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Attribution of Responsibility in Paranoid and Nonparanoid Schizophrenics

Mary Ruth Marsh Payne
College of William & Mary - Arts & Sciences

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ATTRIBUTION OF RESPONSIBILITY IN
PARANOID AND NONPARANOID SCHIZOPHRENICS

A Thesis

Presented to

The Faculty of the Department of Psychology
The College of William and Mary in Virginia

In Partial Fulfillment
Of the Requirements for the Degree of
Master of Arts

by

Mary Ruth Marsh Payne

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APPROVAL SHEET

This thesis is submitted in partial fulfillment of
the requirements for the degree of

Master of Arts

Mary Ruth Marsh Payne

Mary Ruth Marsh Payne

Approved April 30, 1975

Richard M. Bloch

Richard M. Bloch, Ph.D.

Virgil V. McKenna

Virgil V. McKenna, Ph.D.

Kelly G. Shaver

Kelly G. Shaver, Ph.D.

Glenn D. Shean

Glenn D. Shean, Ph.D.

Stanley B. Williams

Stanley B. Williams, Chairman
Department of Psychology

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ABSTRACT

Two experiments were conducted to investigate attributions of responsibility made by institutionalized patients. Using Shaw and Sulzer's (1964) Attribution of Responsibility Questionnaire, Experiment I measured the sophistication of 13 paranoid and 15 nonparanoid schizophrenics in making attributions of responsibility. Paranoids made more sophisticated attributions than did nonparanoids, and their attributional pattern across Heider's (1950) five levels corresponded to the attributions made by normals in other studies.

Experiment II combined elements of defensive attribution theory (Shaver, 1970) and the theory of aversive maternal control (Heilbrun, 1973) to account for attributions of responsibility made by patients. The performance of 15 paranoid and 15 nonparanoid schizophrenics was measured on a Stroop (1935) test before and after the tape, to twelve incidents in which the main person was either similar to or different from the subjects. Results show defensive attribution in paranoids and nonparanoids but not under the same conditions that produce them in normals.

ATTRIBUTIONS OF RESPONSIBILITY IN .
PARANOID AND NONPARANOID SCHIZOPHRENICS

Introduction

Attribution theory deals with the rules that people use in trying to determine the causes and meaning of observed behavior (Jones, Kanouse, Kelley, Nisbett, Valins, and Weiner, 1972; Shaver, 1975). The search for meaning will be affected by the assumptions, the expectations, and the personal needs the attributor brings to his task, because these shape the attribution process by filling in gaps in information, relating behavioral information to comparative standards, and producing shifts in attention or emphasis (Jones, et.al., 1972). Since attributions are based on more than just the behavioral information available, people frequently draw incorrect inferences about the causes of social events and may then behave in accordance with these inferences.

An extreme example of incorrect inference is found in paranoid schizophrenics, whose most characteristic defense mechanism is projection (Shapiro, 1965). The projection typical of paranoia can be described as the misattribution of one's own objectionable motives, affects, or ideas to an external object, person, or group. According to Cameron (1959), when a paranoid is unable to repress successfully the fantasies, conflicts, and feelings of inadequacy he cannot bear to acknowledge in himself, he projects them so that they appear to be coming from outside himself. Ideas of persecution may predominate so that he may become a furtive, constricted,

apprehensively suspicious person; or he may develop delusions of grandeur and become a self-important and arrogant individual (Coleman, 1972). Projection permits him to think that he is the victim of a hostile environment rather than the victim of defects in himself. He is not to blame, the environment is to blame.

Sullivan (1956) maintains that the paranoid dynamism is rooted in an awareness of inferiority which necessitates a transfer or externalization of blame. The essence of the paranoid's dynamics is this transference of blame, which functions to protect his vulnerable feelings of self-worth. The psychotic paranoid also misinterprets social events in order to construct an explanation for his harsh treatment by the environment. Because of this, the paranoid schizophrenic suffers a serious impairment of certain classes of reality experience: He disdains the obvious as misleading, superficial, and something to be seen through (Shapiro, 1965). He attends to a situation or communication not to determine what it is but to understand what it signifies as a potential threat to himself. He looks for clues to threat, and constructs a subjective world from them while disregarding the context in which they appear. His clues are tied to suspicious biases or suppositions that support his delusional system. Cameron (1959) has referred to this process as the building up of a paranoid "pseudo-community" in which the individual organizes the people around him, real or imagined, into a structured group whose purpose it is to carry out some action against him. Everything important to him comes to be interpreted

in terms of this delusional system. As a result, he fails to understand the motives and point of view of others, he does not often reality test, and when he is in stressful situations he is not able to suspend judgment until he can verify his interpretations. Thus he often misinterprets what happens in his world. It is clear that paranoid schizophrenics potentially contaminate many of the attributions they use to explain the behavior they observe in themselves and others.

Of particular interest in the present research is the way in which paranoids attribute the responsibility for some aspects of their experience. It is well documented that when paranoids make attributions of responsibility to themselves, to people who are responding to them in social situations, or to persons who are part of their delusional system they do so in a defensive style (Angyal, 1965; Shapiro, 1965). But the question may be asked, how do paranoids account for and explain the behavior of other people whose behavior is independent of the paranoid? The intent of the present study was to compare two different sorts of responsibility attributions made by paranoid and nonparanoid schizophrenics in an attempt to answer this question.

One way of looking at attribution is in terms of its level of sophistication or development (Sulzer, 1971). Heider (1958) delineates five levels in which attributions of responsibility to the person vary as the relative contributions of person and environment change. These levels represent a progression from

relatively primitive to relatively sophisticated cognitive processes, and are intended to be developmental stages (Fishbein and Ajzen, 1973). The levels have been labeled and restated, first by Shaw and Sulzer (1964), and later by Sulzer (1971) as follows:

Level I: Association: The person is held responsible for any outcome that he is connected with in any way. Thus, a person may be blamed for harmful acts committed by his friends or when he is merely standing nearby when one stumbles and falls.

Level II: Causality: The person is held responsible for any effect that he produced by his actions, even though he definitely could not have foreseen the consequences of his actions. As in Piaget's (1932) "objective responsibility" the person is judged according to what he does, but not according to his motives.

Level III: Foreseeability: The person is held responsible for any foreseeable effect that he produced by his actions even though the effect was not a part of his goals or intentions. He is held responsible for the lack of restraint that a wider cognitive field would have produced.

Level IV: Intentionality: The person is held responsible for any effect that he produced by his actions, foreseeing the outcome and intending to produce the effects. This corresponds roughly to Piaget's "subjective

responsibility" in which motives are the central issue.

Level V: Justifiability: The person is held only partly responsible for any effect that he intentionally produced if the circumstances were such that most persons would have felt and acted as he did. Responsibility for the act is at least shared by the coercive environment.

Attribution of personal responsibility by normal adults has been found to increase up to a maximum at Level IV, where cues clearly indicate intention, and then decrease at Level V, where the actor's behavior is attributed to the environment because of extenuating circumstances. For the most unsophisticated individual, the minimal information contained in Level I should be a sufficient basis for attributions, and the information contained in the "higher" levels would have the effect of unnecessary redundancy (Sulzer, 1971).

Level of attributional sophistication has not previously been assessed in institutionalized patients, but there is good reason to believe that the nature of premorbid development might have some effect on attributional responses. The distinction between "process" and "reactive" premorbid development is based on the establishment of competence in the social-sexual sphere during the period extending from adolescence through young adulthood (Heilbrun, 1973). It has been found that process schizophrenics are clearly less adequate in their premorbid development than reactive schizophrenics. Further, reactive schizophrenics are broader or more effective in their use of external information than are process

schizophrenics, who are less responsive to external stimulation. Heilbrun (1973) concludes that a commonality exists between the behaviors associated with reactive and paranoid, and between process and nonparanoid status. Thus, for a number of reasons, we might expect paranoids, reactive type, to make attributions of responsibility in a more sophisticated way than nonparanoids, process type, who are more developmentally inhibited.

The second comparison to be made in this research deals with the way in which arousal affects the attributions of responsibility made by paranoids and nonparanoids. It has been shown that certain kinds of arousal affect the attributions of responsibility made by normal persons in fairly consistent ways. When people know that it is situationally possible for them to be perpetrators of a negative outcome they attribute responsibility in a way that denies personal similarity and distinguishes themselves from the perpetrator. They are more harsh in their attribution of responsibility, as if to say, "I wouldn't act that way in the same situation" (Shaver, 1970). Further, if the level of threat is increased by making the perpetrators highly similar to themselves, people are more lenient with those perpetrators who are similar (Chaikin and Darley, 1973; Shaver, 1970; Sorrentino and Boutilier, 1974). They tend to attribute more responsibility to environmental factors. Thus, situational possibility and personal similarity are variables which lead normal persons to make defensive attributions of responsibility (Shaver, 1970; Shaver, 1973). It is possible that paranoids and nonparanoids also make

defensive attributions when they are personally or environmentally similar to perpetrators, but it is also possible that these conditions do not arouse feelings of threat in patients while other conditions relevant to morbidity might do so.

In trying to anticipate what factors will stimulate a defensive reaction in paranoid schizophrenics, we should take into account the unique personal needs which may affect their attributions of responsibility. Research into the need systems of various clinical groups has shown that paranoids differ from normals most in their high needs for aggression, defence, and blame avoidance (Chambers, 1975). According to these findings, paranoids do not differentiate aggression from blame avoidance. Rather, expressions of aggression arouse guilt and fear of blame instead of feelings of assertion. This occurs especially when blame results in the possibility of retaliation or punishment. This is reflected in the tendency of many paranoids to construct delusional systems around impersonal, vague, or abstract entities, such as laser beams or the FBI. Because blame avoidance and the projection of blame are important dynamic features in paranoid schizophrenia, it is important to make a clear distinction between two aspects of responsibility: Causality for events, and moral accountability or blameworthiness for those events.

Moral accountability does not necessarily follow from judgments of personal causality (Shaver, 1975). They are ambiguously related concepts. Causality is best represented by local causality,

where the stimulus person actually produces the effect alone or with others, and low foreseeability, which avoids the complications of foreknowledge and thus intentionality to produce the consequences of the action. Therefore, causality is relatively free of distortion based on consequence effects (Shaver, 1975). Moral accountability, however, is a value judgment made by the perceiver that may or may not be consistent with the behavioral evidence. Judgments of moral accountability may be laden with affective qualities and can serve personal needs to such a degree that objective reality is ignored (Shaver, 1975). Because blame is so salient to paranoids, it is essential to measure both attributions of causality and attributions of blameworthiness made by paranoid and nonparanoid schizophrenics.

In addition to blame-avoidance, paranoids may be especially sensitive to another source of arousal, that of aversive maternal control. The most common pattern of the mother-child relationship in schizophrenia is the covertly rejecting mother (Reichard and Tillman, 1950). This kind of mother dominates the child, but her domination takes the form of overprotectiveness to prevent him from ever becoming independent. This deters the establishment of a sense of interpersonal competence. His sense of worth is further reduced by his perception of maternal rejection; if the person who knows him best does not communicate love and esteem to him, then he must be unlovable and unworthy of esteem. The combination of maternal control and maternal rejection act to shape a self-conceptual system which reflects the disparagement and doubt found in his

mother's behavior toward him (Heilbrun, 1973).

This situation makes it necessary for him to devise some way of adapting to the feedback coming from his mother. The most primitive coping mechanisms for dealing with a painful stimulus available to the child are tactics of avoidance and withdrawal which place physical and psychological distance between the child and the mother. The child also learns to direct his attention in ways that reduce the input of potentially upsetting cues. This social-perceptual style of coping is functionally geared to close out the source of aversiveness and has been identified by Heilbrun (1973) as the closed adaptive style.

A more sophisticated coping method also described by Heilbrun (1973) is the open adaptive style. The child who adopts this method attempts to identify clearly what is expected of him in order to elicit positive responses from significant others. He continues to relate as closely to the mother as she will allow, hoping to replace his sense of rejection with signs of positive regard. This mode of coping with the mother as an aversive stimulus requires the child's continuing orientation toward his social environment and close attention to interpersonal cues relevant to social expectations.

Heilbrun's (1973) theory of schizophrenic development proposes that paranoid schizophrenics, reactive type, have developed this open adaptive style as opposed to the closed adaptive style adopted by process schizophrenics. Therefore, although aversive

maternal control is a common element in the etiology of both groups and has had a stressful effect on both, the paranoid stays open to it while the process schizophrenic learns to ignore it. In support of his position, Heilbrun and Norbert (1971) found that a taped instance of aversive maternal control adversely affected the performance of paranoid schizophrenics on the Stroop (1935) Color-Word Test while the performance of nonparanoid schizophrenics improved.

Therefore, it is likely that paranoid schizophrenics, when subjected to an instance of aversive maternal control, will attend to it because of their open style of adaptation and because the tape is relevant to their pathology. The arousal, stimulated by the aversiveness of the tape, should subsequently provoke a defensive response which will affect their attributions of responsibility. Nonparanoid schizophrenics would be less likely to attend to the tape because of their closed adaptive style and thus their attributions of responsibility should not reflect this arousal.

The overall characterization of reactive paranoids as developmentally and psychologically more sophisticated than process nonparanoids, the notion of defensive attribution of responsibility in response to threat, and the idea that aversive maternal control is more threatening to reactive paranoids than to process nonparanoids combine to suggest four specific hypotheses:

- 1) In the absence of threat paranoid schizophrenics' attributions will reflect a higher level of development than those of nonparanoid schizophrenics.

2) Performance by paranoids on a Stroop test will deteriorate during an instance of aversive maternal control while the performance of nonparanoids will not, indicating the tape's arousing affects on paranoids.

3) Arousal, stimulated by the aversive maternal tape, will affect the attributions of causality and blameworthiness made by paranoid schizophrenics but not those of nonparanoid schizophrenics, in accordance with their adaptive styles.

4) Personal similarity to a stimulus person involved in negative consequences will not produce defensive attributions on the part of paranoid and nonparanoid schizophrenics without additional arousal relevant to pathology. When that additional arousal is present in the form of aversive maternal cues, defensive attributions will be obtained only among paranoids.

Level of sophistication of attributions of responsibility made by paranoids and nonparanoids was investigated in a first study (designated as Experiment I), and defensive attributions were assessed in a second study (designated as Experiment II). The latter was designed to investigate the effects of personal similarity on attributions of responsibility while keeping situational possibility constant, and the effects of arousal produced by Heilbrun's aversive maternal tape. A conceptual replication of Heilbrun and Norbert's (1971) study was included so arousal by the tape could be measured for comparison purposes.

Experiment I

Method

Subjects. Subjects were 15 paranoid schizophrenics, reactive type (9 males, 6 females), and 15 nonparanoid schizophrenics, process type (9 males, 6 females), all patients at Eastern State Hospital in Williamsburg, Virginia. The mean age of the paranoid schizophrenics was 35.6 years and the average length of hospitalization was 2.52 years. The mean age of the nonparanoid schizophrenics was 43.7 years and the average length of hospitalization was 4.77 years. The differences between the two groups in age and length of hospitalization were not significant.

Subjects were selected from a group of patients extensively interviewed by a clinical psychologist familiar with the research design to determine the extent and nature of their delusional systems. Patients who were given a diagnosis of paranoid or nonparanoid schizophrenia were further selected on the basis of their performance on the Ullmann and Giovannoni (1964) measure of the process-reactive continuum. In most cases, paranoids who scored 12 or below, and nonparanoids who scored 13 or above on the Ullmann and Giavannoni index were used as subjects. In those cases where there was a question as to the veridicality of the patient's responses to the measure, the experimenter relied on the process or reactive classification assigned by the clinical psychologist.

Subjects were paid \$2.00 for their participation.

Stimulus materials. A modified version of Shaw and Sulzer's

(1964) Attribution of Responsibility Questionnaire (ARQ) was used to determine the sophistication of paranoid and nonparanoid schizophrenics in making attributions of responsibility. The questionnaire consists of 40 short stories, each one paragraph in length, about a boy named Perry who is involved in various situations. The extent of Perry's involvement in the outcome of each story is varied across Heider's five levels. In eight stories, Perry is not present when an incident occurs (Association). In another eight stories, Perry's behavior has outcomes which he could not have foreseen (Causality). Perry's behavior has consequences which could have been readily foreseen but which he does not willfully produce in eight more stories (Foreseeability). In eight other stories, Perry foresees the outcome of his actions and intends to produce the effect (Intentionality). Finally, Perry is involved in eight incidents in which his behavior is brought on in part by a coercive environment (Justifiability). In Shaw and Sulzer's (1964) original version of the ARQ, the severity of the outcomes of the eight stories in each level was also varied. Two of the eight stories had highly positive outcomes, two had highly negative outcomes (brutal death), two had low positive outcomes, and two had low negative outcomes.

Three alterations were made in the original ARQ. First, the highly negative incidents were reworded so that the outcome would be physical harm instead of death. Although this precludes comparison of the present severity results to those of Shaw and Sulzer, it reduces the likelihood of creating serious trauma in already disturbed

patients. A second modification designed to adapt the ARQ for use with patients changed the response scale for each item from a five point scale of responsibility to a dichotomous judgment. Finally, a third modification was to introduce a female stimulus person, Mary, for use with female subjects. The two modified ARQ's (Perry and Mary) were then recorded on cassette tapes, and those were played for individual subjects.

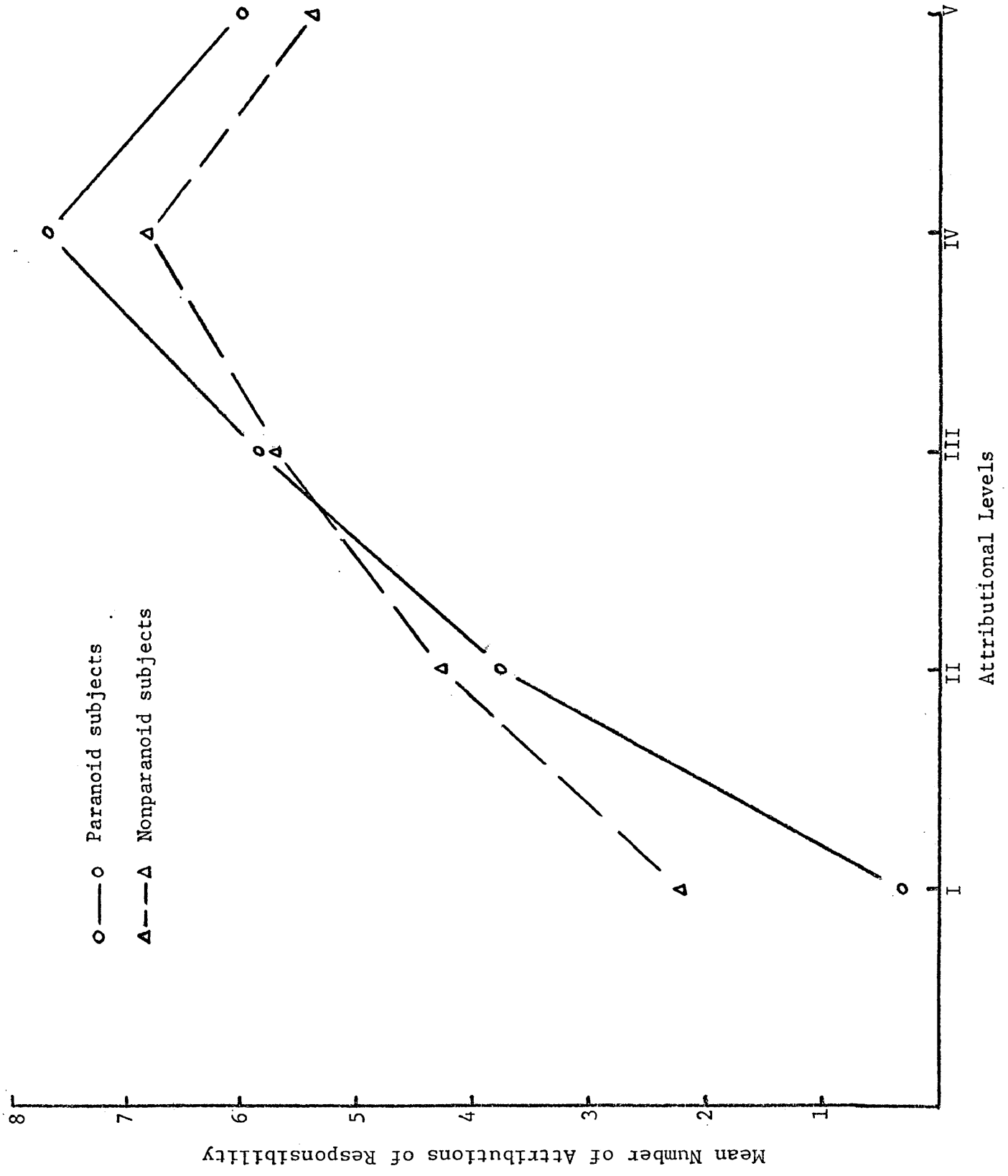
Procedure. Subjects were informed of the nature of the research and their written permission to participate was obtained. They listened to the incidents and after each was played they were asked to indicate whether Perry or Mary was responsible for the outcome of the story. Their "yes" or "no" response was recorded by the experimenter.

Results

At each of the five levels, there were eight opportunities for a subject to assign responsibility to the stimulus person, and the mean number of assignments made at each level are shown separately for the paranoid and nonparanoid groups in Figure 1. These data were subjected to a two-way analysis of variance (Diagnostic Category by Levels) with repeated measures on the Levels factor. As the data in Figure 1 indicate, both paranoids and nonparanoids made progressively more attributions of responsibility to Levels I through IV, with attributions decreasing at Level V ($F=74.21$; $df=4/104$; $p < .001$).¹

¹The degrees of freedom in this analysis were reduced by the fact that ARQ data were unobtainable from two male paranoids.

Fig. 1. Mean number of attributions of responsibility made to Heider's five attributional levels.



There was, however, a significant interaction between diagnostic category and the number of attributions of responsibility made to each level ($F=4.16$; $df=4/104$; $p < .01$), with paranoids making fewer attributions of responsibility at Levels I and II and more attributions of responsibility at Levels III, IV, and V than nonparanoids.

Discussion

This pattern of results provides strong confirmation for the first hypothesis. Paranoids make both more attributions at the sophisticated levels (III, IV, and V) and fewer attributions at the unsophisticated levels (I and II). Paranoids make virtually no attributions of responsibility to stories at Level I (Association) in which Perry's (or Mary's) friends are the causal agents, and their attributions gradually increase to a high at Level IV, where Perry intends to cause the effects he produces by his actions. When environmental factors operate in a coercive way to help produce effects (Level V), the paranoids' attributions of responsibility decrease, as do the attributions of normal adult subjects (Shaw and Sulzer, 1964). Nonparanoid schizophrenics assign responsibility along the same pattern as paranoids but they are not as discriminating as paranoids in making their attributions, particularly at the higher levels.

It is possible that the differences found between the paranoids and nonparanoids on this measure of attributional sophistication are related in part to differences in intellectual functioning. However, this measure was designed to reflect developmental differences;

the original research compared the performance of children and adults (Shaw and Sulzer, 1964). Shaw and Sulzer have not correlated IQ with developmental differences. Therefore, the diagnostic categories seem to offer a more satisfying explanation for the differences found. Reactive paranoid schizophrenics seem to have developed sufficiently to make attributions of responsibility in a normal and sophisticated way. Their pathology, especially the distortions which accompany their delusional systems, evidently does not interfere when they make attributions of responsibility to other persons in the absence of arousal. The attributions of nonparanoids reflect their more inhibited development.

Experiment II

Method

Subjects. Subjects were the 30 subjects described in Experiment I, including the two male paranoids who refused to respond to the ARQ.

Stimulus materials and apparatus

Stroop Test. The Stroop (1935) Speed of Color Discrimination Test developed by the Educational Testing Service was adapted for use in this study. Six sheets were taken from a test booklet and were placed in transparent plastic binders for protection and ease of handling. Two of these sheets had 96 color patches arranged on each page. These patches consisted of five colored asterisks in a group, in either blue, red, green, or orange. Two sheets had 176 color

words, including the words blue, red, green and orange, printed on each page. Each color word was printed in the color of ink it named. Two other sheets had 176 color words printed on each page but a word was never printed in the color ink that it named. Three of the sheets were used for the initial Stroop test and the other three, different versions of the first three sheets, were used while the aversive maternal tape was being played. Brief instructions were typed at the top of each sheet so the subjects could refer to them if it was necessary.

Incidents. Attributions of cause and blame were made to 12 incidents. Each story briefly described a stimulus person, William or Jane, who was involved in a minor accident of the kind that could occur in a hospital setting. The stories were carefully designed to be ambiguous with respect to causality and blameworthiness in order to permit those judgments to be affected by the experimental conditions. The stimulus materials were pretested to insure that the situations were of approximately equal ambiguity across the 12 stories. Similarity to the stimulus person was not manipulated in the pretest.

Attribution of responsibility measure. A slot board and 50 poker chips were used to measure attributions of cause and blame. The slot board was a wooden board resembling a carrying case for poker chips. The board contained five slots into which chips could be placed and removed easily, with about one third of the chip exposed in front. Each chip represented 2% of the cause or blame

to be distributed. The sides of the slots were scaled so the number of chips could be determined and recorded by the experimenter. This method of measuring cause and blame was used to insure that the percentage of cause or blame assigned always summed to 100%. This method had the additional advantage of permitting subjects to see and adjust the proportion of chips in each slot.

Titles for the slots were typed in capital letters one quarter inch high on white cards. These cards could be placed in a groove above any slot. Title cards were made for MAIN PERSON, DAVE, and MIKE for use while illustrating the procedure, and JANE or WILLIAM, OTHER PERSONS, and BAD LUCK for use in the experimental manipulation. These title cards were randomly placed in a different order on the slot board for different subjects to control for a possible position preference.

Aversive maternal tape. The incident of aversive maternal control was a duplicate of the tape used extensively by Heilbrun (1973) in other experiments. The tape was a scene of a mother severely censuring her son for bringing home a poor report card. The son's attempts to explain and defend himself were abruptly interrupted and he was finally reduced to tears. The tape lasted approximately six minutes, and the subjects listened to the tape through stethoscope-type earphones.

Response booklet. Two female experimenters who did not know the research hypotheses actually ran the subjects. Each experimenter was provided with a response booklet for each subject. The

first page was a Form of Consent to Research which was drawn up in accordance with the guidelines provided by the hospital's Patients' Rights Committee. There was a code on this page of the booklet which indicated the sex and diagnostic category of the subject for whom the booklet should be used. The code also indicated the order in which the experimenter was to present the manipulation of personal similarity (Similar-Different).

Next, each booklet contained six Xeroxed sheets which corresponded to the Stroop sheets presented to the subjects. A letter representing the correct color to be named (B, R, G, or O) was placed under each patch and color word. This allowed the experimenter to mark quickly in the booklet an error made by a subject. The number of seconds the subject required to complete each of the three Stroop tasks was recorded with a stopwatch, and was noted at the bottom of the response sheet.

The last page of the booklet was designed for the recording of the attributions of cause and blame. There were six headings across the top: Main Person, Other Persons, and Bad Luck (for recording cause) and Main Person, Other Persons, and Bad Luck (for recording blame). Under the headings were 12 rows of boxes, one row for the subject's responses to each story.

The 12 stories had been randomized into 10 orders so that one subject in each group (male paranoid, female paranoid, male non-paranoid, and female nonparanoid) had the same order of presentation but no order was repeated in the same group. This controlled for

any undetected discrepancies in the effectiveness of the stories. The rows of boxes in the different booklets were numbered according to the various random orders and the experimenter referred to these numbers in order to find which story was to be read next. Thus one male paranoid might hear story number 7 read under the Similar manipulation after the tape had been played while another male paranoid might hear the same story under the Different manipulation and before the tape was played.

Instruction booklet. The experimenter was also provided with written instructions to be read to the subjects. This booklet included instructions for the first Stroop test, instructions for using the board and chips in evaluating the 12 stories, the 12 stories, instructions for the second Stroop test and a page which contained one of the four possible orders of the Similar-Different manipulation: Similar-different-different-similar when the subject was a male and when the subject was a female, and different-similar-similar-different when the subject was a male and when the subject was a female. Since the wording of the four instances was quite varied, four different instruction booklets were constructed, alike except for the presentation of the similarity manipulation. These booklets were coded on the first page. When the experimenter was prepared to run a subject, she selected a response booklet which was appropriate for the subject in terms of sex and diagnosis, and, noting the required order of the Similar-Different presentation coded on the response booklet, she then selected an instruction booklet which corresponded to it. As a

consequence, subjects were assigned to condition orders in advance of their arrival at the experimental room, and this assignment was not made by the experimenter who actually ran the subject.

Pretests

Three attempts were made to validate our manipulation of similarity to the stimulus person. Subjects in these pretests were selected at random from the larger hospital population without reference to their diagnostic category. At first subjects were asked to rate two patients, one similar to the subject and one different from the subject, on several scales. Sex, race, age, length of stay in the hospital, daytime activity (a job on or off the hospital grounds as opposed to ward activities), and the resident building were varied for each subject. Included with the description was an account of how the patient spent an evening. This account was identical for both similar and different patients.

Ten subjects participated in this pretest, and each heard a description of a person. Each was asked to imagine that he or she was very similar to or different from the stimulus person in beliefs, attitudes, and values (an operationalization of personal similarity previously employed by Shaver, 1970). Subjects then rated each person on a series of seven-point scales, including likable-unlikable, good-bad, similar to yourself-different from yourself; morally accountable-not morally accountable, causes everything-doesn't cause anything, and situation likely-situation unlikely. These end points were separated on the response sheet by words which described the

various points between them: Extremely, very, moderately, neither, moderately, very, extremely. Subjects were instructed to circle the word they thought best described the person.

It became apparent that including the description of daytime activities confused the identification process since some subjects who did not have a job at the hospital reported that they perceived themselves as workers rather than participants in activities around the hospital because they held jobs at home. The activity variable was subsequently dropped from the descriptions of the similar and different persons. Presented with the remaining variables, 10 subjects again failed to consistently identify themselves with the person described as similar. Finally, sex, race, and age were varied with eight more subjects, without success.

Since many of the variables which have been effective in eliciting the identification of normal subjects with a similar person (Shaver, 1970, 1973; Chaikin and Darley, 1973) were not effective with a hospital sample, 20 patients, 10 males and 10 females, were asked how they would describe a person who was very similar to and very different from themselves. Eighteen subjects used personality characteristics in their descriptions. These ranged from sensitive, warm, and considerate to stupid, stingy, and "hellified." Only two subjects mentioned physical characteristics. None of the variables that had been manipulated was mentioned. After ruling out race and age as means of manipulating similarity, it was decided to let subjects reach the same point by providing their own descriptions of

similarity, with only the sex of the stimulus person varied by the experimenter. Sex has been used before in successful manipulations of similarity (Shaver, 1970; Shaver and Carroll, 1970), and the philosophy of permitting subjects to reach the same point in manipulation of the conceptual variable through slight variations in instructions has been supported by Aronson and Carlsmith (1968).

Procedure

The subjects were run individually by one of two female experimenters trained by the author, neither of whom knew the hypotheses of the research. After being seated in the interview room, each subject read a Form of Consent to Research which explained the nature of the investigation and reviewed his rights as a patient and a participant. After the subject signed the consent form, the experimenter asked him how he would describe someone who is "very similar" to himself. This description was noted for use later in the experiment.

Subjects were then asked to take the Stroop test. This consisted of three tasks. For the first task, subjects named aloud the color of ink patches; next they read the color words; for the third task, they named the color of the ink in which each color word was printed. The experimenter read instructions describing each task before that task was begun and brief instructions were typed at the top of each task page. Subjects were instructed to work quickly but carefully and were told that time would be kept. The experimenter used the response booklet containing keys to the correct responses to mark errors as they occurred. The number of seconds it took to

complete each task was noted at the bottom of the page.

After completing the three parts of the Stroop test, the subjects were given instructions in the distribution of the poker chips to evaluate the 12 stories. They were asked to assign the cause, defined as who or what made the accident happen, and the blame, defined as who or what might deserve to be punished for what happened in each story, by distributing the poker chips across three categories: Stimulus person, (called main person); other persons, such as friends, nurses, doctors, or aides; or bad luck. It was emphasized that the chips could be distributed in any way. They could be put in a single slot, split between two slots, or some could be put in each slot, as long as all the chips were used. Slots were clearly labeled with the appropriate title card. The experimenter placed the JANE or WILLIAM card over the stimulus person slot, depending on who the stimulus person was at the time. An example story was used to illustrate the instructions, and subjects were asked to attribute cause and blame from that story to familiarize themselves with the procedure.

Before the aversive maternal tape was played, each paranoid and nonparanoid schizophrenic was read three stories in which the stimulus person was described as Similar to the subject, and three stories in which the stimulus person was described as Different from the subject. This similarity manipulation was based on the sex of the subject, and on the subject's own previous description of a similar person. The order of presentation of the manipulation was counterbalanced in an ABBA and BAAB design within diagnostic

classification, and the order of presentation of the 12 stories was completely randomized across subjects. Subjects were asked to remember that they were similar to, or different from the stimulus person in each story right before they distributed the poker chips to assign causality and blame for that story.

After the second series of stories was read and attributions were made, subjects were informed that they would hear a tape of a mother speaking to her son. They were told that they would take another parallel form of the Stroop test while listening to the tape through earphones. The instructions for the three Stroop tasks were reviewed and subjects were reminded that these instructions were printed at the top of each Stroop page. As before, they were told that their work was being timed and were encouraged to work as quickly as possible without making mistakes. The earphones were put on, the tape was begun, and the volume was adjusted for each subject. They listened to the tape for one minute before they were instructed to begin on the first Stroop task. The tape was played until all three tasks were completed.

Immediately after the Stroop was complete, three more Similar stories and three more Different stories were read to the subjects in the appropriate order. Subjects were again reminded that Jane and William were very similar or very different from the ways they described themselves and were urged to keep this in mind when attributing cause and blame.

Results

Preliminary analyses of the data separated by sex of subject revealed no significant differences on any measures attributable to subject's sex. All the analyses reported below, therefore, are for combined data. The Stroop test results have been analyzed as a 2x2 (Diagnosis by Tape) factorial design with repeated measures (before-during) on the Tape factor, because the second manipulated factor (Similarity to stimulus person) was irrelevant to the Stroop test. For purposes of comparison, our analysis was performed on an efficiency score for each task (i.e., the number of correct responses per second). This was derived, following Heilbrun and Norbert, by dividing the number of correct responses by the number of seconds taken to complete the task. The mean efficiency scores for each of the three Stroop tasks are presented in Table 1, and the predicted interaction was obtained on only one of these measures. The analyses for all attribution measures are 2x2x2 (Diagnosis by Tape by Similarity) factorial designs (repeated measures on factors two and three), because here the similarity was relevant to the data collected.

Stroop Test

The previous work of Heilbrun and Norbert (1971) showed that performance by the paranoid subjects deteriorated during the aversive maternal tape, but that performance during the tape by nonparanoids improved. Although the improvement of nonparanoids has no adequate theoretical explanation, Heilbrun and Norbert argued that the performance decrement by paranoids was the result of their open adaptive

Table 1

Mean Efficiency Scores

	<u>Before</u>		<u>After</u>	
	<u>Paranoids</u>	<u>Nonparanoids</u>	<u>Paranoids</u>	<u>Nonparanoids</u>
<u>Color patch</u>				
	1.20	0.87	1.10	0.94
<u>Read Word</u>				
	1.70	1.51	1.43	1.47
<u>Name Ink</u>				
	0.65	0.56	0.67	0.61

style. In the present research an interaction between diagnosis and tape would have been sufficient to confirm Heilbrun and Norbert's earlier findings. Performance of the paranoids did deteriorate during the tape on the first Stroop task, naming the color patch, while performance of the nonparanoids improved ($F=5.95$; $df=1/28$; $p < .05$). For the second Stroop measure, naming the color word, there was no interaction, but there was a main effect showing decreased performance by both paranoids and nonparanoids during the playing of the tape ($F=4.37$; $df=1/28$; $p < .05$). There were no significant differences in the performance of paranoids and nonparanoids before and during the tape for the third Stroop task, naming the ink in which the words were printed.

Attribution Measures

Causality. The most stringent test of the combination of defensive attribution predictions with aversive maternal control predictions is a three-way interaction, with paranoid subjects showing increased attribution to the similar stimulus person before the aversive tape, but decreased attribution to the similar stimulus person after the tape has been played. The mean scores across conditions for both causality and blame attributions are presented in Table 2. The means for causality reveal that the three-way interaction was not obtained. Indeed, there were no significant differences in causality attributions based on diagnostic classification. There was, however, a significant two-way interaction in the predicted direction, with both paranoids and nonparanoids showing decreases in

Table 2

Mean Attributions of Responsibility

	<u>Paranoids</u>			<u>Nonparanoids</u>				
	<u>Before</u>	<u>After</u>		<u>Before</u>	<u>After</u>			
	<u>Similar</u>	<u>Different</u>	<u>Similar</u>	<u>Different</u>	<u>Similar</u>	<u>Different</u>		
<u>Cause to SP:</u>	41.11	29.91	32.58	32.66	36.77	29.22	31.66	31.86
<u>Cause to OP:</u>	6.11	16.51	12.98	13.44	9.95	13.17	9.44	14.80
<u>Cause to BL:</u>	2.78	3.58	4.44	3.89	5.49	7.60	6.89	3.33
<u>Blame to SP:</u>	26.55	17.35	19.78	19.44	28.93	27.13	32.22	26.11
<u>Blame to OP:</u>	8.78	12.31	11.44	11.22	11.28	14.42	7.78	13.89
<u>Blame to BL:</u>	14.66	20.33	18.78	19.33	9.78	8.44	10.00	10.00

causality attributed to the Similar stimulus person after the tape, and increases in causality attributed to the Different stimulus person after the tape ($F=4.20$; $df=1/28$; $p < .05$). It is interesting to note that this predicted difference occurred despite an overall tendency by both paranoids and nonparanoids to attribute more causality to the Similar stimulus person ($F=4.01$; $df=1/28$; $p < .10$), and away from others when the stimulus person was Similar ($F=5.19$; $df=1/28$; $p < .05$).

Blame. On the basis of findings with normal subjects (Shaver, 1970), it was predicted that the same interaction expected for causality would also occur for blame. In fact, with normals, blame-avoidance seems to be the more important issue (Chaiken and Darley, 1973; Shaver, 1973). The blame attribution means are presented in Table 2, and these show that the expected interaction was not obtained. Particularly in light of the causality findings, it is intriguing that the only blame attribution differences were trends toward main effects based on diagnostic category. Paranoid subjects tended to attribute less blame to the stimulus person (whether Similar or Different) than did nonparanoids ($F=3.25$; $df=1/28$; $p < .10$), and to attribute more blame to bad luck than did nonparanoids ($F=3.59$; $df=1/28$; $p < .10$).

Age and Chronicity. Any study conducted with hospitalized patients must take into account the possible contamination of diagnostic category by length of hospitalization. Although our paranoid and nonparanoid groups did not differ significantly either in age ($t=2.02$; $df=28$; $p < .10$) or in length of hospitalization ($t=2.02$; $df=28$; $p < .10$),

there might have been some selective effects on individual dependent variables. To check this possibility, both age and length of hospitalization of paranoid and nonparanoid subjects were correlated with the six Stroop performance measures (three efficiency scores before and three scores during the tape) and the 24 attribution measures (cause and blame attributed to stimulus person, other persons, and bad luck when the stimulus person was similar and when he was different, before and after the tape). There was one significant negative correlation ($r = -.529$; $df = 13$; $p < .05$) between the paranoids' length of hospitalization and the Stroop performance measures, and one significant negative correlation between the nonparanoids' length of hospitalization and the attribution measures ($r = -.540$; $df = 13$; $p < .05$). These do not fall into a consistent pattern, so given the number of different correlations involved (a total of 60) they may be regarded as chance findings. With regard to age, there were no significant correlations between the nonparanoids' ages and the attribution measures. However, five of the six Stroop measures correlated negatively with the nonparanoids' ages.

In order to compare the Stroop performance of the younger nonparanoid subjects with that of the older nonparanoid subjects, these subjects were separated by a median split into two age groups, and a 2x2 (Age Group by Tape) factorial design with repeated measures (before-during) on the Tape factor was used to analyze the data. The mean scores of Stroop efficiency for these two age groups are shown in Table 3. For the first Stroop task, naming the color patch,

Table 3
Mean Efficiency Scores

	<u>Before</u>		<u>After</u>	
	<u>Younger</u>	<u>Older</u>	<u>Younger</u>	<u>Older</u>
<u>Color patch</u>	110.57	66.13	113.14	77.00
<u>Read word</u>	173.86	130.00	182.29	115.50
<u>Name ink</u>	73.43	39.88	80.71	44.25

young nonparanoids performed significantly more efficiently than did the older nonparanoids ($F=6.53$; $df=1/13$; $p < .05$). Younger nonparanoids also performed significantly more efficiently than older nonparanoids on the second Stroop task, naming the color word ($F=5.60$; $df=1/13$; $p < .05$). On the third Stroop task, naming the ink in which the words were printed, younger nonparanoids again performed significantly more efficiently than older nonparanoids ($F=13.25$; $df=1/13$; $p < .01$). Also, the performance of both younger and older nonparanoids improved significantly during the tape ($F=5.20$; $df=1/13$; $p < .05$). There were no significant interactions.

The correlations and their analysis indicate that younger nonparanoids perform more efficiently than older nonparanoids on a cognitive task. This is not a surprising finding. It is reasonable to expect that older adults will not perform as well as younger adults on a task that requires concentration and accuracy under timed conditions. Since the age of nonparanoids did not correlate with attribution measures and no interactions were found between Age Group and Tape, the possibility of age as an artifact is minimized.

Discussion

Aversive Maternal Control

Explicit in Heilbrun's (1973) theory of paranoid development is the notion that there is a specific sensitivity on the part of paranoid schizophrenics to the hostile, censoring behavior of a mother, as evidenced by the disruptive effects of these cues on the performance of a cognitive task, i.e., the Stroop. Heilbrun and Norbert

(1971) maintain that the performance of paranoids on the Stroop deteriorates during the aversive maternal tape because the tape has an emotionally arousing nature which upsets them. Because of their closed style of adaptation, nonparanoid schizophrenics supposedly are not sensitive to these same aversive cues. Their improved performance on the Stroop during the tape is pointed out by Heilbrun to support this assumption.

The results of the present study suggest that paranoids and nonparanoids do respond initially to the tape in line with their respective adaptive styles, but that what is measured by the Stroop is the ability or lack of ability to concentrate on a task during external stimulation. As performance time proceeds, the tape has a deleterious affect on the performance of nonparanoids as well as paranoids, indicating that after prolonged exposure to the tape, the tape affects their attention or concentration also. Finally, both paranoids and nonparanoids seem able to recover their concentration and perform as well on the third task as they did before they heard the tape, even though the third task is the most susceptible to intrusion of the reading response (it is the same task measured by Heilbrun and Norbert, 1971).

The present research calls into question Heilbrun's explanation for the results Heilbrun and Norbert found in their investigation, and a methodological comparison is suggested. The Stroop test administered by Heilbrun and Norbert required naming the ink in which 144 color words were printed. This task is of limited duration

compared to ours. It is possible that Heilbrun and Norbert did not allow their subjects enough time to show the range of their responses to the tape. In the case of paranoids, the task was completed before they could recover their concentration and deal with the distraction of the tape. In the case of nonparanoids, the task was completed before the distracting properties of the tape affected their performance.

Heilbrun may be correct in his assumptions that reactive paranoids have adopted an open adaptive style while process nonparanoids have adopted a closed adaptive style in response to aversive mothering. However, it appears that the Stroop tasks measure the cognitive effects of the tape by measuring distractability. The distracting properties of the tape, as far as they are relevant to a cognitive task, seem belatedly to affect nonparanoids, and then seem to wear off as the task continues. This study reveals that the Stroop may not be adequate to measure the concurrent emotional components of aversive maternal cues for both paranoid and nonparanoid schizophrenics.

It could be argued that the pattern of performance on the Stroop reflects a successful repression of emotional arousal instead of a distraction which is overcome. The effects of the tape on attributions of causality seem to preclude that argument. Some of the attribution measures seem to reflect the emotional nature of the tape and its significance for paranoid and nonparanoid schizophrenics.

Finally, if Heilbrun's theory of emotional interference on

the part of paranoid schizophrenics alone were correct, we would expect to find corresponding Diagnosis by Tape interactions on the attribution measures. This interaction did not occur for any of the attribution measures. This is further evidence that the Stroop is inadequate for measuring emotional arousal for both paranoids and nonparanoids. Attribution measures may offer a better way to reflect arousal, particularly in the context of this study.

Defensive Attribution

The attribution results, themselves, suggest that conditions which produce defensive attributions in noninstitutionalized subjects (situational possibility and personal similarity) do not do so with schizophrenic subjects. Instead, these conditions appear to produce an internalization of the causality that normals externalize; both paranoids and nonparanoids tend to attribute cause most often to the stimulus person described as similar to themselves. I base a possible explanation for this internalization on personal experience with schizophrenics in a hospital setting. This internalization on the part of paranoids and nonparanoids might be explained in light of the feelings of helplessness that often characterize a schizophrenic, feelings that he is not in control of his situation while being very involved in it. Out of these feelings of helplessness may come a great deal of "personalizing" about what occurs in the world: A schizophrenic may perceive that events are revolving around him, without his knowing or understanding why. He may come to believe that he either stimulates events or is the actual cause for those events,

even when they have little or nothing to do with him. For instance, a patient might feel that he caused Watergate, although he cannot articulate in what ways he was connected with the affair. Under conditions of minimal threat, schizophrenics apparently reflect this personalization in their attributions of cause.

With the addition of the aversive maternal tape, the attributions of schizophrenics correspond closely to the defensive attributions of normals. The subjects attribute more causality to the Different stimulus person and less causality to the Similar stimulus person. At least two possible explanations for these results suggest themselves: Schizophrenics may have a higher threshold for the sorts of threat that usually produce defensive attributions, or perhaps they respond only to a psychologically appropriate threat, the tape. In either case, the aversive maternal tape has an arousing effect on both paranoids and nonparanoids under these experimental conditions.

It is clear that the avoidance of blame is the single most relevant factor affecting the attributions made by paranoid schizophrenics. In all their attributions of blame, those made before and after the tape, and those made to Similar and Different stimulus persons, paranoids tended to attribute blame away from the stimulus person. While they dealt differentially with attributions of cause, depending on the experimental manipulations, their attributions of blame reflect their high need for blame avoidance (Chambers, 1975) and the clinically observed tendency to transfer blame (Sullivan, 1965).

Another important aspect of the attributions of blame made by paranoids is the tendency to attribute blame to bad luck. This is again consistent with paranoids' avoidance of blame when punishment or retaliation are possible. Since the "other persons" category referred to peers and persons in authority such as doctors, nurses, and aides, the paranoids apparently felt more comfortable about transferring blame to an ambivalent and possibly less threatening category.

Nonparanoids did not internalize blame as they did cause, and the tape did not produce a change in their attributions of blame. Perhaps another defense mechanism, such as denial, was operating when nonparanoids attributed blame. The results suggest either that blame is not relevant to nonparanoids or that they respond to it with a defense mechanism that makes it appear that they aren't threatened by it.

The contribution of this research is to add to our understanding of the ways in which schizophrenics attribute causality and blame, and to extend defensive attribution theory to an institutionalized population. Although many questions have been raised, we have found that paranoid and nonparanoid schizophrenics tend to make defensive attributions consistent with their pathology. Future research may help to discover the dynamics behind these attributional patterns.

Appendix

Appendix A

Ullmann-Giovannoni Scale

	Reactive
1. I am married now.	<u>True</u>
2. I have fathered children.	<u>True</u>
3. I have been married.	<u>True</u>
4. Before I was seventeen I had left the home I was raised in and never went back except for visits.	<u>True</u>
5. When I leave the hospital, I will live with one or both of my parents.	<u>False</u>
6. As a civilian I have worked steadily at one job or for one employer for over two years.	<u>True</u>
7. I finished at least one year of education after high school--trade apprenticeship, business school, college, etc.	<u>True</u>
8. Adding up all the money I earned for the last three years, it comes to less than \$700, before deductions.	<u>False</u>
9. In my teens I was a member of a group of friends who did things together.	<u>True</u>
10. I hardly ever went over to another kid's house after school or on weekends.	<u>False</u>
11. When I was in school I didn't like Physical Education classes.	<u>False</u>
12. Alcohol has nothing to do with my difficulties.	<u>False</u>

13. I have paid regularly to buy a house. True
14. More than once in the last year I have stayed on after some group meeting and talked with some other members about something that went on. True
15. Shortly before I came into the hospital there was some major change in my life--such as marriage, birth of a baby, death, injury, loss of job, etc. True
16. I have been deeply in love with someone and have told them about it. True
17. In the kinds of work I do, it is expected that people will stay for at least a year. True
18. My top wage in the last five years was less than \$1.50 an hour. False
19. I have earned my living for longer than a year at full-time civilian work. True
20. I have had to stay in a mental hospital for more than one year at a time. False
21. Within the last five years I have spent more than half of the time in a mental hospital. False
22. In my teens I was a regular member of a club or organization that had a grown-up who came to meetings (Scouts, school club, 4-H, church youth club, etc.) True
23. In my teens there was more than one girl with whom I had more than two dates. True
24. When I leave the hospital, I will live with my wife. True

Appendix B

Attribution of Responsibility Questionnaire

(modified)

1. Perry was watching a house that was burning down. As he watched, a small child appeared at a window and called for help. Most of the people thought there was so much fire that no one should go in the house. Perry ran in and pulled the child to safety. Is Perry responsible for saving the child's life? (Level IV)
2. One day several of Perry's classmates were playing by the lake. Perry was not with them. They found a fishing rod in the bushes and broke it into pieces. Is Perry responsible for the fishing rod being broken? (Level I)
3. Perry carried a bucket of water to the yard so that he could wash the family car. Then he went back to get the soap. A thirsty bird flew down and got a drink of water from the bucket. Is Perry responsible for the bird getting a drink of water? (Level II)
4. A man grabbed Perry by the shirt collar and threatened to hurt him if he did not splash mud on an old man who was walking by. Perry splashed the mud on the old man's best shoes. Is Perry responsible for the old man's best shoes getting mud on them? (Level V)
5. Perry woke up in the middle of the night and saw that the house next door was on fire. He was frightened and woke up his father to ask him if he could sleep in his parents' room. His father

ran to the house and saved two old people who were trapped in the burning house. Is Perry responsible for saving the two people?

(Level III)

6. Perry called a boy and asked him to come over to his house to see his birthday presents. On the way to Perry's house the boy was struck by a car and was killed. Is Perry responsible for the boy's death? (Level II)
7. One day when Perry was absent from school some of the boys in his class helped a lady pull weeds from her garden. Is Perry responsible for the weeds being pulled from the garden? (Level I)
8. Perry was helping his father unload some rocks from a truck. One of the rocks he threw missed the pile and crashed through the window of a nearby building. Is Perry responsible for the broken window? (Level III)
9. A little boy was lost in a large cave. Everyone was afraid to go in the cave because they might get lost too. A much bigger boy told Perry he would knock his head off if he did not go hunt for the lost boy. Perry went into the cave, found the boy and brought him to safety. Is Perry responsible for saving the little boy's life? (Level V)
10. Perry put medicine in a coca cola and gave it to another boy. The boy drank the coke and got sick from the medicine. Is Perry responsible for the boy getting sick? (Level IV)
11. After supper, Perry put some meat scraps into the garbage can. A hungry dog came along and ate the meat scraps. Is Perry

- responsible for the hungry dog getting some food? (Level III)
12. Perry was cutting the grass in front of his house. A rock got into the mower and was thrown across the yard. It broke a window in the house next door. Is Perry responsible for the broken window? (Level II)
 13. Perry had been playing with classmates in a tree. While he was gone home for lunch, some of the boys decided to hurt another boy. They pushed him out of the tree and his neck was hurt. Is Perry responsible for the boy getting hurt? (Level I)
 14. Perry saw a boy building a block tower. Perry threw a ball at the tower and knocked it down. Is Perry responsible for the tower being knocked down? (Level IV)
 15. One day it was raining very hard. A man told Perry he would whip him if he did not take an umbrella to a woman getting out of a car in the rain. Perry took the umbrella to the woman and she was able to get in out of the rain without getting wet. Is Perry responsible for the woman not getting wet? (Level V)
 16. One day when Perry was at the dentist's office, the boys in his class went swimming. While there, they saved a little boy from drowning. Is Perry responsible for saving the little boy's life? (Level I)
 17. Perry had an old bicycle which had no brakes. He told his sister to ride it to the store several blocks away. When she came to a busy street, she could not stop the bicycle and ran into the path of a car and was hurt. Is Perry responsible for his sister being

- hurt? (Level III)
18. Perry saw someone's coat on the floor and picked it up so that it would not get dirty. Is Perry responsible for the coat not getting dirty? (Level IV)
 19. A small child had fallen into a swimming pool and was drowning. Perry didn't know the child was in the pool, but just at that time he was draining the pool so he could clean it. The water ran out quickly and the child's life was saved. Is Perry responsible for saving the child's life? (Level II)
 20. Another boy tried to hurt Perry with a large stick. Perry grabbed the stick and hit the other boy over the head with it to keep from being hurt himself. Is Perry responsible for the boy being hurt? (Level V)
 21. Perry was absent from school the day his class lost the relay race. Is Perry responsible for his class losing the relay race? (Level I)
 22. Perry was fishing when he saw a boy drowning in the river. Perry could not swim, but he fought his way out to the boy and pulled him out. Is Perry responsible for saving the boy's life? (Level IV)
 23. While Perry was cleaning the garage, he found some old shoes. He put them on the trash pile. The garbage man found them and kept them for himself. Is Perry responsible for the man getting some shoes? (Level II)
 24. A man was twisting Perry's arm so much it hurt. He ordered

- Perry to break a store window. Perry broke the window. Is Perry responsible for the window being broken? (Level V)
25. Perry was taking his little sister to school. She started to step into a busy street but Perry wanted to look in a store window, so he pulled her back. This kept his sister from being hit by a speeding car. Is Perry responsible for saving his sister's life? (Level III)
26. Perry told some people about a short-cut to the next town. They took the short-cut but as they were crossing a river the bridge broke. Their car fell into the river and the people were hurt. Is Perry responsible for the people getting hurt? (Level II)
27. Perry was at home in bed the day his class won the baseball game. Is Perry responsible for winning the baseball game? (Level I)
28. Perry was at a party. When the cookies were passed, Perry took five. There were not enough to go around and one of the boys got none. Is Perry responsible for the boy not getting any cookies? (Level III)
29. A small child had crawled into the pasture with a very mean bull that had gored several people. The little boy's brother who was bigger than Perry picked up a stick and told Perry that he would hit him if he did not go into the pasture and save the child. Perry dashed in front of the angry bull and pulled the child to safety. Is Perry responsible for saving the child? (Level V)

30. Perry was playing with another boy. He became angry with the other boy so he hit him with a stick he had been playing with. Is Perry responsible for the boy being hit by the stick? (Level IV)
31. Perry had tickets to the movies but he could not go. He left the tickets on the hall table. His sister found the tickets and went to the movies. Is Perry responsible for his sister getting free tickets? (Level III)
32. Perry was coming through the door into a restaurant. Just as he opened the door, a waitress was passing with a tray of dishes. The door struck her arm, causing her to drop the tray and break the dishes. Is Perry responsible for the dishes being broken? (Level II)
33. One day after Perry had gone home from school, some other boys in his class beat up a child. Is Perry responsible for the child being beaten up? (Level I)
34. Perry threw some broken glass into a man's driveway so that he would get a flat tire. The man drove in and got a flat tire. Is Perry responsible for the man getting the flat tire? (Level IV)
35. Perry's mother said she would whip him if he did not cut the grass. Is Perry responsible for the lawn looking nice? (Level V)
36. One day after Perry had gone home from school, the boys in his class pulled a small child from the path of a speeding automobile. Is Perry responsible for saving the child's life? (Level I)
37. Perry was playing with some bricks on the roof of his father's garage. When he was tired of playing with the bricks, he began

tossing them down to the sidewalk. A woman coming down the sidewalk was struck on the head and was hurt by one of the falling bricks. Is Perry responsible for the woman being hurt?
(Level III)

38. While he was on the way to the park, Perry found a newspaper. When he got to the park, he gave it to an old man sitting on a park bench. Is Perry responsible for the old man getting a free newspaper? (Level IV)
39. Perry was making telephone calls to several of his friends. When the phone rang in one home he called, it awakened a man who was sleeping near a broken gas stove. If he had not awakened, the leaking gas would have killed him. Is Perry responsible for the man waking up in time to escape death? (Level II)
40. Perry was taking some money to the bank for his father. A man attacked and threatened him with a knife if he did not give him the money. Perry picked up a rock, hit the man on the head and hurt him. Is Perry responsible for hurting the man? (Level V)

Appendix C

Attribution Incidents

1. Jane was lying in bed smoking. Her doctor had increased her medication and she felt drowsy. She fell asleep and the bed caught fire. Who caused the bed to catch fire? Who is to blame for the bed catching fire?
2. Jane was late for dinner because she had been doing an errand for the nurse. She ran all the way to the cafeteria. She bumped into a cafeteria employee who was carrying a tray of glasses. The employee dropped the tray and all the glasses broke. Who caused the glasses to break? Who is to blame for the broken glasses?
3. A patient was mopping the floor of her ward. She left the mop leaning against the wall while she helped another patient make her bed. While she was away, Jane tripped over the mop, lost her balance and fell, spilling the bucket of water. Who caused the water to be spilled? Who is to blame for the spilled water?
4. Jane was in occupational therapy washing some paint brushes in the sink when the teacher asked her to run an errand. She left to do the errand, but forgot to turn off the water all the way. While she was gone the sink overflowed and the water spilled on the projects of several other people. Some of the projects were ruined. Who caused the projects to be ruined? Who is to blame for the ruined projects?

5. Jane was in gym class learning to roller skate. Her teacher wanted her to try to go around the gym alone. She started off okay but when she tried to stop she couldn't and she banged into the gym door. The glass in the door broke. Who caused the glass to break? Who is to blame for the broken glass?
6. Jane and a group of patients went swimming at a nearby river. After swimming the teacher told everyone to go change. Jane was slow in changing and the group had to look for her. The group was late for supper. Who caused the group to be late for supper? Who is to blame for the group being late?
7. Jane and another patient were doing exercises in the day room. The other patient told some jokes and they started laughing real hard and playing around. Jane lost her balance and fell back into the TV. It broke. Who caused the TV to be broken? Who is to blame for the broken TV?
8. Jane asked the nurse to give her a pass so she could go to town for a job interview. The nurse said no and she got angry and turned around really fast. When she turned around, she bumped into an aide who was carrying a tray of medications. All the medications were spilled. Who caused the medications to be spilled? Who is to blame for the spilled medications?
9. A patient was sitting in the day room smoking but left for a few minutes when the nurse motioned for her to come to the nurses' station. She left a pack of cigarettes on the couch. Jane came into the dayroom to watch TV and sat on the patient's

- cigarettes, crushing them. Who caused the cigarettes to be crushed? Who is to blame for the crushed cigarettes?
10. Jane was in gym class throwing a medicine ball with some other patients. A friend motioned to her to throw the ball to him. Jane threw it and the ball hit her friend in the face. His glasses broke. Who caused the glasses to be broken? Who is to blame for the broken glasses?
11. Jane was in a store shopping for a gift. She saw something she really liked and wanted to touch, but it was very breakable and she thought she shouldn't. A friend who was with her urged her to pick it up anyway. She did and she dropped it. The gift broke. Who caused the gift to break? Who is to blame for the broken gift?
12. Jane was in the cafeteria line waiting for supper. A friend who was way ahead in the line saw her and asked her to come up and cut into the line. When she cut in, she bumped into someone with a tray. The tray fell and the food splattered everywhere. Who caused the food to be spilled? Who is to blame for the spilled food?

Appendix D

Instructions

Instructions for the Stroop test

First I am going to ask you to take a color-naming test. These are patches of four different colors--red, blue, green, and orange. You are to tell me the color of each patch as it appears on a page like this one. Time is important so please name the colors of the patches as quickly as you can without making errors. Your performance will be timed. Begin at the top of the page and work each row from left to right. Don't leave out any patches. Do you have any question? Okay, ready, begin.

These are the names of four colors printed in different colored inks. For example, the name "orange" may be printed in either blue, red, green, or orange ink. Here are some samples. This time you are to read the word that is printed. Read these as quickly as you can without making errors because time is important. Your performance will be timed. Please begin at the top of the page and work each row from left to right. Don't leave out any words. Any question? Okay, ready, begin.

Now I would like you to name the color of the ink that the word is printed in. Don't pay any attention to the word itself. Work as quickly as you can without making mistakes because time is

important. Again, your performance will be timed. Would you please try these samples first? Any questions? Okay, ready, begin.

I'm going to put these earphones on you now and you will hear a mother speaking to her son. While you are listening to the tape I am going to ask you to take the color-naming test again, starting with the color patches. On the first page, please name the color of each patch. On the next page, you will read the words that are printed on the page. Finally, on the last page you will name the color of the ink that the word is printed in. The instructions are printed at the top of each page in case you forget them.

Please remember that your work is being timed so it is important for you to work as quickly as you can without making mistakes. Begin at the top of the page and work each row from left to right. Don't leave out any patches or words. Do you have any questions? I will start the tape now. (One minute). Okay, ready, begin.

Instructions for the 12 incidents

We will use the earphones and tape recorder later, but they aren't working now.

I am going to read 12 stories to you. After I read each story I would like you first to show me who causes what happens in the story and then to show me who is to blame for what happens.

You'll do this by using this slot board and these chips. The board has three slots in it that stand for something. This slot

stands for the "main person"--either Jane or William, depending on the story. This stands for "other persons" like friends, nurses, doctors, or aides. This last slot stands for "bad luck." These chips stand for the total amount of cause or the total amount of blame. The idea is for you to divide all of these chips up between the three slots to show first how much each of these causes what happens in the story and then how much each is to blame. The amount of chips you put in each slot shows how much you think it causes what happens or how much you think it is to blame for what happens. The more chips you put in a slot, the more cause or blame you are showing for that slot.

For example, suppose I told you about a guy named Dave, who got in trouble for breaking a window. He was throwing a ball around with some of his friends. He threw it real hard to a guy named Mike. Now Mike missed it and the ball hit a window and the window broke. The question is, who caused and who is to blame for the broken window.

Okay, first you show me who caused what happened. We say someone causes something when they are the person who makes the thing happen. This slot is for Dave since he is the main person in the story. If you think Dave caused the window to be broken since he threw the ball, you put lots of chips in his slot. If you don't think Dave caused the broken window even though he threw the ball, then you wouldn't put any chips in his slot. This slot is for "other persons." If you think Dave's friend Mike caused the window

to be broken since he didn't catch the ball, you put lots of chips in the "other persons" slot. If you think that Mike didn't cause the broken window, even though he missed the ball, then you would put only a few chips in his slot, or none at all. Now this is the "bad luck" slot. If you think that neither Dave nor his friend Mike caused the window to break, but that it was because of bad luck, you put lots of chips in this slot. But if you think that bad luck didn't have much to do with the window's breaking, then you would put only a few or no chips in this slot.

Finally, you can share the cause between the three slots in any way you want--put all of them in a single slot, some in each slot, or split them among any two slots, just as long as you use all the chips. Why don't you distribute the chips now and show me who or what you think caused the broken window.

Now, when showing who is to blame for what happened, that is, who might deserve to be punished, you use all the chips again, putting chips in the slots according to how much or how little blame you think belongs there. You can put whatever amount of chips you want to in each slot as long as you use all the chips. Do you have any questions? Okay, who or what do you think is to blame for the broken window?

This story about Dave is just an example we use to show you how to use the board and chips. The stories I will read now are different, but the way you show me who causes and who is to blame for what happens is the same.

Instructions for women subjects: Similar-different

You know, Jane, who is the main person in the next three stories, is very similar to you. She is also _____, _____, and _____. I want you to remember that she is very similar to you when showing me who causes and who is to blame for what happens in the stories about her. Please remember that someone causes something when they are the person that makes the thing happen. When someone is to blame, they might deserve to be punished for what happens.

read three stories

You know, William, the main person in the next three stories, is very, very different from the way you described yourself. He is not like you at all. I'd like you to remember that when showing me who causes and who is to blame for what happens in the stories about him.

read three stories--then tape

The next three stories are about William. When you show me who causes and who is to blame for what happens, please remember that he is very different from you.

read three stories

The next stories are about Jane. When you show me who causes and who is to blame for what happens, please remember that she is very similar to you.

Instructions for women subjects: Different-similar

You know, William, the main person in the next three stories,

is very, very different from the way you described yourself. He is not like you at all. I'd like you to remember that when showing me who causes and who is to blame for what happens in the stories about him. Please remember that someone causes something when they are the person that makes the thing happen. When someone is to blame, they might deserve to be punished for what happens.

read three stories

You know, Jane, the main person in the next three stories, is very similar to you. She is also _____, _____, and _____. I want you to remember that she is very similar to you when showing me who causes and who is to blame for what happens in the stories about her.

read three stories--then tape

The next stories are about Jane. When you show me who causes and who is to blame for what happens, please remember that she is very similar to you.

read three stories

The next three stories are about William. Please remember that he is very different from you when showing me who causes and who is to blame for what happens.

Instructions for male subjects: Similar-different

You know, William, who is the main person in the next three stories, is very similar to you. He is also _____, _____, and _____. I want you to remember that he is very similar to you when

showing me who causes and who is to blame for what happens in the stories about him. Please remember that someone causes something when they are the person that makes the thing happen. When someone is to blame, they might deserve to be punished for what happens.

read three stories

You know, Jane, the main person in the next three stories, is very, very different from the way you described yourself. She is not like you at all. I'd like you to remember that when showing me who causes and who is to blame for what happens in the stories about her.

read three stories--then tape

The next three stories are about Jane. When you show me who causes and who is to blame for what happens, please remember that she is very different from you.

read three stories

The next stories are about William. When you show me who causes and who is to blame for what happens, please remember that he is very similar to you.

Instructions for male subjects: Different-similar

You know, Jane, the main person in the next three stories, is very, very different from the way you described yourself. She is not like you at all. I'd like you to remember that when showing me who causes and who is to blame for what happens in the stories about her. Please remember that someone causes something when they are

the person that makes the thing happen. When someone is to blame, they might deserve to be punished for what happens.

read three stories

You know, William, the main person in the next three stories, is very similar to you. He is also _____, _____, and _____.

I want you to remember that he is very similar to you when showing me who causes and who is to blame for what happens in the stories about him.

read three stories--then tape

The next stories are about William. When you show me who causes and who is to blame for what happens, please remember that he is very similar to you.

read three stories

The next three stories are about Jane. Please remember that she is very different from you when showing me who causes and who is to blame for what happens.

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VITA

Mary Ruth Marsh Payne

Born in Ludington, Michigan, December 10, 1947. Graduated from James Blair High School, Williamsburg, Virginia, June, 1966. B.A., The Cleveland State University, June, 1972. M.A. candidate in Psychology, College of William and Mary, June, 1975.