SCHIZOPHRENIC INTERACTION
AND THE
CONCEPT OF THE DOUBLE BIND

by

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ABSTRACT

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This study sought to provide empirical validation for the "double bind" hypothesis. This theoretical viewpoint considers schizophrenia the end product of a particular parent-child relationship in which the parent constantly communicates two contradictory messages to the child, and the child cannot make any response which will be positively reinforced. His ultimate solution to this situation is thought to be his schizophrenic reaction.

The essential features of the double bind were simulated in a two-person three-choice game. The optimal game strategy, resulting in the highest monetary gain, could only be achieved by choosing in such a manner as to lose money every other trial (while reinforcing the other player) and hoping that the other player would reciprocate on the following trials. In following this strategy a player could not know beforehand whether he was to be (ultimately) rewarded or would lose money continually. Thus the inability to discriminate between the alternative

meanings of another individual's behavior is common to both situations. One of the possible game choices was a situational withdrawal in which a player could neither gain nor lose money. This was felt to be similar to the schizophrenic's withdrawal which the theory states is prompted by frequent double bind exposure.

A control task was also utilized to insure that it was specifically double bind frustration which the task measured. The control task was a light guessing situation in which subjects were given money each time they correctly predicted which of two lights would go on, and lost an equivalent amount of money for each incorrect guess they made. They were also permitted a withdrawal response, where they would neither gain nor lose money.

The control task was given to 14 normals and 14 undifferentiated schizophrenics. Fourteen pairs from each of these groups were given the double bind task for a total of 60 trials. The schizophrenic and normal subjects were comparable in age, education and intelligence.

The schizophrenics utilized withdrawal to a greater extent than normals in both experimental and control situations. While both groups withdrew more frequently

to the experimental task, attesting to the greater degree of threat posed by a double bind situation, both groups showed comparable increases in frequency of withdrawal responses over the performance of their matched control groups. Thus, the increase in withdrawal to a double bind situation was neither exclusive nor differential in the schizophrenic group. However, by choosing noncooperatively, the schizophrenics exposed themselves less frequently to the double bind situation than did the normals, though their actual frequency of exposure was still quite high. The schizophrenics withdrew less with time and tended to withdraw when they had the greatest control over their earnings (hence, being less likely to be placed in a double bind). In contrast, normals withdrew more frequently when they had least control over their earnings. Since the basic hypotheses of this study were not confirmed, it is concluded that the double bind poses no distinctive threat to schizophrenic individuals.

The individualistic, non-co-operative strategy of the schizophrenic subjects is best explained by their lack of interpersonal trust. None of the schizophrenic subjects settled on a game strategy which involved a

permanent committment to the other player. The schizophrenics were apparently motivated by a desire to avoid such committments rather than to avoid the specific threat of the double bind. The double bind is then considered to be only one of many possible interpersonal situations which may result in a lack of trust.

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Schizophrenic reactions are characterized by a "disturbance in reality relationships and concept formation, a retreat from reality, emotional disharmony and unpredictable behavior" (American Psychiatric Association's Diagnostic Manual). However, the widespread divergence in the application of this definition is attested to by studies (7,10) demonstrating low reliability in patient classification. Perhaps one of the reasons for this disagreement lies in the inability to qualify this definition in any way. That is, does retreat from reality mean an unconditional retreat as evidenced in a catatonic stupor, or a conditional retreat dependent upon the immediate situation which the individual faces. The inability to answer questions such as these seems in part responsible for the lack of consensual agreement on classification. It appears that only through an extensive study of the people labelled schizophrenics can we arrive at an understanding of the common behavior pathology which justifies the use of this diagnostic label.

Even greater disagreement is encountered when the question of the etiology of schizophrenia is considered. A myriad of theories abound in the literature, all attempting to explain the factors responsible for

psychoses; these range from a strict hereditary position (arguing that psychoses are genetically induced)(3) to strict environmental explanations (conceiving of particular interactions as causative agents, responsible for the lack of interpersonal trust and retreat from reality) (14). A new kind of approach to the area is offered by Ruesch (11) who considers mental illness a disturbance in communication. "The condition which the psychiatrist labels 'psychosis' is essentially the result of the patient's misinterpretation of messages received" (11, p. 88). The misinterpretations are thought due to the particular experiences the individual has undergone. The recent work by Jackson, Bateson, Haley, Weakland and Lidz involving intensive study of the families of schizophrenics, including long range behavioral observations, family therapy, group therapy and individual therapy has resulted in the conception that the familial interaction is the precipitative agent in schizophrenic reactions. Since this theoretical position has recently been expounded, it still does not have any experimental verification. It is the aim of this study to put some of these authors' conceptualizations to an indirect test.

While the aforementioned writers are using somewhat different approaches, there is a great deal of consensus

in their resultant theorizing. Basically, they all feel that schizophrenia is a product of a disturbed familial interaction. Lidz (6) observes two basic kinds of relationships between the parents of schizophrenics which he labels the schism and the skew. The schism represents a direct and open split in which the parents are constantly at odds with each other. In the skewed relationships one parent, generally the mother, assumes an overadequate role without the encouragement of her mate, whereby she exercises the power in the family even though incapable of wielding it effectively. None of the authors have reported cases in which one or both of the parents are considered emotionally healthy individuals. Jackson and Weakland state "the (schizophrenic) patient's symptom of withdrawal is largely shared by the parents but ordinarily they have better conventional covers for this" (5, p. 620).

Prior to the birth of a child the parents of schizophrenics are thought by Bowen (3) to engage in a very cyclical relationship where they move from extreme closeness, which creates discomfort or anxiety within them, to aloofness, which they also view as unfavorable. When the child is born, the father becomes psychologically distant and isolated from both mother and child;

and the mother-child relationship becomes very emotionally intense. Bowen's description would seem to correspond to Lidz' conception of the skewed parental relationship, but he does not address himself to families characterized by a schism.

Jackson and Weakland outline the common core of the schizophrenic family as containing "(1) a child whose mother becomes anxious and withdraws if the child responds to her as a loving mother... (2) a mother, to whom feelings of anxiety and hostility towards the child are not acceptable and whose way of denying them is to express overt loving behavior to persuade the child to respond to her as a loving mother and to withdraw from him if he does not... (3) the absence of anyone in the family such as a strong and insightful father who can intervene in the relationship between the mother and child and support the child in the face of the contradictions involved" (5, p. 236). Thus, the child is constantly exposed to two levels of messages from his mother, one of which covertly contradicts the other. Moreover, the child cannot comment on the messages to correct his discrimination and determine which level of message he should respond to. He is therefore placed in what these authors call the "double bind." An example of

the double bind which the authors cite is the case in which a mother visits her schizophrenic son at the hospital and he impulsively puts his arm around her. She stiffens and he withdraws his arm leading the mother to comment, "Why did you take your arm away; don't you love me?" Frequent double bind exposure is what Jackson and Weakland consider the causative agent in schizophrenic behavior.

When faced with the double bind situation the child cannot leave the field because of his dependency on his mother. "This dependency is fostered by other messages of double bind communication to a degree far beyond the physical or emotional 'realities' of the person's current life situation" (16, p. 376). While it is necessary to respond adequately to the communication, "an adequate response is difficult to achieve because of the concealment, denial and inhibition inherent in or added to the basic contradictory pair of messages" (14, p. 377). Of the three kinds of responses the child can make (a) labelling the incongruity verbally (b) giving a double bind message in return or (c) giving a humorous response, the schizophrenic child is most likely to choose the second probably because it is the only one reinforced. Bateson feels that in order to maintain the homeostasis

in the family, one member, the schizophrenic individual, must sacrifice his normality and remain confused in this interaction. "The boundary of sanity is, however, crossed when the subject uses these tricks of communication in situations which the common man -- one hesitates to say the normal -- would not perceive as the schizophrenic seems to perceive them" (1, p. 134-135).

While Weakland and Jackson consider repeated exposure to a double bind situation the determinant of schizophrenic behavior, they do not quantify this or tell us how frequent this exposure must be to produce a schizophrenic reaction. Perhaps Bowen's theorizing (3) will be of help. He feels that the period of adolescence threatens the mother-dependent child relationship for the child then attempts to achieve a balance between his close relationship with his mother and the demands of the adult world. The inability of the mother to prepare the child for adult living through her constant use of the double bind makes it impossible for him to deal effectively with reality and prompts the schizophrenic withdrawal. Perhaps in the case of childhood schizophrenia, the exposure to a double bind has been severe enough to prompt the schizophrenic withdrawal at that point.

The concept of the double bind can also be stated in the language of social psychology. It can be characterized as a power relationship between the mother and child in which the mother, by virtue of her ability to manipulate the rewards desired by the child, exercises a great deal of authority in this relationship. Her contradictory attitude toward the child makes all of his behavior inappropriate, in that it fails to lead to reward. Such actions generate a feeling of futility in the child, and this generalizes so that he is unable to gain any need satisfaction outside the home. He becomes schizophrenic either as a means of gaining the necessary need satisfactions (Bateson) or in order to break from his dependency upon his mother (Haley). Perhaps both are involved, but the overt symptomatology of the schizophrenic which we encounter involves a withdrawal from interpersonal communication.

Mills' study of "Power Relations in Three-Person Groups" (8) offers some experimental data which may be extrapolated and applied to family relationships. He noted the tendency in an ad hoc three person group to split into a pair and an isolate. He characterizes the relationship between members of a pair as solidary (where they are above the median in support of each other),

contending (where the less active member is below and the more active one above the median in support), conflicting (where they are below the median in mutual support), and dominant (where the more active one is below and the less active one above the median in mutual support). A further experiment by Mills, once again with ad hoc social groups, led to the formulation that "one important personality condition affecting the persistence of the coalition structure is the level of anxiety that isolation generates; the higher it is, the more persistent the structure; the lower, the more likely is the coalition structure to dissolve" (11, p. 666).

Applying these concepts to family interaction we can conceive of the parents in a "normal" family as a pair in a solidary relationship which persists over time. Pairs of mother-child and father-child also exist, but the child becomes an isolate in those instances where he deviates from the parental demands. In the schizophrenic family, however, the isolate is the father rather than the child. Moreover, the child is placed in an extremely dependent position which increases his anxiety and thus strengthens the existing mother-child relationship. The mother increases her power in this 'conflicting relationship' due to her use of the double bind. The child's

only possible resolution of the frustration inherent in his position rests in developing a schizophrenic reaction.

All hypotheses regarding the etiology of schizophrenia remain difficult, if not impossible, to put to experimental test. Studies of contemporary interaction of families can only furnish partial verification of the double bind theory since we cannot be sure of what the familial interaction was like when the patient was a child. Individual therapy can be an added measure of verification, but successful therapy with a schizophrenic is at best a time consuming operation covering several years; and even here we cannot be sure of the accuracy with which the patient perceived and/or reported his parents' behavior. Therapy with the family may be the best technique, but again inaccurate recall and misperceptions remain possible confounding variables.

It seems that by conceding the inability to put these hypotheses to a direct test we nonetheless might reap some benefits by attacking the problem indirectly. If the "double bind" is responsible for schizophrenic behavior, re-exposure to such a situation should bring about a situational withdrawal of greater intensity in schizophrenics than in "normals," since the former group have allegedly structured their lives to avoid such

situations. To simulate this paradigm we would thus have to create a situation in which the subjects are partially dependent upon others for rewards. They would be given messages from these reinforcing agents which imply that they are being rewarded as well as being punished, and the subjects will not be given any further clarification about the nature of the reinforcement until they have made a response. Among the possible alternative actions they should be permitted some sort of behavior involving withdrawal from the situation.

If these conditions can be set up, we would be simulating the conflict which Bateson and others consider the common dynamic underlying schizophrenic withdrawal. If exposure to a double bind situation prompts a greater withdrawal by schizophrenic than by nonschizophrenic subjects, then the reenacting of the paradigm furnishes indirect proof of the hypothesis. Further verification can be offered by demonstrating that schizophrenics withdraw to a greater degree in double bind situations than in other frustrating interpersonal situations. If nonschizophrenics withdraw from the double bind situation with the same frequency as the schizophrenics do, then the "double bind" hypothesis will be cast in serious question.

The medium which seems quite suitable in fulfilling the necessary criteria is that of a game, specifically a non-zero-sum game where the gains and losses of the players do not cancel each other out. This media seems especially appropriate in that it would minimize face-to-face verbal interaction which is felt to be threatening to the schizophrenic. It also would permit us to design alternative choices which would be sufficiently ambiguous so as to carry the different connotations of reward and punishment. Further, game choices lend themselves more easily to analysis and offer less opportunity for disagreement in interpretation than does verbal behavior.

A two person three choice game was designed in which the combinations involved loss as well as gain of money to the participants. The three choices open to each player were labelled A, B, and C. There were thus nine possible combinations of choices: AA, AB, AC, BA, BB, BC, CA, CB, and CC (with the first letter representing player number one's choices, and the second letter representing player number two's choices). The game is outlined in Figure 1.

In this game a player receives the greatest gain (10¢) by selecting B when the other person chooses A.

However, the person choosing A would be unhappy with this combination for it results in a loss of 2¢ a trial. It is therefore expected that he would abandon this line of play with repeated trials.

FIGURE 1. Game choices and returns.

		Player number two's choices		
		A	B	C
Player number one's choices	A	2¢, 2¢	-2¢, 10¢	2¢, 0¢
	B	10¢, -2¢	-1¢, -1¢	1¢, 0¢
	C	0¢, 2¢	0¢, 1¢	0¢, 0¢

(Player number one's returns are listed first in each cell.)

The greatest gain over time for both players would be achieved by alternating A and B play; that is, if on trial 1 player one plays A and player two plays B, on the next trial player one would play B and player two, A. With this strategy both players will average a gain of 4¢ a trial. Such play demands that one relinquish the attempt to perpetually receive 10¢ a trial and also requires mutual trust; for it results in an immediate loss of money, hopefully to be followed by future gain. However, one can never be sure that the other person will reciprocate in this strategy and allow the original A

player to receive 10¢ on the succeeding trial. Thus, by playing A when the other individual plays B, one never knows if he will be rewarded or punished, as is the case with the double bind where the schizophrenic does not know if his behavior is being rewarded or not.

If both subjects strive for the greatest immediate gain and play B continually, they would lose 1¢ on each trial and find this line of play unsatisfactory. Only through cooperation can they make money consistently; for with both the A and B selections the subjects can either gain or lose money, depending on the other person's choices.

The last alternative, C, amounts to a decision not to play the game. The C choice brings no financial gain or loss and amounts to a situational withdrawal. When faced with a C strategy the selection of A brings a 2¢ gain and B brings a return of 1¢ a trial.

It is recognized that any analogue may be questioned as an adequate replication of a hypothesized situation. With regard to this study it is felt that the game measures the frustration resulting from exposure to a double bind. In order to insure that double-bind reactions are being measured as contrasted with a generalized reaction to frustrating situations, a control task

was introduced in the procedure. This was similar to the original task except that the situational outcome was not in the hands of another person.

The control task was a light guessing situation in which subjects were to predict which of two lights would go on. They were given 5¢ for each correct prediction and lost 5¢ for each incorrect guess. They were also afforded a third choice -- making no prediction and consequently neither gaining nor losing money. The sequence with which the lights came on was in a random 50% - 50% schedule insuring that the subjects would have frequent losses as well as gains in the experiment. The subjects made their predictions for a total of 60 trials.

Hypotheses

The following hypotheses were therefore devised:

1. There will be a greater number of withdrawal responses made by schizophrenics in the double bind game situation than in the control task.

2. The schizophrenics will be unwilling to settle on a mutually co-operative strategy and will withdraw rather than let the other person control the rewards and find themselves in a double bind.

a. This will happen either at the outset of the game

and persist or

b. Withdrawal responses will increase in frequency as the game proceeds.

3. The normal subjects not having experienced excessive frustration from double bind situations in the past will demonstrate a lesser tendency to withdraw than will the schizophrenic subjects.

4. Schizophrenics will show a greater tendency to withdraw when they start out with nonsimultaneous game trials (in which one subject's choices are known before the second subject makes his selections) than when they begin with simultaneous trials. This should hold true for normals as well.

Methodology

Apparatus:

Subjects for the experiment were seated side by side at the narrow end of a 36" X 70" table. A black wooden partition measuring 24" X 25½" was placed on the table between them, extending in such a manner that the subjects could not see one another. Directly in front of each subject was a 10" X 5" switch box; each box contained three switches marked A, B, and C. At the far end of the table was a 37" X 14½" board containing six 7 watt light bulbs arranged in pairs. Above the pairs of lights were the one inch metal letters, A, B, and C, reading from left to right, respectively. Above the left light in each pair was the number, one; and above the right light was the number, two. In back of the board on the left side was another switch which the experimenter used to prevent the lights from going on until both subjects made their choices.

In the control condition where subjects were tested individually, the partition was removed and the fifth light (C #1) was taken off the board. The first switch box was placed in back of the light board and was manually controlled by the experimenter.

Subjects:

The schizophrenic sample was recruited from the Battle Creek Veterans' Administration Hospital. They had all been given the diagnosis of undifferentiated schizophrenia by the hospital diagnostic staff, and were either open ward patients or patients with some grounds privileges. (An undifferentiated group was selected because they comprised the bulk of the schizophrenic population, permitting the selection of an adequate sample.) The mean age of the schizophrenic group was 31 years, and ages ranged from 22 to 42 years. Mean length of hospitalization was 23 months and ranged from two months to five years. Their average amount of schooling was 10.6 years, and the range was from seven to 16 years. The subjects were also given the Thorndike-Lorge Multiple Choice Vocabulary Test as a measure of intelligence. Their mean vocabulary score was 9.2 with a range of one to 19 (highest possible score is 20).

The normal group consisted of employees at the hospital (male aides and housekeepers). Their mean age was 30, and ages ranged from 19 to 60. The average amount of schooling was 11.4 years with a range of five to 15 years. Their mean score on the Thorndike-Lorge Test was 10, and scores ranged from four to 16. Normals

and schizophrenics did not differ significantly in age, schooling or vocabulary score (rank sums and t test).

A total of 42 subjects were used from each group. Twenty-eight of the subjects in each group were run in pairs, and 14 were tested individually (control subjects). The assignment to conditions was on a random basis. (Half of the pairs in each group were tested with 30 simultaneous trials first, followed by 30 nonsimultaneous trials; and the other group were first given nonsimultaneous trials followed by simultaneous trials.) The pairs of aides all worked on the same ward; and the pairs of patients were also recruited from the same wards, making the subjects somewhat equivalent in terms of prior knowledge about the other player.

Procedure:

The subjects tested under the experimental conditions were seated by the table and given the following instructions:

We are interested in finding out how people make decisions and have asked you both here to help us in this study. To make it more interesting for you, we have introduced money into the situation; and as you will soon see, different choices will bring you gains and losses of money. You will receive your earnings after the experiment is over.

In front of you are three switches marked A, B, and C. Each switch represents a choice so that both of you can choose either A, B, or C. There are nine combi-

nations that can occur. When you choose A, the other person can choose A, B, or C; when you choose B, he may choose either A, B, or C; and when you choose C, he may choose A, B, or C. Do you understand the different kinds of choices that can occur?

You make your choices by pushing down the appropriate switch. If you want to pick A, you will push the switch marked A; if you want to choose B, you push that switch down; and to choose C, you push down the switch marked C.

In front of you is a board containing the letters A, B, and C. Underneath each letter are two lights, and as you notice both of the lights have a number. The number 1 stands for Mr. ___'s (player 1) choices; and the number 2, for Mr. ___'s (player 2) choices. Thus if Mr. (1) chooses A, after he presses the switch the light marked #1 under A will go on. If he chooses B, the light marked #1 under B will go on; and if he chooses C, the light marked #1 under C will go on. Likewise, if Mr. (2) chooses A, the light marked #2 under A will go on; if he chooses B, the light marked #2 under B will go on; and if he chooses C, the light marked #2 under C will go on. Do you understand how the lights work? Just for practice I want each of you to push a switch now. Mr. (1), what did Mr. (2) choose? And Mr. (2), what did Mr. (1) choose? That's right. Now would you each push the switch back and make another choice. Mr. (2), what did Mr. (1) choose, and Mr. (1), what did Mr. (2) choose? (If either subject had difficulty in identifying the choices made, more practice trials were given until they had learned how to identify the choices.)

Would you now turn to the sheet you have been given. The first column lists your possible choices; the second column lists the other person's choices; the third column is your returns; and the last column is the other person's returns.

When you choose A, the first three rows, you can either receive 2¢ (if the other person chooses A or C) or lose 2¢ (if he chooses B). When you choose B, rows 4-6, you can receive 10¢ if he chooses A (row 4), one cent if he chooses C (row 6), and lose one cent if he chooses B (row 5). When you choose C (rows 7-9) you never gain or lose money.

FIGURE 2. Sample sheet.

YOUR CHOICES	HIS CHOICES	YOUR RETURNS	HIS RETURNS
A	A	2¢	2¢
A	B	-2¢	10¢
A	C	2¢	0¢
B	A	10¢	-2¢
B	B	-1¢	-1¢
B	C	1¢	0¢
C	A	0¢	2¢
C	B	0¢	1¢
C	C	0¢	0¢

Let's look at each combination individually. When you both choose A, you each receive 2¢; when you choose A and the other person chooses B, you lose 2¢ and he receives 10¢. When you select A and he chooses C, you receive 2¢ and he gets nothing. When you choose B and he selects A, you receive 10¢ and he loses 2¢. If you both choose B, you each lose 1¢; and if you choose B while he chooses C, you get 1¢ and he receives nothing. If you choose C you will never gain or lose money, but the other person gets 2¢ by choosing A when you choose C and 1¢ by choosing B when you choose C. Do you understand the amount of money you gain or lose with each choice?

You will notice then that the most amount of money you can make on any one trial is 10¢, by choosing B while the other person picks A. However, since you will be making your choices for 60 trials, it is unlikely that you will keep getting 10¢ a trial because each time you do, the other person loses 2¢, and he will not want to continue losing money. If he did though, you could receive a total of $6.00. If you both try to receive 10¢ a trial, by choosing B, you will each lose 1¢. You

would be best off by alternating A and B so that one of you gets 10¢ on one trial and the other gets 10¢ on the next trial. This way you will average 4¢ a trial (winning 10¢ on one trial and losing 2¢ on the next trial), receiving a total of $2.40 apiece. However, you can never be sure if the other person will let you get 10¢ after you've let him do so. The only other combination which gives both of you money is AA, but you will only get 2¢ a trial this way. Also you cannot be sure that the other person will play A when you do. You will notice that whenever you play B, the other person cannot make any money, and as was mentioned before, your choice of C never gives you any money.

Do you understand how the choices work now? For practice I want each of you to push a switch now. Mr. (1), will you push A, and Mr. (2), B. Mr. (1), will you tell me what you would receive for this choice and what Mr. (2) would receive. Now would you both push B. Mr. (2), what would you have gotten for this combination and what would Mr. (1) receive? Now would you both push A. Mr. (1), what would you receive and what would Mr. (2) receive for this combination? Mr. (1), will you push B and Mr. (2), A. Mr. (2), what would you receive and what would Mr. (1) receive for this combination? (If there was any difficulty in the subjects understanding the outcome of the different combinations, they were given additional practice until they had no trouble with the choices.)

Remember that after you have made your choice and it has shown on the board, you must push the switch back before we can have another trial. While we are doing this study, we do not want you to talk to each other at any time. If you try to talk or communicate in any way, we will have to stop and neither of you will receive any money. Do you have any questions?

NONSIMULTANEOUS TRIALS 1st Condition

One last thing, for the first 15 trials Mr. (1) will see Mr. (2)'s choices before he makes his, and for trials 16-30 Mr. (2) will see Mr. (1)'s choices before he makes his own selections. On the last 30 trials neither of you will know the other person's choices until you have made your own. Any questions about that?

SIMULTANEOUS TRIALS 1st Condition

One last thing, for the first 30 trials you will not know the other person's choices until you have made your own. On trials 31-45, Mr. (1) will see the choices made by Mr. (2) before he makes his own selections; and on trials 46-60 Mr. (2) will see Mr. (1)'s choices before he makes his own choices. Any questions about that?

Remember to push the switch off after a trial is over and never to push more than one switch on any trial. Do not forget that you are not to talk to each other at any time during the experiment. We will begin now.

After each trial the experimenter turned the master switch and waited until both subjects had made another choice before he turned the current on, illuminating their choices. The subjects were told when they were to change conditions (either from simultaneous to nonsimultaneous, or from nonsimultaneous to simultaneous). At the conclusion of 60 trials the subjects were asked what strategy they used and why they chose it. They were then given the Thorndike-Lorge Test and paid the total amount they had earned.

Subjects in the control condition were seated and given the following instructions:

We are interested in finding out how people make decisions and have asked you here to help us in this study. Before you are a group of five lights, lettered A, B, and C and numbered 1 and 2. One of the two lights marked #1 will go on and we want you to predict which one it is. That is, light A numbered one or light B numbered one will go on. You make your predictions by using the levers in the box by your hand. If you think A will go on you push the lever forward marked A, and if you think

B will go on you push the lever marked B. After you have made your choice the lights will go on and you will see which #1 light went on, and the light you predicted (light #2) will also go on. If you predicted correctly then either both A lights or both B lights will be on; but if your guess was wrong then one A light and one B light will go on. Each time you predict correctly you will receive 5¢ and each time you guess wrong you will lose 5¢. You will be making predictions for a total of 60 trials. After you have seen whether you are right or not on each trial, you should push the lever back and make another prediction. You are to make only one guess on a trial. If you do not want to make a guess on any trial push lever C and you will neither gain nor lose money. When the study is completed you will be given the total amount you have earned. Do you have any questions? Just for practice, would you make a prediction. What did you predict? Were you right? Would you gain or lose 5¢? (The experimenter then lit the other combinations, asking the subject if he would be right or not in each case. This was repeated until it became evident that the subject understood the outcome of each combination. Then he was told:) Now we can begin.

In the control condition the #1 switch box was placed in back of the board. The experimenter depressed the A and B levers according to a predetermined random 50% - 50% strategy. When the subjects had made their predictions on each trial, the experimenter turned the master switch on, illuminating the choices. At the conclusion of 60 trials the subjects then took the Thorndike-Lorge Test and were paid the total amount they had earned.

Results

The frequency with which schizophrenics chose the withdrawal response in the experimental and control tasks is depicted in Table 1. A chi-square performed on this datum yields a value of 7.79 which is significant at the .01 level. Thus the schizophrenics withdrew significantly more often in the experimental task than in the control situation.

TABLE 1. Frequency of withdrawal responses (C) by schizophrenic subjects over 60 trials under control and experimental conditions.

	Withdrawal responses	
	0 or 1	2 or more
Control task	7	7
Experimental task	2	26

chi-square = 7.79, significant at .01

The frequency of withdrawal responses by the normal subjects under experimental and control conditions is listed in Table 2. The resultant chi-square value of 11.46 is significant at the .001 level, leading us to the conclusion that the normals withdrew significantly more often in the experimental task than in the control situation.

TABLE 2. Frequency of withdrawal responses (C) by normal subjects over 60 trials under experimental and control conditions.

	Withdrawal responses	
	0 or 1	2 or more
Control task	13	1
Experimental task	9	19

chi-square = 11.46, significant at .001

Schizophrenics and normals were compared in terms of the frequency with which they chose the withdrawal response in the control condition. Table 3 summarizes this datum and the resultant chi-square of 4.37 is significant at the .05 level. The schizophrenics, therefore, withdrew more frequently than normals in the control task.

TABLE 3. Frequency of withdrawal responses to the control task.

	Withdrawal responses	
	0 or 1	2 or more
Normals	13	1
Schizophrenics	7	7

chi-square = 4.37, significant at .05

In order to compare the behavior of schizophrenics and normals in the experimental task as well as to gauge the effects of initial testing condition (simultaneous

vs. nonsimultaneous trials) upon the frequency of withdrawal responses, an analysis of variance was performed. In order to satisfy the assumption of homogeneity of variance inherent in this analysis, the F max test was calculated. The obtained value of 1.96 permits the retention of the hypothesis that the variances are homogeneous.

Table 4 summarizes the analysis of variance. The schizophrenics chose the withdrawal response significantly more often than the normals did (means of 12.9 and 7.4, respectively), which is significant at the .01 level. There were no significant differences between the effects of initial experimental condition and no significant subject-condition interaction.

Since the schizophrenics withdrew to a greater degree than the normals in both experimental and control conditions, it was necessary to discover if there was a differential withdrawal to experimental conditions. That is, if the double bind poses a greater threat to schizophrenics than to normals, the schizophrenics should withdraw to a greater degree under experimental conditions as compared to control conditions, than the normals do. A t-test was therefore computed comparing the difference between schizophrenics under control and

TABLE 4. Summary table for analysis of variance.

Source	degrees of freedom	sum of squares	mean square	F
Order (simultaneous vs. nonsimultaneous)	1	16.08	16.08	1
Subjects (schizophrenics vs. normals)	1	424.22	424.22	9.87*
Subjects X order	1	9.32	9.32	1
Within cells	52	2234.60	42.97	
Total	55	2684.22		

* significant at .01 level

experimental conditions with the difference between normals under these two conditions. The obtained value of .44 does not permit us to reject the hypothesis that there is no significant difference between these two differences. In other words, there was no differential withdrawal by either group to the experimental task.

While a joint alternation strategy will yield the greatest earnings in the game and necessitate double bind exposure, it is possible for subjects to make their choices in such a manner as to avoid the double bind (not play A) as well as avoid withdrawal (not play C). (see

Figure 1.) That is, continual selection of B will avoid double bind exposure. Since the only way that subjects can be placed into a double bind is with their choice of A, a t-test was performed comparing normals and schizophrenics in terms of the frequency with which they risked double bind exposure (chose A). The test for homogeneity of variance yielded an F of 1.51 permitting retention of the hypothesis that both groups have comparable variances. The mean frequency of A selections was 26.0 for the normals and 20.14 for the schizophrenics. The resultant t yields a value of 5.32 which is significant at the .005 level, leading to the conclusion that normals risked double bind exposure to a greater degree than the schizophrenics did.

In order to further clarify the degree of threat which the "double bind" task imposed, the choices on nonsimultaneous trials were analyzed. When a subject chooses first and his choice is displayed to the other player, he has the least control over his returns. When he is in the position of choosing last, knowing the other player's choices, he has greatest control over his returns. The frequency of withdrawal responses made by the schizophrenics under these two conditions was compared by means of a matched t-test. The obtained

means of 2.57 (choosing first) and 4.28 (choosing last) over 15 trials, yields a t of 3.05, which is significant at the .02 level. Thus schizophrenics withdrew to a greater degree when they chose last and had greatest control over the situation, than when they chose first and had least control over their returns.

The frequency of withdrawal responses by normals during nonsimultaneous trials was analyzed in a similar manner. Their mean frequency of withdrawal responses was 2.71 when choosing first, and 1.85 when choosing last (over 15 trials). The obtained t of 2.263 is significant at the .05 level. Thus, normals withdrew significantly more often when choosing first than when choosing last, on nonsimultaneous trials.

A matched t-test was performed in order to compare the frequency with which schizophrenics chose withdrawal responses over time in the experimental task. Behavior on the first 30 trials was compared with behavior on the last 30 trials (obtained means of 7.25 and 5.68, respectively). The resultant t of 2.70 is a difference significant at the .05 level. The schizophrenics, therefore, withdrew less frequently with repeated trials.

Discussion

The finding that both normals and schizophrenics withdrew more frequently in the double bind situation than in the control condition confirms the fact that the double bind is a threatening situation. While the degree of threat varies among individuals, it does not result in a generalized withdrawal. The two subjects with the highest frequency of withdrawal responses were in the normal group, and they withdrew on only 40% of their choices (23 of a possible 60). Furthermore, none of the schizophrenics selected the withdrawal choice as their most preferred response.

Although the total frequency of withdrawal responses was rather minimal, it was demonstrated that withdrawal is a more favored response in the schizophrenic's repertoire of behavior than in the normal's. That is, schizophrenics withdrew significantly more often in both the experimental and control tasks than the normals did. However, the normals and schizophrenics showed comparable increases in frequency of withdrawal responses to the double bind situation, over their initial frequency of withdrawal in the control task (mean gains of 7.57 for the schizophrenics and 6.28 for the normals, which is a nonsignificant difference). If the double bind carries

a special threat to schizophrenics, it would seem likely that they would show a disproportionate increase in withdrawal responses to the experimental task in contrast to the increase of the normal group. Their failure to behave in this manner casts some serious doubt upon the validity of the double bind hypothesis as it has been outlined.

There are two other factors which place the double bind theory in serious question. The first is the finding that schizophrenics withdrew less as the game progressed. Since they failed to achieve the highest paying 'mutual co-operative' strategy, it would seem that in accordance with the theory schizophrenics would try to escape from the double bind, just as their schizophrenia represents an attempt at such a solution. Instead they chose to remain in the situation more frequently than they had initially.

The other finding in contradiction to the hypotheses is the fact that schizophrenics withdrew more frequently when they had greatest control over their returns than when they had least control over their earnings. In other words, they withdrew when the possibility of entering a double bind was minimal rather than maximal. Thus, it does not appear that their primary motivation

was to avoid being placed in the dependent position in a double bind. If being controlled was the critical issue then too, order (simultaneous vs. nonsimultaneous first testing conditions) should have had an effect upon withdrawal, which it did not.

There seem to be several alternative explanations for the lack of support of the double bind theory. Perhaps the game procedure is an inadequate simulation of the situation: It is true that it involved peers rather than a parent-child relationship, and the motivation here was overtly economic rather than emotional (though both emotional rewards in the game and economic motivation in double bind situations cannot be ruled out). Another factor is that the patients used were all from open wards or with some grounds privileges, and were less confused and perhaps in a greater state of recovery from their schizophrenic symptomatology than would be closed ward patients. However, the dependency and uncertainty of reinforcement which appear crucial to the double bind are reenacted in the game. This is confirmed by the fact that both groups had a greater frequency of withdrawal responses to the experimental situation than to the control task. While the experiment may not simulate the same degree of personal investment as the

original double bind, some generalization would be expected if the theory is correct. Thus the lack of a differential increase in withdrawal responses by the schizophrenic subjects points to the erroneous nature of the theory.

It is possible to reason that the hospital employees are an inappropriate normal sample and perhaps not the best adjusted group of subjects. However, their behavior in the game was similar to that of college students who also failed to achieve consistent co-operative strategies when playing similar games. (Wilson, et. al.)

When pilot work was performed to test this procedure and instructions, seven pairs of psychology graduate students acted as subjects in the game. All six pairs who had no trouble understanding the payoffs settled on a co-operative strategy which persisted from the first trial to the last. This stands in marked contrast to the overt performance of the aides. However, the graduate students were playing for points rather than money.

In evaluating the behavior of normal subjects, however, the issue does not appear to be whether "normal" subjects actually succeed in achieving a co-operative strategy. Both the graduate students and the aides

attempted to achieve this goal, and both groups used the co-operative choice of A more frequently than the schizophrenics did. Both normal groups also used withdrawal less frequently than did the schizophrenics. Thus the same general results would be expected with either aides or psychology graduate students serving as the normal group. The difference seems to be only one of degree. Schizophrenics and aides had a mean frequency of 12.9 and 7.4 withdrawal responses in the experimental task, respectively, which are significantly different. If the psychology graduate students' lack of withdrawal responses was statistically compared with the schizophrenics', this too would be a significant difference. Since other research using similar games with undergraduate students demonstrates that a co-operative strategy is rarely attained, it would seem that the graduate students are a unique group rather than representative of a broader spectrum of the normal population.

Since the double bind was not a distinctive threat to the schizophrenics, their behavior was evidently a result of other factors. Information about the nature of these factors was offered by the subjects' verbal statements of the strategies they employed in the experimental procedure. Only three of 20 schizophrenics stated

that they tried to achieve a co-operative strategy, 14 said they were trying to win or make the most money for themselves (individualistic strategy), and three mentioned irrelevant strategies (tried to get all combinations, too lazy to think). In the normal group 14 of 21 stated that they were trying to achieve a co-operative strategy, four said they were trying to gain the most for themselves, and three mentioned irrelevant strategies (two were trying to get the different combinations, and a third said he was trying to give the other player money and did not care about his own returns). If these verbal strategies concerning game behavior were implemented, then the schizophrenics and normals had different motives in the game.

If it is then assumed that the schizophrenics were using an individualistic strategy, their behavior on nonsimultaneous trials can be logically explained. When the game is played with nonsimultaneous trials, if the first player chooses B, the second player can either withdraw or lose money. He cannot earn any money in that situation. Since the second players in both the normal and schizophrenic groups had to select against comparable totals of B choices (179 and 196, respectively), the normals by not withdrawing more frequently chose a

response involving loss of money. This occurred because the normals were trying to influence as well as punish the other player in order to ultimately achieve a co-operative strategy. A withdrawal response would have produced little change in the other player's strategy. However, if one did not consider the other player's motivation, when faced with a B choice which allows either withdrawal or loss of money, one would be best off economically by withdrawing, which is exactly what the schizophrenics did. When choosing last on nonsimultaneous trials, schizophrenics chose C 70 times against a B strategy, 34 times against an A strategy, and 12 times against a C strategy.

Along with the possibility that schizophrenics were choosing in order to maximize their short term gain, it is also possible that they withdrew rather than assume the responsibility for the amount of mutual returns. Perhaps they were trying to avoid self-assertion in an interpersonal situation. Both of these factors may have been operating, but in view of the fact that the frequency of withdrawal responses on nonsimultaneous trials was less than five (out of 15 trials), neither of these possibilities could have been the preponderant motivation. It remains for further research to

demonstrate the factors involved in the low but significant use of the withdrawal response by schizophrenics.

The question to be answered is why the schizophrenics chose an individualistic rather than a co-operative strategy in the game procedure. It is possible that the double bind posed a great deal of threat, and an individualistic strategy was one means of avoidance. Yet if this was the case, they should not have used the A alternative at all, since playing A exposed one to the double bind. Instead, they chose A on an average of 20 times (33% of their selections), a frequency we would not expect if the double bind was such a threat. It is possible to go a step further and argue that choice of A represents an attempt to master the double bind situation, but this seems to be an effort to stretch the data to fit the theory. Furthermore, no reference is made in double bind theory concerning repeated attempts to master the situation.

A more plausible explanation is that past experience has taught the schizophrenic that he cannot trust other people. When faced with the game situation, he chooses a strategy that will exclude the necessity of mutual trust. The schizophrenic's past experience negates the examiner's explanation that co-operative strategy would be

the most profitable.

Thus the explanation for the game behavior of the schizophrenics would appear to rest primarily on their lack of trust of other people. If the underlying cause for their behavior were specifically the double bind, we would have seen a pervasive use of withdrawal; for if withdrawal is a symptom of schizophrenia, it would be expected to occur most frequently in situations similar to the ones which caused the schizophrenia.

With lack of trust as the key to the schizophrenic's game behavior, the double bind functions solely as another situation in which the schizophrenic must characteristically keep on guard. He seeks the greatest monetary gain which does not demand an interpersonal committment.

Thus, the experimental procedure offers no support for the double bind as the primary causative agent in schizophrenic reactions. Double bind situations can be seen as one kind of interaction which has taught the schizophrenic individual that he cannot trust other people. However, these situations represent only a small proportion of the possible interactions leading to this lack of trust. Double bind situations may be the primary cause for some schizophrenic reactions, but they do not

seem particularly important for the subjects in this study.

Summary

This study was designed to investigate the importance of the double bind in the etiology of schizophrenic reactions. Double bind theory considers the parent-child relationship the determinant of schizophrenic reactions; specifically, it states that a parent can continually present contradictory messages to the child so that none of the child's responses will be rewarded. The child's solution to this situation is thought to be his schizophrenic reaction.

The double bind situation was simulated in a two-person three-choice game. In this game one could achieve the greatest monetary returns by losing money every other trial (thus rewarding the other player) and having the other reciprocate on the following trial. Since verbal communication was not allowed in the game, subjects could not know beforehand whether their solutions would ultimately be rewarded or punished. If a player lost money on a trial, the other player's strategy was open to contradictory interpretations (as leading to an ultimate reward or representing immediate punishment). In a similar manner the behavior of the schizophrenic's parents represents frequent contradiction. A game alternative of situational withdrawal was permitted which

parallels the withdrawal inherent in a schizophrenic reaction.

A control task was introduced into the procedure to demonstrate that the frustration being measured was specifically double bind frustration. This control task was a light guessing situation, where subjects had to predict which of two light would go on. The monetary reward for correct guesses was equivalent to the monetary loss for those incorrect. Since the lights went on randomly, subjects were rewarded approximately as often as they were punished. In the control task subjects were also permitted a withdrawal response which prevented them from either gaining or losing money.

Fourteen pairs of undifferentiated schizophrenics and 14 pairs of normal subjects played the game for a total of 60 trials. Another group of 14 subjects from each category were given the 60 trials of the control task. The schizophrenic and normal groups were comparable in age, education and intelligence.

Both groups of subjects withdrew more frequently in the experimental task than in the control task, attesting to the greater threat posed by the double bind situation. While schizophrenics utilized withdrawal more frequently than did normals in both experimental and control situ-

ations, they did not show a differential increase in withdrawal responses to the experimental task. However, in utilizing a nonco-operative strategy the schizophrenics avoided double bind exposure more frequently than did the normal subjects; although the schizophrenics' exposure to the double bind was still quite high. Normals tended to withdraw when they had least control over their earnings. In contrast, schizophrenics withdrew when they had greatest control over their earnings and hence were less likely to be placed in the double bind. The schizophrenics also withdrew less over time. Since the basic hypotheses of the study were not confirmed, it was concluded that the double bind poses no distinct threat to the schizophrenics and is, therefore, not the primary factor in the etiology of schizophrenic reactions.

A lack of interpersonal trust seems to best explain the individualistic, nonco-operative game strategy used by the schizophrenics. None of the schizophrenic subjects settled on a strategy which involved a permanent interpersonal committment. It was apparently the desire to avoid committments rather than a desire to avoid the double bind, which motivated the schizophrenics' game behavior. The double bind is then considered only one of

many possible interactions which could result in the development of a lack of trust.

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APPENDICES

TABLE 5. Raw data for schizophrenic control subjects.

Subject number	Vocabulary score	Birth year	Years of education	Frequency of withdrawal responses
1.	12	1936	12	0
2.	5	1934	10	0
3.	12	1929	12	13
4.	6	1927	10	5
5.	10	1930	10	2
6.	9	1923	16	3
7.	9	1926	13	0
8.	10	1934	12	0
9.	1	1923	7	13
10.	13	1934	12	0
11.	13	1940	12	0
12.	9	1933	10	19
13.	6	1927	12	20
14.	5	1930	9	0

TABLE 6. Raw data for normal control subjects.

Subject number	Vocabulary score	Birth year	Years of education	Frequency of withdrawal responses
15.	4	1906	8	0
16.	12	1941	11	0
17.	16	1921	13	0
18.	8	1934	12	15
19.	11	1942	12	0
20.	8	1916	10	0
21.	10	1938	12	0
22.	13	1942	12	0
23.	10	1936	15	1
24.	8	1934	9	0
25.	11	1934	13	0
26.	10	1915	10	0
27.	12	1941	12	0
28.	8	1937	12	0

TABLE 7. Background data on experimental schizophrenic subjects.

Subject number	Vocabulary score	Birth year	Years of education
29.	7	1930	9
30.	8	1922	7
31.	8	1930	11
32.	12	1936	9
33.	9	1939	10
34.	15	1929	9
35.	7	1931	10
36.	7	1931	12
37.	11	1936	8
38.	15	1924	11
39.	8	1939	10
40.	11	1923	12
41.	9	1934	12
42.	7	1933	11
43.	8	1933	12
44.	19	1931	15
45.	10	1925	15
46.	7	1932	12
47.	10	1933	13
48.	15	1933	10
49.	9	1937	12
50.	9	1941	12
51.	5	1925	12
52.	12	1924	13
53.	7	1923	7
54.	8	1921	8
55.	6	1921	8
56.	9	1927	8

TABLE 8. Background data on experimental normal subjects.

Subject number	Vocabulary score	Birth year	Years of education
57.	10	1938	12
58.	10	1942	12
59.	7	1944	11
60.	7	1944	10
61.	16	1907	11
62.	13	1932	12
63.	11	1940	12
64.	9	1937	12
65.	9	1941	12
66.	11	1941	14
67.	9	1917	12
68.	9	1935	12
69.	10	1937	10
70.	11	1937	12
71.	8	1903	5
72.	10	1941	12
73.	9	1941	12
74.	8	1944	12
75.	10	1928	10
76.	11	1937	12
77.	10	1926	7
78.	9	1929	12
79.	11	1934	14
80.	8	1942	13
81.	6	1932	9
82.	12	1927	12
83.	9	1940	12
84.	2	1927	8

TABLE 9. Game behavior of schizophrenic subjects under simultaneous trials first condition.

Subject number	Total C choices	Total C on simultaneous trials	Nonsimultaneous trials		Total A choices
			Total C when first	Total C when last	
29.	15	7	0	8	17
30.	10	9	0	1	26
31.	7	6	1	0	22
32.	16	12	2	2	14
33.	19	10	4	5	19
34.	13	6	3	4	25
35.	18	8	4	6	26
36.	0	0	0	0	29
37.	14	3	6	5	10
38.	11	9	2	0	22
39.	17	8	4	5	10
40.	5	0	0	5	22
41.	16	9	4	3	20
42.	18	8	5	5	19

TABLE 10. Game behavior of schizophrenic subjects under nonsimultaneous trials first condition.

Subject number	Total C choices	Total C on simultaneous trials	Nonsimultaneous trials		Total A choices
			Total C when first	Total C when last	
43.	9	1	0	8	2
44.	11	0	0	11	17
45.	16	8	4	5	26
46.	17	6	3	8	30
47.	20	11	1	8	18
48.	5	0	0	5	28
49.	21	9	4	8	12
50.	12	5	1	6	21
51.	20	10	5	5	22
52.	0	0	0	0	26
53.	20	10	5	5	22
54.	15	7	6	2	19
55.	7	5	2	0	23
56.	10	3	4	3	27

TABLE 11. Game behavior of normal subjects under simultaneous trials first condition.

Subject number	Total C choices	Total C on simultaneous trials	Nonsimultaneous trials		Total A choices
			Total C when first	Total C when last	
57.	8	0	3	5	35
58.	5	1	1	3	19
59.	0	0	0	0	32
60.	0	0	0	0	31
61.	1	0	1	0	24
62.	4	0	4	0	28
63.	8	4	2	2	19
64.	23	10	5	8	16
65.	0	0	0	0	32
66.	0	0	0	0	32
67.	22	6	12	4	11
68.	2	0	0	2	35
69.	6	0	1	5	23
70.	11	6	4	1	29

TABLE 12. Game behavior of normal subjects under nonsimultaneous trials first condition.

Subject number	Total C choices	Total C on simultaneous trials	Nonsimultaneous trials		Total A choices
			Total C when first	Total C when last	
71.	14	6	4	4	24
72.	8	2	5	1	24
73.	0	0	0	0	30
74.	0	0	0	0	30
75.	7	6	0	1	26
76.	1	1	0	0	37
77.	18	11	5	2	19
78.	15	9	3	3	21
79.	0	0	0	0	25
80.	11	6	4	1	23
81.	11	5	3	3	22
82.	15	6	5	4	22
83.	8	2	5	1	29
84.	9	3	4	2	26