AN EXPERIMENTAL DOUBLE-BIND AND COMMUNICATIVENESS

by

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CHAPTER I

FORMULATION OF THE PROBLEM

Origins of Double-Bind

A group of researchers at the Mental Research Institute in Palo Alto, including Gregory Bateson, Don Jackson, Jay Haley, and others, began over a decade ago systematically studying schizophrenic communication as part of a general study of communication. Communication was considered the 'social matrix' of psychiatry (Mora, 1959),[1] so that behavior was viewed primarily as a response to the observable communications of others. Behavior was also described as being communicative.

The research group at Palo Alto stressed the complexity of communication; they advanced the idea that communication never consists simply of one message, but at least two related messages. Satir (1964)[2] described the two distinct levels of communication, the 'denotative,' or literal, and the 'meta-communicative,' or that which qualifies the literal and reflects the relationship of the speaker to the listener. Communication, on both levels, may take place via verbal and/or non-verbal channels. There is thus a proliferation of possible meanings which creates difficulty for someone confronted with the task of decoding communication.

Bateson, et al. (1956),[3] in an attempt to illuminate the origins of communicational patterns peculiar to schizophrenia, proposed an explanatory concept labelled the 'double-bind.' They had observed that schizophrenic patients have a great deal of trouble comprehending the

communications of others; furthermore, they produce communications which others find extremely difficult to interpret. Bateson and his co-workers reasoned that many schizophrenics must have been exposed at some time in their lives to communication that was very unclear. The double-bind was considered a model of such communication. A double-bind was said to occur if two orders of messages are expressed, on different communicational levels, and one message denies the other. If the individual exposed to such communication feels that he must discriminate accurately what is being said to him, the only appropriate response would be to confront the source of the contradictory or incongruent messages and ascertain which message was intended. Double-binding is disruptive, it was suggested, when the individual confronted with incongruent communication is prevented from commenting upon the situation. He must then respond to incongruent messages, neither of which he can logically respond to inasmuch as an affirmation of one amounts to a negation of the other. According to Bateson, et al., repetition of a communicational context of this nature provides an appropriate context for the learning of schizophrenic communicational patterns.

This approach to schizophrenia focuses on the interpersonal, communicative aspects of the disorder, not its intrapsychic components. An interactional approach was adopted, in contradistinction to simple cause and effect analyses. It was suggested that schizophrenics must have been raised in a universe where the sequences of events were such that their unconventional, and apparently dysfunctional communicational habits were somehow appropriate. A pattern of family interaction

fitting this model was outlined. When a child is repeatedly given incongruent messages to decipher--and is threatened with punishment should he respond unambiguously to one of the messages, thereby denying the other--he will eventually develop a style of communication like that to which he has been exposed. He does this not so much by choice, but rather to avoid punishment. He must avoid making any clear response, and he can best accomplish this by producing incongruent messages of his own.

Watzlawick (1964)[4] in his discussion of the impossibility of not responding to communication, helped greatly to add to our understanding of schizophrenic interaction. According to Watzlawick, one cannot not communicate. In a double-bind situation, a victim may attempt to avoid punishment by not responding to the double-binding messages. However, this refusal to respond, or withdrawal, is certainly not uncommunicative. The victim has made it clear that he cannot hazard an overt response, whereupon the binder may ignore this fact and demand a response or he may inquire as to what is preventing the victim from saying anything; in any case, communication continues. Bateson, et al. (1956)[5] observed that parents prone to delivering double-binding communications to their children are not likely to allow the children to comment on the binding, nor are they likely to be sensitive to withdrawal or disturbances of communication in their children. Such parents are likely to produce a schizophrenic child.

Although a great deal of clinical evidence has been accumulated to document communicational disruption caused by double-binding, no

research has been conducted demonstrating conclusively the relationship between double-binding and the acquisition of schizophrenic communication. Schuham (1967)[6] suggested that the lack of an explicit definition of the double-bind has caused trouble for those interested in putting the concept to productive use in preventive mental health efforts. It is encumbent upon psychologists to refine and clarify the double-bind concept if it is to be of any use in dealing with the problem of schizophrenia.

Watzlawick (1963)[7] presented an outline of what he believed to be the specific conditions necessary for occurrence of a double-bind: there must be two or more persons, one of whom is designated as the victim; a primary negative injunction is offered the victim, generally of the form "Do not do such and such or I will punish you"; a secondary injunction is then offered, conflicting with the first at some, usually more abstract, level, and like the first enforced by the threat of punishment; a tertiary negative injunction prohibits the victim from physically leaving the field of communication; finally, once the pattern has been established, any part of the sequence can trigger a reaction in the victim.

Schuham (1967)[8] has criticized Watzlawick's definition for overlooking many of the types of double-binds which have been observed in clinical settings. He questioned, among other things, Watzlawick's restriction of the double-bind to situations involving two or more persons. Bateson (1959)[9] had indicated that cultural norms and prohibitions can place an individual in a double-bind, although no

specific person or persons can be identified who have mediated the cultural process. Schuham also points out that it is incorrect to insist that there must be a prohibition of escape for a double-bind to take place. The earliest approach to the problem of definition of the double-bind concept was taken by the original authors of the notion.

Bateson, et al. (1956)[10] suggested that it was the structural features of a double-bind, particularly the incongruent messages delivered at different communicational levels, that accounted for its pathogenicity. However, even in the original paper, there are deviations from the conclusion that structural factors are critical for double-binding. Schuham (1967)[11] noted that the Bateson group emphasized the importance of such factors as an intense relationship between binder and victim, victim's need to discriminate accurately what was being said to him, and the necessity for repeated experience. The term coined to combine these factors was 'survival significance.' It was suggested that for a double-bind situation to be pathogenic, the situation must have survival significance for the victim. Unfortunately, the meaning of survival significance was never spelled out.

Subsequent to the original formulation, there have been many modifications, expansions, and revisions of the double-bind concept. In some instances the concept was so broadened as to lose its specificity and explanatory value. Bateson (1961),[12] modifying his earlier views, asserted that a double-bind may be said to exist in any interaction in which an individual's initial expectations are later proven incorrect. Since this would include such situations as that of a moviegoer who

goes to a lousy movie, or a baseball player who swings and misses, it is clear that nothing is gained by this definition. The crucial distinction, between choices that are logically possible and those that are not, is not made in this definition.

A valuable study of the double-bind concept was carried out by Sluzki, et al. (1967),[13] who identified a type of double-binding called 'disqualification.' In disqualification, messages delivered to the victim are generally not expressed overtly, yet victims of this type of double-binding are as disturbed, according to the authors, as victims of 'classical' double-binding. Disqualification occurs when speaker A responds to a communication by speaker B in such a manner as to ignore B's message, offering instead one of his own. If a double-bind is to be avoided, speaker B must comment on what speaker A has done. If he does not do this, the discussion, and ultimately his relationship with speaker A will end. Often, the authors observed, speaker A made it difficult for speaker B to comment on the dilemma, by virtue of concealment of his message or through his power over B. Speaker B is then left three choices: he can withdraw from the discussion; he can accept A's terms, proceeding to discuss A's message and ignoring his own; or, he can counter-disqualify, by ignoring A's new message. As long as no explicit discussion of the disqualification takes place, harm must come to the relationship between A and B. The same will occur when, in his communication, A disqualifies his own message, leaving B uncertain as to what he actually means. If B is unable to comment on A's self-disqualification, he will not know how or to what to respond. A

response to one of A's messages constitutes a negation of the disqualifying message. Again, only explicit comment can extricate the participants from the dilemma.

If speakers A and B are involved in a heated argument, it is likely that little harm will come to their relationship as long as no disqualification takes place. Ordinarily, the transition from an argument to disqualification begins when one of the participants introduces a personal vendetta into the argument. This invariably involves ignoring the other's message. Watzlawick, et al. (1967)[14] have drawn the distinction between paradox, such as occurs in double-binding, and a contradiction or conflict. This distinction applies to the difference between an argument and disqualification. In a paradox, it was suggested, neither alternative stands by itself since each is negated by the other. Conflicts, on the other hand, arise from the existence of mutually exclusive alternatives, such that only one can be correct. While conflicts or contradictions, such as arguments, are resolvable without recognizing the structural features of the communicational situation and commenting on them, paradoxes give only the illusion of choice. The crucial difference between a double-bind and other varieties of conflict may well revolve around the problem of levels of communication.

In a conflict, a disagreement or difference takes place on only one level of communication. For instance, an individual may be asked to judge which of two lights is brighter. If they are very similar in degree of illumination he may find it hard to choose. Yet it is

logically possible, indeed desirable, for him to make a choice. This is not true of a two-level 'conflict.' In the case of disqualification a victim cannot simply choose to respond to the binder's new message or to continue his own, disqualified one; that is, he can choose, but only at a great psychological cost.

Bateson (1962)[15] explained that in a double-bind, the victim is faced with two messages which seem to be independent, but in truth are not. Mishler and Waxler (1966)[16] cited an instance of this sort: "A young man who had fairly well recovered from a schizophrenic episode was visited in the hospital by his mother. He was glad to see her and impulsively put his arm around her shoulders, whereupon she stiffened. He withdrew his arm, and she asked 'Don't you love me any more?' The son blushed." The mother had indicated verbally that she wanted her son's affection, but when he offered it, she physically rejected him. His only option, which, incidentally, he could not exercise due to his illness and a long history of double-binding communication by his mother, was to comment to her about the contradiction in her behavior. Comment was also the only appropriate solution in another double-bind, cited by Watzlawick, et al. (1967):[17] A mother had placed a great deal of emphasis on achievement by her son. Responding to her wishes he stayed home a great deal of the time studying. On many a beautiful Saturday he stayed at home, and his mother approached him and chastized him for not being outside with the other children playing "on such a nice day."

In the first illustration, the contradictory messages are delivered by the mother verbally, then physically. In the second

illustration, both messages are verbal, but one provides a context while the other is a particular within that context. In both cases different levels of communication are involved, but 'levels' means different things. Schuham (1967)[18] concluded that there is as yet no definitive meaning of the term levels in double-bind literature. Some of the dimensions proposed as levels appear to relate to the communication itself, while others are more closely related to the individuals doing the communicating. Some of the pairs of levels that have been mentioned as being related to double-binding are verbal-*non*verbal, communicative-meta-communicative, abstract-concrete, particular-contextual, and intellectual-affective. There is no basis as yet for considering any of these dichotomies more central to double-binding than any of the others.

It is essential, however, to distinguish between conflicts involving different levels of communication, and those which involve only one communicational level. In the varieties of standard conflicts discussed by Brown (1963),[19] including approach-approach, approach-avoidance, and avoidance-avoidance conflicts, resolution is always possible without the individual's blurring the meaning either of his own or the other's communication. Miller (1957)[20] suggested that standard conflicts can always be resolved, given sufficient motivation on the part of the subject or victim to make a choice.

Bateson (1961)[21] discussed in great detail some of Pavlov's experiments with dogs, as examples of paradoxical double-binds. Experimental neuroses were produced by training dogs to discriminate

between a circle and an ellipse, then gradually rendering discrimination impossible by expanding the ellipse to look more and more like a circle. The experimenter, having imposed on the dogs the vital necessity for correct discrimination, then made discrimination impossible. The survival of the dogs was made to depend on a law which violated itself, and not unexpectedly, severe 'anxiety' reactions were produced. Watzlawick et al. (1967),[22] analyzing this experiment, concluded that if human subjects were exposed to such a predicament, they might conclude that they have been denied some vital clues, and then initiate a search for the missing information; they might passively accept the situation, deciding that it is wiser not to look too deeply into things; they might withdraw from the situation through closing of sensory input channels, as in perceptual defense; or they might become hyperactive in an attempt to drown out the incoming message. These four classes of response correspond to clinical pictures of the paranoid, hebephrenic, stuperous catatonic, and agitated catatonic, respectively.

The double-bind may be construed as a special type of learning context, based on avoidance of punishment. The victim may learn dissociative, neologistic, metaphoric, or concrete speech patterns, such as characterize schizophrenic communication, in order to avoid the punishment attendant upon emitting a clear response. According to Laing (1961),[23] in order to avoid the most serious kind of punishment, withdrawal of love or abandonment, a child will deny important aspects of his experiences or of his 'self.'

Arieti (1959)[24] maintained that most persons are exposed to

double-binding at some time in their lives, so that there must be some way of accounting for the pathogenicity of double-binding in some instances but not others. There may be areas of individual functioning in which there is a more "crying need for confirmation" than others. Perhaps, the content rather than the structure of double-binds, discussed previously, determines their pathogenicity. Mishler and Waxler (1966)[25] stressed the significance of substantive issues in a double-bind. Many other investigators (Spiegel and Bell, 1959;[26] Goldfarb, 1961;[27] Clausen and Kohn, 1960[28]) have shown how in one family double-binding will produce a schizophrenic member but not in another.

In order to explain this, Searles (1958)[29] studied families in which double-bind interactions consistently take place, yet no family member comes to be identified as schizophrenic. He attributed this largely to the child's "loving and loyal sacrifice of his own individuality" in order to preserve the mother's unstable personality equilibrium. This is especially necessary when, as suggested by Bateson (1960),[30] double-binding serves a defensive function for the mother who is afraid of the arousal of hostile feelings on her part towards her child should she allow herself to become intimate with him. Instead, she keeps him at a distance by delivering incongruent messages. A mother likely to double-bind her child most likely experiences a pathological amount of anxiety when confronted with problems of feeling and control. She reacts to her child by rewarding him for helping her maintain her defensive system. Thus, the child learns to respond with incongruent

messages of his own, and a double-binding pattern of communication is established.

In their approach to the problem of schizophrenia, the Bateson group rejected a single cause and effect model. The essence of their approach was that it was interactional. The pathogenicity of double-binding communication depended on the victim's inability, for one reason or another, to respond appropriately. Recent theorizing about schizophrenia, at least within a psycho-social framework, avoids simple cause and effect notions like that of the 'schizophrenogenic mother,' popular a decade ago. Mishler and Waxler (1966)[31] undertook a comparison of the line of thinking developed by the Bateson group with two other programs of research: those of the Lidz group at Yale, and the Wynne group at the National Institute of Mental Health.

Bateson and his co-workers took a transactional view, wherein schizophrenia was regarded as the product of distorted interaction. Bateson (1962)[32] suggested, for example, that in certain families children are punished for attempting to help solve family problems by being open and concerned. This observation represented an extension of the double-bind concept. At first, the mother-child relationship was assumed to be the context for double-binding. However, Haley (1959)[33] demonstrated that more often the entire family is involved. He pointed out that although all families must deal with the problem of defining their interrelationships, families with schizophrenic members often act as if no one were setting rules. Haley noted further that children of such families seemed to deny one of the aspects of their meta-

communication--that is, they tended to deny one part of the message: (a) I, (b) am saying something, (c) to you, (d) in this situation. Since these metacommunications help define the relationship between two individuals, denial of metacommunication can only disrupt a relationship.

Satir (1964)[34] observed such patterns of denial during her family therapy sessions, in families she called 'dysfunctional.' These, she indicated, are families in which members could not firmly state their points of view, qualify or clarify them, ask for feedback, or be receptive to feedback. Such families, according to Satir, are most likely to produce a schizophrenic member. Bateson (1960)[35] asserted that the communications of schizophrenics often make it appear that they do not wish to be held responsible for what they are saying.

An individual who is exposed repeatedly to double-binding will soon be unable to break down the double-bind communication himself, but will require outside help. According to the Bateson group, the victim of a double-bind can only respond appropriately--that is, in such a way as to short-circuit double-bind communication--if he is aware of the dilemma. Awareness, leading to comment and change, was held to be necessary in order to break down a double-bind pattern from within. However, Schuham (1967)[36] suggested that the opposite may be the case: that there can be no double-bind unless the victim is aware of his predicament. As with most problems pertaining to the double-bind hypothesis, the role of awareness in the process of double-binding is unclear.

Previous Research

The most glaring weakness in the double-bind hypothesis is the absence of empirical support for the notions that have been advanced to date. Schuham (1967)[37] blamed this on the lack of a clearcut definition of the double-bind, which is responsible for a proliferation of interpretations that make it impossible to investigate specific features of the concept. Mishler and Waxler (1966)[38] observed that there are as yet no adequate criteria for deciding whether or not messages in a double-bind are incongruent. It remains unclear whose perspective is to be used for ascertaining the presence of incongruence, that of the participants or that of observers. Problems in relation to the double-bind concept should not deter researchers from pursuing clarification and operationalization.

Ambiguities in the definition of the double-bind have not prevented investigators from putting the concept to good practical use. Haley (1963)[39] analyzed a therapeutic encounter employing double-bind theory. Scheflen (1960)[40] underscored the usefulness of the double-bind notion in Rosen's 'direct analysis,' which enjoyed tremendous popularity for a while. Watts (1961),[41] in an application of the double-bind which may one day prove most important, described the double-binds inherent in our relation to our so-called free society. We are supposed to act as if we were independent agents, but we are not to know that we are merely acting. The rules of the game confer independence, and at the same time take it away, without revealing the contradiction this entails. Black people, especially, are often told

one set of things, but are confronted daily with the opposite. They are told their opportunities are equal to those available to whites, yet objective facts continually deny this. Under these conditions, one would expect a blunting of communication between binder and victim, such as we are witnessing in black-white relations. If a clue may be taken from double-bind theory, an awareness of the precise nature of the problem is a necessary first step to a solution. When it is not possible to convince the binder to stop binding, the only option left is to attempt to curtail the binder's power over the victim.

In reviewing the research on the double-bind, Schuham (1967)[42] found only five experimental studies of the concept. A brief description of these studies will be presented here, along with some of Schuham's pessimistic conclusions and the present author's more optimistic ones.

Ciotola (1961)[43] presented a series of impossible discrimination tasks to matched groups of schizophrenics and non-psychotic psychiatric patients. He expected that schizophrenics would show greater impairment on subsequent easy discriminations. The impossible discriminations were labelled double-binds, following the Pavlovian model. Contrary to expectations, the schizophrenic group showed no greater impairment than the group selected for comparison.

Berger (1965)[44] asked four groups of subjects to respond to a questionnaire tapping memories of double-binding in mother-child relationships. Although one of the groups, schizophrenics, reported more 'double-bindingness' in their mother-child relationships, this must be regarded as a tentative finding, due to evidence that has been

gathered attesting to the unreliability of memory in studies of this sort.

Potash (1965)[45] created a two-person, three-choice game, which entailed a possibility of contradictory communication between players. Contrary to his hypothesis, schizophrenic subjects showed no greater tendency to withdraw when exposed to contradictory communication than normal subjects.

Loeff (1966)[46] had matched groups of normals, delinquents, and schizophrenics use the semantic differential technique, and rating methods, with emotional metaphors in which the words and content were in direct conflict. Contrary to expectations, the schizophrenic subjects were more influenced by the meta-communicative aspects of the message than were the other groups. Again, schizophrenics exposed to double-binding showed no greater susceptibility than other groups.

Ringuette and Kennedy (1966)[47] attempted to measure the incidence of double-binding communication in letters of mothers of hospitalized schizophrenics, compared with the letters of hospitalized non-schizophrenics. Not only did trained raters prove unable to agree on the presence or absence of double-binding in letters, but where they did agree, they found no difference between schizophrenics and controls.

According to Haley[48] there has been no definitive experimental induction of a double-bind, demonstrating its communicational disruptiveness. There remains considerable disagreement regarding what features of double-binding account for its pathogenicity. Mednick (1958)[49] reached the conclusion that the effects of double-binding were

attributable to the mediating influence of anxiety, but there is no available evidence pertaining to this hypothesis. Schuham (1967)[50] concludes that the double-bind concept, while potentially valuable, remains mired in basic definitional problems. The need for research at this time appears to be more pressing than ever. In a society whose members are subjected to double-binding every day, in which the inability to deal effectively with this binding has led to individual disturbance and large-scale alienation, a clearer picture of the double-bind must be created if the concept is to be useful in helping point the way toward the solution of our pressing social and psychological problems.

There do exist, fortunately, instruments which can be used to detect disruptions in communication. A group of researchers, including Kurt Salzinger, Muriel Hammer, Richard Feldman, and others developed a set of techniques for distinguishing between schizophrenic and normal speech. Starting from the view that the verbal behavior of schizophrenics seems to follow the 'law of least effort' (Salzinger et al., 1966[51]), these researchers found that schizophrenics tended to respond to immediate stimuli, often their own response-produced stimuli. Incorporating a measure originally used as an index of readability (Taylor, 1953[52]), the Salzinger group devised a series of objective techniques which could be applied to speech samples, and successfully differentiated those of schizophrenics from those of normals. The details of these techniques will be described in greater detail below. However, their utility in relation to the double-bind concept must be

stressed. Since double-binding has been said to produce communicational disruption characteristic of schizophrenia, the Salzinger group's methods would seem particularly well-suited to assessing the effects of laboratory-induced double-binds.

Present Problem

The present research involves constructing an experimental double-bind situation, studying its communicational effects, and then trying to determine what factors in the double-bind, if any, contributed to its disruptive influence.

The primary purpose of the present investigation is to determine whether or not double-binds produce the disruption in communication which clinical evidence indicates they do. In order to create double-binds, it is necessary to review the literature carefully so that criteria may be established. There have been many different, and sometimes conflicting, formulations of the double-bind concept. One of the goals in the present research, therefore, is to resolve some of the difficulties in clearly defining a double-bind, and in differentiating between double-binds and other kinds of conflict or stress.

The approach taken in this research was to select from the various definitions of the double-bind those ingredients which are common to them, which for that reason seem essential. Those components which appear in some definitions but not in others have, where possible, been included for the purpose of assessing their importance in the process of double-binding. The goal, throughout, was to secure a

workable definition of the double-bind with which laboratory simulations could be created.

The search for an adequate definition of the double-bind has led to several important conclusions. There is little agreement about the precise requirements for a double-bind. It is generally agreed that there must be two or more competing messages, each enforced by the threat of punishment. Furthermore, the victim of double-binding must be compelled to remain within the field of communication; that is, there is a prohibition on escape. Finally, there is the implication that the dilemma be one of some importance to the victim.

A significant, but unsettled, question in relation to the double-bind is that of levels of communication. Watzlawick et al. (1967)[53] placed this consideration above all others. They traced the double-bind hypothesis to Russell's theory of 'logical types,' suggesting that the primary communicational difficulty experienced by schizophrenics is inner conflicts of logical typing; that is, distinguishing levels of meaning. Other authors, such as Bateson (1961)[54] have placed no emphasis whatsoever on levels of communication. Since this is such an important and controversial issue, an attempt will be made in the present research to assess the role of levels of communication in double-binding. Since, in addition, there has been no consensus as to an interpretation of the term 'levels,' two of the models that have been used previously were selected for use in this research. In one instance, a message is delivered, and is subsequently contradicted by another message, which purports to bear no relation to the first. This is a

variety of the type of double-bind discussed by Sluzki, et al. (1967),[55] known as disqualification. In the other instance, a particular message denies its contextual basis.

A second controversial issue in relation to the double-bind is the relative importance of structural and non-structural components. The originators of the double-bind concept had stressed structural features in their first paper (1956)[56]. According to Schuham (1967),[57] however, the Bateson group rejected their own definition in the original paper, by insisting that there be an intense relationship between binder and victim, and that this relationship be of long duration. It has been suggested that all non-structural facets of double-binding be subsumed under the heading 'survival significance.' If this were interpreted literally, it would be maintained that double-binding could only take place when there is a threat to the individual's survival. More commonly, the term is interpreted to relate to survival in psychological or emotional terms.

In the present research, a more precise approach was taken to the problem of assessing the relative significance of structural and non-structural factors in double-binding. A particular substantive dimension was selected as an index of survival significance. The strength of given needs, which are affected by double-binding, is held to be a prime determinant of its pathogenicity. Such matters as duration and intensity of relationship between binder and victim operate so as to render a particular situation more or less important to the victim. The stronger the need, or needs to which double-binding is addressed, the more communica-

tionally disruptive double-binding is likely to be.

The role of awareness among victims of double-binding has been subjected to considerable debate. Bateson et al. (1956)[58] suggested that awareness might enable a victim of double-binding to begin extricating himself from the situation. Schuham (1967),[59] however, indicated that he believed double-binding could only occur when the victim was aware of his predicament. In a sense, it is true that the victim must perceive the components in a double-binding message for it to have any effect on him. Nevertheless, a lack of awareness can only contribute to a deterioration of communication. If the victim were to avoid perceiving the double-binding messages, he would be binding the binder, who would not know whether the avoidance was an oversight or was accidental. In the present research, an attempt was made to measure subjective awareness of double-binding and relate it to subjects' ability to resist communicational disruption.

Mednick (1958)[60] attempted to explain the pathogenicity of double-binding by introducing anxiety as a crucial mediating factor. If Mednick was correct, communicational disruption in the present experimental situation should vary primarily as a function of anxiety. If level of anxiety is held constant, there should be no difference in communicational disruption among victims of double-binding and subjects exposed to standard conflict situations. The measure of anxiety utilized in this research was a technique for assessing anxiety being exxperienced by subjects at the time of testing. It was felt that chronic, or general anxiety levels of subjects would not provide an

adequate test of Mednick's hypothesis.

The double-binds and standard conflict situations which were developed centered on the need for achievement. This variable was felt to be highly relevant in a college population. In addition, the need for achievement has received considerable attention and has been a useful research variable. According to McClelland (1958),[61] the need for achievement represents the striving to increase or keep as high as possible one's capability in all activities in which a standard of excellence is thought to apply. Von Heckhausen (1965)[62] has demonstrated that threats to the need for achievement can come from two sources: the actual experience of failure; and the expectation of failure. In the present study, both sources were utilized.

Footnotes--Chapter I

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CHAPTER II

METHOD

Subjects

The subjects for this research were selected from the population of students enrolled in the undergraduate courses in Statistics offered by the Psychology Department, at The City College of the City University of New York, during the Spring-1969 semester. There were eight such classes, five of which were included in the study. Two of the classes were excluded because their instructors felt they could not afford the class time necessary for the study. The remaining class was taught by the experimenter; it was felt this factor would complicate the findings in this research. Of the approximately 150 students registered in the five classes involved, 114 students began, and 94 completed the experiment.

The present study consisted of two sessions. During the first, all students were asked to complete a Biographical Data Sheet (BDS), and a Course Preference Ranking (CPR). These instruments appear in Appendix A. Also, students were given the California Psychological Inventory (CPI) to complete at home and return the following session. The experimenter explained that the information being elicited was part of a general survey by the Psychology Department. All students were asked to retain slips of paper with numbers to be used for future identification. The specific wording of verbal instructions given by the experimenter appear in Appendix A. No further information was given regarding

the purposes of this research, but students were assured that the information gathered would not in any way be held against them.

The information gathered during the first session was used either to exclude students who did not meet the requirements for inclusion in the study, or to assign them to one of the three experimental groups. On the basis of Biographical Data Sheet (BDS) information, seven students were excluded because English was not their native tongue. No student was eliminated because of a psychiatric problem.

The 114 subjects remaining were matched first on the Achievement via conformance (Ac) dimension of the California Psychological Inventory (Gough, 1957).[1] The range of scores obtained was 19 to 35, with sufficient duplication of scores to allow second-order matching. Subjects' ranking of Statistics, on a Course Preference Ranking (CPR), was used for second-order matching. The full range of ranks, 1 to 20, were made use of, again with sufficient duplication to enable equal distribution of the sexes among the three experimental groups. An attempt was also made to distribute among the three groups the 22 students who reported, on the BDS, having had some experience with psychological experiments.

Since materials subjects received during the second testing session depended upon the group to which they were assigned, all matching was completed before administering the experimental procedure to each class. When four of the five classes had been tested, some modifications in assignment of subjects in the fifth class to the three experimental groups was necessary. This was caused by the fact that not

all subjects completed the testing procedure adequately. Of the 114 subjects included in the study, eight did not come to class for the second test session, and 12 did not complete the nine steps.

Ninety-four students, 53 males and 41 females, completed the testing satisfactorily. One male was dropped so that there would be 31 subjects in each of the three experimental groups. The results of matching are indicated by the mean Ac scores, and median rankings for Statistics of DB, SC, and C subjects. The mean Ac scores for the DB, SC, and C groups were 24.8, 24.7, and 24.7, respectively. Median rankings for Statistics were 11.2, 11.3, and 11.4, for the DB, SC, and C groups, respectively. There were 19 males and 12 females in the DB group, 18 males and 13 females in the SC group, and 15 males and 16 females in the C group. Seven DB subjects, eight SC subjects, and seven C subjects reported prior experience with psychological experiments.

Procedure

Second experimental sessions were held with each class when the information gathered from first sessions had been analyzed and subjects had been assigned to one of the three experimental groups. At the beginning of the second session, the experimenter indicated that not all atudents could participate in the second part of the study. While ostensibly checking who was qualified to participate, the experimenter determined who was to receive DB, SC, or C booklets. He distributed to all students an experimental booklet with a blank page on its cover. In this manner, every attempt was made to be certain that students thought they

were receiving identical experimental booklets. Any student present for the second session who did not participate in the first session was given a C booklet, although his scores were not tabulated.

The experimenter then introduced the second session as part of an important survey being conducted by the Psychology Department of all students taking courses beyond introductory psychology. The specific wording of the experimenter's verbal instructions for the second session appear in Appendix B. All additional instructions for this session, both written and verbal, also appear in Appendix B. It was suggested, at the outset, that students were to receive tasks related to psychological insight, which is a crucial attribute for anyone intending to enter the field of psychology. With no further introduction, students were asked to begin by writing their names and numbers on the front of their booklets. The experimenter explained that there were nine tasks in the study, none of which would take longer than five minutes. It was indicated that the experimenter would signal the beginning and end of each part of the study. At this point, all subjects were asked to begin reading the instructions for Part I in their booklets.

Part I, for all groups, consisted of instructions, similar to those used for the Thematic Apperception Test, for writing a story based upon a picture. Subjects were told their stories must be at least 100 words long, and they would have five minutes for writing. The picture presented was TAT card 2. Subjects were not to see the card, however, until they had read the instructions. The experimenter allowed thirty seconds for reading the instructions, whereupon he signalled all subjects to begin

their stories.

Part II was then introduced by the experimenter again asking students to turn the page in their booklets and read the instructions. For Part II, however, written instructions differed from one experimental group to another. The C group received the same instructions as they did for Part I. SC group subjects, on the other hand, were placed in a conflict regarding how they were to respond to the task at hand. They were again asked to write a story in response to a picture, but were told that this picture has special significance. It was suggested that if they are not particularly productive and original in their writing of this story, the score for insight that they achieve will be reduced considerably. They were also told that stories written in response to this picture have great diagnostic significance; that is, psychologists have often been able to identify individuals with hidden but serious psychological problems through analyzing stories written from this picture. It is expected that these instructions will create in the student a conflict over what to say in his story. The instructions confirmed this conflict, by indicating that it is expected that the student will experience difficulty with this task; that given the instructions as they are, it is indeed a difficult task. Students were then asked simply to do the best they can.

The instructions for DB subjects were up to this final stage the same as those for SC subjects. However, once the conflict had presumably been engendered, the instructions proceeded to deny that there is any conflict. DB subjects were told that this is a simple task, and

that there is no reason for them to experience any difficulty completing it. This denial stated matter-of-factly, connected with the necessity of finishing the story within five minutes. This denial of the message that has been delivered previously constitutes the core of double-binding in this part of the study. It is a form of disqualification, which denies the validity of the subject's initial perception. He cannot be sure, then, which message, if either, was actually intended. This confusion should be reflected in the responses of DB subjects, who are expected to attempt to blur the meaning of their communications in order to avoid punishment. The TAT card selected for Part II, for all groups, was card 13MF which was expected to be useful in ascertaining differences along an openness-defensiveness continuum.

Part I of the study had as its main purpose the establishment of a 'base level' of communicability for each subject. Following the double-binding task in Part II, another 'neutral' measure of communication was made. TAT card 1 was presented to all subjects in precisely the same manner as in Part I. At the conclusion of this task, the experimenter verbally introduced a new kind of task to the subjects.

Part IV, it was explained, consists of a series of visual comparisons. There were no written instructions for this part of the experiment. Instructions were given orally by the experimenter, so that they would be the same for all subjects. It was suggested that there is a close link between the ability to accurately make visual comparisons and sensitivity to subtle psychological differences. Subjects were requested, therefore, to be very careful in making comparisons, or

discriminations. They would find, it was indicated, pairs of lines on the succeeding pages of their booklets. There were twelve pairs. The task, in each case, was to judge which of the two lines was longer. Spaces were provided beneath each line to place a check under the line the student thought was longer. It was emphasized that no comparisons could be omitted, and that no cues or aids could be used to help make comparisons.

Each of the three experimental groups received a different series of lines for comparison. In the case of the C group, comparisons were selected which 100 percent of pilot subjects could make correctly. Comparisons for the SC group were selected so as to be difficult, but possible. Utilizing the psychophysical criterion of 'just noticable differences,' comparisons were established which could be made 75 percent of the time correctly. Successive comparisons had been made to establish this point, through the method of constant stimuli. The results of a pilot study to determine line lengths are reported in Appendix C. For DB subjects, comparisons consisted of lines of exactly equal length. This type of double-bind resembles those in Pavlovian experiments, in which the necessity for correct discrimination is first imposed on subjects and then discrimination is rendered impossible. It was expected that this task would be communicationally disruptive for DB subjects.

Part V consisted of another task to measure communicability. TAT card 3BM was presented, with the same instructions used for Parts I and III, the same for all groups of subjects.

Part VI was introduced by a brief statement concerning the general nature of the task. Subjects were told to open their booklets to the appropriate page and read the instructions. The task was to write an essay about statistics, in terms of the student's own feelings about the subject. The instructions were different for the C, SC, and DB groups. C subjects were told that the purpose of this task is to determine overall attitudes toward statistics, with an eye toward evaluating its importance in a psychology program. C subjects were assured that nothing they say in their essays would hurt their standing in the course they are taking.

Instructions for the SC and DB groups, on the other hand, began by threatening students with the possible consequences of what they wrote. It was suggested that the essays written would be made available to statistics instructors and would also be kept on file by the Psychology Department. It was pointed out that a negative attitude toward statistics might influence an instructor's evaluation of a student, while expressions of interest in or liking for statistics might result in the student's being called upon to participate in a special project involving statistics. In this manner, a conflict was engendered over the expression of positive or negative feelings about statistics. SC subjects were then told that it is understood that this is a difficult task, and that they are not expected to accomplish it easily. An attempt was made, in other words, to affirm the message that had already been delivered. It was expected that although SC subjects might find it difficult choosing between expressions of positive and negative feelings

about statistics, they would be able to make a choice and would not find it necessary to blur the meaning of their communications. DB subjects, however, were told that this is a simple task, and there is no reason for them to experience any difficulty conveying their real feelings about statistics. Just as in Part II, this double-bind represents a disqualification. The experimenter disqualifies the message given first in the written instructions. In order to assess the effects of this double-bind, another measure of communicativeness was made.

Part VII consisted of TAT card 8BM, presented in the same manner as Parts I, III, and V.

At this point, several additional measurements were made. In Part VIII of the study, the Multiple Affect Adjective Check List, Today Form (MAACL) was administered. This instrument, which appears in Appendix B, was designed by Marvin Zuckerman and Bernard Lubin.[2] It provides a measure of anxiety being experienced by subjects at the time of testing. There are no time requirements for completing this test, but subjects were asked to work rapidly.

When all subjects had completed the MAACL, the experimenter debriefed them regarding the nature of the experiment. The exact text of the de-briefing can be found in Appendix B. The experimenter explained the actual purpose for the experiment. Where facts had been distorted for experimental purposes, this was pointed out. Students were assured that nothing they wrote during any part of the study would be held against them in any way. Students' careers in psychology would in no way be affected. In order to further assure all students regarding

the fact that they were now being told the truth, excerpts were read from DB, SC, and C experimental booklets. The reasons for the differences between booklets were given. Students were asked not to talk about the experiment for at least one month, since other classes were being tested. Finally, it was indicated that students could obtain a reprint of the conclusions of this study if they submitted their names and addresses. At this point, students were asked to turn to the final page of their booklets, on which appeared a Reaction Questionnaire (RQ). This device, which appears in Appendix B, was designed to elicit subjects' reactions to Part VI of the study, the statistics essay task. The first part of this instrument was designed to measure subjects' awareness of double-binding. It also served to distinguish between DB subjects, and SC and C subjects, with respect to their perceptions of the instructions they had received for Part VI.

The remaining questions in the RQ were intended to uncover subjective reactions to the experimental situation which were not detected by the measures of communicativeness in this study. It was felt that reactions such as anger, depression, blunting of affect, and withdrawal might be revealed through questioning.

A brief review of procedures for the second session follows. A nine step procedure was employed, in which DB, SC, and C subjects received the same tasks for steps 1, 3, 5, 7, 8, and 9. All subjects received all corresponding tasks simultaneously. They did not know other subjects were receiving certain different tasks. The second, fourth, and sixth steps differentiated the three experimental groups, which had been created from

information gathered previously.

Step 1 involved presenting subjects a Thematic Apperception Test card, TAT card 2. Standard instructions for TAT administration were used, with the additional requirement that subjects write at least 100 words.

Step 2 required subjects to again write a 100-word story to a TAT stimulus, card 13MF. In this case, however, each of the three experimental groups received different instructions. The instructions were designed to create a double-bind in relation to the task for the DB group, a standard-conflict for the SC group, and control conditions for the C group.

Step 3, like step 1, asked all subjects to write a 100-word story in response to a TAT stimulus, card 1. Standard instructions were given.

Step 4 involved presenting subjects a series of pairs of lines. The task was to judge which line in each pair was longer. Different pairs of lines were administered to each of the experimental groups. The line discriminations were easy for the C group, difficult for the SC group, and impossible for the DB group.

Step 5, like steps 1 and 3, required subjects to write a 100-word story in response to a TAT stimulus, card 3BM. Standard instructions were given.

Step 6 consisted of three sets of instructions, one for each of the experimental groups, for writing a 100-word essay on one's feelings about statistics. Instructions were designed to create a double-bind

in relation to the task for the DB group, a standard-conflict for the SC group, and control conditions for the C group.

Step 7, like steps 1, 3, and 5, required subjects to write a 100-word story in response to a TAT stimulus, card 8BM. Standard instructions were given.

Step 8 involved administration of the Multiple Affect Adjective Checklist (MAACL) to all subjects (Zuckerman, 1965).[3]

Step 9 asked all subjects to complete a Reaction Questionnaire (RQ), the first part of which was designed to measure subjects' awareness of the precise nature of the instructions they received during step 6, the essay on statistics.

Hypotheses

The primary hypothesis in this research is that double-binding produces communicational disruption. Since there are three double-binds in this study, and since measurements of communicability are made prior to and subsequent to each, there are several ways of testing this primary hypothesis. For each double-bind, communications of DB subjects can be analyzed for pre-post decrements in communicability. Written communications of DB subjects can also be compared, at each stage of the experiment, with those of SC and C subjects. In all instances, an index of communicability, hence of disruption of communication, will be provided by the set of measures described below.

The second major hypothesis in the present research is that the greater the subject's need which is being threatened, the more

communicationally disruptive double-binding will be. Thus, it was expected that within the DB group, high need-achievers should show the most communicational disruption, medium need-achievers next most, and low need-achievers least. It was expected, further, that over the series of three double-binds, there would be a progressive disparity in communicability between the three groups of need-achievers, the decrement being greatest for high need-achievers.

The third hypothesis is that communicational disruption will not vary with the amount of anxiety reported by subjects. This was expected to hold true within the DB group, in that no differences were expected in terms of communicational disruption based upon differences in level of anxiety reported. Furthermore, level of anxiety reported across the three experimental groups should bear no relation to communicational disruption.

The fourth hypothesis in this study is that the greater the level of awareness of DB subjects that they have been double-bound, the less communicational disruption they will suffer. Questions 1 through 3 on the Reaction Questionnaire were addressed to the question of awareness. In order to sharpen the focus of this question, it was limited to one double-binding task, the statistics essay of Part VI. Each of the questions one through three was multiple-choice, and DB subjects were classified as 'very aware,' 'moderately aware,' or 'unaware,' based upon their responses to these questions.

Measures

The crucial measurements of communication in this study were made with a set of techniques developed by a group of researchers concerned with identifying and deciphering schizophrenic communication. The view was taken that it was possible to differentiate schizophrenics' communication from that of normals since schizophrenics respond more to immediate stimuli than normal individuals do. Salzinger, Hammer, Feldman, Portnoy and others, employing some methods that had been used earlier, compiled a set of methods for distinguishing between schizophrenic and normal speech. Basically, schizophrenic communication was characterized by reduced communicativeness. Since double-binding has been held to relate to schizophrenia, particularly with respect to reduced communicativeness, the measures chosen appear to be ideally suited to detecting disruptions in communication as a result of double-binding.

The first of the three measures employed was the type-token ratio (TTR). This consists of the number of different words in a sample of communication, spoken or written, divided by the total number of words in that sample. Whitehorn and Zipf (1943),[4] in an early application of this measure, found that schizophrenics tend to repeat more words than normals do, which gives them a lower TTR score.

The second measure employed was the cloze procedure. Salzinger, et al. (1964)[5] found that if every fifth word in a sample of spoken speech were deleted, with the exception of numbers and proper nouns, selected raters would find it significantly more difficult to supply the missing word in the speech samples of schizophrenics than in those

of normals. Instructions to raters who were used in the present research appear in Appendix D.

The cloze procedure was designed originally as a measure of readability by Taylor (1953)[6]. Thus, it has been found to be applicable to spoken as well as to written samples of communication. The applicability of the third measure of communication employed to the written samples of communication is somewhat questionable.

To arrive at the third measure, unitization, subjects' communications are presented to raters unpunctuated and without any capital letters. Instructions for raters appear in Appendix D. Their task is to divide the samples of communication into complete grammatical units; the only changes they are allowed are crossing out words which do not fit. The specific instructions were used by Salzinger, et al. (1966)[7]. It has been found that raters cross out significantly more words from the communications of schizophrenics than from the communications of normals.

In preparing subjects' stories for raters, there were several instances where it was necessary to guess at what had been written. In addition, for both the cloze and unitization measures, the spelling in subjects' stories was corrected where necessary, and abbreviations were lenghthened to the full words it appeared were intended. Over-all, there were very few instances of uncertainty regarding what subjects had written.

Footnotes--Chapter II

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CHAPTER III

RESULTS

A procedure was designed to create double-binding conditions and equivalent standard-conflict and neutral conditions, for purposes of control. There were three double-binds and matching control conditions. These were steps 2, 4, and 6. Interspersed between these tasks were 'neutral' tasks, steps 1, 3, 5, and 7, included in order to elicit samples of communication before and after double-binding. Two of the three 'experimental tasks,' steps 2 and 6, involved obtaining samples of communication.

There were three kinds of measurements used with the six samples of communication obtained. A type-token ratio (TTR) was calculated, consisting of the number of different words among the first 100 words in the story or essay. For the second measure, the cloze procedure, the experimenter presented subjects' stories to raters, with each tenth word, a total of ten out of 100, replaced by a blank. Subjects' stories were presented in complete grammatical units, even if this entailed more than 100 words in order to complete the final sentence. Sixteen raters attempted to fill in the blanks and the mean of their correct responses for the 10 blanks of each story constituted the cloze score for that story. For the third measure, unitization, subjects' stories were presented to raters unpunctuated and without capitalization. A different group of 16 raters was asked to cross out any words they wished in order to create complete grammatical units. The unitization

score for each story was the mean number of words crossed out, among the first 100 words, by the 16 raters.

The 32 raters used for the cloze and unitization measures were undergraduate students at The City College of the City University of New York. They were students in summer session courses, and performed the rating tasks during laboratory time and sessions volunteered. The ratings were carried out over a six week period. The only requirement for raters was that English be their native language. The stories of experimental subjects were prepared for raters by separating stories into those of DB, SC, and C subjects. Stories were then randomized, and presented to raters in groups of three stories: an SC story, a DB story, and a C story.

There were four major hypotheses tested in the present study. The results of the study are divided into one section for each hypothesis, and an additional section to report pertinent material on other aspects of the double-bind hypothesis.

Double-Binding and Communication

It was hypothesized that double-binding would disrupt the communication of DB subjects across the series of tasks, and in comparison with the communications of SC and C subjects. The double-binds in Steps 2 and 6 were tasks eliciting communication, so that disruption was expected in the communication of DB subjects on these two tasks. However, results for the neutral samples of communication, steps 1, 3, 5, and 7, are reported first.

Repeated-measures analyses of variance were carried out, with three groups (DB, SC, and C groups), four trials (the four neutral tasks), and 93 subjects. Analyses were done with the TTR measure of communicativeness, the cloze measure, and unitization. The results of these analyses are reported in Tables 1 through 3.

The TTR measure produced no significant findings. For unitization scores, there was a significant trials-effect ($F = 5.52$, $df = 3/270$, $p < .01$). The mean scores for unitization for the three experimental groups reveal that the primary factor in the significant trials-effect was a decrement in scores from trial one to trial two. This indicates an increase in communicativeness for all groups, which is maintained throughout remaining trials by the SC and C groups, but not the DB group. It is conceivable that a practice effect influenced unitization scores, which are sensitive to respondents' tendencies to use complete sentences. Between trials one and two, another story-writing task was assigned, so that subjects might have learned a more adaptive mode of responding to the writing tasks. Since there were no significant differences between the experimental groups, the pattern outlined above seems to apply in all experimental conditions.

For the analysis of variance with cloze scores, there were no significant differences between groups, but a significant trials-effect was obtained ($F = 20.53$, $df = 3/270$, $p < .001$). A trend analysis was performed with cloze results, and is reported in Table 4. The overall trend of means shows significant linearity ($F = 54.7$, $df = 1/270$, $p < .01$). There is a significant downward trend in cloze scores across

Table 1

Trial Means and Repeated Measures Analysis of Variance of TTR Scores of DB, SC, and C Subjects Across the Four Neutral TAT Tasks

	Trials			
Groups	I	II	III	IV
DB	61.13	61.10	60.94	59.68
SC	61.16	61.58	62.29	60.58
C	61.55	61.68	59.84	60.52

n = 31 for each mean; N = 93

	Analysis of Variance		
Source	df	MS	F
Between Groups	2	16.0	.86
Subjects	90	18.5	
Trials	3	25.7	1.46
Groups X Trials	6	14.5	.82
Subjects X Trials	270	17.6	
Total	371		

Table 2

Trial Means and Repeated Measures Analysis of Variance of Cloze Scores of DB, SC, and C Subjects Across the Four Neutral TAT Tasks

	Trials			
Groups	I	II	III	IV
DB	5.23	5.12	5.11	4.61
SC	5.14	5.13	5.13	4.87
C	5.27	5.07	4.87	4.65

n = 31 for each mean; N = 93

	Analysis of Variance		
Source	df	MS	F
Between Groups	2	3.3	1.34
Subjects	90	2.4	
Trials	3	43.5	20.53**
Groups X Trials	6	3.7	1.74
Subjects X Trials	270	2.1	
Total	371		

**p < .01 (both tails)

Table 3

Trial Means and Repeated Measures Analysis of Variance of Unitization Scores of DB, SC, and C Subjects Across the Four Neutral TAT Tasks

	Trials			
Groups	I	II	III	IV
DB	6.34	5.21	6.03	6.07
SC	6.75	5.85	6.05	5.83
C	6.14	5.52	5.43	5.57

n = 31 for each mean; N = 93

	Analysis of Variance		
Source	df	MS	F
Between Groups	2	65.2	1.80
Subjects	90	36.3	
Trials	3	127.5	5.52***
Groups X Trials	6	18.6	.80
Subjects X Trials	270	23.1	
Total	371		

***p < .001 (both tails)

Table 4

Trend Analysis for Cloze Scores of DB, SC, and C Subjects Across the Four Neutral TAT Tasks

Source	df	MS	F
Linear SS	1	116.0	54.70**
Quadratic SS	1	10.9	5.12*
Cubic SS	1	3.7	1.75
Ss X Trials MS	270	2.1	
Total Trials MS	3		
Linear Inter. SS	2	14.1	3.31
Quadratic Inter. SS	2	5.3	1.25
Cubic Inter. SS	2	2.7	.65
Ss X Trials MS	270	2.1	
Total Group X Trial Interaction SS	6		

*p < .05 (both tails)

**p < .01 (both tails)

trials, representing a deterioration in communication. The curve of this deterioration is not smooth, as indicated by the significant quadratic effect ($F = 5.12$, $df = 1/270$; $p < .05$). Mean cloze scores for all three groups dropped sharply between the third and fourth trials. This drop was pronounced for the DB group, although the linear interaction, representing differences between the slopes of the downward trend for the three groups, did not reach significance. The mean cloze scores for DB subjects fell a full half-point, 5.11 to 4.61, from Trial 3 to Trial 4, while the SC group mean dropped .22, from 4.87 to 4.65. Clearly, the task interspersed between trials 3 and 4 had a deleterious effect upon communication for all subjects, but especially for those in the DB group. The fact that the communicativeness of DB subjects did not differ significantly from that of SC or C subjects suggests that the double-binding was not sufficiently disruptive to influence communication over time.

Between-groups analyses of variance were carried out, between the DB, SC, and C groups, on the two experimental tasks involving communication, steps 2 and 6. Step 2 in the procedure was the experimental TAT story, and step 6 was the statistics essay. Each of the three measures of communication was used separately to determine whether or not double-binding disrupted communication. The results of the between-groups analyses of variance for the experimental TAT story are reported in Table 5. Table 6 contains the same analyses for the statistics essay.

For the experimental TAT, there were no significant differences between the DB, SC, and C groups, but all the differences were in the

Table 5

Experimental TAT Story--DB, SC, and C Group Means and Between Groups Analyses of Variance with TTR, Cloze, and Unitization Scores

	Groups		
	DB	SC	C
TTR Means	60.48	61.74	61.81
Cloze Means	4.86	5.05	5.04
Unitization Means	5.24	5.05	5.15

n = 31 for each mean; N = 93

		Analyses of Variance		
	Source	df	MS	F
TTR	Between Groups	2	17.00	1.61
	Within Groups	90	10.57	
	Total	92		
Cloze	Between Groups	2	3.60	1.42
	Within Groups	90	2.54	
	Total	92		
Unitization	Between Groups	2	2.80	.19
	Within Groups	90	14.46	
	Total	92		

Table 6

Statistics Essay--DB, SC, and C Group Means and Between Groups Analyses of Variance with TTR, Cloze and Unitization Scores

	Groups		
	DB	SC	C
TTR Means	59.87	61.97	62.90
Cloze Means	4.85	5.07	5.26
Unitization Means	4.87	4.67	5.16

n = 31 for each mean; N = 93

		Analyses of Variance		
	Source	df	MS	F
TTR	Between Groups	2	75.00	4.66*
	Within Groups	90	16.08	
	Total	92		
Cloze	Between Groups	2	13.25	5.08**
	Within Groups	90	2.61	
	Total	92		
Unitization	Between Groups	2	18.80	1.26
	Within Groups	90	14.96	
	Total	92		

*$p < .05$ (both tails)

**$p < .01$ (both tails)

expected direction; that is, DB subjects did not communicate as well as SC or C subjects.

For the statistics essay, significant between-groups effects were obtained using both the TTR and cloze measures, although not the unitization measure. Mean TTR scores for the DB, SC, and C groups were 59.87, 61.97, and 62.90, respectively. The analysis of variance yielded a significant difference between these means ($F = 4.66$, $df = 2/90$, $p < .05$). In order to explore this difference further, Duncan's New Multiple Range Test was applied to the differences between the TTR means for the DB, SC, and C groups. Results are reported in Table 7. The difference between mean TTR scores for the SC and C groups is not significant. The DB group's mean, however, is significantly lower than the mean for the SC and C groups.

Mean cloze scores for the DB, SC and C groups were 4.85, 5.07, and 5.26, respectively. The difference between these means was significant ($F = 5.08$, $df = 2/90$, $p < .01$). Duncan's test was again applied to the differences between DB, SC, and C group means. The results are reported in Table 8. The mean for the SC group falls between the means for the DB and C groups but does not differ significantly from either of them. The mean score for the DB group is significantly lower than that of the C group.

The results obtained for the essay on statistics, using the TTR and cloze measures, support the hypothesis that double-binding disrupts communication. The statistics essays of DB subjects were significantly less communicative than those written by SC or C subjects. The effects

Table 7

Duncan's New Multiple Range Test for the Statistics Essay DB, SC, and C Group Means with the TTR Measure

		Means			
		DB	SC	C	Shortest Significant Ranges
Means		59.87	61.97	62.90	
DB	59.87		2.10	3.03	R(2) = 2.027
SC	61.97			0.93	R(3) = 2.133
C	62.90				

Note: Any two treatment means not underscored by a line are significantly different.

Table 8

Duncan's New Multiple Range Test for the Statistics Essay DB, SC, and C Group Means with the Cloze Measure

		Means			
		DB	SC	C	Shortest Significant Ranges
Means		4.845	5.065	5.258	
DB	4.845		.220	.413	R(2) = .258
SC	5.065			.193	R(3) = .272
C	5.258				

Note: Any two treatment means not underscored by a line are significantly different.

of double-binding on subsequent, neutral tasks were only observed with the cloze measure. The significant trials-effect for cloze scores, in Table 2, reflects the communicational disruptiveness of the statistics essay task. With the TTR measure, the trials-effect was not significant, but there was a fairly sizable drop in communicativeness within the DB group from Trial 3 to Trial 4.

The TTR and cloze measures detected the communicational effects of double-binding but unitization did not. Unitization is based on the syntactic aspects of communication, whereas the TTR and cloze reflect the semantic nature of communication. The tendency to use complete grammatical units is much stronger in written communication than in spoken speech. If the double-bind can be viewed as having a disorganizing effect upon communication, the written, structured nature of the statistics essay probably shifted the burden of disorganization to the semantic component of communication.

It is also of interest that the statistics essay double-bind disrupted communication, but not the other two double-bind tasks. The double-binds created by presenting impossible line-discriminations were structurally different from the other double-binds, so it is possible that some important ingredient was lacking from this double-bind. However, the statistics essay double-bind and the experimental TAT double-bind were structurally identical. The instructions for both tasks contained one message, then a second which conflicted with the first, and finally, a denial that there was any conflict or contradiction between the two. These two double-binds differed only in substance. Before

attributing the differential efficacy of the two tasks in disrupting communication to differences in substance or relevance for subjects, additional evidence on the role of substantive issues in double-binding must be considered.

Double-binding and Achievement

In order to study the role of the content of a double-bind in producing communicational disruption, the Achievement via conformance (Ac) dimension of the California Psychological Inventory was selected to provide a measure of task-relevance. The three double-binds in this study were built around the need for achievement. In a college population, achievement is an especially important variable. Ac scores were used to match subjects for assignment to the three experimental groups. It was hypothesized that within the DB group, high Ac-scorers would be most communicationally disrupted by double-binding, followed by medium-Ac scorers, and then low-Ac scorers. As a check on the findings within the DB group, differences between high, medium, and low Ac-scorers within the SC and C groups were also analyzed.

Repeated-measures analyses of variance were carried out for the DB group, between high, medium, and low Ac-scorers, using each of the three measures of communication. The sample size was 30 in each case. The same analyses were then performed for SC and for C group subjects. The results of these analyses are reported in Tables 9, 10, and 11.

There were seven findings of significance in these tables. Four of these were significant trials-effects, and three significant

Table 9

Repeated Measures Analyses of Variance of High, Medium, and Low Ac-Scorers in the DB Group Across Four Neutral Tasks with the TTR, Cloze, and Unitization Measures

Source	df	MS	F
	TTR		
Between Groups	2	0.0	0.00
Subjects	27	18.6	
Trials	3	13.7	1.26
Groups X Trials	6	10.2	.94
Subjects X Trials	81	10.9	
Total	119		
	Cloze		
Between Groups	2	8.65	4.41*
Subjects	27	1.96	
Trials	3	24.17	10.03***
Groups X Trials	6	2.88	1.20
Subjects X Trials	81	2.41	
Total	119		
	Unitization		
Between Groups	2	28.90	8.38**
Subjects	27	3.45	
Trials	3	61.83	1.66
Groups X Trials	6	32.70	.88
Subjects X Trials	81	37.20	
Total	119		

*$p < .05$ (both tails)

**$p < .01$ (both tails)

***$p < .001$ (both tails)

Table 10

Repeated Measures Analyses of Variance of High, Medium, and Low Ac-Scorers in the SC Group Across Four Neutral Tasks with the TTR, Cloze, and Unitization Measures

Source	df	MS	F
	TTR		
Between Groups	2	19.5	.84
Subjects	27	23.1	
Trials	3	17.0	.80
Groups X Trials	6	15.5	.73
Subjects X Trials	81	21.3	
Total	119		
	Cloze		
Between Groups	2	10.60	3.59*
Subjects	27	2.95	
Trials	3	6.60	4.07**
Groups X Trials	6	2.05	1.27
Subjects X Trials	81	1.62	1.27
Total	119		
	Unitization		
Between Groups	2	20.55	.46
Subjects	27	45.02	
Trials	3	58.87	3.71*
Groups X Trials	6	19.78	1.25
Subjects X Trials	81	15.86	
Total	119		

*$p < .05$ (both tails)

**$p < .01$ (both tails)

Table 11

Repeated Measures Analyses of Variance of High, Medium, and Low Ac-Scorers in the C Group Across Four Neutral Tasks with the TTR, Cloze, and Unitization Measures

Source	df	MS	F
	TTR		
Between Groups	2	7.0	.43
Subjects	27	16.4	
Trials	3	25.7	.73
Groups X Trials	6	30.0	.86
Subjects X Trials	81	35.0	
Total	119		
	Cloze		
Between Groups	2	2.35	.94
Subjects	27	2.49	
Trials	3	20.70	11.25***
Groups X Trials	6	3.10	1.68
Subjects X Trials	81	1.84	
Total	119		
	Unitization		
Between Groups	2	42.00	1.23
Subjects	27	34.11	
Trials	3	37.57	2.33
Groups X Trials	6	22.97	1.42
Subjects X Trials	81	16.13	
Total	119		

***$p < .001$ (both tails)

between-groups results. Of the four trials-effects, three were obtained with the cloze procedure. This is not surprising, since the overall trials-effect with the cloze procedure was highly significant ($F = 20.53$, $df = 3/270$, $p < .001$). The significant trials-effects for the three groups were: for the DB group, $F = 10.03$, $df = 3/81$, $p < .001$; for the SC group, $F = 4.07$, $df = 3/81$, $p < .01$; and for the C group, $F = 11.25$, $df = 3/81$, $p < .001$.

The other significant trials-effect was in the SC group, using the unitization measure ($F = 3.71$, $df = 3/81$, $p < .05$). This was also expected since the overall trials-effect for unitization was significant ($F = 5.52$, $df = 3/270$, $p < .01$).

The three significant between-groups findings, however, require further explanation. These findings were obtained in the DB group, with the cloze measure ($F = 4.41$, $df = 2/27$, $p < .05$), in the DB group with unitization ($F = 8.38$, $df = 2/27$, $p < .01$), and in the SC group with the cloze procedure ($F = 3.59$, $df = 2/27$, $p < .05$). Significantly, in all three cases, maximum communicativeness was observed among medium Ac-scorers. In the DB group, the high-Ac subjects did second best and the low-Ac poorest with the cloze measure, while the high-Ac subjects were poorest with the unitization measure. In the SC group, high and low-Ac subjects were similar in terms of overall communicativeness, according to cloze scores.

Moderate levels of task-relevance were most conducive to clear communication. Since some between-groups effects were obtained for DB and SC subjects but none were obtained for C subjects, the stressfulness

of the double-bind and standard-conflict situations might account for the finding that a moderate level of task-relevance is most conducive to clear communication. This notion will be elaborated upon below.

The only significant between-groups effect in which the differences were in the predicted direction was in the DB group, using the unitization measure. High-Ac subjects evidenced the most disruption in this instance. The results for the experimental TAT and the statistics essay were also analyzed to provide further evidence on the role of substantive issues in double-binding.

Between-groups analyses of variance were carried out between high, medium, and low-Ac scorers within each of the experimental groups, with the three measures of communication applied to the experimental TAT and statistics essay. The 18 analyses are reported in Tables 12, 13, and 14. There was only one finding of significance. Within the DB group, on the experimental TAT task, there was a significant between-groups effect using the TTR measure ($F = 3.98$, $df = 2/27$, $p < .05$). Medium-Ac subjects obtained the highest scores for communicativeness, low-Ac scorers next, and high-Ac subjects lowest.

Statistically, evidence in support of the second hypothesis is minimal. If we reject the notion that substantive issues are important in double-binding, however, it is difficult to account for the success of the statistics essay double-bind in disrupting communication, and the failure of the experimental TAT double-bind to do the same. One explanation for this may be that the experimenter's authority was much more manifest in relation to the statistics essay than in relation to the

Table 12

Group Means and Between Groups Analyses of Variance for High, Medium, and Low Ac-Scorers on the Experimental TAT, and Statistics Essay, in the DB Group, with the TTR, Cloze, and Unitization Measures

Experimental TAT

	Means		
	High	Medium	Low
TTR	58.8	62.8	60.0
Cloze	4.82	4.78	5.05
Unitization	5.23	5.36	4.92

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	42.00	3.98*
	Within Groups	27	10.60	
	Total	29		
Cloze	Between Groups	2	2.10	.83
	Within Groups	27	2.54	
	Total	29		
Unitization	Between Groups	2	5.10	.34
	Within Groups	27	13.80	
	Total	29		

Table 12--continued

Statistics Essay

	Means		
	High	Medium	Low
TTR	60.2	58.4	60.8
Cloze	4.66	4.92	4.95
Unitization	5.36	4.66	4.59

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	15.50	1.52
	Within Groups	27	10.22	
	Total	29		
Cloze	Between Groups	2	2.55	1.23
	Within Groups	27	2.06	
	Total	29		
Unitization	Between Groups	2	18.10	1.48
	Within Groups	27		
	Total	29		

*$p < .05$

Table 13

Group Means and Between Groups Analyses of Variance for High, Medium, and Low Ac-Scorers on the Experimental TAT, and Statistics Essay, in the SC Group, with the TTR, Cloze, and Unitization Measures

Experimental TAT

	Means		
	High	Medium	Low
TTR	62.7	61.6	61.1
Cloze	5.04	5.22	4.94
Unitization	5.31	4.70	5.02

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	7.00	.58
	Within Groups	27	12.10	
	Total	29		
Cloze	Between Groups	2	2.05	.93
	Within Groups	27	2.21	
	Total	29		
Unitization	Between Groups	2	9.35	.62
	Within Groups	27	15.04	
	Total	29		

Table 13--continued

Statistics Essay

	Means		
	High	Medium	Low
TTR	62.2	62.7	61.3
Cloze	5.19	4.74	5.25
Unitization	5.01	3.99	5.06

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	5.00	.21
	Within Groups	27	24.30	
	Total	29		
Cloze	Between Groups	2	7.75	2.54
	Within Groups	27	3.05	
	Total	29		
Unitization	Between Groups	2	53.15	2.99
	Within Groups	27	17.75	
	Total	29		

Table 14

Group Means and Between Groups Analyses of Variance for High, Medium, and Low Ac-Scorers on the Experimental TAT and Statistics Essay, in the C Group, with the TTR, Cloze, and Unitization Measures

Experimental TAT

	Means		
	High	Medium	Low
TTR	62.0	62.2	61.3
Cloze	5.07	4.99	5.08
Unitization	5.46	4.68	5.17

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	2.00	.23
	Within Groups	27	8.52	
	Total	29		
Cloze	Between Groups	2	.20	.07
	Within Groups	27	2.91	
	Total	29		
Unitization	Between Groups	2	15.55	1.18
	Within Groups	27	13.07	
	Total	29		

Table 14--continued

Statistics Essay

	Means		
	High	Medium	Low
TTR	62.7	62.2	64.1
Cloze	5.33	5.01	5.33
Unitization	4.77	5.50	5.27

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	9.50	.59
	Within Groups	27	16.04	
	Total	29		
Cloze	Between Groups	2	3.40	1.58
	Within Groups	27	2.15	
	Total	29		
Unitization	Between Groups	2	13.95	.96
	Within Groups	27	14.47	
	Total	29		

experimental TAT task. The potential significance of this difference will be elaborated below.

Double-binding and Anxiety

The third hypothesis stated that the ability of a double-bind to disrupt communication does not depend on the presence of anxiety. A self-report measure of anxiety, the Multiple Affect Adjective Checklist, was used to obtain anxiety scores for each subject. In order to determine whether anxiety produces effects specific to double-bind situations, analyses performed with the DB group were also performed for the SC and C groups' results.

Repeated-measures analyses of variance were carried out within each of the three experimental groups, using each of the three measures of communication. In each case, results across trials were analyzed separately for high, medium, and low-anxiety scorers. These results are reported in Tables 15, 16, and 17.

Anxiety did not mediate reductions in communicativeness in the present experimental situation. For DB subjects, the only finding of significance was a trials-effect, using the cloze measure ($F = 9.09$, $df = 3/81$, $p < .001$). This result reflects the significant overall trials-effect described in Table 2. The overall effect also accounts for the significant trials-effect in the C group, with the cloze measure ($F = 11.76$, $df = 3/81$, $p < .001$). The third finding of significance occurred in the SC group, with the unitization measure ($F = 3.67$, $df = 3/81$, $p < .05$). Again, this was a significant trials-effect, and

Table 15

Repeated Measures Analyses of Variance of High, Medium, and Low Anxiety DB Subjects Across Four Neutral Tasks with the TTR, Cloze, and Unitization Measures

Source	df	MS	F
	TTR		
Between Groups	2	13.5	.73
Subjects	27	18.5	
Trials	3	13.7	1.28
Groups X Trials	6	8.2	.77
Subjects X Trials	81	10.7	
Total	119		
	Cloze		
Between Groups	2	0.00	0.00
Subjects	27	1.96	
Trials	3	24.17	9.09***
Groups X Trials	6	2.32	.87
Subjects X Trials	81	2.66	
Total	119		
	Unitization		
Between Groups	2	72.80	2.11
Subjects	27	34.45	
Trials	3	61.83	1.65
Groups X Trials	6	12.03	.32
Subjects X Trials	81	37.54	
Total	119		

***p < .001 (both tails)

Table 16

Repeated Measures Analyses of Variance of High, Medium, and Low Anxiety SC Subjects Across Four Neutral Tasks with the TTR, Cloze, and Unitization Measures

Source	df	MS	F
	TTR		
Between Groups	2	28.5	1.24
Subjects	27	23.0	
Trials	3	16.3	.78
Groups X Trials	6	16.2	.78
Subjects X Trials	81	20.9	
Total	119		
	Cloze		
Between Groups	2	5.10	1.85
Subjects	27	2.76	
Trials	3	4.47	2.35
Groups X Trials	6	1.50	.79
Subjects X Trials	81	1.90	
Total	119		
	Unitization		
Between Groups	2	33.35	.78
Subjects	27	42.73	
Trials	3	54.07	3.67*
Groups X Trials	6	35.95	2.44
Subjects X Trials	81	14.72	
Total	119		

*$p < .05$ (both tails)

Table 17

Repeated Measures Analyses of Variance of High, Medium, and Low Anxiety C Subjects Across Four Neutral Tasks with the TTR, Cloze, and Unitization Measures

Source	df	MS	F
	TTR		
Between Groups	2	31.0	1.48
Subjects	27	20.9	
Trials	3	21.0	1.11
Groups X Trials	6	6.8	.36
Subjects X Trials	81	19.0	
Total	119		
	Cloze		
Between Groups	2	2.30	.84
Subjects	27	2.74	
Trials	3	22.47	11.76**
Groups X Trials	6	1.62	.85
Subjects X Trials	81		
Total	119		
	Unitization		
Between Groups	2	41.60	1.45
Subjects	27	28.77	
Trials	3	37.43	2.26
Groups X Trials	6	10.02	.61
Subjects X Trials	81	16.55	
Total	119		

**$p < .01$ (both tails)

can be traced to the overall significant trials-effects with the unitization measure, described in Table 3.

Results for the experimental TAT task and the statistics essay were subjected to between-groups analyses of variance, within each of the three experimental groups, using the three measures of communication. Subjects were divided into high, medium, and low-anxiety groups. The results of the analyses are reported in Tables 18, 19, and 20.

For the experimental TAT task, two significant findings were obtained. There were significant between-groups effects in the DB group, with the unitization measure ($F = 3.76$, $df = 2/27$, $p < .05$), and in the SC group, with the cloze measure ($F = 6.33$, $df = 2/27$, $p < .01$). For the statistics essay task, the only finding of significance was the between-groups effect for the DB group, with the cloze measure ($F = 3.53$, $df = 2/27$, $p < .05$). The outstanding feature of these findings is that all three significant findings, high-anxious subjects communicated better than medium, or low-anxious subjects. In two of the three cases, the low-anxious subjects communicated second best, while in the third case, within the DB group, with the unitization applied to the experimental TAT story, low-anxious subjects communicated worse than medium or high-anxious subjects.

These results suggest that anxiety is involved in the process of double-binding, but in a different way than was predicted. The presence of anxiety may somehow indicate or produce resistance to communicational disruption. This will be discussed at greater length below.

As a final check on the role of anxiety in mediating

Table 18

Group Means and Between Groups Analyses of Variance for High, Medium, and Low Anxiety DB Subjects on the Experimental TAT and Statistics Essay with the TTR, Cloze, and Unitization Measures

Experimental TAT

	Means		
	High	Medium	Low
TTR	60.1	60.6	60.9
Cloze	4.79	5.01	4.85
Unitization	4.45	5.29	5.77

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	1.50	.11
	Within Groups	27	13.56	
	Total	29		
Cloze	Between Groups	2	1.30	.50
	Within Groups	27	2.60	
	Total	29		
Unitization	Between Groups	2	44.65	3.76*
	Within Groups	27	11.87	
	Total	29		

Table 18--continued

Statistics Essay

	Means		
	High	Medium	Low
TTR	59.8	58.9	60.7
Cloze	5.08	4.58	4.87
Unitization	4.79	4.56	5.26

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	8.00	.74
	Within Groups	27	10.78	
	Total	29		
Cloze	Between Groups	2	6.30	3.53*
	Within Groups	27	1.78	
	Total	29		
Unitization	Between Groups	2	12.70	.99
	Within Groups	27	12.74	
	Total	29		

*$p < .05$ (both tails)

Table 19

Group Means and Between Groups Analyses of Variance for High, Medium, and Low Anxiety SC Subjects on the Experimental TAT and Statistics Essay with the TTR, Cloze, and Unitization Measures

Experimental TAT

	Means		
	High	Medium	Low
TTR	62.5	61.0	61.4
Cloze	5.39	4.75	4.96
Unitization	4.62	5.16	5.16

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	6.00	.51
	Within Groups	27	11.89	
	Total	29		
Cloze	Between Groups	2	10.65	6.33**
	Within Groups	27	1.68	
	Total	29		
Unitization	Between Groups	2	9.75	.70
	Within Groups	27	13.84	
	Total	29		

Table 19--continued

Statistics Essay

	Means		
	High	Medium	Low
TTR	62.8	63.5	60.0
Cloze	5.11	5.00	5.11
Unitization	4.97	4.59	4.52

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	6.00	.25
	Within Groups	27	23.96	
	Total	29		
Cloze	Between Groups	2	.40	.11
	Within Groups	27	3.58	
	Total	29		
Unitization	Between Groups	2	5.85	.29
	Within Groups	27	19.90	
	Total	29		

Table 20

Group Means and Between Groups Analyses of Variance for High, Medium, and Low Anxiety C Subjects on the Experimental TAT and Statistics Essay with the TTR, Cloze, and Unitization Measures

Experimental TAT

	Means		
	High	Medium	Low
TTR	61.0	61.6	62.8
Cloze	5.24	4.93	4.91
Unitization	5.52	4.58	5.16

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	8.50	1.05
	Within Groups	27	8.07	
	Total	29		
Cloze	Between Groups	2	3.45	1.28
	Within Groups	27	2.69	
	Total	29		
Unitization	Between Groups	2	22.45	1.88
	Within Groups	27	11.95	
	Total	29		

Table 20--continued

Statistics Essay

	Means		
	High	Medium	Low
TTR	62.7	63.0	63.5
Cloze	5.41	5.26	5.17
Unitization	5.10	4.94	5.29

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	8.50	.55
	Within Groups	27	15.50	
	Total	29		
Cloze	Between Groups	2	1.50	.59
	Within Groups	27	2.54	
	Total	29		
Unitization	Between Groups	2	3.10	.21
	Within Groups	27	14.80	
	Total	29		

communicational disruption in double-binding, a between-groups analysis of variance was conducted, using anxiety scores obtained on the MAACL by DB, SC, and C subjects. The results of the analysis, reported in Table 21, indicate that the three experimental groups do not differ significantly in mean level of anxiety. The means for the DB, SC, and C groups were 7.87, 8.71, and 7.97, respectively. These means are, however, substantially higher than those obtained by the author of the MAACL, Zuckerman,[1] in his normative samples. Zuckerman obtained a mean anxiety score for males of 6.9, and for females, 6.3. In general, the procedures in the present research were anxiety-provoking, although there are no grounds for asserting that double-binding was more anxiety-provoking than standard-conflict, or control conditions.

Table 21

Group Means and Between Groups Analysis of Variance of MAACL Raw Scores for Anxiety for DB, SC, and C Groups

	DB	SC	C
MAACL Means	7.87	8.71	7.97

Analysis of Variance

Source	df	MS	F
Between Groups	2	6.50	1.42
Within Groups	90	4.59	
Total	92		

Double-binding and Awareness

The fourth hypothesis in this research was that the more aware subjects are, in a double-bind situation, of the nature of the dilemma they are in, the less communicationally disruptive that dilemma will be. The Reaction Questionnaire, step 9, was designed to measure subjective awareness of double-binding. Subjects were asked to respond to the first three items only if they felt the items pertained to the instructions they had received for step 6, the statistics essay. Since these items actually pertained only for double-bind subjects, the number of subjects responding from each of the three groups is an indicator of subjects' awareness of double-binding. Of the 31 subjects in each of the three experimental groups, 28 DB subjects, 12 SC subjects, and three C subjects responded to the first three items. A chi-square test between these three values yielded a significant value ($X = 41.62$, $df = 4$, $p < .001$). Awareness scores obtained by DB subjects thus provide an accurate estimate of their actual level of awareness of their predicament during the statistics essay task.

Each of the three questions on awareness in the Reaction Questionnaire was designed to provide a score of one through five, least to most awareness. DB subjects' scores for the three items were summed in order to provide a total awareness score. Twenty-seven DB subjects who responded to the first three RQ items were ranked according to awareness and divided into high, medium, and low-awareness groups, with nine subjects in each group. Between-groups analyses of variance were carried out with the three awareness groups, using each of the three

measures of communication. The results of the analyses are reported in Table 22.

Table 22

Group Means and Between Groups Analyses of Variance for High, Medium, and Low-Awareness Scorers in the DB Group's Statistics Essay with the TTR, Cloze, and Unitization Measures

Statistics Essay

	Means		
	High	Medium	Low
TTR	60.6	60.9	59.3
Cloze	4.67	5.06	4.81
Unitization	4.39	5.02	4.93

Analysis of Variance

	Source	df	MS	F
TTR	Between Groups	2	6.00	.55
	Within Groups	24	10.88	
	Total	26		
Cloze	Between Groups	2	3.50	1.72
	Within Groups	24	2.04	
	Total	26		
Unitization	Between Groups	2	10.60	.60
	Within Groups	24	17.70	
	Total	26		

The evidence suggests that awareness does not vitiate the effects of double-binding. No significant between-groups effects were obtained. The absence of significant findings cannot be attributed to any limitation in the range of awareness scores. A between-groups analysis of variance for raw scores on the awareness items, between high, medium, and low-awareness subjects, indicated that the differences between the groups was significant ($F = 76.0$, $df=2/24$, $p < .001$). This analysis is reported in Table 23. Although the hypothesis regarding awareness was not confirmed, it is possible that awareness operated in a different way to influence the extent of communicational disruption caused by double-binding. Table 24 reports the results of a Pearson's r-correlation between raw scores for anxiety and awareness. There was a significant positive correlation between anxiety and awareness scores among DB subjects ($r = .483$, p .01). This finding will be considered at greater length below.

Additional Observations

Communicational disruption was produced by the statistics essay double-bind, when compared with standard conflict and control conditions, as measured by the TTR and cloze techniques. An important question is whether the same subjects appeared to suffer communicational disruption according to both the TTR and cloze measures. In order to determine if this was the case, DB subjects' TTR and cloze scores with respect to statistics essays were compared. A Pearson's r-correlation was calculated between the two sets of scores. Results are reported fully in

Table 23

Group Means and Between Groups Analysis of Variance of RQ Raw Scores for Awareness for DB, SC, and C Groups

	DB	SC	C
Awareness Means	13.00	10.11	6.33

Analysis of Variance

Source	df	MS	F
Between Groups	2	98.00	76.0***
Within Groups	24	1.29	
Total	26		

***p < .001 (both tails)

Table 24

Raw Scores for Anxiety and Awareness of DB Subjects and Pearson's r Correlation for These Sets of Scores

Subject Number	Awareness Score	Anxiety Score
37	9	7
47	4	3
123	11	6
31	9	9
41	11	8
26	7	11
30	10	7
52	5	2
19	9	7
56	14	10
61	7	9
85	9	11
83	5	7
65	6	8
70	8	11
76	9	10
88	6	7
29	11	8
L1	8	6
L2	7	10
119	10	9
120	5	4
115	13	12
118	9	7
L8	8	5
L9	12	7
L13	10	8

$r = .483$
$N = 27$
$z = 2.58$
$p < .01$

Table 25. With 31 pairs of scores, the r-value obtained was .273. This value was tested for significance using a Fisher's Z-transformation. The obtained z-value was 1.48, which does not reach the 1.96 required for significance at the .05 level. However, the TTR and cloze scores of DB subjects on the statistics essay were, to some degree, related. The implication that particular subjects were vulnerable to double-binding is strengthened by the fact that the two subjects whose TTR scores were the lowest were also the two lowest according to the cloze technique. Furthermore, the use of 16 raters for the cloze procedure makes this measure quite reliable. There is a strong possibility that other measures of communication would detect signs of disruption in communication which the measures used in the present research did not detect.

In subjects' reactions to RQ items, only three questions appeared to differentiate the three experimental groups. Question 19 required subjects to respond true/false to whether they had written spontaneously on the statistics essay task. Of the 31 subjects in each of the experimental groups, 22 C subjects, seven SC subjects, and eight DB subjects answered 'true' to this item. The differences between the numbers of subjects in each group responding 'true' were compared using a chi-square test, and the value obtained was significant ($X = 11.41$, $df = 2$, $p < .01$). Control group subjects were significantly more spontaneous in writing their statistics essays than were DB or SC subjects.

Question 22 required subjects to respond true/false to the statement that they felt anger towards the experimenter. Of the 31 subjects in each group, two C subjects, 10 SC subjects, and 22 DB subjects said

Table 25

Scores of DB Subjects on Statistics Essay with the TTR and Cloze Measures; Pearson's r for These Scores

Subject Number	TTR Score	Cloze Score
27	58	4.5
37	60	5.3
47	63	4.8
123	55	3.7
31	59	4.9
41	65	4.4
26	64	5.0
30	62	4.9
52	56	4.4
19	60	4.7
56	57	5.0
61	56	3.8
66	55	4.5
85	59	5.4
87	61	4.6
83	62	4.9
65	56	5.0
70	63	5.4
76	58	5.2
88	59	5.7
29	60	4.6
L1	66	5.3
L2	57	5.4
119	63	5.1
120	61	4.3
115	61	4.6
118	56	4.8
207	58	5.2
L8	64	5.1
L9	57	4.9
L13	65	4.8

$r = .273$
$N' = 27$
$z = 1.48$
$p > .05$

they did feel anger. Again, the chi-square value obtained was significant ($X = 17.89$, $df = 2$, $p < .001$). The disparity between the responses of DB and SC subjects suggests that the separate messages in the double-bind were apprehended separately, as intended. Subjective awareness of double-binding was translated into anger towards the experimenter, who must have been held responsible for the dilemma. The results obtained relating to anger confirm the importance of the experimenter's role in the double-bind situation.

The third RQ item which differentiated the three experimental groups was question 12. Students were asked to indicate the degree to which they felt picked on, or persecuted by the instructions for the statistics essay. Of the 31 subjects in each of the experimental groups, 21 DB subjects, 12 SC subjects, and four C subjects stated that they felt picked on. Five DB subjects, 11 SC subjects, and 22 C subjects said they did not feel picked on, while five DB subjects, eight SC subjects, and five C subjects were neutral on this question. The chi-square value obtained for the differences between the numbers of subjects in each experimental group who felt picked on was significant ($X = 11.73$, $df = 2$, $p < .01$). It is felt that this item measures, to some degree, subjects' tendencies to react in a paranoid fashion to the experimental procedure, in this case double-binding. It appears likely that the experimenter's denial of the objective message that had been delivered to DB subjects accounts for subjects' feelings of being picked on. Of course, double-bind subjects were being picked on, in a sense, since instructions were deliberately designed to place them in a dilemma.

Nevertheless, it is important to note that paranoid reactions, characteristic of schizophrenic illness, probably also had their origin in appropriate reactions to one's surroundings. Subjects exposed to double-binding were indeed victimized in this experiment, but their awareness that they were being picked on might indicate the nature of their later reactions to situations of this sort. The results suggest that the relationship between double-binding and paranoid reactions should be explored more thoroughly.

Footnotes--Chapter III

[1]H. G. Gough, California Psychological Inventory (rev. ed.; Palo Alto: Consulting Psychologists Press, 1964).

CHAPTER IV

DISCUSSION

The primary aim of this research was to examine the effects of double-binding upon communication. In order to accomplish this, three double-binds were constructed. These double-binds and two control conditions--a standard conflict and a neutral condition--were created, with college students in group settings. Measurements of communication were made before and after each of the double-binds and the equivalent control conditions. Three techniques for measurement were employed, each of which has been found useful in distinguishing between the verbal behavior of normals and schizophrenics.

Two of the three double-binds created no communicational disruption, but the third was effective in disrupting communication, according to two of the three measures used to assess communicability. Before discussing the implications of these findings for double-bind theory, it is necessary to consider the measuring devices used in this research, in terms of the reasons why two of the devices produced significant findings but not the third.

The utility of the three techniques, the type-token ratio, the cloze procedure, and the method of unitization, appears to stem largely from the fact that they focus on aspects of communication which are out of awareness. Shakow (1963)[1] suggested that in assessing communicativeness, it is better to measure features of communication about which the subject is unaware; cooperation need not then be assumed. Salzinger,

Portnoy, and Feldman (1966)[2] explained that the three methods are applied to language as raw behavior, rather than as an indicator of something else; thus, content of language is ignored.

Of the three techniques, the close procedure produced the most significant findings in this research. Since the cloze score measures both the semantic and syntactic properties of language, it is the most comprehensive of the three measures. It has been applied in many studies of communication. Osgood and Walker (1959)[3] found significant differences in communicativeness between notes written by male suicide patients and those written by male control patients. Salzinger, et al. (1961)[4] noted that cloze scores tended to decrease as a direct function of increasing dosages of chlorpromazine. Fillenbaum and Jones (1962)[5] reported that mutilated speech samples from the speech of aphasics were more difficult to cloze than those of control subjects. Hammer, Polgar, and Salzinger (1965)[6] discovered that the social distance between a subject and the individual responsible for clozing his communication determines the difficulty of clozing. The explanation the authors offered was that words used in contiguity provide overlapping information to individuals familiar with the same language, so that the comprehensibility of speech is directly related to the sequential regularities of language.

The second measure of communication employed, the type-token ratio, produced some significant findings. The TTR, as a measure, is more highly dependent upon the semantic than the syntactic aspects of speech. It measures the tendency to repeat words, which is reported to

be stronger among schizophrenics than among normals. Wilensky (1952)[7] found that perseveration was significantly more common in response to frustration among schizophrenics than among normals.

Grummon (1950)[8] reported that TTR scores calculated from 500 and 1000 word samples of speech correlated positively with the degree of improvement in therapy, but not 100 word TTRs. The TTR, since it involves a straightforward word count, is somewhat more objective than the cloze measure, which depends on ratings. Nevertheless, the cloze technique has been an accurate measure of communicativeness in many populations, whereas the TTR has been found to vary as a function of the nature of the population. Herdan (1960)[9] uncovered differences in mean TTR scores for Jewish, Italian, and black samples.

The cloze and the TTR differentiate the communications of schizophrenics from those of normals. The reason for this, it has been suggested, is that schizophrenics react more to immediate stimuli than do normals. Honig (1966)[10] asserted that schizophrenics are stimulus-controlled, rather than motivationally-controlled. Salzinger (1966)[11] suggested that it is the prepotency of immediate stimuli, not the fear of consequences, that accounts for the reduced communicability of schizophrenic speech. If immediate stimuli determine subsequent responses, there will be a strong tendency to repeat words. Repetition of words will result in a lower TTR score. In addition, a normal individual, accustomed to a balanced distribution of immediate and long-range stimulus-control, will find it difficult to predict what an individual primarily under the control of immediate stimuli will say. This reduces

the cloze score.

The process whereby an individual becomes controlled by immediate stimuli may be viewed as one model of the schizophrenic process. Normally, intense relationships entail long-range expectations which are fulfilled. If, however, an individual experiences a great deal of pain in such relationships, he will learn not to trust in long-range expectations. Children who are made insecure regarding the love of their parents will probably trust only immediate sources of security or love, perhaps not even these. When the child has experiences with expectations which are satisfied, with love that he can depend on, he will become balanced, in terms of control by immediate and long-range stimuli.

One apparent manifestation of control by immediate stimuli is the tendency of schizophrenics to intrude personal fantasy material in place of a response which would seem to be called for by the stimulus. The third measure of communicativeness used in this research, unitization, reflects the number of such intrusions, in terms of words which cannot be related to surrounding speech. Sommer, Dewar, and Osmond (1965)[12] found that schizophrenics emit less common associates in a word association test than do normals. They also emit more words not at all related to their context. Unitization is based largely on the syntactical properties of speech. In the present investigation, the communication tasks were fairly structured, so that unitization would not be expected to be as powerful a technique as the cloze or TTR, as indeed it was not.

Hammer and Salzinger (1964)[13] offered an explanation for the

communicational phenomena in schizophrenia which the TTR, cloze, and unitization techniques assess. The authors suggested that since schizophrenics have withdrawn from social contact, they have a strong tendency to rely upon language acquired before withdrawal. There is an increase in the relative use of speech which had greater habit-strength in the premorbid stage. There is also an increase in idiosyncratic usage, based upon the fact that the premorbid restrictions or reinforcement contingencies controlled by the listener are not currently effective for schizophrenics. In the present study, double-binding was expected to produce withdrawal which, although not of long duration, would involve the same communicational difficulties that are involved in schizophrenia.

One of the double-binds in this study, the statistics essay, produced communicational disruption according to the TTR and cloze measures. The statistics essay double-bind was created by instructions for subjects to write an essay about statistics. Subjects in the double-bind group were first told, in effect, 'Do not do so and so or you will be punished.' A second message was then delivered which conflicted with the first, of the form 'If you do not do so and so you will be punished.' Finally, a third message was offered, on a different communicational level, denying the dilemma created by the first two messages.

In order to be certain that the denial of the dilemma, crucial to the double-bind, was responsible for the communicational disruption observed, a group of subjects was presented the first two messages

which DB subjects received, but the third message given them was an affirmation of the conflict created by the first two. The difference between the affirmation and the denial of subjects' perceptions as to the conflict produced a significant difference in communicability. The instructions for DB subjects seem to fulfill the requirements for asserting the existence of a double-bind. There were competing injunctions offered, not only in terms of the initial conflict created but also in terms of the objective fact that a conflict existed alongside the subjective denial of the existence of a conflict. The denial of conflict satisfies the requirement that the crucial competing message in a double-bind be delivered on a different communicational level from that employed for the initial message. There was in addition, a tacit prohibition on subject's leaving the field, based upon the experimenter's authority in the classroom setting. Finally, the consequences for subjects of not responding appropriately were designed to be, and apparently were successful in being sufficiently threatening that few could escape the experimental situation by minimizing its importance.

The effects of the statistics essay double-bind were noted not only on the statistics essay itself, but to a lesser extent, on the neutral task which followed. This suggests that subjects' reactions to double-binding were fairly strong. An illustration of statistics essays of DB, SC, and C subjects is given in Appendix E. These essays were selected because they were typical cases, both in terms of TTR and cloze scoring, and impressionistically.

It is noteworthy that to a large extent, DB subjects whose

communications were assessed as disrupted by the TTR measure also appeared disrupted according to the cloze procedure. However, the correlation between the TTR and close scores of DB subjects on the statistics essay did not reach significance. It appears likely that not only can double-binding disrupt communication in different ways among different individuals, but that there might also be reactions to double-binding which measures of communication cannot detect.

Although communicational disruption was the most outstanding effect of double-binding in the present study, there were other effects as well. Double-bind and standard-conflict subjects had more difficulty being spontaneous on the statistics essay double-bind than did C subjects. Although subjects' reaction times before beginning their statistics essays were not measured, and total writing time was structured to be the same for all subjects, it is possible that DB subjects required more time to begin and complete the task than other subjects. This would be in accord with the finding, reported by Finger (1941)[14], that the greater the degree of conflict, the longer it takes subjects to respond in a choice situation. A comparison between DB and SC subjects would be particularly illuminating, since the double-bind is held to be distinct from a simple approach-approach, approach-avoidance, or avoidance-avoidance conflict.

Another consequence of the statistics essay double-bind was anger on the part of DB subjects. The number of DB subjects reporting anger toward the experimenter was significantly greater than the number of SC or C subjects. This finding has a number of important implications.

First, double-bind subjects did hold the experimenter responsible for the denial of the original message in the statistics essay instructions. There is a possibility that he might also have been held responsible for the original conflict message as well.

An important implication of the results pertaining to anger concerns the role of an authority in a double-bind situation. Watzlawick (1964)[15] and others have insisted that there must be two or more persons for there to be a double-bind situation. It has been suggested that if double-binding is to be pathogenic, messages must come from a particular individual. In a parent-child relationship, there is clearly a binder and a victim. Since the present experimental situation involved no certain binder, it is important to note whether or not subjects perceived the double-binds as coming from a specific source. The anger of DB subjects suggests that this is indeed the case. The experimenter's role in double-binding is attested to by these findings.

The role of the experimenter appears especially important in explaining the communicational disruptiveness of the statistics essay task, in contrast to the experimental TAT task. Since the experimenter was introduced as, and was actually an authority in the field of statistics, it is conceivable that subjects reacted to this acknowledged authoritativeness. The source of threat in the experimental TAT pertained to the area of psychopathology, in which the experimenter possessed no authority for students. The differential efficacy of the statistics essay and experimental TAT tasks in disrupting communication suggests that careful attention must be paid to the relationship between binder and victim in assessing

double-binding. This relationship may be considered one of the substantive features in a double-bind situation.

Another reaction to double-binding elicited by the measures in the present study was a feeling of being picked on, reported by significantly more DB subjects than SC or C subjects. This finding offers a hint at the origins of paranoid reactions, in that early tendencies to feel persecuted might be appropriate. In order to gain further insight into the relation of double-binding to paranoia, the TAT stimuli used in the present research might prove a useful tool. An analysis of the content of DB subjects' TAT stories might have revealed important information regarding the use of defensive maneuvers in response to double-binding. Focusing on content opens the possibility of subjects manipulating their messages, and renders results dependent upon subjective ratings. Nevertheless, there is also the possibility of eliciting reactions to double-binding which were not detected in the present research.

A signficant question in the present investigation was whether or not substantive issues are important to double-binding. The formulators of the double-bind concept (Bateson, et al., 1956)[16] emphasized the structural features of double-binding, thereby implying that the content of a double-bind situation was irrelevant. The results of the present study offer mixed evidence on this issue. Clearly, the effectiveness of the statistics essay task in disrupting communication, when contrasted with the failure of the experimental TAT to do the same, suggests that the experimenter's denial of a conflict was more potent for the statistics essay task. The potency, or weight carried by the denial is

certainly a substantive issue. Also, in terms of explaining why the third double-bind--the line-discrimination task--did not disrupt communication, possibly the task was not sufficiently relevant for subjects. Conceivably, the threat of failure was not strong enough to disrupt the communications of DB subjects confronted with discriminations which they could not make.

The role of the substantive component in double-binding was explored directly, in terms of DB subjects' need for achievement, and the amount of communicational disruption they suffered due to double-binding. The findings in this area are somewhat ambiguous. DB subjects' need for achievement, as measured by their achievement-via-conformance scores on the California Psychological Inventory, did not relate to the communicational disruption they suffered on the statistics essay task. In fact, the only findings of significance with respect to need for achievement were with the experimental TAT and across neutral tasks. Of the total of four significant findings, the medium-Ac group evidenced maximum communicativeness in all cases. Furthermore, all the significant differences occurred in the DB or SC groups, none in the C group. Possibly, the stressfulness of the DB and SC conditions renders a moderate level of need strength most adaptive for communication. Where the stress is greater, for instance on the statistics essay task, this relationship breaks down. This would be in accord with some of the notions regarding the relationship between drive strength and performance under stress discussed by Taylor (1956).[17] Possibly, task-relevance interacts with task-stressfulness in

determining the most adaptive response. The statistics essay double-bind was effective, it seems, because the threat was very real for DB subjects. For this task, therefore, substantive features certainly were relevant.

The failure of results pertaining to need-achievement to substantiate the importance of the content of double-bind situations suggests that the variable selected to measure content might not have been appropriate in the subject population employed in the present research. In a population where there might be a uniformly high need for achievement, differences in Ac, achievement via conformance, scores might not reflect real or substantial differences between subjects on this dimension. However, mean Ac scores for subjects in this study were three points below the mean Ac score obtained by Gough (1964)[18] in the normative sample he used in constructing the California Psychological Inventory. Thus, disconfirmation of the role of substantive factors in double-binding cannot be attributed to the inappropriateness of the substantive feature selected. The importance of the content of a double-bind requires further investigation.

Mednick (1958)[19] advanced the hypothesis that anxiety accounts for the communicational disruptiveness of double-binding. The results of the present research disconfirm this hypothesis. Although communicational disruption did not, on the whole, vary with anxiety, there were several important exceptions. Among DB subjects, on the experimental TAT task (according to the unitization measure), and on the statistics essay task (according to the cloze measure), subjects who acknowledged most

anxiety communicated best. The same was true in the SC group on the experimental TAT task (using the cloze measure). It is difficult to explain these findings.

It may be that a high level of anxiety represents a high level of awareness of one's predicament. Since awareness was another key issue in the present study--that is, awareness of the fact that one had been placed in an untenable position by the double-binding instructions--DB subjects' scores were available for correlation with raw scores for anxiety. In a selective sample, representing the 27 most aware DB subjects out of a total of 31, there was a significant positive correlation between raw scores for anxiety and awareness. This does not necessarily mean that awareness produced anxiety. Both might relate to a third variable: perhaps intelligence or paranoid tendencies. Since the measure of anxiety employed was a self-report technique, it is possible that the anxiety scores do not reflect subjects' true levels of anxiety, but rather their willingness to admit anxiety.

One hypothesis which is suggested by the anxiety and awareness findings in the present study is that the presence of anxiety indicates an adaptive response to double-binding. Apparently, many subjects who are aware of the double-bind situation become anxious about it, but do not then suffer the more profound communicational disturbance. Although there were no significant differences in communicativeness among DB subjects between 'high,' 'medium,' and 'low' awareness groups, the differences were in the expected direction. By inspection, it appears that the subjects who were most aware of the circumstances of the statistics

essay double-bind reported the most anxiety in connection with it. The same subjects evidenced maximum communicativeness, at least in terms of the cloze measure.

Although the relationship between anxiety, awareness, and resistance to double-binding is not clearly established, a possible model for treating victims of double-binding may be offered. Most children who are exposed repeatedly to double-binding possess no more than a glimmering of awareness regarding the details of their predicament. Should they become schizophrenic as adolescents or adults, the origins of their illness might seem to be irrevocably lost. If, however, an individual in this predicament were made aware of his dilemma--after the therapist had identified the likely ingredients of the problem--an attempt might be made to help him to experience anxiety in connection with it. This could be accomplished by a form of behavior therapy involving sensitizing schizophrenic individuals to their own anxiety by exposing them to successive approximations to the anxiety-provoking stimulus but not allowing them to become accustomed to any stimulus. Should these individuals learn to experience anxiety in this way, they might no longer find it necessary to resort to the blurring of meaning or blunting of affect which ordinarily protect them. This would be especially true if they were helped to deal with their anxiety adequately.

The bulk of prior research with the double-bind has been of two types. In the first type, attempts were made to uncover double-binding patterns in the communications of parents of schizophrenics. These

attempts have met with mixed success. The second approach that has been taken involves determining whether or not schizophrenics respond differently from normal individuals to double-bind situations. This approach has also failed to contribute significantly to double-bind theory. In the present investigation, an attempt was made to study the process of double-binding, and its effects on normal individuals. There were several difficulties which had to be overcome in creating double-bind situations.

The primary difficulty was in establishing adequate operational criteria for asserting the existence of a double-bind. A thorough search of the literature provided a number of relevant criteria, among which some were selected for use in constructing double-binds, and some were tested for their relevance to a double-bind dilemma. In creating the actual laboratory double-binds for use in this research, informal pilot studies and many revisions led eventually to the procedures employed. Since a laboratory induction of double-binding had never been attempted in this manner, there were a number of subjective factors operating in determining the precise nature of the procedures used. Refinement of the criteria for asserting the existence of a double-bind, and the ingredients utilized in constructing double-binds remains a critical problem for investigators of the double-bind phenomenon. There is also the problem of refining the tools of measurement of the effects of double-binding. Such refinement would provide a strong impetus to further research on this valuable concept.

Footnotes--Chapter IV

[1]D. Shakow, "Psychological Deficit in Schizophrenia," Behavioral Science, VIII (1963), 275-305.

[2]Salzinger, Portnoy, and Feldman, "Verbal Behavior in Schizophrenics and Some Comments Toward a Theory of Schizophrenia."

[3]C. E. Osgood and E. G. Walker, "Motivation and Language Behavior: A Content Analysis of Suicide Notes," Journal of Abnormal and Social Psychology, LIX (1959), 58-67.

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CHAPTER V

SUMMARY AND CONCLUSIONS

The object of the present investigation was to assess the effects of double-binding communication. Additional hypotheses concerned the role of substantive issues in the process of double-binding; the mediating role of anxiety in double-binding, and the role of awareness in mitigating the effects of double-binding. The subjects were 53 male and 40 female students enrolled in undergraduate courses in statistics at The City College of the City University of New York. Three groups of subjects were created on the basis of information obtained during the first of two testing sessions. Subjects were matched on the Ac dimension of the California Psychological Inventory and on their ranking of statistics on the Course Preference Ranking. They were then assigned to one of three experimental groups, a double-bind (DB) group, a standard-conflict (SC) group, and a control (C) group. In a sequence of nine tasks administered during the second testing session, three tasks differentiated the DB, SC, and C groups. The three tasks were interspersed with tasks assigned to the DB, SC, and C groups, which were included to enable measurements of communication to be made throughout the second testing procedure.

The major dependent variable in this research was communicativeness. Communicativeness was measured in three different ways--the type-token ratio, the cloze procedure, and the unitization technique--all of which had proven useful in distinguishing between the communication of

schizophrenics and that of normals. Four 'neutral' samples of communication were obtained, one preceding the first double-bind (and equivalent SC and C conditions), and one following each of the three double-binds in this study. The neutral tasks were Thematic Apperception stories, with standard instructions except that subjects were required to write 100-word stories in response to each of the four TAT cards. Two of the double-binds involved communication tasks, one being another TAT story with special instructions. Another double-bind required subjects to write an essay describing their feelings about statistics. The third double-bind consisted of a series of line-discriminations, which were designed to be easy for C subjects, difficult for SC subjects, and impossible for DB subjects. Following completion of the three experimental and four neutral tasks, all subjects were asked to complete the Multiple Affect Adjective Checklist, and a Reaction Questionnaire which probed their reactions to the study.

Since it was hypothesized that double-binding disrupts communication, DB subjects were expected to communicate less effectively than SC or C subjects on the two experimental tasks involving communication. It was also expected that DB subjects' communications would deteriorate when assessed across neutral tasks, while those of SC and C subjects would not change. The results offer partial confirmation of the hypothesis that double-binding disrupts communication. On one of the double-binds, the statistics essay task, DB subjects communicated less effectively, according to the cloze and TTR measures, than SC or C subjects. The cloze measure also revealed a difference between the DB

group and the other two groups across the four neutral tasks, indicating that the statistics essay task produced disruption among DB subjects which carried over to succeeding tasks. The two other double-binds did not produce communicational disruption. The reasons why this was the case were discussed.

The second hypothesis was that the greater a subject's need for achievement, as measured by his Ac score on the CPI, the more disruption he would suffer if subjected to double-binding. This represented a test of the significance of substantive issues in double-binding. No confirmation was obtained for this hypothesis, although the success of the statistics essay double-bind in comparison with the experimental TAT double-bind in producing communicational disruption is suggestive in this regard; the two double-binds differ only in substance, not structure.

With respect to the role of anxiety in double-binding, it was hypothesized that communicational disruption in response to double-binding would not correlate with amount of anxiety reported by subjects in double-bind situations. In general, anxiety did not relate to communicational disruption. However, a partial exception was the finding on the statistics essay that high-anxious subjects communicated more effectively than low or medium-anxious subjects, as measured by the cloze technique. This finding was related to the results obtained regarding the role of awareness in double-binding.

It was hypothesized that subjects in a double-bind situation who reported that they were aware of the details of the dilemma in which

they had been placed would be more resistant to communicational disruption than subjects who were unaware. This hypothesis was not confirmed by the results.

A significant positive correlation was obtained between DB subjects' raw scores for anxiety and awareness. Apparently, subjects who were aware of double-binding utilized their awareness in different ways: those who were made anxious by double-binding appeared to be less susceptible to communicational disruption than those who were aware but did not report anxiety. Other findings suggest that double-binding produces both feelings of anger and persecution in victims. The distinction between DB and SC subjects in this respect suggests that subjects in the double-bind situation perceived the separate messages in the bind separately.

The exploratory nature of this research points up the need for studying different methods of double-binding, with different populations from the one in this study, employing different measures to detect the effects of binding. Ultimately, double-binding must be studied with children who are its prime targets. The present research has demonstrated conclusively that double-binding can disrupt communication. The manner in which this takes place must be elucidated, as well as how to deal with the problem which the double-bind presents for victims.

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APPENDIX A

Oral Instructions--Day 1

The Psychology Department is gathering information from all students enrolled in psychology courses. One of the purposes of this survey is to get an overall picture of the types of students planning to major in psychology.

There are two questionnaire forms which you will be asked to complete today, and one which you will take home. It is very important that you bring in this latter questionnaire completed at the next class session of this course. You will be saving yourselves and the department trouble if you respond promptly. I will be here at your next meeting to pick up the forms.

As you can see, in the booklets which are being distributed, you are asked today to give some information about yourself, and to fill out a course-ranking. The questionnaire and answer blank you are to take home is a personality test. Make sure to follow the instructions carefully in completing this test.

You can begin now filling out the two forms for today in a moment. As soon as you are finished you will raise your hand and I will collect them from you. First, however, remove the slip of paper with a number on it. Please hold onto this slip. OK, begin.

(After all forms have been handed in.)

Remember, please have the personality tests completed by the next class meeting. By the way, remember to keep the slip of paper

with your number on it. This will be needed to identify you. Thank you for your cooperation.

Biographical Data Sheet

Age:_____ Years of college completed:_____

Date of birth:_____ Major subject:_____

Statistics section:____ Proposed career:_____

1. Have you ever participated in any psychological experiments? (check one) _____ yes _____ no

2. If your answer is 'yes' please indicate the number and general nature of these experiments. (number)_____ _____

3. Is English your native language? _____ yes _____ no

4. If your answer is 'no' please indicate how long you have spoken English and whether or not it is used in your home._____

5. Is your vision normal, with or without the help of glasses? _____ yes _____ no

6. Have you ever been diagnosed or hospitalized for a psychiatric illness? _____ yes _____ no

7. Are you familiar with the present study, perhaps having heard about it from a friend? _____ yes _____ no

8. Do you feel you should be excluded from this study for any reason? _____ yes _____ no

Course Preference Ranking

Would you please rank, in the order you prefer or think you would prefer them, the following courses commonly taken by undergraduates. Write the number 1 next to the course which you prefer most, write a 2 next to the one you prefer second most, and so on, down to 20 for the course you prefer least. You may find it convenient to work from both ends towards the middle. Make sure you assign a rank to each course listed, and do not use any rank more than once.

Courses	Rank	Courses	Rank
American History	____	Language	____
Art	____	Mathematics	____
Biology	____	Music	____
Chemistry	____	Philosophy	____
Economics	____	Physical Education	____
English Composition	____	Physics	____
European History	____	Political Science	____
English Literature	____	Psychology	____
Geology	____	Sociology	____
Health Education	____	Statistics	____

APPENDIX B

Oral Instructions--Day 2

This is the second and final part of the survey being conducted by the Psychology Department. This part involves a detailed study of psychological sensitivity or insight. Psychological insight is perhaps the most important attribute in a psychologist. There are, as yet, no really accurate methods for determining who will make a good psychologist and who will not, so one of the purposes of this study is to begin trying to resolve this problem.

Before proceeding with details and instructions for today's procedures, it is necessary to make certain that everyone present is qualified, on the basis of the information submitted previously, to participate. I will read off numbers, and when your number is called, come to the front and pick up a booklet. Do not open them until you are told to do so.

(After booklets have been distributed.)

Do not open your booklets until you are instructed to do so. First of all, please write your name and number in the spaces provided on top of your booklet.

There are nine parts to this study, each of which will take no more than five minutes. I will signal you when to begin and when to end each task. You should keep in mind that an overall score for each student in terms of suitability for psychological training will be calculated. All right, if there are no questions, open your booklets to

Part I. There you will find instructions for making up a story. Do not turn to the next page until I tell you to do so. You have 30 seconds to read the instructions. Go ahead. (After 30 seconds.) Now look at the picture and begin writing.

Printed Instructions for TAT Stories--Part I
(The Same as for Parts III, V, and VII)

On the following page you will see a picture. Do not turn the page until you are instructed to do so. This is a test of imagination, one form of intelligence. Your task will be to make up as dramatic a story as you can for this picture. Tell what has led up to the event shown in the picture, describe what is happening at the moment, what the characters are feeling and thinking; and then give the outcome. Write your thoughts as they come to your mind. You can devote five minutes to your story, but it must be at least 100 words long.

Printed Instructions for 'DB' TAT (Part II)

On the following page you will see a picture. Do not turn the page until instructed to do so. This is a highly important picture, since responses provide an accurate index of psychological insight. The more open and original you are, the higher your score is likely to be. In addition, responses to this picture often reveal hidden psychological problems, sometimes severe enough to suggest that a student should not enter the field of psychology.

You should have no difficulty making up a story to this picture. Tell what has led up to the event shown in the picture, describe what is

happening at the moment, what the characters are feeling and thinking; and then give the outcome. Since this is a simple task, you should be able to write your thoughts as they come to your mind. You can devote five minutes to your story, but it must be at least 100 words long.

Printed Instructions for 'SC' TAT (Part II)

On the following page you will see a picture. Do not turn the page until instructed to do so. This is a highly important picture, since responses provide an accurate index of psychological insight. The more open and original you are, the higher your score is likely to be. In addition, responses to this picture often reveal hidden psychological problems, sometimes severe enough to suggest that a student should not enter the field of psychology.

You may have some difficulty making up a story to this picture. Tell what has led up to the event shown in the picture, describe what is happening at the moment, what the characters are feeling and thinking; and then give the outcome. Although this is a difficult task, you should write your thoughts as they come to your mind. You can devote five minutes to your story, but it must be at least 100 words long.

Printed Instructions for 'C' TAT (Part II)

On the following page you will see a picture. Do not turn the page until you are instructed to do so. This is a test of imagination, one form of intelligence. Your task will be to make up as dramatic a story as you can for this picture. Tell what has led up to the event shown in the picture, describe what is happening at the moment, what the

characters are feeling and thinking; and then give the outcome. Write your thoughts as they come to your mind. You can devote five minutes to your story, but it must be at least 100 words long.

Oral Instructions--Part IV

Your next task is different from those you have been doing thus far. On the succeeding pages of your booklet, to which you are not to turn until told, you will find pairs of lines. Your task will be to judge which of the two lines is longer, and to place a check in the space provided to indicate your choice.

Although this seems like a simple task, it has been found to relate closely to psychological insight. It is likely that the ability to make psychological discriminations goes hand in hand with the ability to make sensory or physical discriminations. The score you achieve on this test will be part of your overall score for psychological insight, so do these tasks very carefully.

When I signal you to begin, turn the page to the first comparison. You will have five seconds to make your judgment. Then, you will be signalled to turn to the next page. This will continue until the twelve comparisons have been made. You should have one check on every page. Do not omit any comparisons.

One more caution. Do not use your fingers or any other cues besides your eyes in making your judgments. This would render your score meaningless.

All right, turn the page and begin.

Sample DB Discrimination Task (Part IV)

Check which line you think is longer.

left right

Sample SC Discrimination Task (Part IV)

Check which line you think is longer.

left right

Sample C Discrimination Task (Part IV)

Check which line you think is longer.

left right

Oral Instructions--Part VI

The task you will now be undertaking is different from those you have received thus far. Since you are all enrolled in a statistics course, you will be asked to write an essay concerning your feelings about statistics. I am especially aware of the importance of statistics, since I teach other sections of statistics in this department.

In your booklets you will find more precise instructions regarding this task. You have one minute to read carefully the written instructions. At the end of the minute, I will signal you to begin working on your essay. OK, read.

(When one minute is up.)

All right, now begin writing your essay. As indicated, you will have five minutes.

Written Instructions--DB Statistics Essay

This is the most important part of the present study. It is designed to uncover your feelings about statistics, a subject that plays an important role in the work of psychologists. Since statistics is so important, it is necessary to determine feelings of students at an early stage in their careers.

The essays you write will be made available to your instructors in statistics, in order to give them more information with which to evaluate you. It should be pointed out that students who have indicated positive feelings about statistics have been expected to demonstrate their interest in some way. If such students have not expressed

willingness to take on extra work, their grades suffered.

It is also true that if you express negative feelings about the subject, your instructors may find it difficult ignoring this when grading you. It is rare that someone does well in something he is not interested in.

Your task is to write an essay of at least 100 words discussing your feelings about statistics. Since this is a simple task, there is no reason for you to have any trouble writing your true feelings. Furthermore, there are no complications to prevent you from completing your essay in five minutes. Do not begin until you are instructed to do so.

Written Instructions--SC Statistics Essay

This is the most important part of the present study. It is designed to uncover your feelings about statistics, a subject that plays an important role in the work of psychologists. Since statistics is so important, it is necessary to determine feelings of students at an early stage in their careers.

The essays you write will be made available to your instructors in statistics, in order to give them more information with which to evaluate you. It should be pointed out that students who have indicated positive feelings about statistics have been expected to demonstrate their interest in some way. If such students have not expressed willingness to take on extra work, their grades suffered.

It is also true that if you express negative feelings about the

subject, your instructors may find it difficult ignoring this when grading you. It is rare that someone does well in something he is not interested in.

Your task is to write an essay of at least 100 words discussing your feelings about statistics. Because this is a difficult task, you may have some trouble writing your true feelings. However, in spite of the difficulties, you will have five minutes in which to complete your essay. Do not begin until you are instructed to do so.

Written Instructions--C Statistics Essay

This part of the study has been designed to explore attitudes among students toward statistics. An attempt is being made to make the courses in the Psychology Department more relevant to the careers students are planning. It is hoped that the information gathered here will better enable the training of psychologists by helping to decide what should and what should not be included in courses offered.

You will be asked to write an essay about the subject matter of statistics. The information that is collected will be pooled and analyzed. We are not interested here in what you feel as an individual. There is complete anonymity here, so that you should feel free to express your true feelings about statistics.

Your task is to write an essay of at least 100 words discussing your feelings about statistics.

You will have five minutes to work on your essay. Do not begin until you are instructed to do so.

Oral Instructions--Part VIII

This part of the study involves another aspect of sensitivity of psychological insight. You will be asked to try to describe the way you are feeling right now.

Please turn to the page in your booklet on which is printed the Multiple Affect Adjective Check List. Read the instructions carefully, and then proceed to complete the check list.

Directions--MAACL

MULTIPLE AFFECT

ADJECTIVE CHECK LIST

Today Form

By Marvin Zuckerman
and
Bernard Lubin

Name.....Age.....Sex.....

Date.....Highest grade completed in school.....

DIRECTIONS: On this sheet you will find words which describe the different kinds of moods and feelings. Mark an X in the boxes beside the words which describe how you feel now--today. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly.

Published by Educational and Industrial Testing Service
Box 7234, San Diego, California

Adjectives--MAACL

1	____	active	25	____	contrary
2	____	adventurous	26	____	cool
3	____	affectionate	27	____	cooperative
4	____	afraid	28	____	critical
5	____	agitated	29	____	cross
6	____	agreeable	30	____	cruel
7	____	aggressive	31	____	daring
8	____	alive	32	____	desperate
9	____	alone	33	____	destroyed
10	____	amiable	34	____	devoted
11	____	amused	35	____	disagreeable
12	____	angry	36	____	discontented
13	____	annoyed	37	____	discouraged
14	____	awful	38	____	disgusted
15	____	bashful	39	____	displeased
16	____	bitter	40	____	energetic
17	____	blue	41	____	enraged
18	____	bored	42	____	enthusiastic
19	____	calm	43	____	fearful
20	____	cautious	44	____	fine
21	____	cheerful	45	____	fit
22	____	clean	46	____	forlorn
23	____	complaining	47	____	frank
24	____	contented	48	____	free

49 ____ friendly
50 ____ frightened
51 ____ furious
52 ____ gay
53 ____ gentle
54 ____ glad
55 ____ gloomy
56 ____ good
57 ____ good-natured
58 ____ grim
59 ____ happy
60 ____ healthy
61 ____ hopeless
62 ____ hostile
63 ____ impatient
64 ____ incensed
65 ____ indignant
66 ____ inspired
67 ____ interested
68 ____ irritated
69 ____ jealous
70 ____ joyful
71 ____ kindly
72 ____ lonely
73 ____ lost
74 ____ loving
75 ____ low
76 ____ lucky
77 ____ mad
78 ____ mean
79 ____ meek
80 ____ merry
81 ____ mild
82 ____ miserable
83 ____ nervous
84 ____ obliging
85 ____ offended
86 ____ outraged
87 ____ panicky
88 ____ patient
89 ____ peaceful
90 ____ pleased
91 ____ pleasant
92 ____ polite
93 ____ powerful
94 ____ quiet
95 ____ reckless
96 ____ rejected
97 ____ rough
98 ____ sad

99 ____ safe
100 ____ satisfied
101 ____ secure
102 ____ shaky
103 ____ shy
104 ____ soothed
105 ____ steady
106 ____ stubborn
107 ____ stormy
108 ____ strong
109 ____ suffering
110 ____ sullen
111 ____ sunk
112 ____ sympathetic
113 ____ tame
114 ____ tender
115 ____ tense
116 ____ terrible
117 ____ terrified
118 ____ thoughtful
119 ____ timid
120 ____ tormented
121 ____ understanding
122 ____ unhappy
123 ____ unsociable
124 ____ upset
125 ____ vexed
126 ____ warm
127 ____ whole
128 ____ wild
129 ____ willful
130 ____ wilted
131 ____ worrying
132 ____ young

Oral De-briefing

Now that the actual experiment has been completed I can explain to you the purposes of the study. As you already know, psychologists often investigate matters relating to human performance, and in some cases it may be necessary to withhold from subjects the true intent of the research in order to get unbiased results.

The study just conducted is a doctoral dissertation on the effects of a phenomenon known as the 'double-bind' on communication. Based upon the information gathered from you prior to today's session, the class was divided into three groups, each of which received different directions for a number of the tasks in today's booklet. To give you an illustration, some of you were told that the purpose of the statistics essay was to gather general information about students' attitudes toward statistics. To prove this, would those of you whose anonymity was assured please raise your hands so the others can see. Others among you were told that your grades might suffer because of what you wrote. Would you please raise your hands?

There were several instances of this sort where different groups received different instructions. I want to give you my personal assurance that nothing you said during any part of this study will in any way be held against you. Instructors will never see the essays written here. Furthermore, in Part II of the study some of you were told that the story you wrote could be used to identify psychiatric illness in you. This is not the case and you need have no concern about the story you made up in response to the picture presented. Also,

some of you were told that your ability to judge which line was longer related to psychological sensitivity. No such relationship has been found to exist, so you need not worry about your performances on this part of the study either. This applies particularly to those of you who were given lines or figures which were exactly equal in size, so that the task was by definition impossible.

I want to apologize for deceiving you, but some of the data obtained could not have been collected in any other way. If you are interested in seeing the conclusions of this research leave me your name and address and a reprint of the results will be made available to you as soon as they are ready.

Before we close, I have a favor to ask of you. The instructions for writing the essay on statistics were one of the most important parts of this study. In order to note the differences in your reactions to the different sets of instructions you each received, a questionnaire has been devised. Please turn to the questionnaire in your booklet. You will see a brief set of instructions, the same for all of you I assure you, followed by 25 questions. Please fill out the questionnaire and when you are finished hand in the entire booklet.

One more thing. I would appreciate your not mentioning this study to anyone for at least a month since other classes in the Psychology Department are being tested. This is most important. Thank you very much for your help.

Written Instructions and Text-Reaction Questionnaire

In order to gain a greater understanding of the effects of the experimental procedures in this study, it is important to know your precise reactions to one part of the study. Please try to recall your reactions to Part VI, the essay on statistics. The questions you will be asked concern your reactions to the instructions you received for writing the essay on statistics and your subsequent behavior.

Questions 1 through 3 apply only to the instructions received by one group of subjects. Answer these questions only if you feel they pertain to the instructions you received for Part VI. All other questions should be answered by all subjects.

Respond by placing, in the space provided, either a check or the letter corresponding to the discription that best fits your reaction. Do not spend too much time on any one question. Begin.

1. I thought the instructions I received were _____ inconsistent.
(a. not at all; b. slightly; c. somewhat; d. quite; e. completely)

2. I was aware that I was being placed in a difficult position as a result of the instructions. I made use of my awareness in formulating my response to the task _____.
(a. completely true; b. somewhat true; c. neither true nor false; d. relatively untrue; e. completely untrue)

3. In the instructions you were told first that it was possible your performance in statistics might suffer if you expressed positive feelings about statistics. Then, you were told your performance might suffer if you expressed negative feelings. Finally, it was asserted that there was no reason for you to experience any difficulty with the task. This was in direct contradiction to the instructions you had already received, which made the task difficult. How aware do you think you were that this contradiction existed between the actual difficulty of the task and the assertion that there was nothing difficult about it? _____
(a. not at all; b. slightly; c. somewhat; d. quite; e. extremely)

4. I was _____ upset by the instructions.
(a. terribly; b. quite; c. somewhat; d. a little; e. not)

5. I had _____ ideas for what to put in my essay.
(a. a great many; b. quite a few; c. several; d. not many; e. no)

6. My mind wandered _____ during the time allotted for this task.
(a. never; b. once or twice; c. several times; d. a good deal; e. constantly)

7. I felt I ought to be _____ frank in my essay.
(a. completely; b. quite; c. sort of; d. not very; e. not at all)

8. The instructions made me feel _____ anxious.
(a. not at all; b. slightly; c. fairly; d. quite; e. extremely)

9. I felt _____ depressed after reading the instructions.
(a. terribly; b. quite; c. mildly; d. not very; e. not at all)

10. I felt _____ ill during this task.
(a. not at all; b. just a little; c. somewhat; d. quite; e. very)

11. I had _____ thoughts about what others were writing.
(a. a great many; b. quite a few; c. some; d. hardly any; e. no)

12. I felt _____ picked on or punished by the instructions.
(a. not at all; b. slightly; c. somewhat; d. quite; e. very)

13. I felt _____ relieved when the task was over.
(a. extremely; b. quite; c. somewhat; d. slightly; e. not at all)

14. At some point I thought about leaving the room. _____ true _____ false

15. I felt I understood the instructions perfectly. _____ true _____ false

16. I never thought about not writing the essay. _____ true _____ false

17. I did not believe what was said in the instructions. _____ true _____ false

18. I was quite surprised by the instructions. _____ true _____ false

19. I wrote spontaneously, whatever came to mind. _____ true _____ false

20. I felt apathetic or indifferent about the task. _____ true _____ false

21. I never thought of asking the experimenter a question. _____ true _____ false

22. I felt anger towards the experimenter. _____ true _____ false

23. I set to work immediately upon reading the instructions.

_____ true _____ false

24. I was very careful to write at least 100 words.

_____ true _____ false

25. I had other reactions I feel were significant.

_____ true _____ false

If so, please describe them._____

APPENDIX C

Description of Pilot Study for Part IV--Line Discrimination

In order to determine the length of lines to be used for Part IV, a pilot study was conducted with 27 subjects drawn from the course in statistics taught by the experimenter. The physical conditions prevailing were the same as those which will exist for subjects during the actual experiment; the room is the same for pilot and experimental subjects.

The goal of this pilot study was to establish a 'difficult' comparison, defined as one which can be made successfully 75 percent of the time. Comparisons for C subjects were designed to be so easy that they could be made successfully 100 percent of the time. Those for the DB group were impossible, since lines were equal in length. The present study was to determine length of lines for SC subjects. This is inown in psychophysical experimentation as the 'just noticable difference,' or 'difference limen.' In the present study, instead of establishing j.n.d.'s for individual subjects, the goal was to establish it for a group. Therefore, responses of individuals were polled in order to set up a 'collective' difference limen.

All pilot subjects were presented six series of lines of different lengths and at different angles. Each series consisted of pairs of lines presented for comparison. Subjects indicated which line they thought was longer by placing a check in the appropriate space.

In each pair of lines, one was a standard, which reappeared on

every page in the series, and the other a comparison. There were seven comparison lengths for each standard, starting from 1/16 inch longer than the standard, up to 7/16 inch longer. Each comparison length was presented five times, and comparisons were presented in random order. Also, the position of the standard line, left or right, top or bottom, was varied.

The method used here is the method of constant stimuli, since the standard is presented again and again, along with each comparison stimulus. The stimuli used were as follows: (a) a 6 inch vertical line, along with seven comparisons ranging from 6-1/16 inches to 6-7/16 inches; (b) a 2 inch horizontal line, with seven comparisons; (c) a 5 inch diagonal from lower left to upper right, at a 45 degree angle, with seven comparisons; (d) a 4 inch diagonal line from lower right to upper left, also at a 45 degree angle, with seven comparisons; (3) a 1 inch diagonal line from lower right to upper left at a 30 degree angle, with seven comparisons; and (f) a 3 inch diagonal line from lower left to upper right, at a 30 degree angle, with seven comparisons.

There were 27 subjects in this study. Since each comparison is presented five times, there is a total of 135 judgments, not counting omissions, of 'longer' or 'shorter' for each comparison stimulus and the standard. The results obtained are presented in tabular form on the following page. In summary, just noticable differences were observed for each standard line within its series of comparisons. The difference limen was observed to fall between 1/16 inch above the standard and 3/16 inch above, in all cases. The 75 percent point was that point at which

approximately 101 out of 135 judgments stated that the comparison line was longer than the standard, although the subjects did not know which was the comparison and which was the standard. The just noticable difference established for each of the six series are: (a) 6-5/32 inches; (b) 2-4/32 inches; (c) 5-4/32 inches; (d) 4-5/32 inches; (e) 1-2/32 inches; and (f) 3-4/32 inches. These points were established by interpolating between comparison lengths, when necessary, to get the 101 out of 135 judgments needed to establish the 75 percent, or just noticable difference points. Results are presented below.

Comparisons (Number of Judgments--'Longer')

Series	1 (+1/16")	2 (+2/16")	3 (+3/16")	4 (+4/16")	5 (+5/16")	6 (+6/16")	7 (+7/16")
A	59*	70**	82**	115	129*	133*	133**
B	66	90	104*	130	134	133*	134*
C	65*	72*	100	115	122*	129	132*
D	72*	80**	92	111*	114***	126	135
E	68	94	114*	131	134	133**	135
F	70	88*	102**	115	131	134	132**

*one comparison omitted

**two comparisons omitted

***three comparisons omitted

APPENDIX D

Procedure for Measuring Communicativeness

The type-token ratio (TTR) was calculated by the experimenter. It consists of the number of different words (types) to total number of words (tokens) in a sample, which was the first 100 words in each written production.

The Cloze Procedure involved printing subjects' written productions on separate pages, without any punctuation and with every tenth word deleted. Only ten blanks were included, but words were added, when necessary, to complete the last sentence. The passages were then distributed to a group of college students (16 altogether), who was told they were being given samples of continuous speech and that they were to fill in each blank with whatever single word they thought belonged there.

For the Unitization Procedure, passages were printed and distributed to a different group of 16 college students. They were given the following instructions:

> On the following pages you will find the transcripts of written samples. Some people write in perfect, grammatical sentences, but most do not always write perfectly. Instead, they write with some repetitions, incomplete sentences, corrections of words written just previously, etc.
>
> Your task is to divide the following samples into complete grammatical sentences in the best way you can. The only change you can make is to cross out words. You may not add or change words or rearrange the words already present. Indicate the sentences by enclosing them in parentheses. Indicate the words to be eliminated by drawing a line through them.

APPENDIX E

Sample DB Statistics Essay

The psychology course at City College is a difficult schedule. Besides, required coursework, elective concentration which is needed to complete a major in psychology. Statistical methods are important, as tools psychologists use in the field, and help determine success or failure. The teaching is thorough but sometimes leaves out easier material. It is hard to criticize any coursework, one can always work harder. Not everyone will grasp all subject matter and hard courses one can be discouraged. Too many tests often contribute to a poor attitude, the pressure always bearing down. What one does after training depends on many things, including family background and socio-economic status.

Sample SC Statistics Essay

I have many questions about statistics, academically and personally, as I've learned its usefulness in experimental psychology but not in life. I can get off on statistical inquiries when I'm involved in it but how do you take it home with you? It's just not dramatic, or stimulating, or esthetically pleasing. And I won't do well in my grades, but my other psychology keeps me up. Too bad the games can't be cut out, like constant testing and evaluating. Maybe real learning could take place. My last word about statistics: I don't like it and I don't expect to do well--anyway.

Sample C Statistics Essay

I feel that the statistics course which is offered by City College isn't as well thought out as it could be. For one thing, it is too highly geared to problems which don't seem relevant, for instance, to the person who is going into clinical psychology. Since I myself am interested in the clinical area, I find this course very alienating, and find myself not to be able to concentrate on it as best I could. If the problems in the course were geared more toward human beings, I feel this would be a great improvement. I hope this is improved in the near future.

AUTOBIOGRAPHICAL STATEMENT

I am presently working as a psychotherapist at the New York Center for Psychotherapy and Counseling, 132 East 22 Street, where I have been for five months. I am also a researcher for the Maferr Foundation, 199 East 58 Street, which is affiliated with the Postgraduate Center for Mental Health, 124 East 28 Street. I have been at this position for six months, under the supervision of Dr. Anne Steinmann, Ph.D.

Prior to this, I was a lecturer at the City College of the City University of New York, specializing in Statistics. I completed my coursework for a Ph.D. in clinical psychology in May, 1967, and did an internship at Highland Hospital in Oakland, California from September, 1967 to September, 1968. I have had research and testing jobs throughout my educational career, which was also supported by a National Defense Education Act Fellowship.

My undergraduate training was received at the City College of the City University of New York, where I was made a member of Phi Betta Kappa, and graduated Magna Cum Laude. My major was psychology.

I was recently married. My wife, trained in art at the University of Rhode Island, has been a caseworker for the Department of Welfare for the past year. We live on the west side of Manhattan and enjoy in common, among other things, a group of close friends, a deep interest in the well-being of people, and therefore, considerable social and political awareness and activity, and a strong bond of love. We intend to travel extensively before we settle, so to speak, which we

view as finding rewarding work, a suitable place to live, and having children.

For both my wife and me, achieving a Ph.D. means an opportunity to accomplish something significant in the way of alleviating some of the ills of our society. If I can contribute toward this end, I believe I will be satisfied.