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## The Influence of Experimental Stress upon Selected Rorschach Variables

William P. Brady

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William P. Brady

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## INTRODUCTION

Studies on the effect of stress upon Rorschach variables have produced conflicting results. Eichler (1951) investigated the influence of a stress-produced anxiety on certain Rorschach variables. The control group was given the standard series of plates under standard conditions. The experimental group was first given subtraction problems with intermittent electric shocks and then was given the Rorschach under threat of further and stronger electric shock, although no shock was given. He found that some of the alleged indices of anxiety differentiated significantly between the stress group and control group. Shading weight increased, W decreased, total R decreased, oligophrenic details increased. Constriction as indicated by F% decreased concomitant with the increase in shading responses. Decrease in P, decrease in color weight and increase in rejections moved in the expected direction but not to a significant degree. He concluded that experimentally induced anxiety offered evidence of the validity of certain indices of anxiety, but that it could not provide crucial evidence of lack of validity of the other indices which proved to be nondifferentiating. It may be that these other indices reflect another kind of anxiety, or result from anxiety prolonged over a period much longer than that aroused in the experimental stress situation.

Williams (1947) found a high degree of relationship between performance under stress and Rorschach measures of emotional and

intellectual control. Carlson et al (1953) found no relationship between Rorschach measures and decrement in performance under stress. Goldfarb (1961) and Stopol (1954) supported Carlson's results as they found no significant relationship between performance under stress and Rorschach personality variables. A study done by Eriksen (1952) supported Carlson and Goldfarb as the results showed a lack of relationship between performance under stress and Rorschach variables. Eriksen suggested the results might indicate that the Rorschach is not a valid instrument for predicting performance under certain types of stress, such as failure information and the threat of electroshock. Cox (1954), however, found a positive relationship between level of anxiety and certain Rorschach indices. He interpreted his results to be evidence supporting the validity of certain anxiety indicators and the underlying theoretical assumptions.

Goldstein (1955) used a psychiatric population. His study indicated that six Rorschach indices differentiated between the high anxiety group and the low anxiety group. High anxiety subjects showed an increase in total R, decrease in W, and increase in number of reaction times over 15 seconds. Spivack (1964) worked with a population of 36 college males and females. The subjects were asked to respond to three pairs of Rorschach cards under three sets of instructions. One set (Be Yourself) asked the subject to "be yourself." Another set (Reveal) asked the subject to respond as if he were very anxious, had come for help and wanted

the E to know all about himself. A third set asked the subject to respond as if he were anxious but wanted to hide the fact. The Conceal set did not differ significantly from the Be Yourself set. Spivak concluded that the effect of anxiety on Rorschach responses might well be due to whether or not the subject was set by the anxiety-inducing procedure to cooperate with the examiner or whether he was set to defend himself by concealing his emotional state.

Fisher (1950) hypothesized that a gynecological examination is disturbing and embarrassing and hence, stressful. The examination was an admission physical in connection with hospitalization in a psychiatric setting. A battery of tests was administered to the experimental group immediately after the subject had a physical examination including a vaginal examination. The subjects were retested five days later. The control group underwent test and retest but not in association with the physical examination. No significant changes were found in Rorschach responses or other projective tests. Fisher concluded that the projective tests were not sensitive to the effects of embarrassment and anxiety induced in the experimental subjects. This writer would question whether the gynecological examination would in fact be particularly stressful to an adult female. It would seem that the psychiatric setting itself might be more stressful than a physical examination, and any negativism or resistance as seen by the examining psychiatrist would more likely be due to the subject's reaction to or fear of

the psychiatric setting than to the physical examination itself. The "stress" in this study seemed to be questionable.

Berger (1953) used the Rorschach in measuring a real-life stress situation. Two matched groups of 40 persons hospitalized in a TB sanatorium were used. The experimental group was tested on the day of admission and the control group was tested after at least six months of hospitalization. Some of Berger's more salient findings in the experimental group were decrease in  $\underline{R}$ , increase in  $\underline{F}$ , increase in reaction time, decrease in emotional participation with the environment (color response), and increasing stereotypy and evasiveness ( $\underline{A}$ ). Berger's findings supported the use of the Rorschach in measuring anxiety in a clinical setting. In that respect, his findings differed significantly from many other studies including some cited above. Such contradiction in findings tends to focus attention upon the possibility that real-life stress and experimental stress differ to the extent that studies involving one type of stress do not generalize to another type. Real life stress very likely differs significantly from experimentally induced stress and stress as seen in a psychiatric population.

Lazarus (1952) took a different approach. He stated that stress might inhibit or impair performance, or might enhance performance or serve as an energizer, depending upon the situation. He felt that the type of stress, emotion and motivation, and the interaction between these factors is often ignored in favor of the final result or test score. This score is merely the end product

of the subject's approach to the problem and is only a small sample of behavior. He concluded that the interaction between persons and types of stress is of prime importance.

The conflicting results as shown in the literature would indicate a need for further research into the relationship between environmental stress and Rorschach variables. The present study was designed to investigate the relationship between external stress, namely the threat of electroshock, and selected Rorschach variables.

Certain Rorschach variables are more closely associated with the relationship between the person and the environment. This study was concerned only with those variables which seem to be influenced most by external stress. Five hypotheses were tested. Klopfer (1954) indicated that the color determinants reflected the impact of the environment upon the person. Under significant environmental stress the subject would likely tend to turn from threatening external forces toward other resources, and constriction of responding would be expected. It was hypothesized that the experimental group would show a significant decrease in color responses. An increase in F% was expected as a result of external stress and the expected resultant decrease in color response. It was also predicted that the total number of scorable responses per subject would decrease under stressful conditions. Under stress subjects would be expected to censor responses to be sure their performance was acceptable. Accordingly, reaction time was expected to increase. Klopfer (1954) indicated that a high A%



may be indicative of constriction. Berger (1953) found an increase in A% under conditions of real-life stress. It was hypothesized that external stress would result in an increase in A%.

## METHOD

### Sample

The Ss were thirty junior college male volunteers, 15 in the control group and 15 in the experimental group. All subjects were age 24 or younger. The instructors of Introductory Psychology announced to their classes the opportunity to participate in this research. When it became apparent that volunteers from psychology classes would be insufficient to provide a reasonable number of Ss, announcements were made in introductory Social Science courses and posters were placed in prominent locations throughout the classroom building.

### Apparatus

Standard Rorschach plates I - X were used as stimuli. Apparatus used to generate anxiety in the experimental group were Variable Shock Apparatus, Model PR-25; Eico Electronic Mystifier, Model E-700; Waiver of Responsibility (Appendix A); Disposable hypodermic needle, 10 cc, filled with 4 cc of water, needle length 1-1/2"; 4 x 4" gauze pad saturated with red food coloring, saturated area was oval shaped with a vertical diameter of 1-7/8" and horizontal diameter, 1-5/8"; rubbing alcohol; and a 13 x 13" metal cabinet containing blinking lights to serve as a companion unit to the Eico Mystifier. The E wore a white lab coat while running

the experimental Ss. A Lafayette tape recorder, Model RKL37A, and microphone were used as a companion unit to feed responses to the simulated computer. Two 4-inch pieces of velcro were used to hold the electrode in place. A stop watch was used to take reaction time and duration of response. A cloth screen strung on a 6-foot folding wooden frame was placed so that control Ss were not able to see the experimental apparatus. The room had no windows and the dimensions were 10' x 9'6" x 4'8". Two 2 x 4' tables and two chairs were needed.

#### Procedure

The assignment of Ss to groups was decided by the flip of a coin. As a result the first S was assigned to the control group and from there on all odd-numbered Ss were assigned to the control group and even-numbered Ss to the experimental group. All Ss were asked to sign a statement which confirmed their voluntary participation. This statement was required by Lansing Community College (Appendix B). Three questions were asked all Ss regarding age, birthdate, and major. The Rorschach was administered to the control group under standard conditions (Klopfer, 1954). The following directions were given to both groups just prior to presenting the stimuli cards. At this point experimental Ss were connected to the apparatus.

This is an ink-blot test. The blots were originally made by dripping ink on paper and the paper was folded. Now the blots are printed up on cards. I will hand

you the blot and you are to respond freely. When you are through responding, put the card on the table.

Then card I was presented. Prior to presentation of cards I and III the E said, "Tell me what you think it might be or anything you see." Prior to presenting card II the E said, "Tell me anything you see or what you think it might be." On card I, only if the S gave only one response and put the card down, the E said, "Some people see more than one thing." After card III stimuli were presented without comment.

All apparatus was activated prior to the entrance of experimental Ss, and the screen was removed which concealed the equipment from the control Ss. The Eico mystifier and the bank of lights were blinking as the experimental Ss entered and the E was wearing a white lab coat. They were seated at a table facing away from the equipment until the forms were signed. After signing the statement required by Lansing Community College, each experimental S signed a responsibility disclaimer. Then they were seated next to the table containing the blinking simulated computer and other apparatus and asked to place their left arm, palm up, along the edge of the table. At this point the hypodermic needle and "bloody" (red food coloring) gauze pad were in full view. The E took a gauze pad and began to clean an area of skin on the S's forearm with rubbing alcohol. As the E attached the electrode of the shock apparatus, he provided S with the following information:

This is an electrode. It is hooked up to a shock apparatus. Each of your responses will be instantly analyzed by this computer. If your response is not acceptable,

you will receive an electroshock like this. (A 70 v. shock of less than one second duration was administered.) All Ss that tried to determine what type of responses would be acceptable were told by the E, "I cannot answer any questions."

Stimulus cards were then presented as described above.

In order to check the scoring for examiner bias, ten protocols, five from each group, were scored by an independent examiner. Each protocol was assigned a number and the numbers were put into a container. Numbers were drawn until five from each group had been selected. The ten protocols were then given to the independent scorer who has had considerable experience in Rorschach scoring.

It was decided beforehand that all Ss whose responses were abnormal quantitatively and/or qualitatively, would be dropped from the experiment. One S fell into that category, so that 16 Ss were actually tested for the control group.

## RESULTS

The data were tested statistically with a one-tailed t-test between two uncorrelated means (DuBois, 1965). All variables were tested at the .05 level of confidence.

Analysis of the data supported two of the five hypotheses. The decrease in color responses was highly significant at the .01 level (t is 2.467), and an increase in F% was significant at the .05 level (t is 1.701) (Table 1). The decrease in scorable total responses, increase in reaction time, and increase in A% were not significant at the .05 level.

In comparing the scoring of the E with the independent scorer by testing the significance between the means with a two-tailed t-test (DuBois, 1965), there was no significant difference in the scoring of color, form, or animal responses at the .05 level of confidence (Table 1). The minor difference in R could be attributed to preferential bracketing. Other minor differences in scoring were probably the result of individual scoring preferences. Since there was no significant difference between the scoring of E and the independent scorer, the influence of examiner bias was negligible.

The results were also analyzed using the one S that was dropped from the experiment because of an abnormal record. His score did not appreciably affect the results.

TABLE 1

Summary of t-Values Obtained Using the Uncorrelated Means

	<u>Number of Subjects</u>	<u>Reaction Time</u>	<u>Number of Responses</u>	<u>Animal Content (A%)</u>	<u>Form (F%)</u>	<u>Color (C%)</u>
Without Abnormal Subject	30	.03	.61	.87	2.10*	2.80**
Comparison E and Ind. Scorer	10		.06	.26	1.54	.26

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\* Significant at .05 level

\*\*Significant at .01 level

## DISCUSSION

Scoring guidelines (Klopfer, 1954) indicate that movement is the primary determinant, and other, color, for example, would be additional determinants if present. Additional determinants are usually given one-half weight in scoring. Since this study was most concerned whether the Ss perceived color or denied it, color responses were given full weight and a color percent or C%, similar to A%, was used to calculate the results.

The analysis showed that the measures used to generate anxiety did influence the color and form determinants. Since the response to color decreased significantly in the experimental group, the result supports the theoretical relationship between the person's relationship to the environment and response to color on the Rorschach. Form and color are not unrelated. If color responses decrease, a number of other determinants could increase. Form is an elemental determinant and, thus, would be expected to increase in the presence of external stress. The study supported the work of Berger (1953) who found an increase in F% and a decrease in color responses.

The prediction regarding animal content was not confirmed. In theory, significant emotional stress should precipitate constriction. One consequence of this constriction might be a stereotyped approach to content. Animal content is elemental, and under threatening conditions a person might more easily resort to animal



content than to human or other complex content. Berger's (1953) research with real-life stress showed a significant increase in animal content. This study did not support the Berger study or the theory. The difference in results between this study and Berger's study might be due to differences in sample bias, but a more important factor seemed to be the difference in type of stress. In Berger's study most of the variables tested were significant or approached significance. Differences in results, then, might well be due to differences in types of stress. Real-life stress very likely has a different impact on persons than experimental stress. It is also likely that experimental stress and real-life stress have some elements in common, since the results on color and form variables supported Berger's findings.

The analysis showed that there was no significant difference in number of scorable responses. Berger (1953) found a decrease in total responding. In this study there was a tendency towards increased responding on the part of experimental Ss. This is consistent with the findings of Goldstein (1955) that experimental stress significantly increases total responding. The experimental stress seemed to motivate some Ss. In the experimental group four Ss had R of 50 or greater. The highest R in the control group was 46. In some experimental Ss the conditions of stress seemed to suppress responding as was predicted. In the control group only two Ss gave 20 or less responses, while in the experimental group five Ss gave 20 responses or less. The stress, then, seemed to motivate some

Ss to respond while it tended to inhibit responding in others. This effect is consistent with Lazarus (1952) who found that stress could either inhibit or energize.

The results of this study also showed that the stress did not affect reaction time to the extent that it took experimental Ss longer to initiate responding to the cards. Goldstein (1955) and Berger (1953) both found that Ss under stress took significantly longer to begin responding. Most control Ss in the present study seemed to take a guarded approach. Possibly, they perceived a personality test as being threatening, and also they might have been threatened by the experimental setting. It is very probable that the stress used was not sufficient to consistently suppress initial reaction on all cards. Some Ss seemed to recover and reaction time grew shorter as the shock became more remote in time. Others seemed to be motivated by the shock and responded quickly on card I. The reaction times and total number of scorable responses illustrate the inhibiting and energizing effects of the stress.

A student population is not representative of the general population. Furthermore, volunteer students are not representative of the general student population. Therefore, the results are not directly applicable to a general junior college population.

The study has implications for further research. A test-retest schedule where one group would take the Rorschach under stressful conditions and later under standard conditions would be a good way to investigate the relationship between stress and Rorschach

variables. A second group would then be run under standard conditions first. Research could also be conducted to note the effect of external stress on Rorschach variables that are generally associated with inner processes (movement and shading). Finally, more studies should be done using conditions of real-life stress, because this type of research seems to be most helpful in increasing knowledge about testing programs in the community.

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APPENDIX A

Waiver of Responsibility Form

WAIVER OF RESPONSIBILITY

I, \_\_\_\_\_, am participating  
(print name)  
in this experiment of my own free will and I agree to cooperate  
to the best of my ability. I do not hold the experimenter,  
William Brady, Western Michigan University, or Lansing Community  
College responsible for any injury or ill-effects that may occur  
as a result of my participation in this experiment.

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(date)

APPENDIX B

Statement of Voluntary Participation Form

I, \_\_\_\_\_, am participating  
(print name)

in the experiment in AVT Lab Room F of my own free will.

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(date)

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