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FIELD DEPENDENCE AND COMMUNICATION EFFECTIVENESS

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CHAPTER I

INTRODUCTION

It is the purpose of the present study to examine the relationship between Witkin's field dependence dimension of personality and the effectiveness with which people communicate. Witkin (1962) has investigated the relationship between his field dependence-independence continuum and a number of areas of behavior such as the manner in which children approach the T.A.T., the functioning of children on specific intellectual tasks like the block design subtest of the WISC and the relationship to parent-child interactions. Others (Rosenfeld, 1958) have related field dependence-independence to mathematical ability, forms of psychopathology (Witkin, 1965) and to ego strength and sex role identification (Vaught, 1965). To date no literature has been found which has attempted to relate communication to the field dependence dimension.

The concept of communication is an extremely broad and complex one. Reusch (1957) defines communication as any behavior by which one human influences another. Another definition which is nearly as broad is that of Grace (1956) who defines communication as a message sent. Both writers recognize that the messages sent and the influences which one human has upon another are numerous and

complex. For example, the way a person dresses, stands, walks, etc. are subtle messages which may influence the responses of other people to him. In addition to these kinds of messages, communication includes the immense complexities of human verbal communication per se. The present investigation will be limited to exploring the relationship between field-dependency and effectiveness of written communication.

The purpose of the present investigation is to determine if the degree of field dependence is related to the communication effectiveness or the comprehensibility of the message. In order to provide the reader with an overview of the theoretical and experimental background of the present study a presentation of Witkin's theory, and a review of the relevant literature and a statement of the problem follows.

WITKIN'S THEORY

The concept of field dependence evolved from Witkin's early work (1954) in evaluating individual differences in perceiving the perpendicular in space. The observations of individual differences in space orientation led to an interest in personality. One of the significant factors effecting the transition from an interest in orientation in space to an interest in personality was Witkin's observation that "the way in which each person orients himself in space is an expression of a more general preferred mode of perceiving which, in turn, is linked to a broad array of personal characteristics involving a great many areas of psychological functioning" Witkin, 1962, p. 1).

Using a series of perceptual tasks, Witkin (1954) found that some of his subjects relied primarily on the axis of the visual field to determine the perceived upright in space while other subjects seemed to rely primarily on their own proprioceptive cues to make this judgement. Witkin termed those subjects who relied on the visual field, field dependent and those who relied on their own internal proprioceptive cues as field independent.

Another important finding of Witkin's 1954 studies was that young children tend to perceive in a field dependent fashion but as they grow older gradually shift to a more field independent form. Having found a relationship between stages of human development and field dependence, the investigators hypothesized that field dependent functioning was a more primitive mode of perceiving than field independent functioning. They also hypothesized field dependent functioning in the later developmental stages may represent retardation in some general aspect of an individual's psychological development. Witkin stated, "... In many ways it gradually became clear that the constellations with which we are now dealing might best be conceived in terms of differentiation" (Witkin, 1962, p. 8). According to Witkin, the degree of one's psychological differentiation is positively correlated with the degree to which the personality is integrated. By Witkin's definition integration is a necessary component property of all systems whether biological, social, or psychological. It refers to the form of the functional relationships between differentiated components of the system and the functional relationships of the system

to its environment. The concept of differentiation also has obvious roots in biologically based theories of development which state, in effect, that development proceeds from the gross to the differentiated and then to integration of the differentiated sub-systems into a total functioning unit.

Witkin hypothesized that more complex relations are possible between a highly differentiated system and its parts than between a relatively undifferentiated system. Witkin gives as an example the integration of feelings and ideas. The mechanisms of control and defense perform the function of integrating these two psychic entities. Witkin states that the integration becomes more complex as ideas and feelings become more discrete e.g., as differentiation develops.

Witkin stated;

> .... in summary, experience of the body-field matrix is early essentially global, and during development becomes progressively more articulated so that body, self and objects in general are experienced as segregated. Segregation, or analysis and with it structuring of experience--of what is outside and what is inside--are manifestations of developed psychological differentiation. The growth of a segregated structured self, of self differentiation, is in this view part of the process of articulation of experience (1962, p. 14).

Thus a relatively differentiated self implies that where the person's own activities and attributes are the source of experience, experience is analyzed and structured rather than global.

Witkin stated that progress toward differentiation is expressed in increasing articulation (analysis and structuring) of experience. Furthermore he hypothesized that along with greater structuring of

experience there would be an accompanying development of self differentiation. For Witkin, the development of a segregated, structured self provides internal frames of reference for viewing, interpreting and interacting with the world from the position of an autonomous agent. Witkin implies then, that a person who has a well differentiated self is better able to function autonomously. That is, he should be able to initiate, guide, and direct his behavior from within himself with relative freedom from being dependent upon, directed or dominated by the world in which he lives.

The psychological differentiation hypothesis is a broad attempt at developing a comprehensive theory of personality and personality development. It is still quite vague in many respects and there is difficulty in deriving specific, testable hypotheses. In the succeeding section an attempt is made to show that it is possible to derive conflicting hypotheses with respect to the relationship between field dependency and communication effectiveness.

A number of cognitive indices (Embedded Figures Test, Body Adjustment Test and the Rod and Frame Test) have been used by Witkin and his associates in attempting to verify their differentiation hypothesis. Because it is the simplest and most reliable test of the battery, the Embedded Figures Test is frequently used by itself as an index of field dependence-independence. There still is no single valid independent external criterion for assessing field dependence. It appears, however, that the many years of careful research by Witkin and others have demonstrated that the

concept of field dependency-independency has a considerable degree of construct validity. That is, there is sufficient experimental data to indicate that field dependent and independent people do behave as the differentiation hypothesis predicts they will.

REVIEW OF THE LITERATURE

The use of the term communication in this section is left intentionally vague because the various authors have somewhat differing opinions as to its meaning. However, the general definition of "a message sent" is sufficiently close to convey the general meaning of the term as presented in this section.

The assumption that there is a relationship between the way in which a person communicates and his personality appears to be relatively common. Some writers contend that communication skills and abilities present a parallel, if not inextricably intertwined development along with personality development and physical maturation, (Spiegel, 1959; Ruesch, 1957). Others state that the way in which a person communicates is a reflection of his personality and also of the way in which the personality is held together. (Deutsch, 1952). These ideas have appeared largely in theoretical works (Reusch & Bateson, 1961; Reusch 1957; Berlo 1960), or in studies designed to investigate speech or communication patterns in psychopathology (Bertoch, 1966; Gottshalk, Gleser, & Hambridge, 1957; Hoch & Zubin, 1958; Lorenz & Cobb, 1954; Pearl, 1963). To date, relatively little controlled <u>experimental</u> work has been done to determine whether there is a relationship between a given theory of personality and some aspect of communication or the communication

process as a whole.

Witkin (1965), suggests one type of relationship that may exist between ability to communicate and his field dependent-independent continuum. He states that field dependent persons who get involved in personal psychotherapy tend to respond to their therapist in one of two contrasting ways; on the one hand they may respond only briefly to the therapist's questions so that many questions must be asked in order for the therapist to find out what it was that brought the client to see him in the first place. On the other hand, they may tend to 'spill over' responding in eruptive spurts, involving a great deal of repetition so that it is very difficult for the therapist to make sense of the content of the client's communication.

Deutsch (1952), writing on the relationship between the social sciences and communication says that it is communication which is responsible for organization of all kinds, from the organization of pieces of machinery in a calculator to thinking in human beings. He states that all complex communication systems from machines to human beings have many channels of intake and several available patterns of response. In order to prevent such systems from degenerating into chaos there must be some pattern of priorities or preferences which he refers to as values. Values then are absolutely essential to operation of any communication system.

> If stored information from the past in a communication system is given priority over incoming information from the present, we have a situation resembling <u>will</u>. When we say that "our will is strong", that "our decision has hardened" or that "our mind is made up", we are

> saying that in the determination of our behavior we are giving priority to predecision data over post decision ones. Will in an individual or a social group thus functions like the deadline in a newspaper or the departure of a train (Deutsch, 1952, p. 471).
>
> More fully we may describe will as internally labeled decisions and anticipated results, proposed by the application of data from the systems present or future. An effective memory, and at least a measure of preference for some information from the past over current input, are thus essential for self determination. So long as it has self-determination or autonomy, the system wills what it is. It wills the behavior patterns--the personality--which it has acquired in the past and which it is changing and remaking with each decision in the present. Thanks to its past, it is not wholly subject to its present. In this interplay between memory and intake we may see the essence of autonomy of inner freedom (Deutsch, 1952, p. 471).

Deutsch states that there is a connection between autonomous functioning and the communication process. In Deutsch's view, an internal set of 'values' is essential to successful communication. It appears that this internal set of 'values' is analogeous to Witkin's 'internal frames of reference'. To the degree that this analogy holds, one could hypothesize that the more clearly defined the individual's internal frame of reference (which comes with differentiation or field independence) the more effectively will he be able to communicate with his fellows.

Reusch (1957) has discussed the relationship between communication and personality emphasizing the developmental nature of communication. He states that the foundations of identity are laid when a child imitates adult behavior. Subsequent imitation of other children's behavior and the child's own experiences round out the

knowledge he has of himself, including his skills, abilities, limitations and defects. Identity, according to Reusch, is dependent on early interpersonal experiences. Role, however, is a function of group experiences which necessarily occur later in life. Identity is experienced, in Reusch's view, as a somewhat permanent aspect of self while role is felt as a temporary function which the child assumes. Reusch hypothesizes that the awareness of one's identity and role determines to a large degree the type of responses received from others and thus awareness of identity and role are essential for successful (effective) communication. He maintains that this awareness is transmitted to the receiver in all expressions of the individual, and in subtle ways determines the interpretation of the message. Thus when an individual's identity is ill-defined *and/or* he *cannot or will not* function in a certain role, communication can be disrupted.

Witkin defines the field dependent person as one who has not organized or delineated his experience and self awareness, and Reusch would hold that such an individual would have difficulty communicating with his fellows. Thus by inference Witkin would appear to concur with Reusch's hypothesis that some kind of inner self concept, identity or awareness, is a prerequisite for successful (effective) communication.

Speigel (1959), points out that the personality is shaped by communication and that there are fairly characteristic patterns of communication in the various kinds of personality disorders that fall within the province of psychiatry. Thus like Deutsch

and Reusch, Spiegel maintains that not only do communication experiences determine what the personality of an individual will be, but that the pattern of the communication at a given point in time is a reflection of an individual's personality.

Spiegel (1959) also hypothesizes a relationship between communication and the organization of experience. In Witkin's terms, presumably, communication enters into the process of psychological differentiation. Spiegel states that:

> Word language permits building of hierarchies of meaning, from image for a concrete object to abstraction of a quality or a meaning. Thus it organizes thought and experience, one level of organization forming the floor for the next. Word language makes interpersonal communication of thought easy. It fills in what the empathetic mode of communication, which essentially serves the affects, can hardly accomplish.

Berlo (1960) also hypothesized a relationship between the communication process and personality. Berlo states that there are at least four kinds of factors within the communicator which can increase fidelity of communication and presumably can also decrease it. These factors are communication skills, attitude, knowledge level and position within the social-cultural system. Attitudes he says, affect the fidelity of communication in at least three ways, the most important for the focus of the present investigation, is one's attitudes toward oneself. He states, "the whole complex of variables that go together to comprise the individual's 'personality' are related to the concept of self attitude in communication" (Berlo, 1960, p. 46).

Berlo presents a slightly different perspective than the other writers cited in that he points out that one's evaluation (presumably whether a person sees himself as being worthwhile, likeable, etc.) of himself is related to the effectiveness of his communication. This theoretically necessitates some kind of inner awareness of something about which to have attitudes.

All these writers hypothesize or imply that some form of internal frame of reference whether it be called 'value', 'identity', 'organization of experience' or simply 'personality' is inextricably tied to communication effectiveness or successful communication. It has been pointed out that the theoretical viewpoints of most of these authors appear to parallel or to coincide with Witkin's thinking. It does not appear to be an unwarrented extention of Witkin's theory, therefore, to hypothesize that the degree of field dependence-independence should be related to communication effectiveness.

Bertoch's experiment. Bertoch's study was particularly important to the present investigation. First, it was an experimental study as contrasted with the theoretical works presented thus far. Second, as there had been extremely little experimental research attempted in support of the theoretical work on the relationship between communication effectiveness and personality, part of his methodology was adapted to the research problem in the present investigation.

Bertoch pointed out that redundancy is a measure of information transmission; i.e., how effectively the elements in a

given situation are combined to restrict the results to a single outcome. In other terms, redundancy is a measure of the predictability of verbal behavior. This is a somewhat different use of the term than in common parlance. Studies by Weaver & Kingston (1963) and Taylor (1957) have shown that redundancy of verbal material determines how easily it is read and how well it is comprehended. Bertoch also stated that:

> When verbal phenomena occur as messages in human communication it can readily be seen how redundancy becomes quite significant in evaluating the process of human communication from at least three standpoints; the states of the messages (what is communicated), the states of the encoders (transmitters of messages) and the states of the decoders (receivers of messages) (Bertoch, p. 1).

Bertoch hypothesized that it is not the encoder (transmitter of the message) alone who determines whether or not the message will be comprehended (effective). Characteristics of the decoder (receiver of the message) also determine the effectiveness of the overall communication. Therefore, Bertoch studied the encoder and decoder characteristics in combination.

In his experiment, Bertoch singled out eleven encoder-decoder variables to study. These variables were, age of encoder and decoder, education of encoder and decoder, vocabulary level of encoder and decoder, psychopathology of the encoder, decoding ability of the decoder, difference between encoder and decoder age, difference between encoder and decoder education, and difference between encoder and decoder vocabulary level.

His encoders were hospitalized psychiatric patients. Non-

hospitalized subjects were used as the decoders. He attempted to ascertain the variables which effect the fidelity, or in his terms, the redundancy of the communication between patient encoders and relatively normal individuals.

Bertoch used two different sets of five T.A.T. cards as the source of stimuli for his patient encoders, asking them to tell stories about the five pictures. These two sets of T.A.T. cards were differentiated on the basis of their response uncertainty. Response uncertainty referred to the degree to which a sample of subjects tell stories with widely varying themes. Cards which previous research indicated had a high response uncertainty were those cards which had elicited many different themes. Those cards which were low in response uncertainty tended to elicit fewer different themes across subjects.

To obtain his measure of communication effectiveness, or comprehensibility (redundancy), Bertoch used the Cloze procedure (Taylor, 1953). In this method the experimenter takes encoder stories and has them retyped deleting every fifth word. These typescripts are then given to decoders and they are asked to fill in the blanks with the word which they think belongs there. The Cloze score is the percent of the deletions that a decoder can fill in correctly (a correct fill-in is defined as the exact word which the encoder had originally put in that space). Bertoch used the Cloze score then as an index of the effectiveness, redundancy or comprehensibility of the encoder's message.

Bertoch found that there were significant differences between "high redundant" patient encoders and "low redundant" patient encoders with respect to the variables studied. Specifically, those typescripts from which high Cloze scores were obtained differed consistently with respect to the eleven encoder-decoder variables from low Cloze score typescripts. Two of the variables which consistently ranked high in their ability to discriminate between the high and low redundant encoder groups were decoding ability of the decoder and educational level of the encoder. Bertoch found that if he categorized response-uncertainty in conjunction with Cloze scores the combination ranked high in its ability to discriminate between those encoders whose messages were difficult to decode and those whose messages were easy to decode.

Bertoch found then that such variables as educational level of the encoder, decoding ability of the decoder and response uncertainty of the encoder's stimulus were related to the Cloze scores (his measure of redundancy or ability to communicate). Since an equivalent term for redundancy is communication effectiveness, Bertoch's study has shown that there is a relationship between communication effectiveness and the variables listed above.

SUMMARY

It has been pointed out that writers of seemingly disparate theoretical points of view nonetheless have in common the idea that communication is inextricably tied to personality and personality development. While Witkin (1962) does not specifically relate his

differentiation hypothesis to communication effectiveness it seems to be a warrented extention of his theory to do so. Witkin's hypothesis appears highly similar to these communication theorists in terms of their concepts of autonomy, self concept, etc. Reusch, Deutsch, Speigel and Berlo seem to agree that the presence of these factors are essential for effective communication.

Bertoch's experiment has been reviewed in order to explain his use of the Cloze procedure as a measure of communication effectiveness and in order to indicate some of the variables he found to be related to it.

STATEMENT OF THE PROBLEM

The present study seeks to determine if there was a relationship between communication effectiveness and Witkin's field dependence-independence dimension. Witkin developed and used the Embedded Figures Test as one of his measures of field independence. The present study will use a group form of the Embedded Figures Test developed by Jackson, Messick and Myers (1964) called the Hidden Figures Test. The Cloze procedure described in the introduction will be used as the measure of communication effectiveness.

Witkin (1962) stated that it was theoretically possible for people to be field independent in some aspects of their functioning but not in others. Thus it is theoretically possible for a decoder or encoder to function in a field independent way on one of Witkin's perceptual tasks yet function in a field dependent fashion in a communnication situation.

Although Reusch (1957), Deutsch (1952) and others hypothesize that some kind of frame of reference is essential for successful communication, and field independent functioning seems to fulfill this condition, other theoretical questions can be raised as to what predictions would follow from Witkin's theory with respect to communication effectiveness. It is possible that a highly field independent person would adhere so rigidly to his own frame of reference that he would be a relatively poor communicator. It is equally possible that a highly field independent encoder would be able to analyze and structure what he attempts to communicate so well that his messages could be easily decoded. Witkin's theory is not sufficiently explicit to enable one to state categorically what to expect. Thus from Witkin's theory it is possible to derive diametrically opposed hypothesis.

The only question that may be appropriate to ask, at this stage of development of the theory is whether there is a relationship between field dependence and communication effectiveness. If some evidence can be obtained supporting such a hypothesis it will be a step forward in experimentally relating communication effectiveness to Witkin's theory.

Bertoch (1966) hypothesized and demonstrated that such encoder and decoder variables as age, education and response uncertainty are related to effective communication. Thus in addition to investigating the relationship between field dependence and communication effectiveness such variables as age and education were compared with respect to their relative ability to predict

communication effectiveness. It was also felt that it would be valuable to learn if the field dependence of the encoder or the decoder was the better predictor of communication effectiveness.

PREDICTIONS

The predictions which follow are based on the experimental and theoretical work which has been reviewed.

Prediction 1. The field dependence of the encoder as measured by the Hidden Figures Test will be related to communication effectiveness as measured by the Cloze procedure.

Prediction 2. The field dependence of the decoder as measured by HFT will be related to communication effectiveness.

Prediction 3. The field dependence of the decoder and the encoder as measured by their combined (sum) HFT scores will be related to communication effectiveness.

Prediction 4. Language facility as measured by the ACT English Scores of the encoders and decoders will be related to communication effectiveness but to a lesser degree than either the field dependence of the encoder or decoder.

Prediction 5. The response uncertainty value of the stimulus material will be related to the measure of communication effectiveness.

CHAPTER II

METHOD

The Hidden Figures Test

Witkin (1962), in his perceptual battery, used an individual form of the Embedded Figures Test, a Body Adjustment Test, and a Rod and Frame Test. He combined these into a perceptual index which was used as the measure of field dependence. It was found however, by Witkin and others, that the Embedded Figures Test scores correlated .86 with the entire battery. For this test Witkin (1962) also reported a high coefficient of stability (r=.95) with 14 to 17 year old subjects over a three year period. The EFT has been demonstrated to be the most reliable of all the tests in his perceptual battery. Since it is a fairly easy test to administer it has been the most frequently used as the measure of field dependency by later investigators.

A group form of Witkin's Embedded Figures Test was used in the present investigation. The group test which was developed by Jackson, Messick, and Myers (1964) is called the Hidden Figures Test (HFT) (1962). The task of the subject on the Hidden Figures Test is to indicate which of five simple figures is hidden in each of the test figures which are complex with many distracting lines. The time limit for the task of locating the 16 hidden figures is

ten minutes. The Hidden Figures Test is printed in booklet form with practice figures and two equal parts consisting of 16 problems in each half. These two halves can be used as parallel tests. Thus the score on the HFT is the number right (minus the usual multiple-choice correction for guessing) within the given time limit rather than the time score used on the individual EFT. Jackson et. al. (1964) using 52 male and 60 female undergraduates as subjects report a correlation of .84 with the individual form of the test. Although sex differences have been reported on EFT performance (Witkin, 1962), Jackson found no significant differences between males and females using the HFT.

The Cloze Procedure

The choice of the measure of communication effectiveness was influenced by the work of Bertoch (1966) who demonstrated a relationship using the Cloze procedure between communication effectiveness (Bertoch used the term redundancy) and several variables, none of which relate directly to personality. Osgood (1959) points out that the Cloze procedure is not only a measure of redundancy (communication effectiveness) but also of encoder (transmitter of messages) and decoder (receiver of messages) differences. That is, it can be used to make inferences about or comparisons among different encoders by holding the decoders constant, or about different decoders by holding encoders constant. The Cloze procedure can also be used to measure the language communality between encoders and decoders and as an index of language facility

(a person's knowledge of language usage). Thus because of the previous work demonstrating the effectiveness of the Cloze procedure in evaluating communication effectiveness and its hypothesized ability to measure several encoder and decoder variables simultaneously it was decided to use this measure in the present investigation.

The Cloze procedure was initially developed by Taylor (1953). The hypothesis which underlies the Cloze procedure is the familiar Gestalt theory that observers tend to fill in with familiar forms that which is obscure or incomplete. A similar phenomenon seems to occur in the decoding of linguistic forms. Osgood (1959) gives a good illustration of this phenomenon:

> ....Just as a person presented with an incomplete circle tachistoscopically will tend to see it whole, so will the average American reader, when he reads, "Chickens cackle but _____ quack", tends to fill in ducks as the missing word. In terms of all of the past experience of typical users of our language, ducks is the element most probably missing. We may note that filling in ducks depends not only upon knowledge of barnyard animals, but also on linguistic facility--given the above structure, the missing word must be a plural noun. To us another example, "The old man _____ down the road", it is clear that the structure of English requires some verb (flew, limps, crawls, traveled, etc.), though the tense is not specified by the context; on the other hand, the presence of the "old man", and "road" clearly exerts semantic selectivity on the alternatives--limped or hobbled are certainly more probable semantically than slept, swam, or even ran" (p. 78-79).

The essence of the Cloze procedure is as follows. A message, produced by an encoder, is typed out with the experimenter substituting a blank for every nth word. The message, containing the

blanks, is then given to a decoder to fill in. The Cloze score is the percent of the blanks correctly filled in by the decoder. As indicated in the illustration above, the decoder presumably uses the context of the message as a basis for predicting what words should be placed in the blank spaces in the message. If the linguistic habits and experiences of the encoder and decoder correspond perfectly the Cloze score should be 100%. In other words, the more alike the encoder and decoder are in terms of their linguistic and cultural backgrounds, the easier it should be for the decoder to fill in the blanks with the exact words which the encoder used in the original message.

Response Uncertainty and the T.A.T.

Since Bertoch (1966) found that response uncertainty (R.U.) or psychological ambiguity of T.A.T. cards influenced the ease with which his encoder's messages were decoded, response uncertainty was included as a variable in the present investigation. Response uncertainty or psychological ambiguity refers to the degree to which a given T.A.T. card will elicit a large number of themes across subjects. Those T.A.T. cards which elicit a large number of different themes are said to be high in response uncertainty and those which elicit few different themes are said to be low in response uncertainty. Cards 15, 18BM, 11 and 19 were utilized as the high R.U. cards in this study; cards 1, 2, 9BM and 12BG were the low R.U. cards used (Kenney & Bijou, 1953).

Pilot Study

The literature revealed no previous attempts to relate field dependence to communication effectiveness. For several reasons therefore, it was felt a pilot study should be conducted prior to the major investigation. Since college populations tend to be more homogeneous than the general population, a determination was needed of whether there was a sufficient range of field dependence in a college population. It was also felt that language facility itself might be correlated with scores on the Cloze procedure as suggested by Osgood (1959). Therefore a measure of language facility other than Cloze itself was needed so that the importance of language facility as a predictor of Cloze could be compared with the predictive efficiency of the HFT scores. Since the ACT is required for all freshmen the English Usage subtest score was used as the measure of language facility.

Another concern was the possibility of differential results for male and female subjects. Although Jackson (1964) found no differences between sexes on the HFT it seemed worthwhile to verify his findings.

The subjects for the pilot study were volunteers from two introductory psychology classes at the University of Oklahoma in the spring semester of 1966. Fifty subjects (23 females and 27 males) participated in the study.

The Hidden Figures Test was administered to all subjects during a regular class period. In order to determine if there was a difference in the difficulty of the two halves of the test and to

determine whether there was an appreciable practice effect, half of the subjects were started on the first half of the HFT items and half were started on the second sixteen items. After ten minutes all S's were instructed to begin work on the other half of the items for which they also had ten minutes.

The Cloze procedure was administered to the same subjects after the HFT was collected. A typescript of a story from a recent issue of the Saturday Evening Post magazine in which every fifth word in the story had been deleted was distributed to the subjects. No time limit was placed on the subjects in filling in the deleted words.

The correlation between Cloze scores on the magazine article and HFT was .36. With an N of 50 this was significant at the .01 level of confidence suggesting that the relationship between Cloze and field dependence was significantly greater than zero. The HFT scores ranged from 0 to 11 on one half of the items and from 1 to 13 on the other half of the items; the range for the combined halves was from 0 to 23. This was considered to demonstrate sufficient variability to justify the use of the HFT in the larger study. The distribution of total HFT scores appeared to be somewhat trimodal.

The correlation between the Cloze scores and the ACT English scores did not reach significance at the .05 level of confidence ($r=.22$). Since there was a correlation of .30 (significant at the .05 level) between the ACT English scores and the HFT scores, it was felt the ACT English scores should be included in the major

investigation as a variable. The correlation between sex of the pilot study subjects and their HFT scores did not differ significantly from zero. Thus subjects of both sexes were included in the larger investigation.

As mentioned previously, the decoders were equally divided so that one half of them took the problems 1-16 (inclusive) first and problems 17-32 second. The other half of the pilot subjects took problems 17-32 first and problems 1-16 second. The mean score for the problems 1-16 irrespective of the order in which they were taken was 5.66. The mean score of problems 17-32 ignoring the order in which they were taken was 5.56. These results indicate equivalency between the two sets of problems.

When order is considered, however, there was evidence of a practive effect. For example, the mean score for problems 1-16 when that set was taken first was 4.93. When it was the second set of problems attempted the mean was 6.52. Similarily when problems 17-32 were taken first the mean score was 4.30. When these same problems were attempted during the second ten minutes the average score was 6.63. The consistent increase in mean scores from the set first attempted to the set taken second suggested that practice influenced the HFT scores. It was decided therefore to provide a practice period in the main study.

In scoring the HFT an unexpected finding occurred. It was observed that some subjects attempted very few of the HFT items but that of those they did attempt a very high percentage were all correct. Other subjects attempted many of the HFT problems, but

most of their choices were incorrect. While there was no way of assessing the meaning of this phenomenon, the number wrong on the HFT was included as a variable in the larger study to investigate the possibility that there might be a relationship between it and some of the other variables.

Procedure

Encoder Subjects. Twelve subjects were chosen from among those who participated in the pilot study. Four encoders were selected at each of three levels of the HFT range of scores (lower, middle and upper). The HFT scores of the encoders at the upper end of the HFT continuun ranged from 20-23 inclusive out of a possible 32; the mid-range encoders scored from 11-13 inclusive and the low encoder's scores ranged from 3-5 inclusive. All encoders had been raised in homes in which English was the only language spoken.

The twelve encoders were subsequently divided into two equal groups of six so that two encoders from each level of the HFT score continuum were in each group. One half of the encoders responded to low response uncertainty (R.U.) T.A.T. cards; the other half to high response uncertainty cards.

Procedure with Encoders. The encoders were brought individually into a room and comfortably seated at a desk. On the desk sat a microphone connected to a tape recorder which was used to record the stories told in response to the T.A.T. cards. After the subjects were comfortably seated, the following directions were read to them.

> I'm interested in communication. As part of this study I'm going to ask you to make up some stories. In order to help you do this I am going to show you some pictures, one at a time, and your task will be to make up as dramatic a story as you can for each. Tell what has led up to the scene shown in the picture, describe what is happening at the moment, what the people are feeling and thinking and then give the outcome. Speak your thoughts as they come to mind. Do you understand?
>
> First, I will show you a picture for you to practice with, and then I will show you three other pictures. Since you have thirty minutes for four pictures you can devote about eight minutes to each story. Are there any questions?

T.A.T. cards 15, 18BM, 11 and 19 were shown to the high R.U. group. Card 15 was used for all of the high response uncertainty group cases as a 'practice card'. The remaining three cards were presented in random order. Deviations from the directions were noted and mentioned to the subjects after they told their stories to the practice card; no further help was given with remaining three cards.

The low R.U. group told their stories to the following T.A.T. cards; 1, 2, 9BM, 12BG. For this group, card 12BG served as the practice card. Otherwise the procedure for the low R.U. group was identical to that for the high R.U. group.

Typescripts were made of the tape recorded speech samples. Subsequently, every fifth word was deleted from the typescript and the deleted stories were run off on mimeograph. A sample of the typescript is included in the Appendix.

Decoders. One hundred and seventy 1966 summer school students at the University of Oklahoma were administered the HFT during a regularly scheduled class period preparatory to their serving as

decoders in the present experiment. Sixty of these were enrolled in an introductory personality course, and one hundred ten were enrolled in introductory psychology classes. Data for another dissertation using a short form of the Manifest Anxiety Scale (MAS) was collected from these subjects prior to the administration of the HFT. The scores from the MAS were used in the present study to ascertain if manifest anxiety was related to the number wrong on the HFT. The following instructions were read to the class by the present experimenter:

> What we will do during the class period today will take only about twenty minutes; for the second half of the experiment, I should like to ask that you come to the University of Oklahoma Guidance Service on the third floor of the Carnegie Building. I will need about forty-five minutes of your time at that time. Please indicate when you can come by writing your name in a space on the sign-up sheets that are being passed around. Please write down the time you sign up some place where you won't forget it.
>
> I'm interested in communication. Specifically, I'm interested in those things which make human communication effective. Most if not all of you have had the experience, at some time in your lives, of meeting someone for the first time and found that it was a most enjoyable experience. At times you may have been able to predict the next thing that this former stranger was going to say; at times you were aware of this person's keen interest in you and in turn, may have sensed that he knew you were interested in him. In short, effective communication between people is a pleasant and gratifying experience. Of course not all of this communication takes place via the spoken or written word; some of it is non-verbal. Nonetheless, a great deal of the communication does take place verbally. Some writers maintain that ideally all human communication should be a pleasurable experience.
>
> It is my intention to study a few of the variables that are involved in the communication between human beings. That is why I have asked for your help today.

Please do not be concerned if you do not understand the connection between the tasks being presented to you and what I have just said about human communication, it is not intended that you should at this time.

(Data sheets and then HFT booklets were passed out). Please do not make marks of any kind on these test booklets. Your answers to the problems contained in the test booklets are to be recorded on the answer sheet just handed you. First, fill in the information asked for on the answer sheet. After you have completed that please read the directions on the front cover of the test book, but do not open the test book until I tell you to do so. When you have finished reading the instructions, please look up at me. (When every one was finished the following was said): Remember that you are to make no marks of any kind on the test book, but you are to record your answers on the answer sheet. Contrary to the directions you have just read you will have five minutes to work on the first nine problems for practice. After doing the first nine problems for practice you will have fifteen minutes to work on the remaining twenty three problems, that is, problems 10 through 32. If you finish the nine practice problems before I call time, please simply leave your test book flat on your desk. Do not look ahead at the remaining problems. When I tell you to begin, simply fold back the first page of problems like this (demonstrated). Are there any questions? You may begin.

(After five minutes the students were instructed to stop). When I tell you to begin, turn your test book over and begin working on problems 10 through 32. Be sure that you are indicating your answers in the appropriately numbered spaces on your answer sheet. If you finish before time is called, please remain seated. (After fifteen minutes all answer sheets and test booklets were collected. Everyone was encouraged to sign up for the second experimental session. The sign-up sheets were then collected and the experimenter dismissed the class).

A total of 155 subjects made appointments to participate in the second experimental session. All of these were sent post-cards reminding them of their appointments. Phone calls were made

to those who did not appear but most of these were unsuccessful in reaching the subjects. Of the one hundred fifty five S's who signed up for the second part of the study, one hundred six actually appeared at their appointed time. Two of these were later discarded because they had failed to follow directions.

For the second session the subjects reported in groups as small as two and as large as ten. They were seated in a large air conditioned testing room and deleted typescripts of two sets of encoder's stories in booklet form were distributed to the decoder subjects. Each booklet contained the practice story and three other stories from two different encoders. One set of four stories was from an encoder who had responded to high response uncertainty T.A.T. cards and one set of four stories from an encoder who told his stories in response to low response uncertainty T.A.T. cards. The decision as to which decoders got which encoders' stories was made using a table of random numbers. Table 1 shows the number of decoders in each combination of encoder response uncertainty and HFT level for both the first and second set of stories decoded. For example, Table 1 shows that fifteen decoders first decoded stories from encoders who had scored high on HFT and had responded to low response uncertainty cards. Nineteen decoders had stories from this class of encoders as their second set of stories to decode.

After the decoder received his two sets of four stories, the following directions were given orally:

TABLE 1

Number of Decoders within each Classification of Encoder Type

	low R.U. low HFT	low R.U. med HFT	low R.U. high HFT	high R.U. low HFT	high R.U. med HFT	high R.U. high HFT
Number of decoders first set of stories	19	22	15	16	16	16
Number of decoders second set of stories	15	14	19	20	18	18

> If you were reared in a bilingual home please indicate this fact by writing the work bilingual at the top of the first page of your test booklet. (If there were any questions about this, the meaning of the term was defined for the group.) Every one put their student identification number, if you know it, at the top of the first page. If you do not know your student I.D. number then use your social security number, if you do not know that number, do not write anything.
>
> The booklets you have just received contain eight stories obtained by having some students tell a story about each of eight pictures. You note that every fifth word has been blanked out. Fill in each blank, if you are not sure of a word, guess. Contractions such as "he'll", "they've", "should've" and so forth are acceptable fill-ins.
>
> You should be able to finish this task in one half hour to forty five minutes. If you finish in that time please simply hand your paper to me and then you may leave. If you do not finish in that time you will be limited to one hour. About half way through the hour you should start on the second set of stories if you have not already done so. (After one half hour, all subjects were instructed to begin work on the second set of four stories if they had not already done so).

Scoring. The stories from each encoder were scored by finding the number of verbatim fill-ins in the first one hundred blanks. The two criteria of communication effectiveness were each subject's two Cloze scores from the two sets of encoder stories. Hereafter, the Cloze score from the first set of stories obtained from a decoder will be designated as Cloze 1; the second set as Cloze 2.

Statistical Treatment. A 19 by 19 correlation matrix was calculated using the variables listed in Table 2. Using the iterative multiple regression model described by Bottenberg and Ward (1963), the variables which contributed significantly to the prediction of the criteria were found. In the output of the regression analysis the

TABLE 2

Variables Included in the Analysis of the Present Study

	Variables	Explanation
	Encoder Variables	
1.	Sex of the encoder	
2.	Age of the encoder	
3.	Class standing of the encoder	
4.	HFT score of the encoder	
5.	Number wrong on the HFT of the encoder	
6.	ACT English score of the encoder	
7.	Encoder HFT level (High Medium, or Low)	This variable was included to see if the level of the HFT score would better predict the Cloze scores than the raw HFT score.
	Decoder Variables	
8.	Sex of the decoder	
9.	Age of the decoder	
10.	ACT English score of the decoder	

TABLE 2 (continued)

	Variables	Explanation
11.	Class standing of the decoder	
12.	HFT score of the decoder	
13.	Number wrong on the HFT of the decoder	
14.	MAS score of the decoder	
15.	Whether or not decoder reared in a bilingual home	This variable was included to see if it would correlate with the Cloze scores as expected. In the event that it would, bilingual data would be excluded from the data
16.	Response Uncertainty of T.A.T. cards a given encoder responded to	
	Combination Variables	
17.	Sex same or different between encoder and decoder	This variable was included to see if the Cloze score would be higher when encoder and decoder were of the same or different sex.
18.	Sum of HFT scores of encoder and decoder	Included to see if it would correlate higher than HFT alone
19.	Cloze 1 and Cloze 2	

variables were listed in order of the magnitude of their contribution to the prediction equation. The test of significance (Wert, Neidt and Ahman 1954) involves a comparison of successive R^2's to determine the point at which the addition of another variable does not significantly increase the R^2 at the 5% level of confidence.

HYPOTHESES

Listed below are the hypothesized results of the present investigation.

1. The major hypothesis is: the field dependence of the encoder as measured by the HFT score will be a significant predictor of Cloze 1 and Cloze 2, the criteria of communication effectiveness.
2. The second hypothesis is: the field dependence of the decoder as measured by the HFT score will be a significant predictor of Cloze 1 and Cloze 2.
3. Hypothesis three is: the sum of the encoder and decoder HFT's scores will be a significant predictor of Cloze 1 and Cloze 2.
4. The fourth hypothesis is: Response uncertainty of the T.A.T. cards will be a significant predictor of Cloze 1 and Cloze 2.
5. The fifth hypothesis in this study is: ACT English scores of encoders and decoders will be significant predictors of Cloze 1 and Cloze 2 but will be relatively poorer predictors of Cloze 1 and Cloze 2 than the HFT scores of either encoder or decoder.

CHAPTER III

RESULTS

Bilingual Subjects

Six subjects who indicated that they were reared in bilingual homes were eliminated from the study. Osgood (1959) stated that the Cloze is a measure of language communality, thus it is theoretically possible that being reared in a bilingual home would reduce the linguistic communality with those subjects raised in monolingual homes. In the present study a correlation of .33 was found between bilingualism and Cloze 1 and an r of .46 was found between Cloze 2 and bilingualism, indicating that bilingual subjects were poorer in the decoding task than monolinguals. Both coefficients were significant beyond the .05 level of confidence supporting the hypothesis of lack of language communality.

Reliability Data

Cloze 1 refers to the Cloze score on the first set of encoder stories which a given decoder attempted; Cloze 2 refers to the Cloze score obtained by the same decoder on the second set of stories from a different encoder.

The reliability of the Cloze procedure was estimated by applying

the Spearman-Brown Prophecy Formula for the split half, odd-even reliability coefficient. In order to apply the Spearman-Brown Formula each blank in the encoder's stories was counted as an item. Each item was numbered from 1 to 100 and the number correct among the odd numbered items was correlated with the number correct among the even numbered items. The reliability coefficient was .63 for Cloze 1 scores and .66 for Cloze 2 scores. In each case there was an N of 98. Since the split half reliability coefficients indicated relatively low reliability they cast some doubt on the usefulness of the Cloze procedure as a measure of communication effectiveness using the methods and procedures of this study. Bertoch (1966) reported a split half reliability coefficient of .86 with an N of 88. Why this difference in reliability should be so great is unknown.

The split half reliability coefficient for the HFT was .87.

Mean Cloze Scores for each Encoder R.U. X HFT Level

Table 3 provides graphic illustration that encoder HFT and response uncertainty level did not significantly affect the means of the Cloze scores. The means do vary somewhat for a given encoder type from Cloze 1 to Cloze 2, but since the encoder variables remain constant, the variance has to be due to the decoder variables. The standard deviations of all Cloze 1 scores was 9.85 and of all Cloze 2 scores was 8.05 indicating that the means for a given HFT by R.U. level combination did not differ significantly.

Table 3

Mean Cloze Scores in each R.U. X HFT Level

	Cloze 1		Cloze 2	
	N	Mean	N	Mean
Low R.U. Low HFT	19	49.52	15	51.53
Low R.U. Med. HFT	21	48.48	13	51.23
Low R.U. High HFT	14	55.14	16	53.93
High R.U. Low HFT	14	50.21	20	47.45
High R.U. Med. HFT	15	50.73	16	52.37
High R.U. High HFT	15	47.47	18	50.38

Bivariate Correlations Between Cloze Scores and Other Variables

Table 4 reveals that the HFT score of the encoder was not significantly correlated with either the Cloze 1 or the Cloze 2 score. There was however a significant correlation between the ACT English score of the encoder and Cloze 1, while the correlation between ACT English score of the encoder and Cloze 2 was not significantly different from zero. Both age of the encoder and class standing of the encoder were significantly correlated with Cloze 2 but not with Cloze 1. Table 4 shows that the response uncertainty level of the T.A.T. cards which served as stimuli for the encoders did not correlate significantly with either Cloze score. Furthermore, the level of the encoders' HFT scores did not correlate significantly with either Cloze 1 or Cloze 2.

Table 5 summarizes the correlations between the decoder variables and the Cloze scores. Unlike the encoder HFT scores, the decoder HFT scores correlated significantly with both Cloze 1 and Cloze 2 scores. As predicted the ACT English score of the decoder correlated with both Cloze 1 and Cloze 2. None of the other decoder variables correlated significantly with the Cloze scores. The correlation between the Manifest Anxiety scores of the decoders and the number wrong on the HFT of the decoders was .02, which suggests that the anxiety of the decoders as measured by the Manifest Anxiety scale is unrelated to how many wrong a decoder had on his HFT.

Table 6 summarizes the correlations between the combination

TABLE 4

Correlations Between Cloze 1 Scores, Cloze 2 Scores and Other Encoder Variables

Encoder Variables	Cloze 1 score	Cloze 2 score
1. HFT score of the encoder	-.07	.11
2. Number wrong on HFT for encoder	.06	-.07
3. ACT English score of encoder	.33**	.08
4. Age of encoder	.05	.26*
5. Sex of encoder	.04	.16
6. Class standing of encoder	.09	.25*
7. T.A.T. Response Uncertainty level	.02	-.14

* Significant at the .05 level of confidence
** Significant at the .01 level of confidence

TABLE 5

Correlation Between Cloze 1 Scores, Cloze 2 Scores,

and Other Decoder Variables

	Decoder variables	Cloze 1 scores	Cloze 2 scores
1.	HFT score of the decoder	.26*	.38**
2.	Number wrong on HFT of decoder	-.37**	-.27**
3.	Sex of decoder	.10	.08
4.	ACT English score of decoder	.31**	.37**
5.	Decoder age	-.09	-.10
6.	Class standing of decoder	-.04	.02
7.	Decoder MAS score	.01	-.01

* Significant at the .05 level of confidence
** Significant at the .01 level of confidence

TABLE 6

Correlation Between Cloze 1 Scores and Cloze 2 Scores

and Combination Encoder-Decoder Variables

	Combination encoder-decoder variables	Cloze 1 scores	Cloze 2 scores
1.	Sum of HFT of encoder and Decoder	.08	.28*
2.	Encoder and decoder the same or different sex	-.07	-.02

* Significant at the .05 level of confidence

encoder and decoder variables. The sum of the encoder and decoder scores was significantly correlated with Cloze 2 scores but not with Cloze 1 scores. Whether the encoder and decoder were of the same or different sex was not significantly related to either Cloze 1 or Cloze 2.

None of the encoder variables were significantly correlated with the HFT of the encoders. The N was so small that correlations on the order of .70 are required to reach significance. Of all possible correlations between the decoder variables and decoder HFT scores only the correlation between decoder ACT English scores and HFT scores was significant (r=.26).

Multiple Regression Analysis

The results of the iterative multiple regression analysis are presented in Tables 7 and 8 for the Cloze 1 and Cloze 2 scores respectively. The Tables list the predictors of the criterion in the order of the magnitude of their contribution to the prediction. The R columns indicate the correlation between the criterion and the prediction using the variables listed to that point. The F column shows the F value for testing the significance of addition of the variable in that line to the prediction equation.

In Table 7, it can be seen that the ACT English scores of the encoders correlated .33 with the Cloze 1 scores. When the ACT English scores of the decoders were added as a predictor, the predicted Cloze 1 scores based on the combination of these two variables correlated .46 with actual Cloze 1 scores. The addition

TABLE 7

Iterative Regression Analysis on Cloze 1 Scores

	Variable	R	F
1.	ACT English score of encoder	.33	
2.	ACT English score of decoder	.46	12.61*
3.	HFT of the decoder	.49	3.41

* Significant at .05 level

TABLE 8

Iterative Regression Analysis on Cloze 2 Scores

	Variable	R	F
1.	HFT score of decoder	.37	
2.	ACT English score of decoder	.47	5.67*
3.	Class of encoder	.51	4.0*
4.	Sex of encoder	.52	2.53

* Significant at .05 level

of a third variable, in this case the HFT scores of the decoder, increased the multiple regression coefficient to .49. The F test indicated that adding the HFT scores of the decoder to the prediction equation did not add significantly to the prediction equation.

Table 8 shows that there were three variables which taken together, yielded a multiple regression coefficient between the predicted and actual Cloze 2 scores of .51. These variables in order of the magnitude of their contribution to the regression equation were; HFT scores of the decoders, ACT English scores of the decoders, and class standing of the encoders. Addition of the fourth variable, sex of the encoder, did not significantly increase the value of the multiple correlation coefficient.

Summary

The results of the present investigation are summarized below in terms of the hypothesis posed at the end of Chapter II.

1. The field dependence of the encoder as measured by the HFT scores will be a significant predictor of Cloze 1 and Cloze 2. This hypothesis was rejected since the listing of variables which significantly predict Cloze 1 and Cloze 2 did not include the HFT scores of the encoder.

2. The field dependence of the decoder will be a significant predictor of Cloze 1 and Cloze 2. The hypothesis was rejected. However, the HFT of the decoder was the most significant predictor of Cloze 2.

3. The sum of the HFT scores of the encoders and decoders will be

significant predictors of Cloze 1 and Cloze 2. This hypothesis was rejected because the variable was not among those listed as significant predictors of Cloze 1 or Cloze 2.

4. Response uncertainty of the T.A.T. cards which served as stimuli for the encoder stories will be significant predictors of Cloze 1 and Cloze 2. This hypothesis was rejected. The response uncertainty variable did not appear in the list of significant predictors of either Cloze 1 or Cloze 2.

5. The ACT English scores of encoders and decoders will be significant predictors of Cloze 1 and Cloze 2, but will be relatively poorer predictors either of the HFT score of the encoder or the HFT score of the decoder. This hypothesis was also rejected. The ACT English score of the encoders was the most significant predictor of Cloze 1 while neither the HFT of the encoder nor the HFT of the decoder was included in the listing of significant predictor variables. However, for Cloze 2 the HFT of the decoder was the most significant predictor while ACT English score of the decoder was the second in the list of predictors.

One of the factors which was tangentially related to the present study, but about which no predictions were made, was whether or not the anxiety of the decoder as measured by the Manifest Anxiety Scale would be related to the number wrong on the decoder's HFT. The results indicate that no relationship existed between decoder MAS scores and number wrong on the HFT.

CHAPTER IV

DISCUSSION

The purpose of this investigation was to determine if a relationship existed between field dependence and communication effectiveness. The analysis of the data did not unconditionally support the several specific relationships as hypothesized between these two variables. Discussion of the results in terms of the specific hypotheses tested follow.

Encoder Variables

It was hypothesized that the field dependence of the encoder as measured by the HFT would be a significant predictor of both Cloze 1 scores, and Cloze 2 scores, the criteria of communication effectiveness. It will be recalled that Cloze 1 refers to the score on the first set of encoder stories decoded by a given decoder and Cloze 2 refers to the score on the second set decoded by that decoder. Since neither the bivariate nor the multivariate analysis of the data indicated a relationship between the encoder's field dependency and communication effectiveness, the first hypothesis was rejected.

One of the factors contributing to the finding of no relationship between field dependency and communication effectiveness of

the encoders may have been the relatively low internal consistancy coefficients found for both Cloze 1 and Cloze 2 procedures. While Bertoch reported a split half, odd-even reliability coefficient of .86 for the Cloze procedure, the same reliability measure applied to the data of the present study yielded an *r* of only .63 for Cloze 1 and .66 for Cloze 2. Since the present investigator and Bertoch both used the same T.A.T. cards as stimuli to obtain encoders speech samples, it is difficult to explain the discrepancy between the reliability coefficients in the two studies. There does not appear to be any *a priori* reason why the messages of patients in a mental hospital should be more internally consistent in terms of the ease or difficulty of decoding than those of college students. Yet, the present results suggest that they are. It may be that hospitalized patients are typically more rigid, in that they are less able to react in more than the most superficial way to the most obvious aspects of the objective stimulus. Thus when patients responded to the T.A.T. cards their stories may have been more internally consistent but at the same time more stereotyped than those of college students.

Another possible factor contributing to the failure of the field dependency of the encoder to be a significant predictor of either of the Cloze scores may have been that the task of telling stories to T.A.T. cards did not elicit, or perhaps provide an opportunity for those encoder variables which are included under the rubric of field dependence-independence to be expressed.

Perhaps T.A.T. cards are too structured to adequately elicit such variables as the organization and structuring of experience. That is, since the stimuli are structured to some degree, the encoder was only minimally required to use his ability to structure and organize the stimuli about which he subsequently told a story. Had the encoding task required the encoder to organize and express his thoughts without the aid of such well structured external stimuli his speech samples might have reflected more of his field dependence. Such an explanation is supported by the research of Gottschalk, Gleser, and Hambridge, (1957). They investigated speech variables which they felt might be related to personality adjustment. Their methodology, in part, consisted of eliciting speech samples by means of two different procedures. One group of subjects told stories to several T.A.T. cards while another group talked about themselves for a period of five minutes in the presence of a psychiatrist. Gottschalk et. al. found more variables which discriminated between subjects who were well adjusted and those who were poorly adjusted in the speech samples of those who talked about themselves than in speech samples elicited by T.A.T. cards.

Witkin (1949) maintains that when one is attempting to measure various aspects of field dependence, it is important that the tasks demand an immediate or direct response to experience rather than an interpretation or an impression of those experiences. The use of T.A.T. cards may thus have decreased the possibility of obtaining the encoder's immediate experience and encouraged reliance on

confounding learned cognitive processes. It appears that field dependence is a relatively elusive factor easily masked by the intrusion of other learned skills. People apparently tend not to rely on those variables which constitute field dependence-independence unless they have no other learned skills in their repertoire on which to rely.

Decoder Variables

The second hypothesis of this study was that the field dependence of the decoder would be a significant predictor of communication effectiveness as measured by Cloze 1 and Cloze 2 scores. This prediction was based on Bertoch's experimentally supported hypothesis that both encoder and decoder characteristics contribute to the effectiveness of communication. This hypothesis was partially confirmed. In the multiple regression analysis the field dependence of the decoder approached, but did not quite reach statistical significance as a predictor of Cloze 1 scores, while it was the most significant predictor of the Cloze 2 scores. In the bivariate analysis of the data, the decoder field dependency measure was significantly correlated with both Cloze 1 and Cloze 2 scores.

The differences in the two sets of significant predictors of Cloze 1 and Cloze 2 is difficult to explain. The two significant predictors for Cloze 1 were the ACT English scores of both the encoders and decoders while the significant predictors of Cloze 2 scores were, in order of their contribution to the prediction equation, the field dependence of the decoder, ACT English scores

of the decoders, and the class standing of the encoder. One is led to hypothesize that there was a shift with experience in the decoding task, from dependence on linguistic skills as measured by the ACT English scores to dependence on one's more characteristic modes of approaching tasks as represented by the HFT scores (experience as it is used here is not intended to mean improvement in scores). Such a hypothesis is supported by the significant relationship found between the Cloze 1 scores and the ACT English scores of the encoder, (r=.33), while the relationship between Cloze 2 scores and the encoder's ACT English scores was not significant. Conversely, the correlation between the HFT scores of the decoders and the Cloze scores increased from an r of .26 on the first attempt to decode to an r of .38 on the second attempt. Although the relationship was between encoder's ACT English scores and both Cloze scores in the first instance and decoder's HFT scores and both Cloze scores in the second, these results do offer suggestive evidence of an increased effect of decoder field dependence as a predictor variable from Cloze 1 to Cloze 2.

The shift from relatively more cognitive skills to other, perhaps more personality based modes of approaching tasks in the environment postulated above corresponds to the writer's clinical observations. For example, the first meeting with a new client typically arouses some anxiety and general discomfort in the therapist, so that there seems to be some cautiousness and heightened attention to details concerning the reasons for the person seeking

help, selective attention to the way in which he presents himself and so on. Soon after this initial meeting however, the therapist increasingly tends to make use of more aspects of himself and his characteristic ways of approaching people who are seeking help.

Sum of HFT Scores

The third hypothesis of the present study was that the sum of the HFT scores of the encoders and decoders would be a significant predictor of communication effectiveness. This hypothesis was rejected. The bivariate analysis showed that the HFT sum was correlated significantly with Cloze 2 (r=.28), but not Cloze 1 scores (r=.08). Evidently, it was the HFT scores of the decoders which accounted for this significant correlation with Cloze 2 scores since the HFT scores of the encoder were not significantly correlated with either Cloze 1 or Cloze 2.

Response Uncertainty

Contrary to the prediction made, the response uncertainty of the stimulus T.A.T. cards did not prove to be a significant predictor of communication effectiveness. Thus the fourth hypothesis was rejected. Bertoch (1966) found relatively complex relationships among response uncertainty, as measured by the stimulus ambiguity of the cards, Cloze scores obtained from his encoder's stories and his measure of the type of psychopathology in his encoders. His results indicated that it was his 'sickest' (Bertoch's term) encoders who told more easily decoded stories in

response to low response uncertainty T.A.T. cards. He also found that stories told about high response uncertainty T.A.T. cards by other members of the same encoder group were the most difficult to decode. Thus, the more ambiguous the stimulus to which his 'sickest' encoders responded, the more difficult it was to decode their stories. Bertoch hypothesized that just the opposite would be true for normal encoders. He did not explain the reasoning behind this prediction, but there does not appear to be any *a priori* reason why this should follow. The results of the present investigation did not reveal any significant relationship between response uncertainty and communication effectiveness either on the bivariate or the multivariate analysis. Thus Bertoch's statement that for 'normals' more ambiguous stimuli would elicit more easily decoded stories was not confirmed under the conditions of the present study.

ACT English Scores

It was predicted that the ACT English scores of the encoders and the decoders would be significant predictors of the two Cloze scores, but less important than the HFT scores of the encoders or decoders. This fifth and final hypothesis was rejected. The ACT English scores of the encoders and the decoders were the only significant predictors of the Cloze 1 scores, while Cloze 2 scores were predicted most significantly by the HFT of the decoder with the ACT English score of the decoders the next most significant predictor. These results support Osgood's (1959) hypothesis that the Cloze procedure is among other things, a measure of linguistic facility.

Decoder MAS and HFT Scores

Though a matter of peripheral interest in this investigation, the Manifest Anxiety Scale scores of the subjects were evaluated in order to determine whether a relationship existed between the decoder's Manifest Anxiety score and the number wrong in their HFT performance. No relationship was found between MAS scores and the number wrong on the decoder's HFT. Although it appears that people who attempt and fail many of the HFT problems may differ from those who attempt only a few problems, none of the variables in the present study provided information (clues) about such differences. It may be that the number wrong on the HFT is related to Allen Edward's social desirability variable (Edwards, 1957). That is, an attempt to respond to many of the items at the expense of accuracy may be a reflection of an S's attempt to 'look good', to put his 'best foot forward' or to please the experimenter. Whether or not this may be the case, Manifest Anxiety as measured was not related to the number of wrong HFT responses.

Encoder Class Standing

Bertoch (1966) found that the age, educational level, and the degree of psychopathology of the encoder, were significantly related to communication effectiveness. Only one of these three findings was supported by the results of the present investigation. Both the bivariate and multivariate analysis indicated that there was a significant relationship between the class standing of the encoder and Cloze 2 scores. There was no ready rationale which

would explain why this particular variable among all the potential predictors of the Cloze scores should be significantly related to Cloze 2. While encoders were selected from pilot study subjects on the basis of their HFT scores, an examination of the data revealed that only three of the encoders were other than 18 year old freshmen. It seemed possible that the results with respect to class standing were a function of individual differences associated with these three encoders. If age and class standing were to be meaningfully included as encoder variables, a larger number of encoders should have been used.

Field Dependence and Communication

Several possible explanations for the failure to support the hypotheses have been discussed. However, an attempt to explain the relationships which were found may also be useful in future explorations of variables affecting communication. The results of this investigation suggest that the most important variables in predicting communication effectiveness, under the experimental conditions which prevailed in this study, are the language facility of both the encoder and decoder and the field dependence of the decoder. It may be that if the decoder and the encoder have a common linguistic background the degree of field independence of the decoder is crucial in his ability to comprehend the message another person is sending. In a clinical setting this may be related to being a 'good listener'. Hayakawa (1962), captures in part what is being suggested in this context in his theorizing about the

necessary elements of successful communication. He states that when a person encodes a message, the other person's response to that message is not just a negation or acceptance of the message alone, but is felt as an acceptance or negation of the encoder as well. What is needed for successful communication, according to Hayakawa, is to be able to listen, to be able to see how the other person sees things even though you don't agree with him rather than rejecting the message outright.

Gendlin (1966), in talking about research in psychotherapy with schizophrenic patients uses the term 'empathetic understanding' to describe what is meant here by being a 'good listener'. He states that in listening to a patient it is not the words which we hear and know but the '... felt experiencing, the felt referent, the mass of inner momentary meaning, which we do not fully know. This felt experiencing, is not what people say but rather what they talk from. And it is only as they work with this experiencing, and as its felt meanings evolve, does change happen in any psychotherapy' (Gendlin, 1966, p. 9). To be a 'good listener', in the sense described here, may require some of the personality characteristics attributed to the field independent person such as the ability to analyze and synthesize one's experience in the interaction with others.

Perhaps, in line with present results if a decoder is a 'good listener', as described, then the kinds of messages he has to decode are relatively unimportant as far as comprehension of the messages is concerned. Clinical experience dictates that while some encoders are more difficult to understand or to 'get with' than

others, their messages are nonetheless comprehensible. This does not deny that the field dependence of the encoder has an effect on the kinds of messages he produces, but it does suggest that encoder field dependence may have little to do with the comprehensibility of the message per se. It may be that the encoder's field dependence is reflected mainly in terms of his verbal style.

Osgood (1960) stated that style is concerned more with structural choices than with lexical choices, i.e., how a person talks rather than what he talks about. Thus, the effects of the encoder's field dependence on the message may have to be measured by techniques which will discriminate between the stylistic and other components in a message. For example, such stylistic variables as the number of sentences, the number of nouns, the number of personal pronouns and so forth (Carroll, 1960).

In clinical practice many more messages are being exchanged between the participants and many more channels of communication are being utilized than the decoding task utilized in the present study. For the therapist in the clinical setting the decoding task is not simply to decode a static message but rather to attempt to understand or 'get with' a person. In order to accomplish this decoding task he must be responsive to multilevel and multichannel messages and he must attempt to reconcile the possible contradictions between them. It is in this kind of setting that encoder style may become an important source of data about the encoder, and would most probably, effect the comprehensibility of his message as

it relates to his total functioning as a person.

The Hidden Figures Test and the Cloze Procedure

The Cloze procedure did not appear to be an adequate method of ascertaining the effects of field dependence on communication effectiveness for the several reasons already enumerated. Furthermore, its reliability is relatively poor as revealed by its internal consistancy. However it does have the advantage of having been used in several communication studies and thus makes comparisons between studies possible. In comparing the results of the present investigation with those of Bertoch (1966) it was found that the Cloze scores which he obtained had a wide distribution as compared with the Cloze scores in the present study which had a relatively restricted range. Thus it may be that unless the group or groups under study vary more widely, in terms of the relevant variables, than the college students in the present study, the Cloze procedure would not be the method of choice.

In future research in the area of field dependency and communication effectiveness the number of variables investigated may profitably be reduced. At least among college populations, such variables as sex, class standing, and age are apparently of relatively little significance. If on the other hand the Cloze procedure is to be used as an index of communication effectiveness in future research it may be wise on the basis of the present results to control the linguistic facility variable or verbal intelligence so that the effects of field dependence and other variables of interest

will not be masked by the operation of the language facility variable. Pearl, (1963), found that verbal facility as measured by the vocabulary subtest of the WAIS was more discriminating with respect to ability to process information than was the presence or absence of schizophrenia. Thus the variable of linguistic facility, however measured, seems to account for much of the variance in communication tasks.

The Hidden Figures Test. The HFT, as contrasted with the Cloze procedure, seems to have a relatively high degree of internal consistency. While it remains to be seen whether it correlates significantly with indices of field dependence other than the Embedded Figures Test, the HFT appears to be a promising tool for future research in the area of field dependence-independence. It would be particularly valuable where a measure of field dependency for large groups is desired.

SUGGESTIONS FOR FUTURE RESEARCH

The present study provided additional support for the hypothesis that there is a relationship between field dependence and communication effectiveness, and for the relationship between the technical ability to use the English language and communication effectiveness. Specifically, both the verbal skills and personality characteristics of the decoder were found to be significant variables related to communication effectiveness. These findings raise a number of important and critical questions concerning the conditions under which encoder personality characteristics such as

field dependence become significantly related to communication effectiveness. For example, it would be useful to know whether the results of the present study were significantly influenced by the nature of the task presented to the encoder. A clearer indication of the importance of the encoder's field dependency in communication effectiveness might be obtained if the encoder were asked to respond to less structured stimuli such as a Rorschach Ink Blot. A study could be conducted in which the stimuli to which the encoder responded were varied from responding under conditions of a minimum of external stimuli, to highly structured stimuli like reciting a poem. The HFT scores could be correlated with the Cloze scores on the speech samples elicited by these stimuli to see if they differed significantly.

It would also be useful to know to what extent the results of this study were a function of the limited stimulus of the decoding task. Certainly the many vocal and behavioral cues which are present in face to face communication were absent in the present study. Such cues as role, status and self attitudes which are present in bodily movements, gestures, dress, tone quality and pitch changes in the voice were not available to the decoder. An initial step in investigating this question could be made by having clinicians judge the effectiveness of communication between client and counselor in counseling sessions. These judgements could then be correlated with the HFT scores of the two people involved in the counseling hour to determine whether the relation-

ship between field dependence and communication effectiveness increases as a function of the greater number of cues available.

Another approach to the same problem would be to pair subjects of similar intellect and cultural background and assign them the task of getting to know one another well enough to accurately describe the person with shom they were paired. Observations could be made of such variables as who initiates the conversation, who talks the most, etc. The verbal descriptions could then be judged for completeness and comprehension. The conversation and comprehension variables could then be intercorrelated with previously obtained HFT scores, to evaluate whether there is an increase in the relationship between communication effectiveness and field dependence.

Gendlin (1966), has conducted studies, similar to the one just described, in which an attempt was made to explore the important therapist and patient variables which produde personal change in psychotherapy in a hospital setting. He found change was correlated with adjudged experiential involvement of both therapist and patient with one another. It is thus implied that if the therapist can be himself without hiding behind his professional role and if the patient is able to talk from his inner experience then change can occur.

Gendlin stated that if research in psychotherapy is to progress one has to begin to define and measure what is going on in the therapeutic hour. To paraphrase Gendlin, if progress is to be made in communication and communication effectiveness, we have

to define and measure what occurs when people communicate in face to face situations. In the writer's view the value of this kind of research would depend on the ability to measure the effects of the many complex variables involved.

CHAPTER V

SUMMARY

This study was concerned with the relationship between field dependence as measured by the Hidden Figures Test (HFT) and communication effectiveness. Because other investigators had found that variables such as age, education, and response uncertainty provided by the stimulus were related to communication effectiveness, the present study also sought to determine the significance of field dependence in relation to some of these other variables.

Twelve subjects were selected from the lower, middle and upper ranges of the field dependency continuum as measured by the Hidden Figures Test to serve as the encoders for this study. The encoders were divided so that half of them told stories about relatively unstructured T.A.T. cards (high response uncertainty) and half to T.A.T. cards that were relatively structured (low response uncertainty). Typescripts were made from which every fifth word in the stories was deleted.

One hundred four decoders, from whom HFT scores had been obtained, filled in the blanks in the deleted stories. Each decoder had two sets of stories to decode, one set from an encoder who responded to high response uncertainty cards and one set from an encoder who had responded to low response uncertainty cards. The

scores for communication effectiveness, Cloze 1 and Cloze 2 were the percent of verbatim fill-ins in the encoder's stories.

The bivariate analysis showed that the HFT scores of the encoder were not significantly correlated with either Cloze 1 or Cloze 2. The correlation between the HFT scores of the decoder and the Cloze 1 and Cloze 2 scores were both significant. While the ACT English scores of the decoder were significantly correlated with both Cloze 1 and Cloze 2 scores, the ACT English scores of the encoders was significantly correlated only with Cloze 1. The degree of ambiguity of the T.A.T. cards was not significantly correlated with any of the varialbes in the present investigation. The sum of the combined encoder and decoder HFT scores did not correlate significantly with Cloze 1.

The results of the multivariate analysis showed that the variables which predicted the Cloze 1 scores and the Cloze 2 scores differed. For Cloze 1 the significant predictors in order of the magnitude of their contribution to the prediction equation were the ACT English scores of the encoders and the ACT English scores of the decoders. The HFT of the decoders approached but did not reach significance at the .05 level of confidence. For Cloze 2 scores the significant predictors in order of their importance were HFT score of the decoders, ACT English score of decoders, and the class standing of the encoders.

Several possible reasons for the failure of the encoder HFT scores to significantly predict the Cloze scores were discussed. Among them was the possibility that the T.A.T. cards presented to the encoders were too structured and thus did not force the encoder

to rely on his abilities to analyze and structure what he communicated. It was suggested that eliciting responses related more closely to the degree of field dependence might be accomplished by giving the encoder a task such as describing himself to the experimenter.

It was concluded however, that under the conditions of the present study and with college students as subjects it was primarily the decoder variables which determined the effectiveness of communication. Thus if the decoder has a fairly good knowledge English usage and is relatively field independent the field dependence or independence of the encoders does not appear to relate to the effectiveness of communication.

Directions for future research were suggested, including devising methods of evaluating the conditions under which the encoder and decoder variables become significantly related to communication effectiveness.

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APPENDIX A

Sample of Deleted Stories

Encoder B_2

Story 15

Well this fella has _____ murdered someone, he looks _____ he might be that _____ of a character. And _____ at this person's grave _____ and he's got some _____ going through his mind _____ to how and why. _____ to me like a _____, I don't know what, _____ a dracula movie or _____. He may be thinking _____ his next victim. Looks _____ a very evil person, _____ don't know, just the _____ around his eyes and _____ black and grey here. _____ he may regret it _____ and turn himself into _____ police. He may have _____ thinking about why he _____ the guy. I guess _____ conscience has been bothering _____ and he went back _____ the grave.

Story 19

This looks _____ an abstract painting to _____, I don't know. Well _____ looks as if there _____ a dragon here and _____ coming around a peninsula _____ there's a beach house _____ and it's real _____ and stormy night and

_____ clouds are hanging pretty _____ and the wind is _____ the waves up into _____ house and it looks _____ quiet in the house _____. This dragon, I guess _____, looks like he'll come _____ around the peninsula into _____ house or he'll try _____ scare whoever is _____ there and finally demolish _____ house. And then the _____ will finally cease and _____ sea will calm down _____ the dragon will disappear _____ go back to his _____ of hiding. Looks as _____ this is a real _____ place so they'll probably _____ find the people who _____ there or least they _____ find them for a _____ time.

Story 11

Well this looks _____ it's inside a cave _____ there is some prehistoric _____ weird animal that's coming _____ of a hole in _____ wall and he's trying _____ get at some people _____ a ledge inside the _____ and it looks like _____ has been a landslide. _____ a bunch of big _____ and there's a narrow _____ up to the area _____ the people are, and _____ the only way there. _____ people are frightened, they _____ know which way to _____ and the only way _____ is across the path, _____ the rock path. They _____ about to panic. They _____ know how they got _____ here, they just happened, _____ wandered in this cave _____ happened on this great _____ room and they had _____ explore a little bit _____ see what they could

_____ and now they are _____ trouble. The monster is _____ out of the hole _____ the wall there and _____ come down the rocks _____ the people. They'll make _____ past the narrow rocks _____ across the narrow path _____ just in time before _____ lunges at them.

Story 18 BM

Well _____ looks to me that _____ man has no self _____; he's either dead or _____ or something, I don't _____. Looks as if he _____ be dead. There are _____, one hand is on _____ neck and one hand _____ on his arm and _____ maybe his killer there, _____ they're in a very _____ place because you can _____ the other person. A _____ alley or a very _____ room. Could this be _____ business man or something; _____ got a black suit _____ and an overcoat so _____ must be cold weather, _____ weather. The killer is _____ ready to dispose of _____ body. He might of _____ some business dealings and _____ one fellow wasn't too _____ or something, he felt _____ was slighted so he _____ this man or maybe _____ business dealings were a _____ bit illegal and he _____ afraid that somebody would _____ him out so he _____ him. Well he dumps _____ body in a lake _____ something like that, the _____ or a river the _____ after much work find _____ and find the body. _____ finally found in a _____ country under an alias. _____ brought back to this _____ and tried for murder _____ he's sentenced and put _____ prison.