Examiner variables in human figure drawings

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The University of Montana
"EXAMINER VARIABLES IN HUMAN FIGURE DRAWINGS"

by

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INTRODUCTION

The purpose of this study was to investigate the effects of examiner variables on the behavior of subjects in a controlled observation situation. Specifically, this study investigated effects which a male or female examiner's presence and absence had upon human figure drawings produced by Ss in an individual testing situation.

Although the experimental task, e.g., the production of human figure drawings, is fairly specific, the implications of this area of research are far broader, and in fact pose a major methodological and theoretical problem in any study in which an experimenter or examiner is present in the test situation for the purpose of observing and recording the behavior of a subject. As Edwards (1964) has remarked, "Although psychology, on occasion, has been defined as the science of human behavior, it is obvious that behavior does not occur in a vacuum but always in a particular setting or environment" (p. 5).

Psychologists and other scientists interested in the behavior of organisms have typically attempted to study and describe stimulus, response, and response-inferred organismic variables. In a broad sense every psychologist works directly with stimulus and response variables some of which have, at one time or another, been systematically studied in a controlled observation situation. Realizing that behavior does not occur in a vacuum, psychologists have proceeded to use the controlled situation as the "particular setting or environment" in which systematic observations may be carried out.

The examiner, as a variable which influences the subject's
behavior, has been investigated in many different ways. An analysis of examiner variables in test performance has been provided by a number of researchers (Joel, 1949; Sarason, 1954; Bernstein, 1956; Khaling, 1961; Rosenthal, 1963). Research findings support the hypothesis that significant examiner variables include age, sex, race, professional and socioeconomic status, appearance, and such behavior characteristics as self-confidence, aggressiveness, responsiveness and social warmth (Anastasi, 1961).

A survey of studies investigating specific effects of examiner variables indicates that the major focus of research attention has been concerned with individual examinations and projective techniques rather than the experimental laboratory. In support of this observation, Rosenthal (1962a) made the following statement: "The role of the clinician or interviewer in influencing his patient or respondents unconsciously has been investigated experimentally. Somehow, though, the examiner's role in the experimental situation has remained sacrosanct as far as research is concerned" (p. 662).

Anastasi (1961) is careful to point out that "all testing will to some extent be subject to social and situational interaction" (p. 66). Rosenthal (1962a) attempts to demonstrate that examiner effects are not limited to the testing situation in which the subject is a human being. He conducted a study to determine the extent to which the examiner himself might be a relevant but constant variable affecting the behavior of planaria, an invertebrate placed low on the phylogenetic scale. He found that there was a significant examiner effect upon the performance of planaria. Another investigator (Brogden, 1962) has also
suggested that the experimenter variable could very well be a factor in animal conditioning.

Although there is research evidence to substantiate the contention that the experimenter or examiner constitutes an important variable in any observation situation, the remaining review of research material, which specifically relates to examiner variables and test performance, will be concerned with tests using projective techniques. The review of literature will proceed from general to specific in the following order:

1) a survey of reviews dealing with E variables;
2) review of specific studies relating to E variables in projective testing, and
3) an evaluation of the findings in terms of their theoretical implications.

Khaling (1960) presented a survey of studies on the effects of interpersonal and situational variables on projective test performance. One of the purposes of this paper was to review the considerable research evidence that the examiner is an important variable in the area of projective testing. In his survey Khaling states that studies which have investigated interpersonal influences between examiner and subject are relatively recent in origin.

In this paper Khaling also presented what he called "the greatest deterrents to exploration of this question" (p. 67). First, the notion of examiner influence struck at the heart of the "X-ray" concept of projective techniques first expressed by Frank (1939). Second, the extreme complexity and subtlety of the interpersonal testing situation,
discussed by Schafer (1954), made experimentation very difficult to carry out.

Such complexity is expressed in a research article entitled, "The Interpersonal Equation in Projective Methods" in which Joel (1949) remarked that "Even if it were possible for the examiner always actually to feel the way he pretends he does, we should not forget that the subject reacts not only to the examiner's real attitude, but also to what he thinks the examiner's attitude is" (p. 480).

With a growing sophistication required by those using psychological tests, a number of writers explicitly commented on the influence in projective testing of factors other than the subject's personality. One of the first to delineate the subjective factors in the Rorschach was Schectel (1945). He described four common elements in the Rorschach situation as being (a) the relationship of E and S; (b) the assignment of the task by E to the S; (c) the E's need to interpret the S's behavior, and (d) the specific qualities of the task, such as the ambiguity or lack of familiarity with the stimuli. Miller (1953), Sarason (1954), and Luchins (1947) also have indicated subtle ways in which subjective forces may influence the course of projective testing.

In Maling's review (1960) of the specific examiner variables which influence projective testing, he differentiates between those studies which relate to: 1) the examiner's physical characteristics; 2) warm-cold examiner behavior; 3) operant conditioning of the S's verbal behavior; 4) the effects of the examiner as a person: no assessment of E's personality; 5) the effects of E as a person: examiner's personality assessed, and 6) the presence or absence of E
from the testing room. The present investigation will review major studies concerning examiner variables, but the major emphasis will be placed upon those studies which evaluate the effects of the examiner’s presence or absence during test administration.

Among the most obvious characteristics of an E are his sex, skin color, and body build. It is perhaps for this reason that the bulk of research investigations have been limited to studying those particular examiner variables, especially the sex variable. Each of these physical characteristics has been investigated for possible influences in a S’s response.

Studies of the relationship of sex of E to sexual responses on the Rorschach have produced conflicting results. Alden and Benton (1951) selected 100 Rorschach records of male subjects, 50 tested by female Es and 50 tested by male Es. No significant differences in either overt or covert sexual responses were found that could be attributed to the sex of E. In a similar study Curtis and Wolf (1957) obtained Rorschach records from 36 male veterans. They compared the records with respect to overt and covert sexual responses as given to three female Es and seven male Es. In this study statistically significant differences were obtained for the sex responses as related to sex of E.

Rabin et al. (1954) found that under some conditions the sex of the E would make a difference and that under others it did not. Subjects who had waited for Rorschach examinations in a room decorated with anatomical charts did not differ in the number of anatomical responses given to male and female Es but male Es who had waited in a room
decorated with pictures of nude women gave significantly more sexual responses to male Ss than to female Ss.

Clarke (1952) found that the male Ss gave more manifest sexual responses and more guilt responses on the TAT to a male E than to an attractive, rather seductive, female E. In another study the influence of the E's size and sex on the Draw-A-Person productions were investigated by Holtzman (1952). The findings of his study revealed that none of the 12 judges could guess better than chance either sex or the identity of E by inspecting the drawings of 40 male and 40 female Ss.

Garfield, Rick, and Nocker (1952) had two male Ss and two female E's administer TAT tests to 54 male and 56 female Ss. Neither sex of E or S nor the interaction of the sex of E and S produced significant differences. Summarizing the research findings regarding the sex of an E and the effect this variable has upon Ss is a difficult, if not impossible, task. To reconcile these conflicting results, one is provided numerous articles of criticism in methodology, and must attempt to select one which can account for experimental errors. Purcell (1953), Balle (1952), and Hamlin (1954) each possess interesting ideas and criticisms, however no general agreement exists to account for the conflicting results which have been obtained regarding the sex of E as a variable.

In studying the skin color of the examiner as a variable Ries, Schwartz, and Cottinham (1955) investigated the responses of negro and white Ss to negro and white stimulus figures on TAT cards. These TAT cards were administered by negro and white Es. The results obtained in this study indicated that skin color did not affect the length of the
stories. Rankin and Cumball (1955) used galvanic skin responses (GSR) of male $S$ to a negro and white $E$ in a word association situation. It was found that higher differential GSR's were elicited in response to the negro $E$. Although this study attempted to use a more adequate objective measure of the dependent variable, the experimenters concluded that they could make no general statement about skin color as an examiner variable since the negro $E$ was nine years older and 27 pounds heavier than the white $E$.

Another approach to the study of examiner influence has been through the use of hypnosis. While no studies used hypnosis primarily to investigate variables affecting the testing situation, most experiments using hypnosis do report that $E$'s test behavior varied with hypnotic suggestion.

Goss (1959) and Vickers (1956) represent two investigators who have attempted to establish operant conditioning of $E$'s verbal behavior. With regard to their efforts Maling (1960) has written, "This method seems so promising that undoubtedly it will become more widely used in investigating examiner influences" (p. 67).

Miles (1954) predicted that $S$s, treated in a positive, friendly manner by $E$ during administration of the TAT, would produce longer stories in which hero would manifest comparatively positive attitudes and low anxiety; subjects treated in a negative, hostile manner would produce shorter stories, and the hero would manifest comparatively negative attitudes and high anxiety; and subjects treated in a neutral, business-like manner would produce stories intermediate with respect to length, quality of hero attitudes and the amount of hero anxiety. Miles
found, contrary to predictions, that Ss treated in a neutral manner produced by far the shortest stories, while the negatively and positively treated groups produced stories of equal length. However, the other predictions were supported. The E noted the marked tendency for the "hero-press interdynamics" in the stories to approximate the subject-examiner dynamics in the testing situation.

Using the Rorschach for the E's task, Winker (1956) hypothesized that test results would be significantly modified by the perfunctory verbal comments, "good," "fine," and "all right," and that test results would be significantly modified by perfunctory, nonverbal actions of smiling, nodding the head, and leaning forward in the chair. Thirty-six Ss, all males, were used to determine the effects of perfunctory verbal comments and nonverbal actions on test results, as analyzed by two judges. The results suggest that such comments as "good" or "fine" and such actions as smiling or nodding by E have a decided effect upon test results. The E indicated that examiners should be alert to the fact that even under "standardized" conditions it is possible for their behavior to be reflected in test results.

Van Krevelen (1956a) conducted an experiment using the Scandi test to study subject-examiner interaction upon test performance. Nineteen "normal adult females" took the Scandi test under two conditions: in one they administered the test to themselves, and in the other they were tested by E. Then profiles for the two series were compared the following results were noted: 1) Ss were more consistent in their reactions to individual photographs when the test was self administered; 2) Ss showed more plus-minus reactions when the test
was self-administered; 3) the sum of the open and plus-minus reactions was greater when the test was self-administered. It was concluded that the presence of the examiner did influence S's responses, and the above directions in which that effect seemed to operate in the group of Ss was indicated by test results.

Van Krevelen (1954b) used the "Make-A-Person" (MAP's) test in an attempt to determine whether there were significant differences between stories told to E and written by Ss when they were alone in regard to 1) the number of figures used, 2) repetition of figures, 3) particular figures used, 4) the number of words per story, and 5) emotional tone of the stories. No significant differences were found for the number of figures selected or their repetition. When Ss used the more structured background (the raft), no significant differences in the number of words per story were found, however in the more "unstructured" situation (the bare stage) a significant difference was found: stories written about the picture of the bare stage were significantly longer than those told to E.

Van Krevelen reported that "the fact that the stories written by Ss in the absence of E were significantly longer using the unstructured background may be worthy of some comment. If the clinical value of the stories bears any direct relation to the amount of verbal material contained it might prove rewarding to have Ss write their stories in the absence of the examiner in cases where such a procedure would be feasible" (p. 293).

Bernstein (1956) attempted to determine what effect the absence or presence of E has upon TAT test performance. He simultaneously
investigated two factors in test administration: 1) oral vs. written tests, and 2) the effects of presence or absence of an examiner under each method of administration. Sixty-seven female Ss were used in the study. In the present condition one of the examiners sat across the desk from the S throughout the session. All stories gathered from the four experimental conditions were rated independently by two judges. Reliability coefficients were .83 for emotional tone, .82 for outcomes, and .83 for levels of response. For the three scales, the examiner absent condition yielded a significantly higher mean score than the examiner present condition. There were no significant interactions between the two testing factors studied, nor were there significant differences between MM stories given orally and those written by Ss.

In the discussion of his findings Bernstein (1956) stated that "with the examiner absent the stories are sadder, have sadder outcomes, and show greater involvement on the part of the subject" (p. 289). He felt that these findings support Selie's (1952) suggestion that the presence of an examiner may inhibit highly emotional content.

Cassal et al. (1958) used the House-Tree-Person test to study specific effects upon Ss' drawing performance of E leaving the room while Ss draw. The following assumption was stated: "when E is in the room during the drawing, the ego defenses of S are in a state of higher mobilization than when E is absent during the drawing. Hence some constriction of behavior should be obtained and it may be hypothesized that this should be revealed in two ways: 1) items, listed by Buck (1945) and Honer (1954b) as interpretable features of the drawings, should be present in the drawings made in the absence of
The study involved 120 white adult employees applicants, with 72 Ge in the absent condition, and 58 Ge in the present condition. The results indicated that the mean number of interpretable features for the house and person differed significantly for the two experimental groups. For size of drawing, the person and the total score mean for the two groups also differed significantly. The authors stated that their study "demonstrates the need of more research aimed at identifying the many small variables which may influence projective test behavior" (p. 159). To this statement the present E is most definitely inclined to agree.

Although it appears reasonable to assume that situational and examiner variables can and do have significant effects upon test performance, research evidence for substantiating the effects of these variables appears inexcusable. In the studies cited, investigators have attempted to isolate E variables to which a E responds in the testing situation. Studies designed to elucidate specific E variables such as sex, skin color, and body build have produced conflicting results and typically lack theoretical basis and methodological precision.

Partial reasons for this state of affairs may be better understood when one is reminded of the fact, as Nicholson (1951) points out, that "clinical research has derived its orientation not from science qua science but from attempted application of scientific knowledge, concepts, and methods to individuals" (p. 21). It seems that in the process, research workers developed their own concepts and methods
which are not easily amenable to scientific investigation. Clinical
application of scientific knowledge to the individual has served to
provide a variety of situations in which \( E \) variables operate, but the
concepts and methods which have been developed are not well suited for
the study of these variables.

With increasing evidence that \( E \) variables operate in most
clinical situations, the central focus of interest to the practicing
clinician is not the abstract variable but is still the individual
patient. MacFarlane (1951) contends that "he [practicing clinician]
is troubled by the very notion of the 'isolated variable'. To him,
a multiplicity of variables appears to be interacting in all life
situations, and to behave very differently in different combinations.
Replicability, in the sense understood by the experimentalist, is not
possible. , ." (p. 31), and this seems most noticeable where projective
techniques have been employed. MacFarlane points out clearly that if
the clinical and personality research worker is to add to scientific
knowledge he must somehow integrate the three approaches of the
classical experimental approach in psychology, the tradition of
statistical methods, and clinical and personality research.

In order to integrate the three approaches of which MacFarlane
writes, the present study will consider the projective testing situ-
ation in light of stimulus-response theory, treating the projective
testing behavior as stimulus-response components.

Little interest has been manifest in the explanation of pro-
jective test behavior in terms of general stimulus-response concepts
and principles as evidenced by the fact that this type of behavior has
largely been ignored by Hall (1952), Tolman (1952), Skinner (1953),
and Guthrie (1952). Although Dollard and Miller (1950) attempted to
interpret psychoanalytic theory and defense mechanisms in light of
stimulus-response reinforcement theory, they also neglected to account
for projective test behavior.

Although several investigators, Sears (1953), McClelland (1953),
and Auld (1951) have stressed the necessity of accounting for projective
test behavior by relevant stimulus-response principles, these investi-
gators have confined their analyses to applying variations of the prin-
ciples of stimulus generalization and/or the Miller-Brown (1944) para-
digm of approach-avoidance conflict.

Goss and Brownell (1957) stress the necessity of integrating the
behavior which occurs during projective testing with existing stimulus-
response theory. They feel that such an effort "might well clarify
basic concepts and principles of projective testing and, at the same
time, allow for more systematic generation of hypotheses" (p. 503). In
their attempt to present a broad stimulus-response interpretation of
projective test behavior they have first analyzed the components of
projective test situations and behavior, and second, applied various
concepts and principles describing relationships among stimulus and
response events to account for occurrences of responses and response
patterns in projective test situations. The manner in which these authors
analyzed the projective test situation into stimulus and response com-
ponents is reproduced in Figure 1.

Their analysis summarizes "the classes of potential as well as
actual stimuli and responses in projective test situations for a given,
arbitrarily small, stimulus-response sequence in time" (p. 506). Two main classes of external stimuli, contextual events and properties of the test stimuli, are distinguished. Contextual events are further divided into the features of the examination room and of the examiner. Test stimuli per se make up the remaining set of immediate external events.

In projective testing, stimuli prior to the S's introduction to the test situation, the task (or test), instructions, internal state of the S, and his environment are all stimuli which combine to produce a response. During administration of a projective test the examiner attempts to hold all stimuli constant, except the test stimuli, and measure the S's responses. The novelty of the test stimuli and consequent variations in responses underlie the treatment of test stimuli as the most significant differential antecedents to responses in projective situations (Goes & Brownell, 1957).

In the present study the Draw-A-Person test (Racheev, 1949) was selected as S's task, thus no form was present to elicit the first response of the drawing situation except the instructions which were given to S. Assuming negligible cue-value for contextual features, approximations of the following sequence have been hypothesized: (a) instructions arouse verbal response produced stimuli ("Draw-A-Person") which, along with generalizations from stimulus drawing situations and material elicit the first drawing response; (b) the drawing response produces proprioceptive and external stimuli which, with persisting response-produced stimuli from instructions, evoke the second response of the sequence, and (c) this cycle continues until
Figure 1. Summary of classes of potential and actual stimuli and responses of projective test situations for an arbitrarily small stimulus - response sequence in time (Coas & Brownell, 1957).
production of a drawing sufficiently similar to previous productions which have been described as "finished" so that responses of terminating the drawing sequence are elicited (Cox & Brownell, 1957).

In the light of stimulus-response theory, a pilot study was conducted to study the examiner as stimulus, an aspect which in projective testing and the majority of previous studies, has been assumed to be constant. By varying the E as stimulus, i.e., physical absence or presence in the test situation, and holding all other contextual stimuli constant, consequent differential effects of E as stimulus were then investigated via response measures.

Specifically, this pilot study examined E's performance on the draw-a-person test while the examiner was absent from the experimental room, as compared to E's presence in the experimental room during test administration. The E was interested in determining if the time E would devote to the task of drawing a person was affected by the absence and presence of an individual test administrator.

Twenty Introductory Psychology students were assigned to one of two experimental conditions: one condition in which the E was present for the first drawing and absent for the second drawing; and a second condition in which the E was absent for the first drawing and entered the experimental room to be present for the second drawing. Ten Es were assigned to each of the two experimental conditions. Each E drew one figure in the presence of E and one figure in the absence of E. The time which an E would devote to the task of drawing a person was recorded in minutes and seconds.
The data were analyzed by means of a 2 x 2 Latin Square re-arranged by Orders, which allowed for statistical evaluation of three sources of variation: 1) the order in which figures one and two were drawn; 2) the order in which E was present or absent; and 3) the treatment effect, or E's presence or absence. An analysis of variance yielded a significant value (p < .001) only for the treatment source of variation. The treatment group that drew in the absence of the test Examiner spent a significantly longer amount of time on their drawings than E's who drew in the presence of the Examiner. Thus, this suggested that E's would devote a longer amount of time to an unstructured task, in this case the task of drawing-a-person, when the Examiner was absent from the test situation.

The results of the pilot study offer support for a stimulus-response interpretation wherein the E served as an inhibiting agent in the production of a response as measured by the time spent in drawing. The present study was undertaken to further examine the E as stimulus. First, the number of E's was increased, and certain methodological problems of the pilot study were corrected. Also, by expanding the number of E's, greater freedom for examining various aspects of E stimulus properties, such as sex of E, which was not varied in the pilot study, could be achieved. In addition, possible effects of treatment conditions were investigated.

A possible explanation of the pilot data is provided by Wells (1952) who suggested that the E has significant stimulus properties which will inhibit the production of both qualitative and quantitative aspects of E's response. More specifically, Goss and Brownell (1977)
hypothesized that E as a stimulus, would serve to elicit anxiety arousong cues resulting in an inhibited approach response. One of the purposes of the present study was to provide a test of this hypothesis.

Secondly, if it proved to be the case that subjects in the absent condition spent significantly longer at this task, then the question arises as to whether there would be appreciable differences in the drawings they produced. If it is the case that E's presence has an inhibiting effect, then this should be reflected not only in the amount of time spent drawing, but also in the amount of detail included in the drawings and the size of the drawing (Holtzman, 1952). This, then, provides a second test of the hypothesis.

According to Machover (1949) "erasure are considered as expression of anxiety" (p. 98). Based on the above assumption and within the framework of stimulus-response theory regarding E as an anxiety arousing source, number of erasures should provide a measure of anxiety which can be compared for the two treatments.

Finally, since the Draw-A-Person task is frequently used as a projective test in clinical situations, the effects of this inhibition should manifest themselves in the amount of expressive or "projective" material which E reveals in his drawings. First, one would expect experienced clinicians to be able to distinguish between drawings made in the "inhibiting" (E present) condition and those made in the non-inhibiting" (E absent) condition. Also, comparisons can be made between clinical judgements of "amount of expressive material", and actual amount of drawing under each experimental condition, to determine some of the bases for clinical judgements of amount of "projective" material.
Specifically, then, the present study tests the following hypotheses:

1) Subjects who drew a person in the experimental condition in which the E is absent will spend a significantly longer amount of time on their drawings than Ss who complete drawings in the presence of E.

2) Subjects who drew a person in the experimental condition in which the E is absent will make fewer erasures (which indicates an anxiety response) than Ss who complete drawings in the presence of E.

3) There will be a greater amount of drawing material produced in the E absent condition as measured by the rating of three naive judges.

4) There will be a greater amount of projective or expressive material produced in the E absent condition as measured by the ratings of three clinical psychologists.

5) Subjects who drew a person in the E absent condition will produce larger figures, as measured by the total height of figures, the head heights, and head to body ratios, than Ss who complete drawings in the presence of E.
METHOD

Subjects. Forty students enrolled in introductory Psychology classes at Montana State University served as Ss in this experiment. The 40 Ss, consisting of 20 males and 20 females, were randomly assigned to one of two treatment conditions, with the one restriction that each condition contain 10 male Ss and 10 female Ss. The Ss in each treatment condition were randomly assigned to a male E or a female E. Each E served as examiner to an equal number of male and female Ss. Randomization procedures were thus restricted in the following two ways: 1) Ss to treatment condition, and 2) Ss to the two Es.

Apparatus. The experiment was conducted in an experimental room which had a one-way vision screen built into the wall. The room was furnished with one table and two hard backed wooden chairs. The table was centrally positioned in the room and clearly visible from the one-way vision screen. The chairs were placed on opposite sides of the table so that E and S faced one another during the instruction periods and during the experimental condition in which the test examiner was present during a S’s drawing performance.

The standard materials of the Machover DAP test (Machover, 1949) were used by each S. The test materials consisted of two pieces of white 8 1/2 x 11 inch paper and a sharpened 2 pencil equipped with eraser. A telegraph key, fastened to the table, was pushed by E to indicate when the drawing had been completed. A stop watch was used by the E behind the vision screen to measure the time each S spent com-
Completing the drawing task.

**Procedure.** The experimental task for each S consisted of drawing two human figures. The experimental design consisted of two randomized conditions. For Condition I, the S was present in the experimental room for the first drawing and absent for the second drawing. For Condition II, the S was absent from the experimental room for the first drawing, and entered the experimental room to be present for the second drawing.

Test administration procedures in the present experiment departed from the standard procedures of the Meckover DAP (Meckover, 1949), in the following ways: 1) questions about the two completed drawings were omitted, with the exception of age of figures; 2) after completion of the first drawing, the S was instructed to "draw a person of the same sex as your first drawing."

The second departure from the standard Meckover procedure attempted to control for differing amounts of difficulty a S might have in drawing a person of the opposite sex from that selected for the first drawing. Hence, a standardized task was used for both drawings.

In each condition two sets of instructions were read aloud by E, one prior to the first drawing, the other prior to the second drawing (see Appendix A). If S asked questions prior to or during the experiment, E responded with appropriate passages from the instructions. For the condition in which E was present during S's drawing performance E attempted to hold all gestures, notions, and possible modes of communication to a minimum.
Two E's, one male and one female, served as test examiners. During the condition in which one E was present in the experimental room with a G the other E was located directly behind the one-way vision screen to first, obtain an accurate time measure; second, to count the number of times a G erased during each drawing and, third, to observe any departure from instructions or test procedures.

The length of time each G devoted to the task of drawing was measured by the time which elapsed between the first point of contact of the G's pencil with paper and the time at which the E pushed the telegraph key. The E behind the two-way vision screen recorded the time in minutes and seconds and the number of erasures per drawing.

After each G had completed the second drawing, E placed the first drawing in front of G and asked, "If this were a real person how old do you think the person would be?" The examiner marked the estimated age of the figure on the back of the drawing and then repeated the same procedure for the second drawing.

Upon completion of the task, E took G to another room and asked several questions about the experiment (see Appendix B). At the same time the other E entered the experimental room, coded the drawings, and prepared the materials for the next G. The drawings were coded in such a manner as to indicate the name of the G and the experimental condition under which the drawing was completed.

The results were treated as follows: First, time measures and number of erasures were analyzed by Replicated 2 x 2 Latin Squares rearranged by Orders (Edwards, 1953). Second, the drawings were submitted to two groups of judges. One group, consisting of three graduate
Students in the Natural Science area was asked to rate which drawing in each pair contained the greatest amount of drawing material (for instructions see Appendix C). The second group, consisting of three Ph.D. psychologists currently active in clinical practice, was asked to rate which drawing in each pair contained the greatest amount of projection or expressive material (for instructions see Appendix D). These ratings were analyzed by using Phi coefficients (Bendix, 1955). Third, the following measures, in centimeters, were taken for each drawing: (a) total body height of figure, (b) head height (from chin to top of head), and (c) the ratio of total body height to head height. Each of these three measures was analyzed separately by means of Replicated 2 x 2 Latin Squares rearranged by Orders.
RESULTS

The objective measures were used to record observable behavior in the projective test situation: 1) the time Fs devoted to the task of drawing a person was recorded in minutes and seconds, and 2) frequency tabulations were made of the number of measures made on each drawing.

The time devoted to the task was converted to minutes and fractions of minutes in order to facilitate computational procedures. Obtained variances indicated heterogeneity of variance, therefore, a logarithmic transformation of raw scores was necessary in order to meet the condition of homogeneity of variance. The transformed time data was analyzed by means of Replicated 2 x 2 Latin Squares rearranged by Orders (Edwards, 1964). An Analysis of Variance yielded a significant value (p < .01) for the treatment source of variance.

TABLE 1

Analysis of Variance of Time Devoted to Drawing Task

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<tr>
<th>Source of Variance</th>
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<td>Sex of S</td>
<td>.53816</td>
<td>1</td>
<td>.53816</td>
<td>1.79</td>
<td>*</td>
</tr>
<tr>
<td>Orders x Sex of E</td>
<td>1.13079</td>
<td>1</td>
<td>1.13079</td>
<td>3.79</td>
<td>*</td>
</tr>
<tr>
<td>Orders x Sex of S</td>
<td>.00415</td>
<td>1</td>
<td>.00415</td>
<td>.01</td>
<td>*</td>
</tr>
<tr>
<td>Sex of E x Sex of S</td>
<td>.63443</td>
<td>1</td>
<td>.63443</td>
<td>2.43</td>
<td>*</td>
</tr>
<tr>
<td>O. x S. of E x S. of E</td>
<td>.00120</td>
<td>1</td>
<td>.00120</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Error (a)</td>
<td>9.57476</td>
<td>32</td>
<td>.29927</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Periods</td>
<td>.00272</td>
<td>1</td>
<td>.00272</td>
<td>.02</td>
<td>*</td>
</tr>
<tr>
<td>Treatments</td>
<td>1.08905</td>
<td>1</td>
<td>1.08905</td>
<td>8.69</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Error (b)</td>
<td>1.78128</td>
<td>38</td>
<td>.22553</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>19.81592</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 1 indicates that the Mean Square for Orders (order in which \( A \) was absent or present) was significant at the .05 level of confidence. All other sources of variation, i.e., sex of \( E \), sex of \( B \), were non-significant.

In order to fulfill the condition of homogeneity of variance, the frequency data for erasures was transformed to a logarithmic scale. The transformed data were analyzed by means of Replicated 2 x 2 Latin Squares rearranged by Orders, the results of which are presented in Table 2.

**TABLE 2**

Analysis of Variance of the Number of Erasures Made Per Drawing

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>( F )</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orders</td>
<td>1.54109</td>
<td>1</td>
<td>1.54109</td>
<td>7.48</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Sex of ( E )</td>
<td>0.22521</td>
<td>1</td>
<td>0.22521</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Sex of ( B )</td>
<td>1.16951</td>
<td>1</td>
<td>1.16951</td>
<td>5.32</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Orders x Sex of ( E )</td>
<td>1.11722</td>
<td>1</td>
<td>1.11722</td>
<td>5.42</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Orders x Sex of ( B )</td>
<td>0.00001</td>
<td>1</td>
<td>0.00001</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Sex of ( E ) x Sex of ( B )</td>
<td>1.75513</td>
<td>1</td>
<td>1.75513</td>
<td>8.52</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>G. x S. of ( E ) x S. of ( B )</td>
<td>0.03488</td>
<td>1</td>
<td>0.03488</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Error (a)</td>
<td>6.59310</td>
<td>32</td>
<td></td>
<td>.206</td>
<td></td>
</tr>
<tr>
<td>Periods</td>
<td>.02769</td>
<td>1</td>
<td>.02769</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Treatments</td>
<td>39.337</td>
<td>1</td>
<td>39.337</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Error (b)</td>
<td>1.27358</td>
<td>38</td>
<td>.03355</td>
<td>11.74</td>
<td>&lt;.005</td>
</tr>
</tbody>
</table>

The treatment Mean Square, or the treatment conditions of \( E \) absent=present, produced an \( F \) 11.74 (\( p < .005 \)). The Order Mean Square, or the order in which \( A \) was absent=present or present=absent, was significant at the .01 level of confidence, with Condition II \( 95 \) (\( n=8.05 \)) producing a greater number of erasures than \( 95 \) in Condition I (\( n=7.22 \)).

The Mean Square for the sex of \( B \) was significant at the .25
level of confidence, with the female Bs (n=9.67) producing a greater number of errors than the male Bs (n=5.39). The interaction of sex of E with Order was found to be significant at the .05 level of confidence, and the interaction of Order, sex of E, and sex of S significant at the .01 level of confidence.

The judges' ratings were statistically treated by arranging the data in a correlation table. The proportion of "correct" choices, i.e., drawings made with E absent, for each judge and set of judges was found. The intercorrelations between judges' ratings were found by means of phi coefficients, ϕ (Edwards, 1955, p. 156). The means and phi coefficients are presented in Table 3.

**Table 3**

<table>
<thead>
<tr>
<th>Judge</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.625</td>
<td>.290</td>
</tr>
<tr>
<td>2</td>
<td>.650</td>
<td>.483</td>
</tr>
<tr>
<td>3</td>
<td>.725</td>
<td>.452</td>
</tr>
<tr>
<td>4</td>
<td>.500</td>
<td>.506</td>
</tr>
<tr>
<td>5</td>
<td>.520</td>
<td>.503</td>
</tr>
<tr>
<td>6</td>
<td>.500</td>
<td>.506</td>
</tr>
</tbody>
</table>

Diagonal and Superdiagonal Elements of the Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>Natural Science Judges</th>
<th>Clinical Judges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3</td>
<td>4   5 6</td>
</tr>
<tr>
<td>Judges</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.000</td>
<td>.622</td>
</tr>
<tr>
<td>2</td>
<td>.999</td>
<td>.487</td>
</tr>
<tr>
<td>3</td>
<td>.999</td>
<td>.055</td>
</tr>
<tr>
<td>4</td>
<td>1.000</td>
<td>.100</td>
</tr>
<tr>
<td>5</td>
<td>.999</td>
<td>.402</td>
</tr>
<tr>
<td>6</td>
<td>1.000</td>
<td>.329</td>
</tr>
</tbody>
</table>

The average proportion of the pictures drawn in the E absent condition which were subsequently chosen by the natural science judges...
as having a greater amount of drawing material was .67 (significance level). The average proportion of the pictures drawn in the E absent condition and subsequently chosen by the clinical judges as having a greater amount of projective or expressive material was .52.

Inspection of the correlation matrix indicates that the natural science judges tend toward a greater degree of agreement concerning the amount of drawing material, \( r^2 = .48 \), than did the clinical judges, regarding amount of projective material (\( r^2 = .23 \)).

Three Replicated 2 x 2 Latin Squares rearranged by Orders were used for the purpose of analyzing the three measures of total body height of figure, height of the figure's head, and the ratio of body height to head height. Tables 4, 5, and 6 present the separate Analysis of Variance summary tables for the three measures.

**TABLE 4**

**Analysis of Variance of Height of Total Figure**

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orders</td>
<td>.24</td>
<td>1</td>
<td>1.24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex of E</td>
<td>9.41</td>
<td>1</td>
<td>9.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex of S</td>
<td>.96</td>
<td>1</td>
<td>.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orders x Sex of E</td>
<td>.36</td>
<td>1</td>
<td>.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orders x Sex of S</td>
<td>46.28</td>
<td>1</td>
<td>46.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex of E x Sex of S</td>
<td>138.86</td>
<td>1</td>
<td>138.86</td>
<td>2.47</td>
<td>.05</td>
</tr>
<tr>
<td>0 x S. of E x S. of S</td>
<td>142.11</td>
<td>1</td>
<td>142.11</td>
<td>2.53</td>
<td></td>
</tr>
<tr>
<td>Error (a)</td>
<td>1798.74</td>
<td>32</td>
<td>56.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Periods</td>
<td>.88</td>
<td>1</td>
<td>.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatments</td>
<td>3.04</td>
<td>1</td>
<td>3.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error (b)</td>
<td>105.81</td>
<td>38</td>
<td>7.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2337.09</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An Analysis of Variance for the total body height of figures, found in Table 4, indicates that the F-test yielded non-significant values for all of the Mean Squares tested.
TABLE 5

Analysis of Variance of Head Height of Figures

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orders</td>
<td>.31</td>
<td>1</td>
<td>.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex of B</td>
<td>.03</td>
<td>1</td>
<td>.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex of S</td>
<td>3.20</td>
<td>1</td>
<td>3.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orders x Sex of B</td>
<td>.97</td>
<td>1</td>
<td>.97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orders x Sex of S</td>
<td>8.45</td>
<td>1</td>
<td>8.45</td>
<td>2.09</td>
<td>.15</td>
</tr>
<tr>
<td>Sex of B x Sex of S</td>
<td>3.78</td>
<td>1</td>
<td>3.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O. x S. of B x S. of S</td>
<td>4.50</td>
<td>1</td>
<td>4.50</td>
<td>1.21</td>
<td>.28</td>
</tr>
<tr>
<td>Error (a)</td>
<td>129.81</td>
<td>32</td>
<td>4.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Periods</td>
<td>.16</td>
<td>1</td>
<td>.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatments</td>
<td>.34</td>
<td>1</td>
<td>.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error (b)</td>
<td>13.59</td>
<td>38</td>
<td>.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>165.84</td>
<td>72</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5 presents the Analysis of Variance results for the head height of figures. F-tests, for all of the Mean Squares tested, yielded non-significant values.

TABLE 6

Analysis of Variance of Body Height to Head Height Ratio

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orders</td>
<td>.18</td>
<td>1</td>
<td>.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex of B</td>
<td>1.53</td>
<td>1</td>
<td>1.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex of S</td>
<td>.90</td>
<td>1</td>
<td>.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orders x Sex of B</td>
<td>2.49</td>
<td>1</td>
<td>2.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orders x Sex of S</td>
<td>9.15</td>
<td>1</td>
<td>9.15</td>
<td>2.41</td>
<td>.14</td>
</tr>
<tr>
<td>Sex of B x Sex of S</td>
<td>1.10</td>
<td>1</td>
<td>1.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O. x S. of B x S. of S</td>
<td>0.00</td>
<td>1</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error (a)</td>
<td>121.70</td>
<td>32</td>
<td>3.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Periods</td>
<td>.02</td>
<td>1</td>
<td>.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatments</td>
<td>.10</td>
<td>1</td>
<td>.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error (b)</td>
<td>28.01</td>
<td>38</td>
<td>.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>137.15</td>
<td>72</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Analysis of Variance for the ratio of total body height of figure to head height, which is presented in Table 6, indicates that all of the Mean Squares tested yield non-significant values.

**Table 7**

Mean for Time and Erasure Data

<table>
<thead>
<tr>
<th>Variables</th>
<th>MEANS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time Data (in minutes)</strong></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>4.51</td>
</tr>
<tr>
<td>Absent</td>
<td>8.25</td>
</tr>
<tr>
<td>Orders (PA)</td>
<td>4.61</td>
</tr>
<tr>
<td>Orders (AP)</td>
<td>8.14</td>
</tr>
<tr>
<td>Sex of X (Male)</td>
<td>6.78</td>
</tr>
<tr>
<td>Sex of X (Female)</td>
<td>5.97</td>
</tr>
<tr>
<td>Sex of Y (Male)</td>
<td>6.07</td>
</tr>
<tr>
<td>Sex of Y (Female)</td>
<td>7.19</td>
</tr>
<tr>
<td><strong>Erasure Data (no. of erasures)</strong></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>5.00</td>
</tr>
<tr>
<td>Absent</td>
<td>10.20</td>
</tr>
<tr>
<td>Orders (PA)</td>
<td>7.22</td>
</tr>
<tr>
<td>Orders (AP)</td>
<td>8.03</td>
</tr>
<tr>
<td>Sex of X (Male)</td>
<td>9.10</td>
</tr>
<tr>
<td>Sex of X (Female)</td>
<td>6.17</td>
</tr>
<tr>
<td>Sex of Y (Male)</td>
<td>5.35</td>
</tr>
<tr>
<td>Sex of Y (Female)</td>
<td>9.67</td>
</tr>
</tbody>
</table>
DISCUSSION

The Analysis of Variance of the time devoted to the task of
drawing a figure yielded a significant value ($F = 8.63$, $df = 1/33$, $P < .01$)
for the treatment source of variation. Hypothesis I was thus supported:
subjects who drew in the E absent condition ($m = 8.25$ min.) devoted a
greater amount of time to their drawings than $S$s who completed drawings
in the E present condition ($m = 4.51$ min.).

The position taken in this study, in light of prior research
and the stimulus-response theoretical formulations of Coas and Bronwell
(1957), was that E possessed contextual stimulus properties in the pro-
jective test situation. The substantiation of Hypothesis I offers
strong support that E not only has stimulus properties, and may be one
of the more important sources of stimulation, which acts upon a $E$'s
production of a figure drawing response.

The fact that $S$s spent significantly more time on the figure
drawing task and also produced more drawing material (Hypothesis III) in
the E absent condition supports the contention that E's presence acted as
an inhibiting factor, or, more specifically, the contention that E as
stimulus served to arouse anxiety producing cues which inhibited S's
approach response.

Additional support for this interpretation is found in S's verbal
reports following the completion of the task. Typical comments by Ss
were, "I felt pressured," "I felt more nervous when you (E) were present."
"I get nervous when people watch me draw," etc.
In answer to the question, "Did you feel you had to hurry in any way?" and, "If so, why?" typical responses were, "Yes, I felt self-conscious of drawing and wanted to get done as soon as possible." "Yes, when someone watches or is waiting for you, you get nervous and this makes you hurry." "Yes, I felt more anxiety when you (E) were there than you weren't." "Yes, I don't like to have anyone watch me draw." It would appear, therefore, that in a figure drawing task, E served as an anxiety arousing stimulus which was a factor of significance in the time a S would devote to the task of drawing.

Although the effect of the order of occurrence of the E's absence or presence yielded a significant value (F = 4.70, df = 1/35, P < .05), it is impossible to determine the extent to which the order's effect influenced the main variable of interest, the treatment source of variation. The statistical model did not allow for an Orders x Treatments examination.

The significant orders effect indicated that subjects operated differentially with respect to the condition to which they were assigned. Subjects assigned to Condition I devoted a significantly shorter amount of time to their drawings (m = 4.61) than Ss who were assigned to Condition II (m = 10.64).

The fact that orders was a significant factor with respect to the time spent drawing might be accounted for on the basis of stimulus generalization. In Condition I, if E served as an anxiety arousing stimulus which inhibited an approach response, other contextual stimuli within the room were associated with E as anxiety arousers, and might through stimulus generalization themselves acquire anxiety arousing
properties which would tend to inhibit S's approach responses even after B left the room.

The B's absence during the first drawing of Condition II would serve to minimize anxiety arousing cues, resulting in an approach response of greater magnitude than in B's absence for Condition I. The presence of B in the second drawing, while anxiety producing, would not produce as great an inhibited approach response as B's presence (Condition I), due to B's having become accustomed or adjusted mentally to other contextual stimuli within the room during the first drawing.

A second possibility, in light of B's comments following completion of both drawings, is that B's presence during the first drawing produced a not for speed, and that this was maintained during the second drawing. Worthy of mention in the fact that Periods was nonsignificant. Thus, it can be concluded that there were no practice effects.

The Analysis of Variance for the number of errors made indicates that Ss differed significantly (E - 11.74, df - 1/38, p - .005) with respect to treatment. The fact that there were significant differences in the number of times a B ceased with respect to B's absence (n = 10.20) or presence (n = 5.05) does not, however, support Hypothesis II.

According to Bandura (1969) "errors are considered an expression of anxiety" (p. 58). Based on the above assumption it was predicted that if B served as an anxiety arousing source, the number of errors would provide a measure of anxiety produced during the figure drawing task, and that the B's presence would generate a greater number of errors than B's absence. The prediction was not supported, and in
fact, the reverse was found to be the case. While these findings would
detract from the assumption that erasures are themselves indicators of
anxiety, they offer additional support for the concept that \( E \) serves as
an inhibiting stimulus, in this case inhibiting a \( E \)'s production of
erasures. In the \( E \) absent conditions \( S \)s devoted more time to their
drawings and erased a greater number of times than in the \( E \) present
conditions. That the frequency of erasures is a function solely of
amount of time spent drawing is a distinct possibility and one which
merits further investigation using a time controlled study.

Orders was also found to be a significant factor, with more
erasures occurring in Condition II (\( m = 8.03 \)) than in Condition I (\( m = 7.22 \)).
As with the time data, stimulus generalization of anxiety arising cues
to other contextual stimuli associated with the \( E \)'s presence would appear
to account for the significant Orders effect.

Other factors which were significantly related to the number of
erasures were: Sex of \( S \), and the 2-factor interactions of Orders x Sex
of \( E \) and Sex of \( E \) x Sex of \( S \). Female \( S \)s erased a significantly greater
number of times (\( m = 12.42 \)) than the male \( S \)s (\( m = 5.35 \)). The means for the
sex of \( E \) x Sex of \( S \) interaction indicated that \( S \)s drawing a person in the
presence of an examiner of the opposite sex erased a significantly greater
number of times than \( S \)s who completed their drawings in the presence of
an \( E \) of the same sex.

While erasing behavior per se, and its relation to sex of \( S \) and
sex of \( E \) x Sex of \( S \) was not of specific concern to this study, it is con-
sidered a significant finding and worthy of additional study. Further
investigation is needed to clarify the differential effects and inter-
actions of $A$ and $B$ organic variables as related to crease as well as other test behavior.

Three Natural Science Judges selected the drawing produced by $5e$ in the $E$ absent condition as having the greatest amount of drawing material 67% of the time. On the basis of these findings Hypothesis III is thus supported.

Interrater agreement between the three judges' selections was ($r^2 = .48$). Whether the amount of drawing material produced was the result of the amount of time devoted to the drawing, or due to $E$'s absence from the experimental room was not investigated by this study, but will be considered in more detail under implications for further research.

Three Clinical judges selected the drawing produced by $5e$ in the $E$ absent condition as having the greatest amount of projective or expressive material 52% of the time. This percentage is not significantly greater than chance, therefore Hypothesis IV was not supported. It might be noted that the Clinical judges, on the basis of "global" judgments, achieved a very low degree of interrater agreement ($r^2 = .23$), raising question of the appropriateness of these test materials as a basis for personality inferences when only subjective criteria are used.

The present $E$ chose not to provide the Clinical judges with one or more of the existing objective criteria, by which to evaluate the degree of projective or expressive material in figure drawings, because they seemed to measure the amount of drawing material, i.e., inclusion of eyes, ears, nose, etc., which the $E$ hoped to achieve by the use of the Natural Science judges. In a research article by Nichols (1962) the author stated that the highest degree of agreement between Clinical judges had been achieved
when they used their intuitive or "global" judgments. This certainly was not found to be the case in the present study.

Three separate Analysis of Variances for total height of figures, head heights, and head to body ratios were performed. Tables 4, 5, and 6 indicate that none of these sources of variation yielded significant values. The present findings do not support Hypothesis V: subjects who drew a person in the E absent condition did not produce larger figures, as measured by the three indices indicated above.

Halterman (1952) indicated that the size of the figures drawn by Ss may be important in the analysis of E's relationship. In the E present condition, Cassel (1958) observed that there was more constriction in the S's behavior than when E was absent during the drawing and this constriction would carry over to the size of figures drawn. This hypothesis was not supported at a significant level.

CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

In general, the results of this investigation offer support for a stimulus-response interpretation of projective test behavior. More specifically, the results support the hypothesis that the examiner's presence in the test situation serves as an anxiety producing stimulus, and it is significantly associated with the amount of drawing material and the amount of time spent drawing in a figure drawing task.

Of special importance is the finding that E's presence or absence in the projective test situation was not significantly associated with the size of the figure drawn, or the amount of projective or expressive material as measured by ratings of three clinical judges using
global or "intuitive" judgements. Instituting additional controls by providing judges with objective criterion by which to assess projective material is a suggestion for further research.

A question which was not studied in the present experiment was the extent to which the amount of drawing material might be simply the result of the amount of time devoted to the task of drawing. It seems reasonable to assume that if a S devotes more time to the task of drawing a person, he will also produce a greater amount of actual drawing material.

A possible experimental design, to test the extent to which the amount of drawing material is directly a function of E's absence or presence, would be achieved by holding time constant for both drawings and varying only the treatment condition of E's absence or presence. The greater production of actual drawing occurred as a function of the treatment condition. The present investigator can only conclude that a significant relationship exists between E's absence, the amount of actual drawing material produced, and the amount of time devoted to the task.

A factor which was not investigated in the present study was whether or not Ss were aware of the one-way vision screen, and if so, what effect this awareness would have on test performance. Knowledge about the vision screen was only indirectly studied. In the questions following test administration, Ss were asked if they had any idea there was a one-way vision screen in the testing room, and if so, did they feel that there was anyone behind the mirror watching them draw?

Seventeen Ss reported that they were unaware of the vision screen
in the testing room; 7 Ss reported that they were aware of the possibility that the mirror was something other than a mirror, but they didn't feel there was anyone behind the mirror watching them draw; 16 Ss reported that they were aware of the vision screen and felt there was someone behind the mirror watching them draw.

The present E is aware that verbal reports about such knowledge constitute an organismic variable (Edwards, 1964, p. 7-8), and therefore cannot be used to determine the extent to which E's knowledge about the vision screen affected their test performance in the present experiment. However, this could be investigated through the use of an experimental design which would differ from the present study only with respect to treatment conditions. Each S would serve as his own control, by drawing two human figures. In order to further study E as stimulus, or more specifically, to study the S's perception of E's physical proximity, Ss would be assigned to one of the following three treatment groups for the E absent condition: 1) curtains closed over the vision screen so that the E is unobserved; 2) the S informed that E will be behind the vision screen observing his drawing performance, and 3) E physically absent from the testing table but preoccupied with some task in a remote corner of the testing room. Varying degrees of E as anxiety arousing stimulus could then be studied.

Rosenthal's work (1958a, 1960) elucidates an important E variable in experimentation which he called the phenomenon of "unconscious experimenter bias." Although he does not specify the way in which Es can unknowingly or unconsciously influence the course of events in a predicted direction, he does give good support to the fact that this occurs.
One then wonders about the extent to which this 'E bias' phenomenon influenced the nature of the results obtained in the present study. Since both E's had knowledge of the hypothesis and were in hopes of obtaining results in the predicted direction, there is a possibility, however small, that in some way the E's could have unknowingly pressured the E's in the E present condition. A suggestion for further research is to replicate the present study using naive experimenters.
decorated with pictures of nude women gave significantly more sexual responses to male Es than to female Es.

Clarke (1952) found that the male Es gave more manifest sexual responses and more guilt responses on the TAT to a male E than to an attractive, rather seductive, female E. In another study the influence of the E's size and sex on the Draw-A-Person productions were investigated by Holtzman (1952). The findings of his study revealed that none of the 12 judges could guess better than chance either sex or the identity of Es by inspecting the drawings of 40 male and 40 female Es.

Garfield, Rick, and Melker (1952) had two male Es and two female Es administer TAT tests to 54 male and 56 female Es. Neither sex of E or S nor the interaction of the sex of E and S produced significant differences. Summarizing the research findings regarding the sex of an E and the effect this variable has upon Es is a difficult, if not impossible, task. To reconcile these conflicting results, one is provided with numerous articles of criticism in methodology, and must attempt to select one which can account for experimental errors. Purcell (1953), Selig (1952), and Hamlin (1954) each possess interesting ideas and criticisms, however, no general agreement exists to account for the conflicting results which have been obtained regarding the sex of E as a variable.

In studying the skin color of the examiner as a variable Ries, Schwartz, and Cottingham (1955) investigated the responses of negro and white Es to negro and white stimulus figures on TAT cards. These TAT cards were administered by negro and white Es. The results obtained in this study indicated that skin color did not affect the length of the
found, contrary to predictions, that Ss treated in a neutral manner produced by far the shortest stories, while the negatively and positively treated groups produced stories of equal length. However, the other predictions were supported. The S noted the marked tendency for the "hero-press interdynamics" in the stories to approximate the subject-examiner dynamics in the testing situation.

Using the Rorschach for the S's task Wickes (1956) hypothesized that test results would be significantly modified by the perfunctory verbal comments, "good," "fine," and "all right," and that test results would be significantly modified by perfunctory, nonverbal actions of smiling, nodding the head, and leaning forward in the chair. Thirty-six Ss, all males, were used to determine the effects of perfunctory verbal comments and nonverbal actions on test results, as analyzed by two judges. The results suggest that such comments as "good" or "fine" and such actions as smiling or nodding by S have a decided effect upon test results. The S indicated that examiners should be alert to the fact that even under "standardized" conditions it is possible for their behavior to be reflected in test results.

Van Krevelen (1954c) conducted an experiment using the Scandi test to study subject-examiner interaction upon test performance. Nineteen "normal adult females" took the Scandi test under two conditions: in one they administered the test to themselves, and in the other they were tested by S. Then profiles for the two series were compared the following results were noted: 1) Ss were more consistent in their reactions to individual photographs when the test was self administered; 2) Ss showed more plus-minus reactions when the test
investigated two factors in test administration: 1) oral vs. written tests, and 2) the effects of presence or absence of an examiner under each method of administration. Sixty-seven female $g$s were used in the study. In the examiner condition one of the examiners sat across the desk from the $g$ throughout the session. All stories gathered from the four experimental conditions were rated independently by two judges. Reliability coefficients were .83 for emotional tone, .82 for outcomes, and .83 for levels of response. For the three scales, the examiner absent condition yielded a significantly higher mean score than the examiner present condition. There were no significant interactions between the two testing factors studied, nor were there significant differences between MT stories given orally and those written by $g$s.

In the discussion of his findings Bernstein (1956) stated that "with the examiner absent the stories are sadder, have sadder outcomes, and show greater involvement on the part of the subject" (p. 289). He felt that these findings support Selice's (1952) suggestion that the presence of an examiner may inhibit highly emotional content.

Cassai et al. (1958) used the House-Five-Person test to study specific effects upon $g$s' drawing performance of $E$ leaving the room while $g$s draw. The following assumption was stated: "When $E$ is in the room during the drawing, the ego defenses of $g$s are in a state of higher mobilization than when $E$ is absent during the drawing. Hence some constriction of behavior should be obtained and it may be hypothesized that this should be revealed in two ways: 1) items, listed by Buck (1945) and Bosner (1945b) as interpretable features of the drawings, should be present in the drawings made in the absence of
Figure 1: Summary of classes of potential and actual stimuli and responses of projective test situations for an arbitrarily small stimulus–response sequence in time (Goos & Brownell, 1957).
when they used their intuitive or "global" judgments. This certainly
was not found to be the case in the present study.

Three separate Analysis of Variences for total height of figures,
head heights, and head to body ratio were performed. Tables 4, 5, and
6 indicate that none of these sources of variation yielded significant
values. The present findings do not support Hypothesis V3: subjects
who drew a person in the E absent condition did not produce larger
figures, as measured by the three indices indicated above.

Holtzman (1952) indicated that the size of the figure drawn by
E's may be important in the analysis of S and E's relationship. In the
E present condition, Casseel (1958) observed that there was more constric-
tion in the S's behavior than when E was absent during the drawing and this
constriction would carry over to the size of figures drawn. This hypo-
thesis was not supported at a significant level.

CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

In general, the results of this investigation offer support for
a stimulus-response interpretation of projective test behavior. More
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in the testing room; 7 Es reported that they were aware of the possibility that the mirror was something other than a mirror, but they didn't feel there was anyone behind the mirror watching them draw; 16 Es reported that they were aware of the vision screen and felt there was someone behind the mirror watching them draw.

The present E is aware that verbal reports about such knowledge constitute an organismic variable (Edwards, 1964, p. 7-8), and therefore cannot be used to determine the extent to which E's knowledge about the vision screen affected their test performance in the present experiment. However, this could be investigated through the use of an experimental design which would differ from the present study only with respect to treatment conditions. Each E would serve as his own control, by drawing two human figures. In order to further study E as stimulus, or more specifically, to study the E's perception of E's physical proximity, Es would be assigned to one of the following three treatment groups for the E absent condition: 1) curtains closed over the vision screen so that the E is unobserved; 2) the E informed that E will be behind the vision screen observing his drawing performance, and 3) E physically absent from the testing table but preoccupied with some task in a remote corner of the testing room. Varying degrees of E as anxiety arousing stimulus could then be studied.

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SUMMARY

This investigation evaluated the effects of an examiner's absence and presence on S's performance in a figure drawing task. The subjects consisted of 40 Introductory Psychology students (20 males and 20 females) randomly assigned to the two treatment conditions: E present-absent and E absent-present. The following response measures were used: 1) time spent drawing; 2) erasures made; 3) quantitative measures of the figures produced; 4) amount of drawing material, as evaluated by naive judges; and 5) amount of projective or expressive material, as evaluated by clinical judges.

It was found that time spent drawing, number of erasures made, and amount of drawing material produced were significantly associated with E's absence. The examiner's absence was not found to be significantly related to projective or expressive material produced or to quantitative measures of the size of figures drawn.

The results were interpreted within a stimulus-response framework, offering support to the hypothesis that E serves as an inhibiting agent by producing anxiety arousing cues which influence S's performance on a figure drawing task. It was further concluded that the evaluation of personality material from a figure drawing test without the use of objective criteria is a questionable procedure. Implications for further research were considered.
SUMMARY

This investigation evaluated the effects of an examiner's absence and presence on S's performance in a figure drawing task. The subjects consisted of 40 Introductory Psychology students (20 males and 20 females) randomly assigned to the two treatment conditions: A present-absent and A absent-present. The following response measures were used: 1) time spent drawing; 2) erasures made; 3) quantitative measures of the figures produced; 4) amount of drawing material, as evaluated by naive judges; and 5) amount of projective or expressive material, as evaluated by clinical judges.

It was found that time spent drawing, number of erasures made, and amount of drawing material produced were significantly associated with A's absence. The examiner's absence was not found to be significantly related to projective or expressive material produced or to quantitative measures of the size of figures drawn.

The results were interpreted within a stimulus-response framework, offering support to the hypothesis that A serves as an inhibiting agent by producing anxiety arousing cues which influence S's performance on a figure drawing task. It was further concluded that the evaluation of personality material from a figure drawing test without the use of objective criteria is a questionable procedure. Implications for further research were considered.
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APPENDIX A

INSTRUCTIONS FOR SUBJECTS

1st DRAWING

"What I want you to do is, simply, draw a person. The person may be any size or shape that you desire. The only thing I ask, is that you do not draw a stick figure. You may take as much time as you like, and when your drawing is finished, push the key as an indication that you are through. Are there any questions?"

2nd DRAWING

"Now, what I want you to do is, simply, draw another person. The person may be any size or shape that you desire, but this time I would like you to draw a person of the same sex as your first drawing. You may take as much time as you like, and when your drawing is finished push the key as an indication that you are through. Are there any questions?"

(For the condition in which E left the experimental room only the verbal comment, "excuse me," was made.)
APPENDIX B

QUESTIONS FOLLOWING TEST ADMINISTRATION

1) "Did you have any idea that there was a two-way vision screen in the testing room?"

2) "If so, did you feel that there was anyone behind the mirror watching you draw?"

3) "If you had to guess, how much time do you think you spent on the drawing you did when I was in the room?"

4) "How much time do you think you spent on the drawing you did when I was out of the room?"

5) "When I was present while you were drawing, did you feel that you had to hurry in any way?"

6) "Do you have any comments about this experiment?"

Please do not discuss the nature of this experiment or your task with any other student.
APPENDIX C

INSTRUCTIONS FOR NATURAL SCIENCE JUDGES

Enclosed are forty pairs of human figure drawings. We wish to find out which drawing in each pair contains the greatest amount of actual drawing.

For each pair of drawings please (a) examine each drawing separately; (b) compare the two drawings, and (c) make a judgement of which of the two drawings contains the greatest amount of drawing material, i.e. the greatest number of pencil markings.

On the data sheet, you will find spaces numbered 1 to 40.

For each of the forty pairs of drawings in the space corresponding to the number of the drawing, make a check in column A if you feel drawing A contains more drawing, or mark column B if you feel drawing B contains more drawing. Please be sure to make a judgement about each drawing, even if the choice is difficult.
APPENDIX D

INSTRUCTIONS FOR CLINICAL JUDGES

Enclosed are forty pairs of human figure drawings. We wish to find out which drawing in each pair contains the greatest amount of over-all projective or expressive material.

For each pair of drawings please (a) examine each drawing separately; (b) compare the two drawings; and (c) make a judgement of which of the two drawings contains the greatest over-all projective or expressive material.

On the data sheet, you will find spaces numbered 1 to 40. For each of the forty pairs of drawings in the space corresponding to the number of the drawing, make a check in column A if you feel drawing A is most expressive, or mark column B if you feel drawing B is most expressive. Please be sure to make a judgement about each drawing, even if the choice is difficult.