desirabiliby of a strategy are scored "Ev St."

Example: Money Problem

"I could make money typing theses./ (St) I don't want to do this because it will cut into my free time."/ (EvSt)

B. Units which evaluate the problem situation or other people in the problem situation are also scored "Ev St."

Examples: Restaurant Problem

"I decide to move in with him./ (St) After two years, I feel sure he's the right

191

man for me."/ (Ev the other person)

"A restaurant isn't a very good place to meet someone."/ (Ev the situation)

VI. Evaluate Self (score "Ev Self")

A. Units which evaluate or judge the subject are scored "Ev Self." These units have a quality of introspection to them.

Examples:

1. Neighbors Problem

"I think I'm better at encouraging or responding to friendly contacts, rather than initiating them."/ (Ev Self)

2. Teaching Problem

"I would try to analyze what was wrong with my teaching./ (A) Is it that I haven't been spending enough time preparing?/(EvSelf) Is it that I have too much else occuring in my life so that I'm not doing well?"/ (Ev Self)

VII. Reason for Strategy (score "R St")

A. Units which give a reason or explanation for a particular strategy are scored "R St." These units are sometimes part of a sentence and often begin with the conjunctions "so, that, since, because, to see, in order to." These reasons are distinguished from evaluations in that they do not convey a sense of judgment.

Examples: Spouse Problem

"We spent the weekend alone at a local hotel./ (St) (This was my idea so that our talks wouldn't be interrupted by friends dropping in)."/ (R St)

"Since my need to feel cared for is opposite to his need to feel free,/(RSt) we generate new ways to meet both of our needs."/ (St)

B. Reasons can also be linked to feelings and evaluations, not just to strategies.

1. Teaching Problem

"My sense of inadequacy is just a misperception/ (Ev Self) because I'm comparing myself to a perfect standard."/ (R)

2. Unsatisfying Life Problem

"I've recently been feeling uneasy/ (F) because I don't have a sense of direction in my life."/ (R)

VIII. Statement of Feelings (score "F)

A. Units which report how the subject feels about the problem, about one of the strategies, or about the outcome of the problem solving are scored "F." Sometimes these units are very specific expressions of feelings (e.g. lonely, angry, happy) and

193

sometimes they are more general (e.g. "feeling better about myself," "sitting here with all of these feelings," "feeling understood by my spouse.")

Examples:

1. Unsatisfying Life Problem

   "I felt satisfied that I had decided to get out of my rut."/ (F)

2. Watch Problem

   "I feel somewhat panicky/ (F) and begin to search my pockets."/ (St)

Scoring Protocols for Problem-Solving Style.

Once the individual units of the protocol have been scored, then the protocol as a whole is analyzed to assess the style the problem solver has used. There are three categories representing three mutually exclusive problem-solving styles. The three scoring categories are as follows:

1. Analytical
2. Affective
3. Behavioral

Analytical Problem-Solving Style

This style is characterized by a cognitive approach that does not include feelings. The problem solver not only presents strategies for dealing with the problem, but also analyzes the problem, gives reasons for strategies, evaluates strategies, and elaborates strategies more often than in the other two categories. There is evidence of mental work occurring either before action is taken to solve the problem, or during the actual problem solving. The order for this style varies, but most often fits into one of the two following

patterns:

Analyze-strategy-reason-elaboration-strategy

Strategy-reason-evaluate-strategy

Example: Neighbors Problem

"The first thing I did was to call 'Welcome Wagon' and make an appointment./ (St) since I thought they might be able to give me neighborhood information such as parks, local organizations (e.g. lobby groups, Block Parents, etc.) which I might be interested in./ (R St) Also, I thought that this might help the more informal process of people finding out about me and then initiating contact./ (R St) (I think I'm better at encouraging or responding to friendly contact, rather than initiating them)./ (Ev Self) The other thing I did was try to spend a lot of time outdoors (taking walks, washing my car, etc.)/ (St) to maximize the likelihood of chance meetings with my neighbors./ (R St) I found that this was too slow a process for my liking/ (Ev St), so I went to my immediate neighbors' homes to ask them information such as 'where is the best supermarket in the area?"/ (St) After these initial meetings, I started to invite my neighbors into my home (for coffee)/ (St) and to get involved in the local "goings-on" such as garage

sales, petitions./ (St) Gradually I made friends."/ (Ev St)

Affective Problem-Solving Style

This style is characterized by the inclusion of the problem solver's feeling or affective state during the problem-solving process. Most often, problem solvers begin with their feeling reaction to the problem and their feelings about having solved the problem at the end of the protocol. Sometimes a feeling reaction is also included about the strategies being presented. While the analytical problem-solving style often includes evaluation of a strategy, in the affective style, evaluation is more likely to be about the self. In general the order for this style is as follows:

Feelings - evaluate - strategy - elaborate - reason - feelings

Example: Neighbors Problem

"I'm in my room and feeling somewhat anxious./ (F) I had moved to a new city and didn't really know anyone./ (P) I liked fitness activities/ (Ev Self) and there was a health club a few blocks from where I lived./ (P) I joined a week later/ (St) and began meeting people through playing squash, social activities, stuff like that./ (St) Eventually, I

formed some close friends over time/ (Ev St) and feel quite at home."/ (F)

Behavioral Problem-Solving Style

This style has neither the analysis and evaluation of the analytical style, nor the feeling or self-reflection of the affective style. Instead, the problem solver simply reports one strategy after another. The emphasis is on action or behavior rather than on analysis or feelings.

Example: Neighbors Problem

"I would make a point of being friendly and talking to my neighbors as I saw them outside on a casual basis./ (St) With the immediate neighbors next door on each side or behind the fence, I would invite them over for a drink on some nice afternoon in the back yard./ (St) I would use them to get information about other neighbors that might be potential acquaintances./ (St) If it was the kind of neighborhood that had a neighborhood party, I would go to that./ (St) Then I would initiate activities with one neighbor that I like."/ (St)

The order for this style is as follows: strategy, strategy, strategy. Sometimes there are additional elements, but the main flavor is of a behavioral approach with little mental processing.

Scoring for Problem-Solving Process

Once the type of problem-solving style has been categorized, the protocol is then scored as a whole for overall process of problem solving. There are three mutually exclusive categories. The three categories are as follows:

1. Sequential
2. Wholistic
3. Simultaneous

Sequential

The sequential process is a step-by-step procedure that lists several different strategies in temporal order. This is indicated by phrases such as, "First I would do this, then I would do this. Next I would do this. After that I would do this. Last I would do this."

Example: Teaching Problem

"Once I realized that things were not going well, I had to identify my weaknesses./ (A) First I gave a questionnaire to my students/ (St) and started to discuss teaching practices with my colleagues to find out what they do./ (St) I also

took careful note of how the students reacted during class/ (St) as a benchmark for my hoped for improvement./ (R St) Of the identified weaknesses, I chose three/ (St) which were easy to change and seemed to be important./ (R St) Each week I focused on improving one of these,/ (St) while maintaining the previous improvements./ (St) Again I watched the students/ (St) and realized that my changes had indeed been effective."/ (Ey St)

Sometimes there are no key words like "first" or "last" in the protocol, but it is still clear that the problem-solving steps are in a temporal order because they would not make sense in any other order. Thus, the problem solution is categorized as sequential since the steps listed would not be happening simultaneously (the other choice for numerous strategies).

Example: Teaching Problem

"I go home and talk to my husband about it./ (St) We discuss my feelings about what is going well and what is not going well./ (E) We think about other ways of doing things which would make me feel better./ (St) I sit down and decide which strategies would work and which wouldn't, in my situation./ (St) I return to work and try out my strategies which might require some new materials which I have

to order./ (St) I begin to feel better as soon as I'm involved and things are working for me."/ (F)

In this example, it is clear that before the problem solver tries out new strategies, she decides which strategies to use, and before that she discusses with her husband several different possibilities. Thus, this is a sequential problem-solving process.

Wholistic Problem-Solving Process

In the wholistic approach, the focus is on only one strategy or solution to a particular problem as compared to the sequential method which has several strategies in a step-by-step order. This tends to be a more simplistic approach in that it is focused on only one overall strategy.

Example: Teaching Problem

"I have just taught my second class/ (P) and don't feel very good about it./ (F) The students seem to be leaving completely confused at the end of the class./ (Ev Situation) I decide that something has to be done about it./ (St) I talked to a few students in the class and asked them if they had any suggestions as to what I might do to make things better./ (St) They made several suggestions./ (El) and I resolved to work on incorporating their

suggestions in teaching my next class."/ (St)

While at first glance it might appear that there are several different strategies in this example, when it is compared to the previous two examples, one can see that the strategies in this second example are all part of one overall strategy: talk to the students to get suggestions that could be used in class.

Simultaneous Problem-Solving Process

In the simultaneous approach, several strategies are presented at the same time. There is no indication that the strategies need to be in any sequential order. It is more of a multi-pronged approach to a problem that happens simultaneously.

Example: Teaching Problem

"I would sit down and try to analyze what specifically was wrong with my teaching./ (A) Is it that I haven't been spending enough time in preparation so that I have interesting lessons?/ (Ev Self) Is it that I haven't been spending enough time talking to students individually to find out what they want and need?/ (Ev Self) These factors and others could be possibilities./ (El) With the first, I would get some new books/ (St) and talk to other teachers to get new ideas to freshen up what I was

doing./ (St) I would also increase the time I was spending on preparation/ (St) until I felt things were going well again./ (Ev St) Part of this preparation time would be mental work of analyzing more thoroughly what I needed to do, anticipating student reactions, and planning for them./ (A) If I did all of these things my teaching would improve/ (Ev St) and I would feel good about it."/ (E)

Compared to the previous three examples, this approach has more in common with the sequential approach than with the wholistic approach in that several different strategies are presented. The main difference between the sequential and simultaneous process is that in the first the order of the strategies is a necessary part of the problem-solving process. For example, "I begin by identifying my weaknesses with a questionnaire and having a colleague sit in. Once I know what my weaknesses are, then I can focus on changing them and evaluating whether the changes have been effective." In the simultaneous example, while the problem solver starts by analyzing and uses the word, "lastly," the strategies given do not have to be in any order and the impression is given that they would be occurring simultaneously.

203

Appendix H

Information Sheet for Subjects

Information Sheet for Research and
Evaluation of the Guidance Program

Evaluating the effectiveness of the summer school program is an integral part of the course. This program evaluation and research is designed to help students gain further awareness of their skills in the areas of problem solving and empathy and to evaluate how well the summer school courses are meeting their objectives. The data will also be used for a Ph.D. thesis in educational psychology.

To achieve these goals, students will be asked to complete five instruments. These include the following:

The Group Embedded Figures Test

The Means-Ends Problem-Solving Procedure

The Index of Responding

A form completed after taping two interviews

A short-answer test of course content

Students are also asked to turn in their last two counseling tapes, one with an interpersonal client concern and one with a client "self" concern. These tapes will be used exclusively for the

immediate purpose of this research and evaluation. Only a trained research assistant will hear the tapes. All tapes and test results will have a code name or number chosen by you to ensure confidentiality of participants (that is, names of participants will not appear on files or labels). Once the tapes have been scored, they will be erased.

In addition, students will be asked to fill out a form about each of the tapes to be turned in. It is hoped that by analyzing all of this data, plus using student grades and course evaluations, information will be obtained that can help in strengthening the summer school guidance program. Results of the Group Embedded Figures Test will be given to students at the end of the course. Other results will be available to students after the completion of the course on request.

If you agree to participate in this evaluation and research, please read the attached consent form, sign and date it.

Appendix I

Information Sheet for

Group Embedded Figures Test

207

Information Sheet for

Group Embedded Figures Test

Your Score

Field-Dependent	Mid Field-Dependent	Mid Field-Independent	Field-Independent

Main Characteristics of Relatively Field-Dependent and Field-Independent People*

Field-Dependent	Field-Independent
Perceives field as a whole	Perceives items as discrete from background
Views things in a global way	Views in articulated way
Learns social content better	Learns abstract content well
Uses intuitive problem-solving approach	Uses hypothesis-testing problem-solving approach
Attentive to social frames of reference	Not as sensitive to social undercurrents
More external frame of reference for feelings	More internal frame of reference for feelings
Likes to be with people	More individualistic

Appendix F

Means-Ends Problem-Solving Procedure