THE DAP AND VISUAL IMAGERY IN ASSESSING PSYCHO-SEXUAL CONFLICT

Thesis for the Degree of Ph.D.
MICHIGAN STATE UNIVERSITY

Arlys N. Acheson
1972

This is to certify that the

thesis entitled

The DAP and Visual Imagery in

Assessing Psychosexual Conflict

presented by

Arlys Acheson

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Psychology

Joseph Reyher
Major professor

Date May 15, 1972

ABSTRACT

THE DAP AND VISUAL IMAGERY IN ASSESSING PSYCHOSEXUAL CONFLICT

By

Arlys N. Acheson

Thirty male college students drew a man, woman, and automobile. A ten minute visual imagery session followed each drawing. A questionnaire completed the session. Continuous GSRs were obtained throughout the session.

The following hypotheses were tested: The ANS activation of a subject while drawing the human figure, during visual imagery, and when the female examiner enters the room will all be a function of the degree of psychosexual adjustment. Resistance to visual imagery and psychosexual maladjustment as measured by a questionnaire will also be a function of the degree of psychosexual adjustment as determined by the human figure drawings.

Although none of the hypotheses received unambiguous support, the obtained correlations were in the predicted direction in every instance. Thus it is reasonable to conclude that the ranking of degree of psychosexual conflict is a variable which determines a subject's behavior in a wide variety of situations; however, the relationship is so weak that it is useless with the techniques and response modalities incorporated in the present research design.

THE DAP AND VISUAL IMAGERY IN ASSESSING PSYCHO-SEXUAL CONFLICT

By

Arlys N. Acheson

A THESIS

Submitted to

Michigan State University

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

DEPARTMENT OF PSYCHOLOGY

1972

ACKNOWLEDGEMENTS

It is with grateful appreciation that I acknowledge the assistance of those who made this research possible.

I would like to thank my chairman, Dr. Joseph Reyher, for the many hours of advice and encouragement preceding the completion of this volume, and for the extensive assistance he so willingly provided. To my other committee members, Dr. Zucker, Dr. Hanley, and Dr. Kell, I express my appreciation for their helpful suggestions improving this study.

My husband, Ken, deserves a special thank-you, not only for spending many hours in assisting with the research and scoring, but especially for his understanding and loving attitude and encouragement when it was most needed.

TABLE OF CONTENTS

LIST OF TABLES

TABLE PAGE

INTRODUCTION

Although the DAP is the second most frequently used test in hospitals, clinics, and counseling services throughout the country (Sunberg, 1961), research has not generally supported Machover's (1949) hypotheses connecting, on a one-to-one basis, psychodynamic processes with symbolic representations of these processes on the drawings (Swensen, 1957; Handler and Reyher, 1956). Some authors (Reyher, 1959; Handler and Reyher, 1965, 1970; Swensen, 1968) consider a global approach to the interpretation of figure drawings to be more productive in comparison with the examination of discreet details. In assessing the significance of specific details, Reyher (1959) recommends a relative consideration of all the details on the drawings; and in a recent review of the literature, Swensen (1968) has concluded that global ratings are the most reliable. Graff (1968) utilized a global approach and reported some success in identifying children with behavior problems.

Reyher (1959) proposed that the drawings of the human figure should be compared with a relatively neutral, common figure of equal difficulty to assess the contributions of two sources of anxiety: (1) the testing situation and (2) intra-psychic conflict. He selected an automobile. If the drawing of the automobile has fewer graphic indicators of anxiety than the human figures, then the clinician has an objective basis for formulating psychodynamic hypotheses to account for these differences.

Since the level of difficulty of a drawing might be an influencing variable, Handler and Reyher (1964) found, using the method of paired comparisons, that the automobile was judged to be as difficult to draw as the human figure. They also obtained evidence for the two sources of anxiety, using male subjects, by comparing the increase in the number of graphic indexes of anxiety for the three drawings between nonstress and stress conditions. Individual drawing style and ability were eliminated by using the subject as his own control. As hypothesized, there was a differential increase in the number of indexes of anxiety that significantly differentiated between the stress and nonstress conditions. The automobile drawing only increased on five out of 18 indexes, whereas the male and female drawings differed on 15 and 11, respectively, out of 21. Handler and Reyher concluded that the increase on the automobile reflected anxiety stemming from the testing situation, whereas the increase on the human figure drawings beyond the increase for the automobile reflected intrapsychic conflict which was exacerbated by the stress condition.

In another investigation, (Handler and Reyher, 1966) human figure drawings were characterized by more GSR activity in addition to more graphic indexes of anxiety than was the automobile. Myers (1965), using only female subjects, also found that the drawing of the human figure was associated with greater GSR activity than was the automobile.

Evidence that the act of drawing the human figure stimulates psychosexual conflict was obtained by dividing the human figure into primary, secondary, and nonsexual body parts (Handler and Reyher, 1966). They reported that the secondary sexual body parts elicited the greatest GSR activation for males drawing the male figure, whereas the primary sexual body parts activated the greatest GSR for males drawing the female

figure. Sanders (1966) reported that the degree of psychosexual conflict, based upon ratings of the clothed figure, was directly related to GSR activation during the drawing of a nude human figure.

Handler and Reyher found that reinforcement of line, erasure, shading, and deliniation lines were frequent under nonstress conditions and were inversely related to the GSR. Those subjects that utilized the above devices under both stress and nonstress conditions appeared to cope constructively with their anxiety in contrast to other subjects who avoided the anxiety-producing task by drawing oversimplified figures with an impoverishment of detail. The former and latter subjects were called "copers" and "noncopers", respectively.

According to Reyher (1959), the DAP is unlike any other projective test because it forces the subject to create his own stimulus. In the course of drawing a human figure, anxiety-producing conflicts are activated by the act of drawing body areas closely associated with the sexual drive and the subject's self-concept. For example, when the male is drawing the breast of a female, his sexual drive is activated and any conflicts associated with it are piqued, particularly those that are peculiar to the breast. Similarly, a young male who feels physically inadequate will experience anxiety when drawing the shoulders because feelings of inadequacy are piqued. The unconscious and conscious affect and related fantasies activated by drawing the human figure are response-producing, making the DAP highly susceptible to laboratory investigation. The present study is an attempt to assess, at different levels of functioning, the response-producing properties of the psychosexual conflicts activated by the act of drawing the human figure.

HYPOTHESES:

I. The ANS activation of a subject while drawing the human figure is a function of his psychosexual adjustment.

II. The ANS activation when the examiner enters the room is a function of degree of psychosexual adjustment.

III. The ANS activation of a subject during visual imagery stimulated by his own drawing of the human figure is a function of psychosexual adjustment.

IV. Degree of drive representation (primary process) is a function of degree of psychosexual adjustment.

V. Resistance to visual imagery stimulated by the subject's own drawing of the human figure is a function of psychosexual adjustment.

VI. A questionnaire measuring psychosexual adjustment (as reported by the Ss) will be significantly correlated with a psychopathology score derived from the figure drawings.

METHOD

SUBJECTS

Thirty volunteer college students were divided into relatively well adjusted (RWA) and relatively poorly adjusted (RPA) groups on the basis of their human figure drawings. Each S was assigned a number to insure anonymity.

MATERIALS AND EXPERIMENTAL SETTING

The drawings were made on $8\frac{1}{2}$ by 11 unlined white paper attached to a clipboard which was securely anchored to the double armrests of a large chair. A Grass #5 Polygraph was used to measure the GSR; the

electrodes and electrode paste were manufactured by the Yellow Springs Instrument Company.

The questionaire used consisted of the L Scale and the K Scale of the MMPI and a Psychosexual Scale from selected statements on the MMPI, the Mooney Problem Check List (College Form), and the Multi-Purpose Inventory, Marriage and Personality, as well as selected original items. (See Appendix A for complete questionnaire.)

The arrangement of subject, polygraph, and polygraph operator was similiar to that described by Handler and Reyher (1964). S was seated in a large chair with double armrests and his back to the polygraph, E was behind and to the side of him in order to observe and note the body parts being drawn. The tape recorder was behind S and within easy access of E. The polygraph was in continuous operation throughout the testing session.

PROCEDURE

S was ushered into a soundproof testing room by a male examiner (E_1), and was seated in the large chair with arm rests. After attaching the electrodes to the non-preferred hand, fifteen minutes were allowed for skin hydration and general adaptation. After the period of adaptation, E_1 left the room and a female examiner (E_2) entered. GSR activation at the moment of entry was noted. E_2 then asked S to draw a series of objects on seperate sheets of paper. S was given a freshly sharpened pencil for each drawing. Upon the completion of this task, E_2 said, "Now let us begin." Since this usually produces an increase in GSR activity, additional time was allowed for skin resistance to return to baseline. The objects drawn were: a circle, triangle, pentagon, square, octagon,

and rectangle. After each of these, time was allowed for the subject's basal skin resistance to return to the original level. This series of preliminary drawings served the purpose of reducing GSR activation produced by the testing situation, E_2's presence, and instructions. The order of the drawings were counterbalanced. S was instructed: "Now I would like you to draw a man (woman, automobile). Be sure to include the whole figure (for man and woman). Tell me when you are finished."

After the first drawing was completed and the GSR returned to baseline, the following instructions were given, "Now I would like you to close your eyes and get a picture in your mind's eye of the figure you just drew. Let me know when you have this picture in your mind's eye." After S indicated he had this image, E_2 continued, "Now I would like you to let your mind relax and describe whatever images come into your mind's eye." E_2 asked no further questions, except after every sixty seconds of silence when she said, "What's in your mind's eye?" S was asked to open his eyes after ten minutes.

After allowing time for the GSR to return to baseline, S was instructed to draw the second figure. After it was completed, S again closed his eyes and described the images in his mind's eye during the ten minute period. The same procedure was followed for the third drawing.

After the third drawing and the ten minute period of visual imagery were completed, E_2 left the testing room and E_1 entered to administer a questionnaire.

The order of the drawings was counter-balanced, with the male, female, and automobile drawn first, second, and third an equal number of times. All possible sequence of drawings was not utilized, based on previous research by Handler and Reyher (1964) which demonstrated differential

effects of order but no sequence effects. The particular order used for any S was determined prior to his testing in a totally random manner.

After all thirty subjects had completed their drawings, each subject was rated according to his psychosexual adjustment on the basis of his drawings. The following criteria for good psychosexual adjustment were used: 1) Kinesthetic enlivenment (movement); 2) Effective use of available space (optimal is 2/3 of the vertical dimension); 3) Primary sexual aspects of the body drawn (or not warded off) in terms of the perspective; 4) Female and male clothing or physical characteristics clearly differentiated; 5) Evidence of ego involvement; presence in the drawings of erasure, shading, reinforcement, etc. to emphasize certain aspect of the clothing or body, and when used in the service of doing a good job; 7) Absence of transparencies and distortions; 8) The details, size, emphasis lines, and general quality of the human figures are comparable to a relatively neutral object (the automobile).

MEASURES OF ANXIETY

GSR. The number of GSRs of 2000 ohms or greater was divided by time taken for each drawing. The first GSR for each drawing was excluded from the analysis because of its relationship to the instructions.

A second measure of the GSR was the mean conductance (The resistance is found by computing the mean of readings taken at the beginning, two in the middle, and one at the end of each drawing. The mean conductance is the inverse of the resistance. (All scores were multiplied by 10^{-6} for ease in reporting.) This yielded information concerning the overall anxiety-producing properties of each drawing.

The same GSR measures were used for each visual imagery period and for the questionnaire.

Verbal Content. The visual imagery content was typed verbatin from the tape and coded. These records were scored in random order, using Holt's method (1956) of scoring content (see Appendix B for detailed scoring instruction).

Resistance. Indicators of resistance were counted for each subject. The following indicators were selected: asking questions, latency in closing eyes, opening eyes, silent periods (pauses) between images, verbal associations instead of images, and spontaneous comments about experienced resistance. All indicators of resistance considered occurred in relation to the visual imagery.

Psychopathology Score (FI). An overall score of psychopathology was derived from the visual imagery which included the indicators of resistance as well as Level I responses, distortions, bizarre responses, affective responses, etc. Since this score was derived after the data was collected, any significant findings should be considered as only suggestive pending replication.

ITEMS FOR PSYCHOPATHOLOGY SCORE (FI)

ITEM	POINTS	EXPLANATION
Opening eyes	1	1 point given for each time the eyes were opened
Questions asked		
During the first session	1	1 point for each question asked
During the second session	2	2 points for each question
During the third session	3	3 points for each question; consider as greater resistance when the questions continue
Verbal associations instead of verbal images	1	1 point given for each occurrence; example: "I don't see anything but I was thinking about. . ."
Distortions in imagery of drawing	1	1 point for each distortion; example (following drawing on auto): "I see a bent fender. . ."
Imagery irrelevant to drawing: distortions	3	3 points for each distortion; example (following drawing on auto): "I see a man with a real weird face. . " indicative of greater maladjustment, since the stimulus is not present.
Bizarre response	5	5 points for each occurrence; example: "I see an ugly looking monster that is about to pounce on someone."

ITEMS FOR PSYCHOPATHOLOGY SCORE (FI)

ITEM	POINTS	EXPLANATION
Latency in first response	1	20-29 seconds
	2	30-39 seconds
	3	40-49 seconds
	4	50-59 seconds
	5	60-69 seconds
	6	70-79 seconds
	7	80 + seconds
Level 1 (socially "unacceptable" responses)	10	10 points given for each; considered a very significant index of maladjustment; see Appendix B for example
No scorable responses in the entire imagery sessions	20	20 points given to Ss showing such strong repression, considering the stimulus of the human figure drawings.
Libidinal responses		
0-10	0	The presence of some libidinal responses is considered healthy.
11-20	2	When the number of libidinal responses becomes excessive, it is an indicator of maladjustment. (See Appendix B for examples of all criteria).
21-30	4	
Aggressive responses		
0-4	0	Again, the presence of some aggressive responses is considered healthy, but when the number becomes excessive, it is an indicator of maladjustment.
5-8	2	
9+	4	
Affective responses		
0-3	0	Same as above
4+	2	

A rank order coorelation (Rho) of .62 ($p < .005$) was obtained between the ranking of severity of psychosexual conflict (PC) on the drawings and the psychopathology score (FI) derived from the visual imagery. Even

though this is an ad hoc correlation which must be replicated before its significance can be assessed, the FI index was compared with the PC ranking whenever possible.

RESULTS

Interrater reliability

Three raters (A, B, and C) independently ranked the thirty sets of drawings. One rater (A) was the investigator (Reyher) who formulated the criteria and who has had considerable experience with the DAP in clinical settings. Rater B (Acheson) was a third year graduate student in clincial psychology who had been instructed in the use of these criteria by Rater A, but only had a limited amount of experience in the interpretation of figure drawings. Rater C was a graduate student in mathematics who had been instructed in the use of the criteria for psychosexual adjustment by Rater B. He had no experience in the interpretation of figure drawings and was given the written criteria plus three sets of drawings illustrating these criteria (similar to the sets of drawings in Appendix C). The correlations (Spearmen's rho) of the rankings for Raters B and C with Rater A were 0.98 and 0.97, respectively.

The three raters independently dichotomized the total sample into RWA and RPA groups. Each rater did this by determining a cut-off point or a point of demarcation so that all the ranks above represented relatively well adjusted Ss and that all the ranks below represented relatively poorly adjusted Ss. The dividing points for raters A,B, and C were ramks 11, 10, and 10 respectively. This made the composition of the group almost identical for the three raters. These results, along with

the extremely high interrater reliability, were very surprising, in fact, remarkable. The data of rater A was used for all analyses.

The point of demarcation was determined by the subjective evaluation of each rater based on a global rating of all the criteria. In general, the relatively well-adjusted group included those subjects whose drawings met seven of the eight criteria, with only S rated #1 using kinesthetic enlivement. The Ss rated #8, #9, and #10 demonstrated less ego involvement (i.e. less erasure, shading, and reinforcement), but their drawings were still considered adequate for a rating of "well-adjusted". This cut-off point was subjective, but was considered necessary for group comparisons.

Reliability of dependent variables

The Spearman rank order coorelations between the drawings during the Drawing and Imagery Conditions were very high-they ranged from .92 to .95 - for both the GSR and conductance measures, but there was a -.40 correlation between them. This means that the so - called Law of Initial Values (LIV) obtains for these data (Wilder, 1962). The customary procedure under such circumstances is to make analysis of variance adjustments to partial out this source of variance; however, this is a statistical adjustment that does not allow for individual variation in the amount of adjustment. Burns and Reyher (1972) approached the problem differently. Since the frequency of GSRs meeting the criterion decreases as S's conductance (reciprocal of resistance) increases, they multiplied the GSR rate of each S by his mean conductance (C) during the condition. Although the reliability of this measure dropped to .68, it appeared to vary more systematically with the independent variables and conditions of the research design. As they observed, high reliability indicates that a measure is insensitive to variations in S's psychopathology and to an

interaction between S's and conditions. Perhaps the most important reason for the advantage of this measure is that the score of each S is the arithmetical product of two mathematically related functions (GSR rate x C) rather than statistically adjusted GSR rates or scores, like percentages, which are transformations of the original scores and, therefore, do not provide additional information.

Characteristics of GSR x C score

When GSR x C is plotted against frequency for each drawing under the Drawing and Imagery Conditions, moderate to severely positively skewed distributions were produced; consequently, nonparametric statistical methods were utilized in evaluating the hypotheses. The skewing resulted from a few Ss who had high GSR rates despite high conductance scores. No transformations were made to normalize the distributions because of the real possibility that this alteration in numerical representation might distort the physiological processes involved in the generation of the score.

The reliability of the GSR x C score varied considerably (Table 1) with the correlations between the Drawing, Imagery and Questionaire Conditions being the best estimate of its stability. These correlations ranged from .44 to .55 for the different combinations of the three conditions. If the relationship between repressed drives and the repressive force oscillates as previous investigations (Burnsm 1972; Perkins and Reyher, 1971; Reyher, 1967; Sommerschield, 1969) suggest, then low correlations are to be expected. However, the high reliabilities for the other dependent variables controverts this interpretation. Hopefully the various statistical analyses will shed light on this issue.

- -

Insert Table 1 about here

- -

A preliminary analysis of the GSR frequency and conductance (C) showed that both had significant order effects. An inspection of the distribution of scores over the three groups representing the three orders (MFA, FAM, and AMF) revealed that the random assignment of Ss to the several groups was uneven with the FAM being characterized by Ss with low GSR rates and high conductance. This order effect disappeared when the GSR x C score (Table 2) for each drawing and its order of presentation was compared for the Drawing and Imagery Conditions. Thus, the GSR x C score accomplished the same thing as either an analysis of covariance or a transformation of scores taking the initial level into account.

- -

Insert Table 2 about here

- -

Hypothesis I

The hypothesis that the ANS activation of an S while drawing the human figure is an inverse function of his psychosexual adjustment was not supported. Although the correlations were positive (Table 3), only the correlation between GSR x C and the Auto -- which allegedly is relatively neutral -- was significant for both PC ($r = .31$; $p < .05$) and FI ($r = .42$; $p < .01$).

Hypothesis II

The hypothesized relationship between GSR amplitude x C and degree of psychosexual conflict when E_2 entered the room was not supported.

Spearman rank order correlations of -.11 and -.32 were obtained for the PC and FI Indexes, respectively. Both correlations were in the wrong direction.

Hypotheses III

The hypothesis that ANS activation of a S during visual imagery, instigated by his own drawing of the human figure, is a direct function of psychosexual adjustment was not supported. Although the correlations (Table 3) were positive for PC, none were significant. It should be noted, however, that the correlations for FI were positive with the Male Drawing reaching significance (r = .37; p .05).

- -

Insert Table 3 about here

- -

Hypothesis IV

The hypothesis that degree of drive representation (primary process) is a function of degree of psychosexual adjustment was not supported. The correlation obtained between the D-score for the Imagery Condition and PC was only .19. The FI score was not appropriate because Level I and II Responses entered into its computation.

Hypothesis V

The hypothesized relationships between measures of resistance and degree of psychosexual adjustment received weak support. The mean latency (seconds) on the first image was 18.9, 16.1 and 18.4 for the male, female and auto, respectively. The corresponding means for mean pauses (seconds) between images were 27.29, 26.33 and 21.12. Neither of these two sets of means were significantly different (Friedman two-way analysis of variance). Table 4 shows that all the correlations between PC and these

two variables were in the expected direction. Since the frequency of verbal associations was too low to permit correlations for each drawing, the combined frequencies were correlated with PC. The correlation is .22.

- -

Insert Table 4 about here

- -

Although all the correlations were in the predicted direction, only the auto was significant. It must be concluded that the relationship between PC and resistance is too weak to be useful.

Hypothesis VI

The hypothesized relationship between a questionaire measuring degree of psychosexual adjustment and the PC score derived from the figure drawings was not supported. The Spearman rank order correlation between the two measures was .06; however, the correlation between the questionaire scores and FI was .30 ($r = .31$ is significant at the 0.5 level). Because of its intrinsic interest, a correlation between the questionaire and C x GSR was computed. This was -.18.

Other findings:

On the basis of earlier investigation, the human figures were expected to be associated with higher GSR rates than the auto, but this was not confirmed by the results ofthe present investigation. In the Drawing Condition, the C x GSR rate means were 280.35, 265.38 and 270.89, respectively, and were not significantly different (Friedman two-way analysis of variance; $X^2_r = 2.91$). The corresponding means for the Imagery Condition were 294.01, 255.56 and 315.20 and they were not significantly different ($X^2_r = 3.26$).

As a way of exploring other variables and a means of conceptualizing the data, the Ss were divided into RWA and RPA groups and compared on a variety of variables. Ss characterized by coping vs. noncoping drawings were identified using the criteria of Handler and Reyher (1966). Copers are considered to be better adjusted than noncopers and were those Ss that used reinforcement of line, erasure, shading, deliniation lines, and, for the present study, a realistic treatment of the sexual areas of the body. In contrast, the noncopers avoided the anxiety-producing properties of task by drawing oversimplified figures with an impoverishment of detail. Only those subjects who clearly belonged in one of the two groups were used, thus there were seven "copers" and thirteen "noncopers". Using analysis of variance, non-significant differences between groups were obtained, although the differences between means was often large (Table 5). The lack of significance may have been due to the small number of subjects in each group; however, the noncopers did differ from the copers in the expected direction for 15 of the 17 comparisons. The copers spent more time on the drawings, gave more responses during the visual imagery with a shorter mean response time and a shorter latency for the first response. Noncopers gave more verbal associations (resistance) and fewer responses scored libidinal, aggressive, or affective. Copers reported more images of men, women, and automobiles and gave more Level II responses. The GSR amplitude when E_2 entered was higher for copers than for noncopers, but the GSR was greater for noncopers on five of the other six comparisons. The differences between the RWA and RPA groups did not favor the former to the same degree that these differences favored the copers; however, this is not to be construed as implying statistically meaningful differences. Table 6 presents these results.

- -

Insert Tables 5 and 6 about here

- -

Discussion

Although none of the hypotheses received unambiguous support, the obtained correlations were in the predicted direction in every instance. Thus it is reasonable to conclude that the ranking of degree of psychosexual conflict (PC score) is a variable which determines S's behavior in a wide variety of situations; however, the relationship is so weak that it is useless with the techniques and response modalities incorporated in the present research design. Subsequent research should attempt to improve upon the assessment of psychosexual conflict, refine the dependent variables and utilize new response modalities.

The assessment of psychosexual conflict with figure drawings may be susceptible to improvement. In the present investigation this assessment did not include as one of the criteria the relative size of each figure, the feminization of the male drawing and the type of car drawn. Males with high self-esteen should draw obviously masculine males which are larger than the female drawing and the auto should reflect his phallic-aggressive drives. Ranking the drawings on the basis of an impressionistic assessment in terms of the criteria may be too uncontrolled for research purposes. A rationally derived score like the FI score may be superior. In support of this possibility, the FI score generally produced higher correlations, with more being significant, than the PC score.

An attempt should be made to quantify or weight the various dimensions of the criteria for assessing degree of psychopathology on the basis of

the figure drawings. The task of ranking a large number of protocols taking into account all the dimensions of the criteria is too demanding on the clinician; he cannot evaluate all the information concurrently in the same manner for each set of protocols. In some sets, certain dimensions are salient and determine the ranking whereas in other sets of protocols other dimensions are salient and determine the ranking. In other words, the contribution of each variable is uncontrolled and subject to the idiosyncratic thought process of the clinician.

Additional responses can be elicited from S to enhance the validity of the PC score. In the clinical situation, asking S to give three wishes and a TAT type story for each drawing often appears to be very helpful in conceptualizing the client's psychopathology. The contribution of these sources of information to the PC should be kept seperate in order to assess the predictive ability of each.

The dependent variables could be improved upon. The measure of ANS arousal or, inferentially, anxiety was the mean GSR rate multiplied by the mean conductance over the duration of the drawing period for a particular drawing. Although previous research with this measure was successful in showing a difference in arousal between the human figure drawings and the auto, it lacks precision. The duration of time that most Ss spend on the sexual anatomy is a small percentage of the total drawing time. Thus the mean GSR rate lacks the precision of a score based solely on the time spent on the sexual anatomy. As Handler and Reyher (1966) have shown, the GSR rate for the primary sexual characteristics is higher than the rate for the nonsexual anatomy. Only the GSR rate for the primary sexual characteristics should be used in future investigations. Another possible factor influencing the GSR rate was the fact that the experimenter

was an attractive female, in contrast to previous research. It is very likely that the stimulation of Ss' sexual drives and their resulting need to be accepted by her as acceptable males generated anxiety that overshadowed the specific anciety-producing properties of the figure drawings in both the Drawing and Imagery conditions. The precision of the GSR rate score could be similarly increased in the Imagery Condition if the rate was based only on the time in which the visual imagery of S is depictive of the drawings and other images of males, females and autos.

The precision of the measures of resistance can be increased by taking into account only those observations that occur in conjuction with imagery depictive of males, females and auto. Also, to increase the number of observations, S should be asked to visualize the drawing being used as an instigator after some standard period of time (30 sec.) in which imagery nondepictive of the instigator has transpired.

The significant -.40 correlation between GSR rate and conductance was surprising in view of Hord, Johnson and Lubin (1964) finding that the GSR does not obey the so-called Law of Initial Values (LIV). Since his findings were based upon a large sample, they are considered to be more reliable than the findings of the present research. An analysis of Wilson's data (1972) also shows that GSR rate is not negatively correlated with conductance. He obtained a correlation .14. Since the assessment of psychosexual conflict used in the present investigation is open to question and the dependent variables lacked precision of measurement, the advantage of using the GSR xC score could not be adequately evaluated. The fact that it eliminated the need for analysis of covariance adjustments when GSR rate was found to be correlated with conductance level

and increased the size of the correlations with PC in the majority of instances indicates that the incorporation of conductance into the score may provide useful new information.

Even though the FI score was not delveloped until after the data was collected and, subsequently, suffers the indeterminacy of all post hoc analyses, it is of intrinsic interest and will certainly lead to an attempt to replicate its .62 correlation with PC. If this correltion is valid, it means that the insufficiency of the present investigation resides in the lack of precision of the dependent variables or their inability to perform the task assigned to them. Also, the PC and FI scores are both rational scores based upon clinical experience and psychoanalytic theory and, as such, have strong implications with respect to practice and theory if they enter into empirical relationships with other variables in future research. Conversely, continued negative findings will weaken confidence in both figure drawings and visual imagery to figure drawings, as instigators, as being useful clinical tools. Accordingly, the viability of psychoanalytic theory seems to be weakened.

One of the most striking aspects of the obtained figure drawings is the high incidence of drawings which ordinarily would be considered as being severly neurotic or schizophrenic. For example, Handler and Reyher (1966) reported that transparancies were very rare in college population, yet five Ss showed this in the present investigation. A number of drawings were quite bizzare. Since recent samples do not show these characteristics frequently, these drawings probably do not reflect an alteration in the college culture. The most likely explanation is the heightened pressure that E, an attractive female, put on Ss' management of psychosexual conflicts and anxiety generated in the experimental situation. In

this situation the integration of Ss' behavior often was impaired. If this analysis is correct, the psychodynamic impact of an attractive experimenter of the opposite sex, particularly a female, can be an invaluable tool for the investigation of psychodynamic processes in the laboratory.

The comparisons between the RWA and RPA groups and between the copers and noncopers were not striking, but might be helpful in planning future research and sensitizing the investigator to new interpretive possibilities. All of the "copers" were in the RWA group and all of the "noncopers" were in the RPA group. Also, there were three and seven subjects in the former and latter groups, respectively, who were not clearly classified in either way. Those subjects, particularly those three in the RWA group, generally made some attempts to cope with the task at hand, but were not as successful in completing the task as those subjects classified as "copers"; thus they were excluded from the group described as copers to enable as clear a distinction as possible. Although a coping attitude is closely associated with good psychosexual adjustment, some protocols show coping behavior in the context of severe psychopathology. The converse is not true: In the frame of reference of this investigation, a person cannot be "well-adjusted" and be a noncoper. Coping is really a complex criterion for rating degree of adjustment.

The exclusion of subjects who could not be clearly classified as either copers or noncopers, appears to have increased some group differences. In comparing the RWA and the RPA groups, only ten of the seventeen comparisons were in the predicted direction. In comparing copers and noncopers, fifteen comparisons were in the predicted direction, with only two GSR measures in the opposite direction. The most notable differences occurred on the visual imagery, with the copers and noncopers differing in the

predicted direction in all of the nine comparisons, while the RWA and the RPA groups differed in the opposite direction on six of the nine comparisons.

The noncopers generally had greater anxiety, although their general level of arousal was lower during the visual imagery where they tended to avoid the affect-laden responses such as those scored libidinal, agressive affective, and Level II. The greater tendency for the noncopers to avoid the anxiety-producing drives is further supported by fewer reported images of men, women, and automobilies. Fewer responses, a longer mean response time, a longer latency for the first response, and more verbal associations for the non-copers all support the suggestion of greater defensiveness. The greater GSR frequency during the visual imagery for the noncopers suggests that their defensive operations are not totally successful in eliminating anxiety. When the noncopers were allowed less freedom to withdraw (i.e. required to draw some form of a man, woman, and automobile and required to answer specific questions dealing with sexuality, their GSR (and anxiety) was consistently higher than for the copers. The only exception involved the GSR amplitude when the female examiner entered.

In comparing the means for the copers and the RWA group, it appears that the three subjects who were not included as copers had the following effect on the RWA group: lowering the number of responses on the visual imagery; lengthening the mean response time; increasing verbal associations; increasing the GSR frequency on the drawings, imagery and questionnaire; decreasing the time on drawings; decreasing the GSR mean conductance; increasing the number of men, women, and autos reported. This generally supports the previous suggestion that these subjects were attempting to cope, but were not as successful as the other subjects within the group.

There appears to be some tendency to avoid or withdraw from sources of anxiety and to constrict their responsivity to the specific task. It should be noted that only trends can be suggested and no conclusions can be drawn due to the few number of subjects involved.

The seven subjects in the RPA group who were excluded from the non-copers had the following effects upon the RPA group: increase in the total number of responses on the visual imagery; Level II responses; aggressive libidinal responses; the number of men, women, and automobiles; GSR frequency and conductance to visual imagery and questionnaire; time spent on the drawings; GSR activation when the female examiner entered; decrease in the mean response time and the latency in the first response. All of these differences suggest that these seven subjects were attempting to cope with the task, although they were not as successful as the copers. Greater anxiety accompanied their attempts to cope.

The hypotheses relating psychosexual adjustment to the GSR were not supported, suggesting that psycho-sexual adjustment is not related to the anxiety or the physiological (GSR) response of the subject, but rather with his ability to cope with the situation. This is supported by a number of other investigators who report no significant correlation between GSR and manifest anxiety (Galbrecht, Dykman, and Reese, 1965; Koepke and Pribram, 1966).

In further consideration of these results, two alternative hypotheses appear feasible. On the basis of order effects the issue of the effectiveness of defenses appears relevant. The relative neutrality of the automobile has been established by Reyher (1959), Handler and Reyher (1966), and Meyers (1965). In the present study, many subjects in both groups showed a GSR increase for the male drawing, and an even greater increase

for the female drawing; however, there were also many Ss in the RPA group who had the greatest GSR to the automobile. These Ss might have been able to cope with the anxiety-producing properties associated with the act of drawing the relatively neutral automobile, but not the human figures.

Since adaptation is a well-known and well documented phenomenon (Woodworth and Schloshbery, 1954), it is interesting to note that adaptation did not occur for almost half of the subjects during the drawing.

Adaptation occured more frequently during visual imagery than for the drawings, particularly for well-adjusted Ss. This suggests that the act of drawing itself arouses the anxiety, while in free imagery S is free to use his regular means of dealing with anxiety, be it repression, denial, projection, etc. The fact that one-fourth of the RPA Ss showed an increase in GSR activity during the imagery following the drawing of the automobile again supports the idea of a relative reduction of threat posed by this relatively neutral object.

The issue of lability is also important in discussing adaptation effects. Johnson (1962) also found a lack of GSR adaptation for some subjects. Stable Ss, those who had few spontaneous GSR responses at rest, showed GSR adaptation to the stimuli of a tone and a flicker. Conversely, labile Ss, those with many spontaneous responses, did not adapt and were more reactive to the initial presentation of both stimuli. In the present study, the greater incidence of a lack of adaptation for the RPA group was accompanied by greater lability as evidenced by the content of the visual imagery.

On the basis of the GSR data and the conceptual frame of reference guiding this line of research, the following groups should show decreasing

GSR activation during the drawing of human figures: (1) Ss characterized by severe psychopathology and unsuccessful attempts to cope with anxiety-producing stimuli; (2) Ss who recogonize their ego and sexual strivings are activated, but who feel anxious about dealing with them in the context of their relationship with the investigator; (3) Ss who show little evidence of psychosexual conflict or repression, having effective coping responses to anxiety-producing, intra-psychic stimuli; (4) Ss who show gross evidence of repressed psychosexual conflict and very weak or ineffective coping responses to these anxiety-producing, intrapsychic stimuli.

The lack of a greater number of indicators of resistance in the RPA group is surprising in light of the frequency of these indicators in clinical practice (Reyher 1969). This may be related to the subject's concept of the purpose of visual imagery. In a recent pilot investigation (Perry, 1969), it was found that volunteer Ss from a class in introductory psychology did not react with behavioral indicators of anxiety in a vis a vis relationship to instructions for eye closure when given by an experimenter who defined the situation as research on imagination; however, when the situation was defined as research on the value of visual imagery in psychotherapy, resistance behavioral indicators of anxiety were produced. The issue of psychotherapy was never mentioned to the subjects in the present study. An additional difference centers around the importance of security operations in the therapeutic relationship (Reyher, 1969). It is essential for many patients to be constantly vigilant for any sign of rejection from the psychotherapist. This is accomplished by visual cues. When the patient closes his eyes and the therapist is silent, the

patient can no longer monitor the psychotherapist's expressive behavior for signs of approval or disapproval, nor can he converse with him in such a manner as to produce these signs. The anticipation of rejection then produces anxiety as evidenced by many behavioral indicators. In the present study, the examiner was always behind the subject, thus never permitting the monitoring of visual cues or the establishment of an interpersonal relationship. The instructions to close their eyes did not change the security operations in any essential way.

The significant correlation between the rankings of psychopathology on the basis of the figure drawings and the psychopathology score derived from visual imagery will justify if replicated the use of figure drawings as a means of assessing psychosexual adjustment. The obtained correlation suggests that the figure drawings are, in fact, measuring similar processes as is the visual imagery. If the figure drawings are conceptualized as visual images transferred to paper, with the obvious limitation of artistic skill, then it is not surprising to obtain high correlations between measures of adjustment on the two seperate indices. The high correlation is encouraging to the future clinical application of figure drawings in light of the clinical usefulness of visual imagery. In comparing visual imagery and verbal associations (Reyher and Smeltzer, 1968), imagery was accompanied by more anxiety, more primary process, more direct representation of drives, and less effective defense. The superiority of visual imagery over verbal association as an uncovering technique was attributed to the relative ease with which unconscious processes can influence visual imagery.

The present study suggests several areas where additional research is needed. Although the issue of copers vs. non-copers has been previously

introduced (Handler and Reyher, 1966), there has been no research clearly evaluating this variable in relation to human figure drawings. Further research concerning the relative contributions of psychosexual conflicts and coping mechanisms to physiological measure of anxiety (GSR) should also be conducted. The effects of intra-psychic vs. external sources of anxiety on the GSR is still uncertain, and should be clarified before using the GSR as a measure of anxiety aroused by any specific source. The effect of examiner variables is especially significant as suggested by the differences obtained by Handler and Reyher (1966) and the present study. The issue of lability in its effect upon the GSR adds another variable. At the present time, the GSR appears to be highly sensitive to numerous variables, and thus a relatively poor measure of specific sources of anxiety.

REFERENCES

LIST OF REFERENCES

Galbrecht, C., Dykman, R., Reese, W., and Suzuki, T. Intrasession adaptation and intersession excitation of the components of the orienting response. J. of Exper. Psychol. 1965, 70, 585-597.

Goldberger, E. Simple methods of producing dreamlike visual images in the waking state. Psychom. Med., 1957, 19,127.

Graff, B. The DAP and overt behavior promblems in school children. Unpublished Master's thesis, Michigan State University, 1967.

Handler, L., and Reyher, J. The effects of stress on the Draw a Person Test. J. Consult. Psychol. 1964, 28, 259-264.

Handler, L., and Reyher, J. Figure drawing anxiety indexes: a review of the literature. J. Proj. Tech. 1965, 29, 305-318.

Handler, L. and Reyher, J. The relationship between GSR and anxiety indexes in projective drawings, J. Consult. Psychol. 1966, 30, 60-67.

Hathaway, S., and Briggs, P. Some normative date on new MMPI scales. J. Clin. Psychol. 1957, 13, 364-368.

Holt, R., Gauging primary and secondary processes in Rorschach responses. J. Proj. Tech. 1956, 20, 14-25.

Hord, D., Johnson, L., and Lubin, A. Differential effect of the law of Initial Value (LIV). Psychophysiology. 1964, 1, 79-87.

Hoyt, T., and Baron, M. Anxiety indices in same sex drawings of psychiatric patients with high and low MAS scores. J. Consult, Psychol. 1959, 23, 448-452.

Johnson, L. Spontaneous autonomic activity, autonomic reactivity, and adaptation. San Diego. U.S. Navy Medical Neuropsychiatric Research Unit. 1962.

Kanzer, M. Image formation during free association. Psychoanal. Quart. 1958, 27,465.

Koepke, J., and Pribram, K. Habitation of GSR as a function of stimulus duration and spontaneous activity. J. Comp. & Phys. Psychol. 1966, 61, 442-443.

Machover, K. Personality Projection in the Drawing of the Human Figure. Springfield. Charles Thomas. 1949.

McKinley, J., Hathaway, S., and Meehl, P. The Minnesota Multiphasic Personality Invetory: VI. The K Scale. J. Consult. Psychol. 1948, 12, 20-31.

Mogar, R. Anxiety indices in human figure drawings: a replication and extension. J. Consult. Psychol. 1962, 26, 108.

Mordkoff, A., The relationship between psychological and physiological responses to stress. Psychosomatic Medicine. 1964, 26, 135-150.

Myers, L. The clinical usefullness of stories told about male, female, and animal drawings. Unpublished Master's Thesis, Michigan State University, 1965.

Perry, G. Security operations in psychotherapy in relation to anxiety. Unpublished manuscript, Lansing Community College. 1969.

Reyher, J. Emergent uncovering, Psychopathology and the Objectification of Pathogenic Psychodynamic Processes. Paper presented at the meeting of the American Psychological Association, Washington, D.C., September 1969.

Reyher, J. Free imagery: an uncovering technique. J. Clin. Psychol. 1963, 14, 454-459.

Reyher, J. Use of figure drawings in differential diagnosis. Paper read at the State Diagnosticians Conference. Michigan. 1959.

Reyher, J. and Morishige, H. EEG and rapid eye movement during free imagery and dream recall. J. Abn. Psychol.

Reyher, J. and Smeltzer, W. Uncovering properties of visual imagery and verbal associations: a comparative study. J. Abn. Psychol. 1968, 73, 218-222.

Rickers-Oksiankina, M. Rorschach Psychology. New York. John Wiley and Sons, Inc. 1860, 273-284.

Sanders, R. and Reyher, J. The Clinical applicability of nude figure drawings.

Smeltzer, W. A comparative study of free imagery and free association. Unpublished Master's thesis. Michigan State University. 1966.

Sunberg, N. The practice of psychological testing in clinical services in the United States. Amer. Psychologist. 1961 16, 79-83.

Swensen, C. Empirical evaluations of human figure drawings. Psychol. Bull. 1957, 54, 431-466.

Wexler, M. and Holzberg, J. A further study of the validity of human form drawings in personality evaluation. J. Proj. Tech. 1952,16, 249-251.

Winer, B. Statistical Principles in Experimental Design. New York. McGraw-Hill Book Co. 1962.

Woodworth, R. and Schlosbery, H. Experimental Psychology. New York. Holt, Rinehardt, & Winston, 1954.

Table 1

Correlations Between Drawings for GSR rate x C, Latency of First Response (L), Response Time (RT), and Correlations Between Conditions for GSR x C (N= 30)

	Drawings	Imagery		
Correlation	GSR x C	GSR x C	L	RT
Male and female	.62	.47	.95	.83
Female and auto	.18	.79	.89	.88
Male and auto	.21	.54	.95	.84
	GSR x C			
Drawings and imagery	.55			
Drawings and questionaire	.44			
Imagery and questionaire	.47			

Table 2

Kruskal - Wallis One-Way Analysis of Variance

Between each Type of Drawing and Order (1,2,3)

of Presentation

Entries in the body of table are values of H

	Conditions	
Type drawings	Drawing	Imagery
Male	2.47	.37
Female	.81	.05
Auto	2.09	1.27

Table 3

Spearman Rank Order Correlations Between GSR x C

for the Three Conditions and

The PC and FI Indexes (N = 30)

Condition	Index	
	PC	FI
Drawing		
Male	.18	.08
Female	.04	.12
Auto	.31*	.42**
Imagery		
Male	.01	.37*
Female	.22	.02
Auto	.07	.25
Questionaire	.06	.31*

* $p < .05$

** $p < .01$

Table 4

Spearman Rank Order Correlations Between Degree of Psychosexual Adjustment(PC) and Measures of Resistance

Drawing	Pauses (sec.)	Latency (sec.)	Verbal associations
Male (M)	-.30	.13	
Female (F)	-.23	.21	
Auto	-.16	.32*	
M+F+A			.22

*p $<$ .05

Table 5

Comparison of Copers and Non-Copers

Drawings	Non-Copers Means	Copers Means	Expected Direction
GSR Frequency	2.847	1.49	yes
GSR Mean Conductance	118	117	yes
Time in Drawings	173	298	yes*
Visual Imagery			
GSR Frequency	2.85	2.42	yes
GSR Mean Conductance	90	111	no
Number of Responses	20.19	31.12	yes
Mean Response Time	32.58	25.28	yes
Latency in First Response	26.05	15.79	yes
Verbal Associations	1.81	0.27	yes
Number of Level II Responses	1.095	2.212	yes
Number of Libidinal Responses	0.523	1.515	yes
Number of Aggressive Responses	0.523	1.484	yes
Number of Affective Responses	0.142	0.151	yes
Number of Men, Women, and Automobiles	7.285	13.787	yes
Questionnaire			
GSR Frequency	3.21	2.72	yes
GSR Mean Conductance	103	96	yes
GSR Amplitude when E_2 entered	7.271	10.018	no

* Significant beyond the .05 level

Table 6

Comparison of RWA Subjects and RPA Subjects

Drawings	RWA $\bar{X}$	RPA $\bar{X}$	Expected Direction
GSR Frequency	2.32	2.66	yes
GSR Mean Conductance	115.6	118.5	yes
Time on Drawings	294.8	182.7	yes*
Visual Imagery			
GSR Frequency	2.86	3.03	yes
GSR Mean Conductance	104.4	108.9	yes
Number of Responses	26.7	36.8	no
Mean Response Time	30.55	22.49	no
Latency in First Response	15.37	18.7	yes
Verbal Associations	3.9	8.5	yes
Number of Level II Responses	4.2	7.55	no
Number of Libidinal Responses	1.8	5.5	no
Number of Aggressive Responses	1.9	2.45	no
Number of Affective Responses	0.6	0.09	yes
Number of Men, Women, and Automobiles	10.87	13.33	no
Questionnaire			
GSR Frequency	3.92	3.48	no
GSR Mean Conductance	89	101	yes
GSR Amplitude when E_2 entered	10,870	11,200	yes

*Significant beyond the .05 level

APPENDICES

APPENDIX A

QUESTIONNAIRE

APPENDIX A

QUESTIONNAIRE

1. I enjoy going to dances
2. I think I'm liked by most girls who know me
3. At times I feel like swearing
4. I often wait for girls to speak to me before I show any interest
5. Once in a while I think about things too bad to talk about
6. I have never been in love
7. I do not always tell the truth
8. I am embarrassed by dirty stories
9. I like to "flirt" or kid around with girls
10. At times I feel like smashing things
11. I wish I were not bothered by thoughts about sex
12. I think a great many people exaggerate their misfortunes in order to gain the sympathy and help of others
13. I am strongly attracted to other men
14. I do not read every editorial in the newspaper every day
15. I am pinned or engaged
16. I get angry sometimes
17. I never date
18. I often hide my feelings
19. It takes a lot of argument to convince most people of the truth
20. It is harder to talk to girls than to guys

21. Once in a while I put off until tomorrow what I ought to do today

22. I rarely date

23. I date occasionally (once a month or less)

24. I date frequently (once a week or more)

25. I have very few quarrels with members of my family

26. Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it

27. It is hard to find anything to talk about when I meet a girl

28. Sometimes when I am not feeling well I am cross

29. I need more information about sex matters

30. I have poor posture

31. My table manners are not quite as good at home as when I am out in company

32. I have a poor complexion or skin trouble

33. I'm too short

34. I'm too tall

35. Often I can't understand why I have been so cross and grouchy

36. I am not very physically attractive

37. I would like to be more popular

38. At times my thoughts have raced ahead faster than I could speak them

39. I am deciding whether to become engaged

40. Criticism or scolding hurts me terribly

41. I'm often disappointed in my dates

42. I certainly feel useless at times

43. I am too inhibited in sex matters

44. I think I am overweight

45. I think I am underweight

46. It makes me impatient to have people ask my advice or otherwise interrupt me when I am working on something important

47. If I could get into a movie without paying and be sure I was not seen, I would probably do it

48. I often feel ill at ease with girls

49. I have never felt better in my life than I do now

50. What others think of me does not bother me

51. I have boring weekends

52. It makes me uncomfortable to put on a stunt at a party even when others are doing the same sort of thing

53. Sexual things disgust me

54. I find it hard to make talk when I meet new people

55. I would rather win than lose in a game

56. I like my general appearance

57. I am against giving money to beggars

58. My sex life is satisfactory

59. I like to know some important people because it makes me feel important

60. I frequently find myself worrying about something

61. I feel inferior

62. I get mad easily and then get over it soon

63. I feel awkward in making a date

64. When in a group of people I have trouble thinking of the right thing to talk about

65. I never attend a sexy show if I can avoid it

66. At times I am full of energy

67. I dislike having girls around me

68. I do not like everyone I know

69. I like slow dancing

70. I have periods in which I feel unusually cheerful without any special reason

71. Girls often turn me down when asked for a date

72. I think nearly anyone would tell a lie to keep out of trouble

73. My sexual needs are unsatisfied

74. I gossip a little at times

75. I lack self-confidence

76. I worry over money and business

77. I'm too easily sexually aroused

78. At periods my mind seems to work more slowly than usual

79. I enjoy close contact with girls

80. People often disappoint me

81. My friends and I often talk about sex

82. Sometimes at elections I vote for men about whom I know very little

83. Pre-marital sex is accepted and normal

84. Pre-marital sex is morally wrong

85. I have sometimes felt that difficulties were piling up so high that I could not overcome them

86. I am rarely aroused sexually

87. I often think, "I wish I were a child again"

88. I am disturbed by ideas of sexual acts

89. I have often met people who were supposed to be experts who were no better than I

90. Once in a while I laugh at a dirty joke

91. I have had enjoyable and satisfying sexual experiences

92. I find it hard to set aside a task that I have undertaken even for a short time

93. I like to let people know where I stand on things

APPENDIX B

HOLT'S SCORING SYSTEM

APPENDIX B

HOLT'S SCORING SYSTEM

DRIVE REPRESENTATIONS

1. (I) Ideational Drive Representations
(ideas, incontrast with affect which indicate drive tension).

(L) Drives with Libidinal aims

(O) Oral

(A) Anal

(S) Sexual (phallic-genital)

(E-V) Exhibitionistic-voyeuristic

(H) Homosexual (sexual ambiguity)

(M) Miscellaneous libidinal

(AG) Drives with agressive aims
(refers to preparation for or potentiality for a hostile or destructive act, to the act itself, or to the results of aggression)

(P-S) Potential-subject

(P-O) Potential-object

(A-S) Active subject

(A-O) Active object

(R) Results (object)

(Anx) Anxiety and guilt about drive expression
(indicates a projection of instinctual danger or super-ego punishment; feelings of helplessness)

2. (Aff) Affective Drive Representation
(clear display of affect indicated either in the verbalization or the behavior)

APPENDIX B (cont.)

LEVELS OF DRIVES

Level 1. Primary, direct, intense, or blatant drive expression; close to primary process

Level 2. Socialized or secondary drive expression; appropriate to communication between strangers in a testing situation

LIBIDINAL

Level 1.

O: breasts; an open mouth; hungry birds waiting for mother to bring something to eat

A: a pile of feces; a person's backside

S: female organs; intercourse

E-V: human figure, nude

H: some sort of symbol - phallic, not phallic - sexual -- guess I'd say vagina; men with breasts

M: menstruation; birth; urine

Level 2.

O: two dogs kissing; men, a little drunk over a punchbowl

A: bug in a mudpuddle; a woman - here's one leg, her fanny

S: a bride and groom standing, holding hands

E-V: woman with a transparent dress on; face luring up at something

H: two people - I don't know if they are men or women; two men holding ladies' handbags

M: ovaries, embryo, cupid

AGGRESSIVE

Level 1.

P-S: something with snapping jaws - there's his hot breath coming out to get you (oral scored secondarily)

APPENDIX B (cont.)

P-O: frightened figure - menaced; nightmarish

A-S: witches tearing a woman apart

A-O: sharp instrument going through penis

R: animal, looks like it's been in a horrible fight - all torn up; people with their heads chopped off

Level 2.

P-S: people arguing, swearing at each other; cat's face snarling; a fist

P-O: shield; figure - looks afraid of something

A-S: people fighting or a conspiracy; bomb bursting; bull's face - charging

A-O: an unhappy person - looks like he's being bawled out

R: blood; man with a wooden leg; dead chicken; blackened trees after a fire

ANXIETY and GUILT

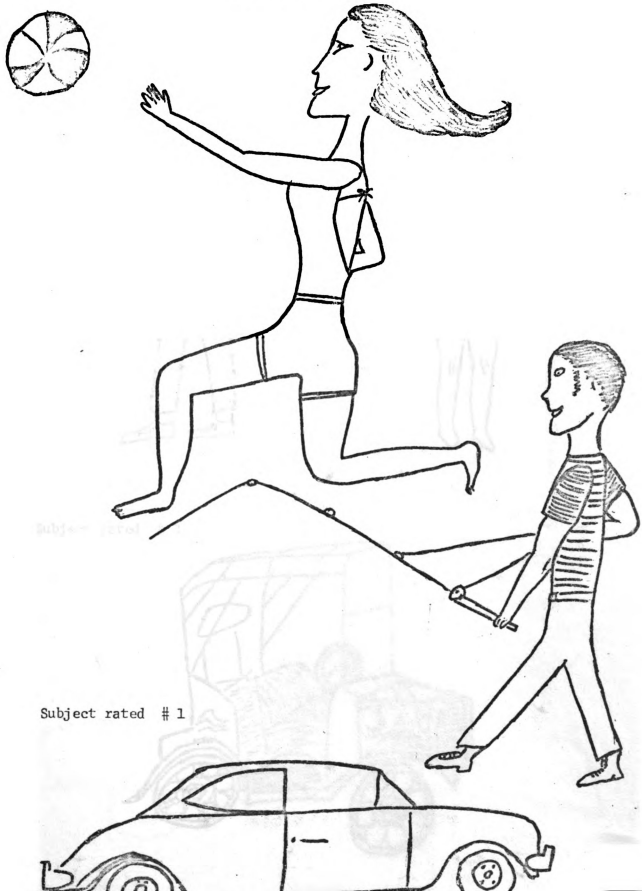
Level 1: Man tied, falling into space helplessly

Level 2: The inferno; devil; a pile of rocks about to topple over

APPENDIX C

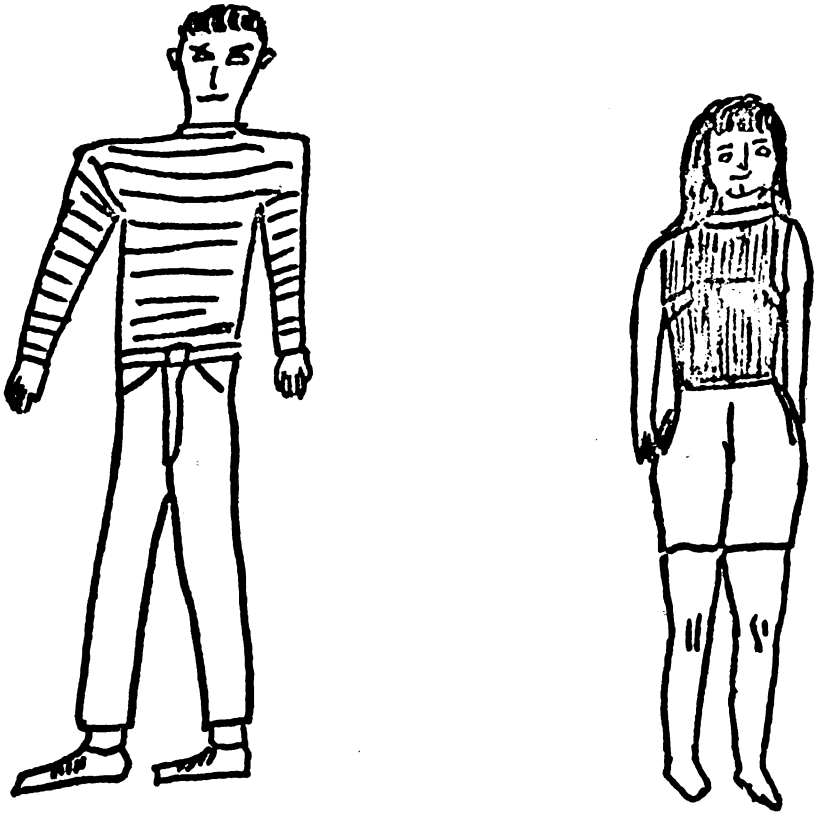
EXAMPLES OF DRAWINGS

APPENDIX C

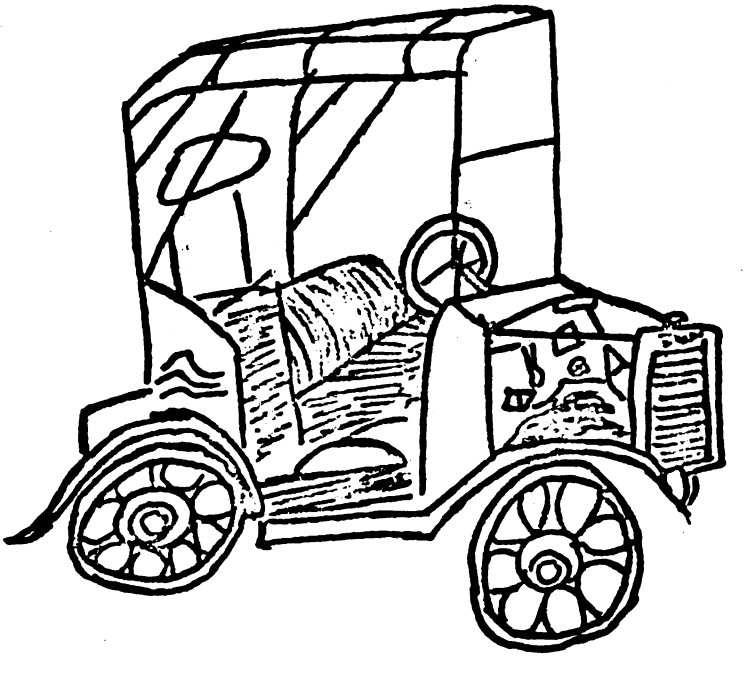


Subject rated # 1

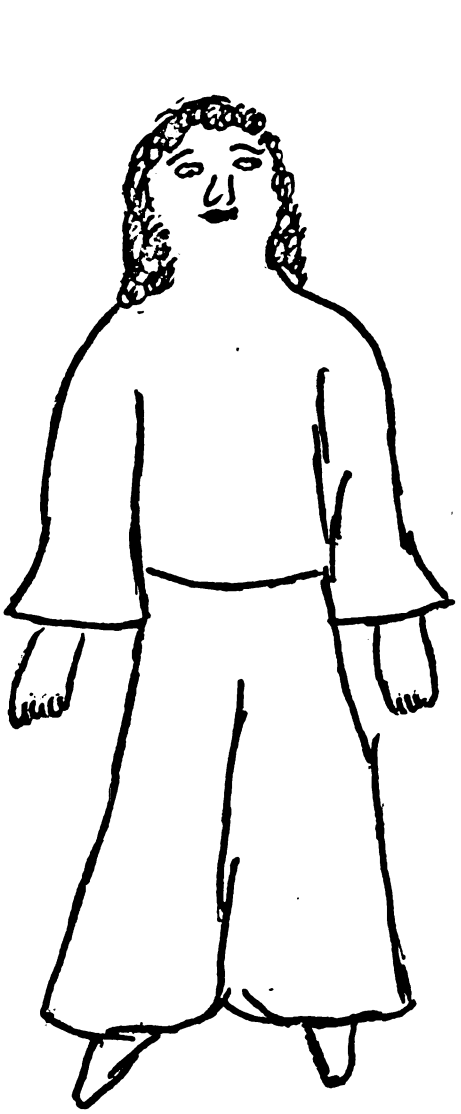
APPENDIX C (cont.)

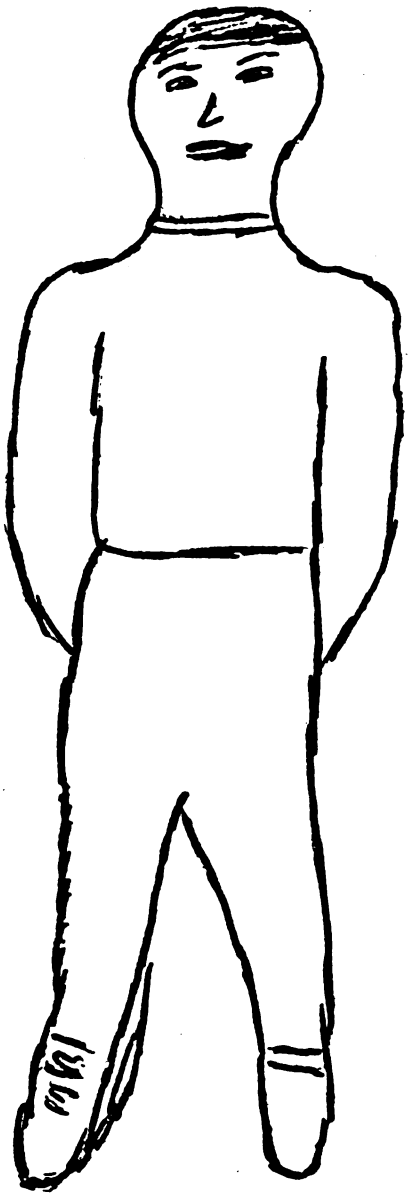


Subject rated # 3

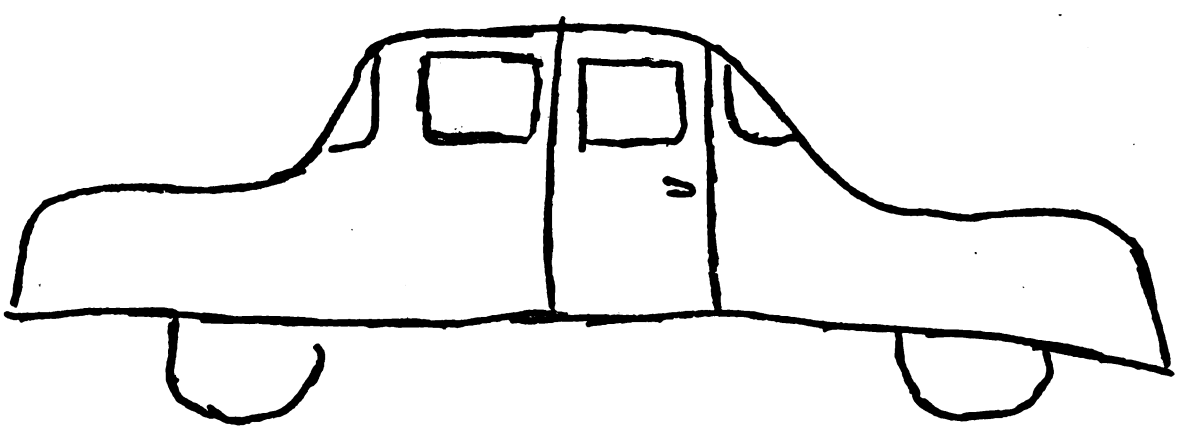


APPENDIX C (cont.)

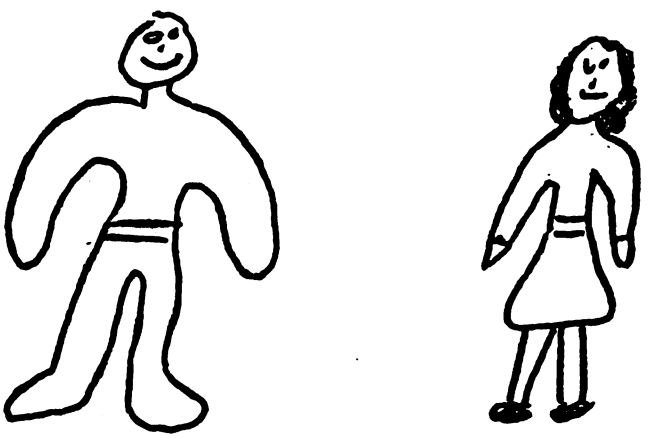




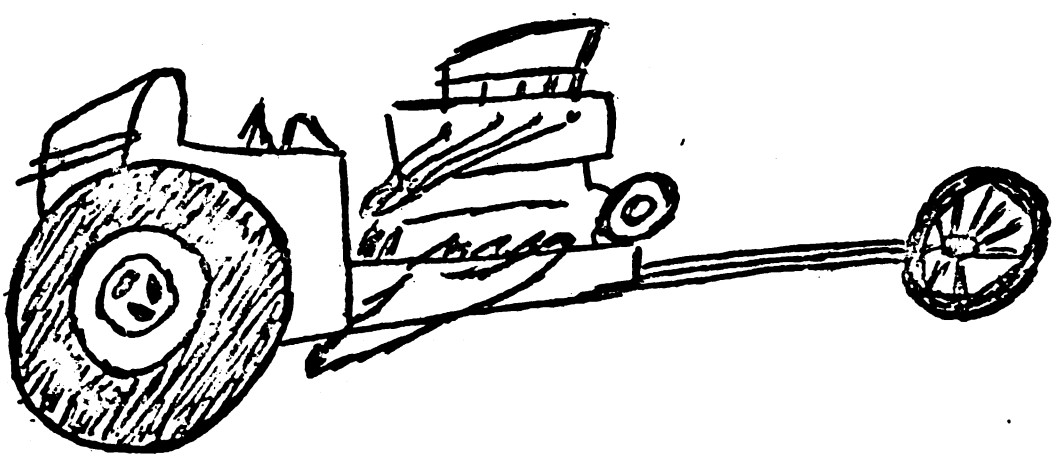
Subject rated # 11



APPENDIX C (cont.)



Subject rated # 25



APPENDIX D

RANK ORDER OF DRAWINGS

APPENDIX D

RANK-ORDER OF DRAWINGS BY THREE RATERS

Subject	Rater #1	Rater #2	Rater #3
1	13	13	13
2	22	21	28
3	9	12	10
4	15	17	19
5	3	3	5
6	25	24	25
7	5	5	4
8	26	26	14
9	10	11	8
10	7	8	7
11	4	4	3
12	19	18	22
13	11	9	11
14	17	16	17
15	20	19	20
16	16	15	12
17	12	14	16
18	30	30	30
19	2	2	2
20	8	7	9
21	29	28	24
22	28	25	26

APPENDIX D (cont.)

Subject	Rater #1	Rater #2	Rater #3
23	27	29	27
24	14	10	15
25	6	6	6
26	23	23	18
27	21	20	23
28	18	22	21
29	24	28	29
30	1	1	1

APPENDIX E

EXAMPLES OF VISUAL IMAGERY

APPENDIX E

EXAMPLES OF VISUAL IMAGERY

Subject # 30 Rated # 1

Automobile

I see a Volkswagon sitting on the black top driveway. . . there's a yard to the left. . . a house. . . trees and a yard and green leaves. . brick along the front of the house. . . dead leaves along the edge of the house. . . worn path around the edge of the house. . . in the back yard there's a barbeque grill. . . there's a piece of metal sticking up out of the sidewalk used for scraping mud off your feet - right by the back door - people often trip over it. . . stairway leading down into the basement. . . a little hallway with a worn out rug. . . kitchen. . . refrigerator that's often freezing up because of the humidity. . . I see another black top drive lined with palm trees out in California. . . a conference room. . . men sitting around a table. . . sitting for a long time. . . back in the living room of the other house now. . . blue carpets. . . gold curtains. . . table with some books on it. . . same carpet leads into the bedroom. . . I see twin beds one of which we just carried from the basement. . . bookcase. . . and a closet. . . other bedroom has a double bed. . . blue bedspread. . . and carpet that needs to be tacked down. . . more carpet in another bedroom - it's gold - that needs to be tacked down. . . kind of a general layout of that gold room. . motorcycle out in the driveway. . . riding the motorcycle in the sand-pits down by the river. . . picture of scenes from a book I've been reading - Level Seven. . . 500 people living underground - future

APPENDIX E (cont.)

Subject # 30 (cont.)

society in the event of nuclear warfare. . . the frustration and boredom in that situation. . . a yoyo. . . I see you frantically turning the voltage now trying to keep the pen on the paper. . . I see a girl smiling. . blue ege shadow. . . soft hair. . . soft cheeks. . . lips. . . my girl pretending that she's peeved at me. . . but she's not really. . . I see a pontoon boat. . . people fishing on it. . . it has a canvas top to provide shade. . . a yellow canoe. . . two people paddling on crystal clear waters. . . sunshine . . . blue sky. . . big trees grow down to the waters edge - there's a rocky shoreline. . . they're enjoying the scenery. . . fishing a little but - mostly paddling along and sightseeing. . I see a shark. . . mouth full of teeth. . .

Male

Well the man is a little out of proportion - I think his head is too big. . and I couldn't get his hand to go around the pole right. . . I drew his head sideways cause that's easier than front view. . . he kind of reminds me of me over on Lake Lansing fishing. . . sneaking along under the trees. . . sometimes getting the line hung up on the trees. . . and finally getting out on the other side and the ground is real soggy and you sink in it and you don't catch any fish. . . now I'm back in a swamp in a boat where the fishing is better. . . lots of lilly pads. . . little bobber that you put on your line is bobbing up and down as the fish fight. . sometimes it takes off and goes in one direction or another - the fish are pulling it. . . I see a big airplane - an airliner in the clouds. . . I took some pictures like this once. . . I see the Market Place in

APPENDIX E (cont.)

Subject # 30 (cont.)

Mexico. . . lots of people running around . . . Americans dickering with street venders. . . brightly colored paintings. . . hats. . . sandels. . purses. . . the hotel where we stayed. . . white with black trim . . . Christmas flowers outside. . . bright red in the sunshine. . . some Mexican boys playing soccer on the lawn. . . I'm playing with them. . . the soccer we played here. . . the balls being kicked around a lot . . . I'm the goalie trying to keep the ball out of the net. . . a girl going up the stairs in Olds Hall . . . wearing black slacks and a black sweat-shirt. . . she's not very pretty. . . now she's out of sight. . . I see another girl I know. . . her name's Cynthia and she's overweight. . . I see a railroad track that we were going beside one morning. . . it goes for miles and miles with blackberry bushes along the side. . . the heavy traffic on a one way street. . . a police car. . . I'm waiting to turn left on that street - but the traffic doesn't stop. . . finally it stops - I turn left. . . I go down Grand River. . . the bank on the corner. . . across the street from the bank there's a restaurant - Cave of the Candles. . . I've always been curious as to what it's like down there. . . I see my sister riding her horse. . . I see the different things she built for training horses - a bridge. . . a gate. . .

Female

The girl is playing ball by a swimming pool. . . she's wearing a bathing suit. . . and she's suppossed to be smiling - having a good time but it doesn't show in the picture. . . still the same image and I'm critizing it cause I can't get the right expression. . . I see the park where we

APPENDIX E (cont.)

Subject # 30 (cont.)

Went on a picnic last week. . . lots of green trees and grass. . . water. . we might have played ball there but it was raining. . . I see the shelter where we ate and barbequed. . . good food. . . good friends. . . I see you writing on the graph. . . a drain pipe inside a house. . . it has a wire beside it. . . I see the drain pipe all along the edge of the house-along the edge of the roof. . . full of leaves. . . I see the old Sigma Nu House and the new one being built beside it. . . new lumber. . . sheet rock. . . 3 stories. . . men working on it. . . picnic table with thermos bottles on top of it. . . I see the workmen eating lunch there - watching prople go by. . . talking and laughing to each other as a coed goes by . . . I see the trailer I've been building. . . splotchy white paint job. . . needs another coat. . . I see all the leaves and pipes and things that need to be cleaned up in the back yard. . . I see the countryside. . . campus here. . . many students walking around on campus with no real purpose in life. . . I don't recognize any of the students - just a lot of people. . . I see my car sitting there. . . see the library. . . see a skyline silhouette of a large city with sky-scrapers. . . smog. . . airplanes flying over. . . a lounge in a dorm - a lot of students meeting there-someone speaking . . . see the new ties I bought today. . . I see a young girl sitting on the floor looking up with a surprised look on her face - wearing a bluish-green kind of a mumu. . .she has blue eyes. . . a round face. . . can't see the rest of the room - she's sitting. . . she faded out. . . see some tennis racquets. . . it's a blurred picture - like they're moving real rapidly...

APPENDIX E (cont.)

Subject # 30 (cont.)

I see a man throwing a baseball - they're wearing uniforms - the pitcher and the catcher - they have blue hats, numbers on the back of their shirts. . long sleeved blue shirts.

Subject # 23 Rated # 29

Female Drawing

she's beautiful. . . has brown hair. . .blue eyes. . . nice shape. . . she looks like she very pleasant, very nice personality. . . she's very introverted, very hard to get to know her. . . and yet she's a very loving and pleasant person. . . it seems as if you didn't know her you'd think she was very, very conceited. . . that is stuck up. . . very dominant. . . .?. . . nothing. . .?. . . I can see her walking. . . towards me. . . but she never seems to get any closer. . . ? . . . same thing. . .

Automobile Drawing

it looks like a modified Volkswagon. . . with the engine in the front. . . with a long, low truck. . . looks like it would be used for a road race of some sort. . . it's painted red. . . has a gold stripe down the side. . it also has mag wheels on it. . . fuel exhaust . . . racing tires. . . it has two air? . . . one on the trunk and one that set up on the road. . the engine has 625 horsepower. . . also high compression engine (?) . .. . picture of the car just sitting there with a crowd of people looking at it . . .it looks like it won a big race or taken first prize in an auto show or something. . .

APPENDIX E (cont.)

Subject # 23 (cont.)

Male Drawing

. . . oh he's a wierd one. . . (?) . . . he acts real weird now. . . real shaky . . . very funny looking. . . he has a wierd nose and a very large pointed nose. . . his eyes are set deep into his head. . . he has a protruding chin. . . must be about the age of 40 . . . he has a face that's just like a baby. . . very smooth. . . he has very large features for his size. . . looks like an oddball. . . could be a mad scientist, or a mad man of some sort. . . he's constantly rubbing his hands together. . . he has a wierd little laugh. . . seems to draw a crowd of spectators wherever he goes. . . spectators seem to sit back and laugh and make jokes about him. . . all he does is laugh back. . . seems like he'd be very brilliant, very intelligent. . .

APPENDIX F

SURVEY OF THE RESEARCH LITERATURE

APPENDIX F

SURVEY OF THE RESEARCH LITERATURE

The psychological interest in drawings is not new, dating back to the late nineteenth century. Art products were probably the first "projective techniques" or indicators of both conscious and unconscious personality trends. As early as 1855 Burckhardt analyzed artistic productions and with amazing accuracy described the dominant personalities and sociopsychological atmosphere of a whole epoch.

Despite this early success, extensive interest in the human figure drawing as a projective technique was to come almost a century later. Meanwhile, children's drawings and their relationship to child development took the foreground. In 1885, Ebenezer Cooke published an article on children's drawings describing successive stages of development as he had observed them. Perhaps the earliest collection of children's drawings is that of Corrado Ricci (1887) of Italian children. Between 1885 and 1920 numerous studies were untaken in an attempt to establish descriptive developmental stages. This paralleled the growth of the child study movement. One of the most successful in these endeavors was Cyril Burt (1921) who published a very psychologically perceptive account of developmental stages.

Two other significant research studies during this period were those of Lamprecht and Claparede. Lamprecht proposed an extensive plan for gathering drawings made according to standardized directions from all parts of the world and all levels of culture. Many thousands of drawings were

APPENDIX F (cont.)

sent, representing almost every nation in the world, even primitive African races. Unfortunately, this was never completed. Claparede in 1907 proposed a similar plan, but with different goals, that of determining any relationship between aptitude in drawing and general intellectual ability. This idea was adopted by several different researchers in the following years.

One of the earlist attempts to devise a purely objective measuring scale based upon age standards was made by Schuyten, although the plan was not successful. Lobsien continued work in this area. A very extensive amd carefully controlled study of this time was done by Kerschensteiner who collected and studied almost 100,000 drawings.

Many studies of an individual's drawings occurred, with Luquet's the best of his time. It involved about 1500 drawings of his daughter between the ages of three and eight and one-half. Numerous other studies compared the drawings of modern children and prehistoric man or primitive races of that day.

Goodenough's (1926) demonstration that a large intellectual component existed in the development of children's drawings initiated a somewhat different direction for the research on figure drawings. This paralleled the psychometric interest in intelligence and was the major emphasis up to 1940. Interest and research in the use of the DAP as an intellectual indicator have continued to the present, although other areas of interest in the DAP have also developed.

Goodenough (1926) developed an objective measure by attempting to disregard artistic elements, by standardizing the scoring system, and

APPENDIX F (cont.)

by specifying the subject which was to be drawn. First, she compared the drawings of 100 children with their chronological ages and school grades, in order to assess the differences related to increasing age and intellectual development. She was primiarily concerned with the accuracy of bodily proportions and the presence of absence of details of the human figure. Only after five revisions was she able to extract 51 items which occurred as a function of increased age and yet would clearly differentiate between the performances of the same age but in different school grades. A point scale was then devised from which a mental age could be derived. Over 5000 drawings were used in the standardization and verification of the scale, with the ages ranging from four to ten years.

Beginning in the 1930's, numerous efforts were made to extend the DAP to adolescents and adults. Much of the research centered upon mentally defective adults, perhaps expecting their drawings to be more child-like. Many of the results have suggested that the DAP may be an adequate measure of the general intellectual ability of adjusted mentally deficient adults, but not of adults who are of average to above average intelligence (Murphy, 1956).

There have been many attempted revisions of the Goodenough Draw-A-Man Scale. Harris (1963) attempted to extend the scale to include the adolescent years and also to develop an alternate form using the figure of a woman. He used 1000 Ss from five years, nine months to fifteen years, eight months. Harris concluded that he was successful in developing an additional form but was unable to extend it to include the adolescent years.

APPENDIX F (cont.)

Beginning in about 1940 with the advent of the "projective methods" of studying personality, widespread research on the projective value of the DAP was initiated. In a survey of the literature on artistic behavior in psychiatric patients, Anastasi and Foley (1940) reported that the spontaneous art productions of many mental patients revealed aspects of their daily behavior, such as, poor organization and a lack of integration. However, many other aspects of their abnormal behavior was not reflected in their drawings which could not be distinguished from the drawings of normals, either in content or style. They concluded that artistic productions do not provide a clear clinical picture of an individual, a fact they did not find surprising in light of the difficulty and often arbitrariness of the classification of psychopathology into distinct clinical types.

Interest in human figure drawings as a psycho-diagnostic tool was greatly stimulated when Machover (1949) published a book on their use in making a comprehensive personality analysis, stating:

> "Again we repeat the basic assumption, verified repeatedly in clinical experience, that the human figure drawn by an individual who is directed to 'draw a person' relates intimately to the impulses, anxieties, conflicts, and compensations characteristic of that individual. In some sense, the figure drawn is that person, and the paper corresponds to the environment (p. 35). "

Machover, used many specific details, line quality, erasures, size, shading, size, symmetry, reinforcements, ommissions, specific content, etc. in the evaluation of the individual's personality. Unfortunately, this was not supported with research evidence, but it did stimulate a large number of research studies in the following years, even to the

APPENDIX F (cont.)

present time. Although the investigations have moved in several directions the basic premise remained: individuals who exhibit different signs of psychopathology draw the human figure differently. A number of investigators submitted drawings to judges to determine if they could make accurate judgements about an individual's adjustment from his drawing of the human figure. If there was success, attempts were made to isolate the distinguishing variables. Other investigators used the Good enough or similar scales, to determine if diagnostically different groups of individuals would obtain significantly different scores on individual items or total test scores. If successful, this in turn could place individuals into diagnostic categories. A third group of researchers tried to disprove the validity of some of Machover's conclusions.

Hammer (1958) has very aptly described the foundation stones upon which the field of projective drawing interpretation rests:

> 1) The use of common psychoanalytic and folklore meaning of symbols, derived from clinician's study of dreams, art, myth, fantasy, and other such activities influenced by unconscious determination.
>
> 2) Clinical experience with the mechanisms of displacement and substitution as well as a wide range of pathological phenomena, especially the conversion symptoms, obsessions. and compulsions, phobias, and the psychotic states, all of which become understandable only within the framework of the comcept of symbolism.
>
> 3) Unraveling of the symbolization employed by inviting the patient's associations.
>
> 4) Empirical evidence
>
> 5) The flooding of frank symbolization onto the drawing pages from the unconscious psychotics' mind.

APPENDIX F (cont.)

6) The correlation between projective drawings made at intervals during the course of therapy and the clinical picture at the times the drawings were produced.

7) Internal consistency between tests and between the data and case histories.

8) And, most basically, the interpretative framework of projective drawings rests upon experimental studies.

(pp. 22,23.)

The remaining sections of this paper will be devoted to a discussion of the research, using the outline followed Swensen (1968) and Roback (1968) in their summaries of the DAP research literature. The following categories will be considered: 1) Reliability; 2) The "Body Image" hypothesis; 3) Global judgements of drawings; 4) Structural and formal aspects of drawings; 5) Content of the drawings.

This article is not intended to be a comprehensive review, including all the research which has been done. Rather, it will present the major trends with some supporting studies. Excellent general reviews have been presented by Swensen (1957), Swensen (1968) and Roback (1968). These should be consulted for greater deatils concerning a study as well as a more comprehensive coverage.

1. Reliability

In general, the reliability of drawings has been quite high. As early as 1949, Machover demonstrated that the structural and formal content is very reliable, although she found the content to be more variable. The studies by both Bradshaw (1952) and Gunderson and Lehner (1949) found consistency for both structural and content aspects in the 70-70 % range. Marzolf and Kirchner (1970) found a high reliability of

APPENDIX F (cont.)

the coding of 73 variables by two judges, with a mean of 91.8%. There were no marked changes, except for a few individuals, when the drawings were repeated after four to six weeks. Stumpfer's 1963 study had reliabilities of .74-.89 for six standardized methods of judging the overall aspects of drawing. Starr and Marcuse (1959) found high reliabilities for five of seven indices while Hammer and Kaplan (1964, 1966) found some signs on children's drawings very reliable, others highly variable. For example, extreme sizes were not reliable. Schubert (1969) in his consideration of reliability, related lower quality on repeated DAP tests to lower motivation.

Inter-judge correlations have been generally high (.79-.97): Casler et al (1958), Stumpfer (1963). Naive raters who taught themselves the Goodenough method had inter-rater reliabilities of .938-.954 (Yates, Barclay and McGilligan; 1969). In Guinan and Hurley's 1965 study, Ph.D's successfully matched drawings made at five week intervals. They also review the reliability of the DAP and report it to be very good (at the .001 level of confidence). Swenson (1968) concluded that global studies, based upon the drawings as a whole, achieve levels of reliability that would generally be considered satisfactory for most psychometric purposes. However, single signs such as line quality or presence or absence of certain body parts are less reliable. This is true of structural aspects of drawings as well as the content of the drawings. Hammer and Kaplan's studies (1964, 1966) suggest that normal drawings tend to be reliable, but drawings containing certain indices of pathology tend to be unreliable. A recent study by Clodfelder and Craddick (1970) lends

APPENDIX F (cont.)

support to this distinction. Psychotics were more varied in their degree of control as demonstrated in greater variance in the size of their drawings than normals.

Two of the most recent studies on reliability were by Stumpfer (1971) and Beck and Bart (1970). Stumpfer found acceptable rerate, interrater and retest reliabilities. Beck and Bart, on a measure of proportionality for the male figure drawing found test-retest (.81) and inter-judge (.91) reliability.

II. The "Body Image" Hypothesis

Machover (1949) stated that "in some senses, the figure drawn is the person, and the paper corresponds to the environment." Hammer (1958) emphasized that the drawing of a human figure is somehow related to an individual's physical or psychological concept of self, an ideal self, or a depiction of his perception of other significant individuals. The very nature of this concept makes it very difficult to arrive at any reliable conclusions; for example, if a crippled child draws a picture of an individual with distorted limbs, it is a self portrait, but if the drawing is of a normal person, then it is a drawing of the ideal self.

As early as 1953, Kotkov and Goodman investigated the basic premise that one's body image is projected in one's drawings. They compared the drawing of a person offered by obese women with those of a control group of non-overweight women. The drawings of the obese women, in almost all cases, were larger or wider than those of the control group.

APPENDIX F (cont.)

A study by Berman and Laffal (1953) found a significant relationship between Sheldon's body types of 88 male neuropsychiatric patients and the body type of the figure they drew.

In 1957, Swensen in his survey of research cited minimal evidence in support of this hypothesis, but stated that a definitive test of the hypothesis seemed impossible. Ten years later Roback concluded "although there appears to be some support for Machover's hypotheses, the inconsistent findings indicate that the relationship between figure drawings and body image is still unclear (1968)." Swensen (1968) took a closer look at the conflicting results and came up with the following conclusion: "the data does indicate that scores on various aspects of the DAP are significantly related to some other measures that would be expected to reflect a subject's image of himself. One interesting regularity is that all of the studies using adult subjects, with the exception of the Hunt and Feldman (1960) study, found some significant relationship between the DAP and some other measure of body image or self-concept. However, that one study by Hunt and Feldman did directly relate body concept to figure drawing performance. Aside from the Hunt and Feldman study, all of the studies cited that produced negative results used children as subjects. This suggests that performance on the DAP reflects one thing for adults and somthing else for children. In any case, the result of the last ten year's research provides more evidence in support of the body image hypothesis than the previous ten years had produced."

APPENDIX F (cont.)

The following studies are some examples supporting the body-image hypothesis. Apfeldorf and Smith (1966) successfully matched the DAP with full length photograohs of subjects. Kamano (1960) found a .59 correlation between the DAP and actual self concept, a .35 correlation between the DAP and the ideal self, and a .36 correlation between the DAP and the least-liked self. Fisher (1959) demonstrated a significant relationship between the GSR directionality and a body disturbance score. Craddick (1963) had subjects draw a person and then draw a picture of themselves, finding some support of the body image hypothesis. Armstrong and Houck (1961) found some resemblance of the opposite sex parent for subjects who drew the opposite sex first. Bodwin and Bruck (1960) developed and validated the DAP as a self concept scale. Schoeberle and Craddick (1968) found that most nurses drew themselves in uniform with senior doing it more frequently than freshman. Seniors rated themselves closer to the ideal nurse and drew larger figures of the "undesirable" nurse than did freshmen. In Rosen and Boe's study (1968), men in a weight lifting course frequently drew a nude male figure. Jernigan (1970) had modest success in judging whether a patient was white or black by his DAP. Ludwig (1969) correlated self perception with the DAP and Craddick (1969) demonstrated some identification on the DAP.

There have also been many studies which have failed to support the body image hypothesis. The following are some examples. Silverstein and Robinson (1961) found a low negative correlation between the subject's height and weight and estimated height and weight of drawings. McHugh (1965) had his subjects uniformly assign ages to their figures that were

APPENDIX F (cont.)

substantially higher than their own ages. Bennett (1964, 1966) found no relationship between self concept and the DAP for sixth grade children. Hunt and Feldman (1960) found no relationship between subjects' ratings of twenty-five body parts on the Body Cathexis Scale. Gravitz (1969) compared the DAP with the sex of the subject drawing them, with no significant relationship. This aspect of the body image will be discussed more extensively in the final section of this paper. Maloney and Payne (1969) concluded that a body image scale was not significantly related to one established measure of body image and only minimally related to a second measure. In Solar, Bruehy, and Kovacs 1970 study, scores on drawings tended to reflect artistic ability rather than conformity or self image.

Additional research is essential to clarify this area of research. Meanwhile, clinicians must be cautious in their interpretation of drawings as the body-image of the subject, especially when considering children's drawings.

III. Global Judgements of Drawings

The global approach to the assessment of figure drawings has been discussed in the introduction of this paper. Some additional studies will be cited in this section.

One frequently posed problem is if drawings represent adjustment or artistic ability and to what extent each is important. Swensen (1968) concluded that drawing a particular part should be considered. The importance of a control for drawing ability and the specific use of the automobile has been discussed in the main body of this paper.

APPENDIX F (cont.)

Several studies support the importance of artistic ability in the drawings of the human figure. Whitmyre (1953) and Sherman (1958) found significant relationships between psychologist's ratings of drawings for adjustment and art teacher's ratings of the same drawings for artistic quality. Billiauskas and Bristow (1959) used art students' drawings, with higher IQ scores using Buck's system than the controls. Feldman and Hunt (1958) found that the more difficult a body part is to draw, the more likely a subject will demonstrate some sign of disturbance in drawing that part. Solar, Bruehl and Kovacs (1970) concluded that the scores on their drawings tended to reflect artistic ability rather than conformity. Eysenck and Eysenck (1970) demonstrated tenative support of the relationship of extraversion to drawing ability.

In 1968 Swensen concluded: "Global ratings of drawings are more reliable than other aspects of drawings, therefore it would be expected that they would be more likely to be significantly related to a variety of personality and behavioral ratings. This expectation is confirmed by the results of the studies. . . Global ratings do not significantly detect specific kinds of pathology, however. It would appear that global ratings, by whatever name they are called, are mostly measuring the overall quality of a drawing, and for the most part, the variables to which they significantly relate are variables that are reflections of gross maladjustment. In the earlier reviews (1957) it was concluded that drawings rated globally are useful screening devices. That conclusion is confirmed by the subsequent evidence summarized here."

APPENDIX F (cont.)

Numerous studies have provided positive support for the global approach of interpreting figure drawings. Nichols and Stumpfer (1962) concluded that the largest single factor in their drawings was the overall quality of the drawing. They had reliabilities in the 80's and 90's for the global measures and reliabilities from .26 to .51 for the individual measures. Lewinsohn (1965) correlated the overall quality with several personality and behavioral measures. Bruck and Bodwin (1963) correlated self ratings based on the DAP with grades. Kahn and Jones (1965) successfully predicted hospital admission by the DAP. Lapkin, Hillaby, and Silverman (1968) used a checklist for figure drawings and differentiated between schizophrenics and neurotics. Engle and Suppes (1970) found that human figure drawing scores were related to self-reported test anxiety, defensiveness, and response latency in problem solving. Individual indices and subscales had little predictive value. Fuller, Preuss, and Hawkins (1970) distinguished between normal and disturbed children on nine emotional indicators. Gardiner (1969) compared 26 cultural groups of eleven thirteen year old boys, finding variations in both the degree of hostility as well as the kind of hostile content portrayed. Mebane and Die (1970) used the Leary diagnostic system and the TAT, finding only gross discrimination of those having loving or hating, dominant or passive interpersonal attitudes.

One line of research involves sexual differentiation. Rabin and Limuaco (1959) found that Filipino children produced drawings with significantly greater sexual differentiation than American children. Hadworth and Normington (1961) demonstrated that sexual differentiation

APPENDIX F (cont.)

improves with age and Murphy (1957) found that women differentiate significantly better than men. Sherman (1958) found that sexual differentiation was significantly related to the rated artistic quality of the drawings. Armon (1960) failed to find a significant relationship between sexual differentiation and female sexuality. Pustel, Sternlicht, and Deutsch (1971) used male homosexuals and revealed a strong feminine tendency in the DAP of passive more than active homosexuals.

Several studies using a global approach have failed to find significant results. Atkinson, Handler, and Shrader (1969) found the DAP to be invalid in assessing religious beliefs. Koppitz (1969) compared lower and middle class fourth and fifth grade children and any differences disappeared when the subjects were matched for age, sex, and I.Q. Ziv and Shechari (1970) stated that the DAP was not a valid measure of social adjustment in school for Isreali children. Cauthen, Sandman, Kilpatrick, and Deabler (1969) found no significant differences in the ratings of bizareness on the DAP for schizophrenics and non-schizophrenics. Lingren (1971) found no significant differences between shy and aggressive five to twelve year olds. Jensen, Prandoni, and Abudabbeth (1971) found no significant difference between sex offenders and a random sample

IV. Structural and Formal Aspects of Drawings

Structural and formal aspects of drawings include general characteristics such as size, position upon page, the quality of the lines drawn, etc. In Swensen's 1968 summary, he found the reliability of these various indicators to vary mostly between .30 and .50 "Since the reliability of these indicators is lower than the reliability of global measures, it

APPENDIX F (cont.)

would be expected that they would less consistently relate significantly to other measures of personality or behavior. A survey of the research evidence would be expected to produce contradictory results." Swensen found this to be true in both his surveys (1957, 1968). Handler and Reyher (1965) also found conflicting results for several structural characteristics. However, in addition to the preference for a global approach, they attributed some of the conflicting results to the failure to differentiate between external and intrapsychic stress, as has been discussed in the introduction to this paper.

Drawing Size

Handler and Reyher (1965) concluded that both small and large drawings seem to indicate anxiety. Size increase and decrease seems to be a fairly reliable index. Head size and head to body ratio appears to be less reliable. Both Machover (1949) and Hammer (1958) asserted that size is related to self esteem and energy level, with high energy - high self esteem subjects drawing larger figures and low self-esteem subjects drawing smaller figures. Hammer adds that the size of the drawing may also reflect "fantasy self-inflation." Swensen (1968) concluded that there is some evidence that the size of the figure reflects self-esteem, but the evidence is not consistent.

The following studies are examples of the research which has found size related to self-esteem. Cramer-Azima (1956) reported that a patient at the beginning of treatment, when he was meek and depressed, drew a figure about $3\frac{1}{2}$ inches high. After twenty-one days of treatment, when the patient showed signs of euphoria and later became grandiose, the figure

APPENDIX F (cont.)

was $8\frac{1}{2}$ inches tall. As the patient's behavior became less expansive and less euphoric, the figure drawn was $6\frac{1}{2}$ inches tall. Gray and Pepitone (1964) found that the drawings of high self esteem subjects covered significantly more area than low self esteem subjects. In Lakin's study (1960), institutionalized aged subjects (with presumerably lower self esteem) had smaller drawings than noninstitutionalized subjects. Koppitz (1966) demonstrated that shy children draw smaller figures as do depressed subjects according to Lewinsohn (1964). McHugh (1966) found that children suffering from conduct disturbances drew larger figures than neurotic children. And in Rosenberg's study (1965) a paranoid's drawings grew smaller as he improved. A recent study by Clodfelder and Craddick (1970) demonstrated that psychotics are more varied in their degree of control as indicated by the size of their drawings. Generally, the results suggest that either a very large or a very small drawing are pathological.

Size of the drawing has also been found to be related to: father's presence in a boy's home (Lawton and Sechrist, 1962); presence of a brain tumor (Mabry, 1964); mental age (Zuk, 1962); being a well-adjusted child (Koppitz, 1966); and anxiety in male alcoholics (Craddick and Leipold, 1968).

Other studies have failed to demonstrate any significant relationship between size and self-esteem (Bennett, 1964, 1944; Reznikoff and Nichols, 1968; Craddick, 1962; Goldstein and Rawn, 1957; and Exner, 1962). Swensen (1962) also summarized the other conflicting results: "size has been found to not be related to: diagnostic categories of mental illness or

APPENDIX F (cont.)

chronicity of illness (Strumpfer, 1963; Strumpfer and Nichols, 1962;); school achievement (Koppitz, 1966); (Lourenso, Greenbery and Davidson, 1965); Dominance (Shry, 1966); or seeking a furlough from a V.A. center (Apfeldorf et al, 1966)."

Swensen (1968) concluded: "The size of the drawing does seem to reflect self esteem, and probably fantasied self-inflation, but with an inconsistency that is the reflection of the relative lack of reliability of the size of the drawings."

Placement

Machover (1949) suggested that a figure placed on the right side of the page indicates a person who is self-oriented. Placement high on the page indicates optimism, while placement low on the page indicates pessimism. Hammer (1958) suggested that placement high on the page indicated striving, and drawing near the center indicates more self-centeredness, while placement on the left indicates impulsiveness and placement on the right indicates impulse control.

The reliability of placement has generally been poor. Hammer and Kaplan did not find the placement of the figure beyond chance reliability (1966). Swensen's 1957 survey found that the hypotheses concerning placement were not supported. Handler and Reyher (1965) reported seven studies supporting the hypotheses and eight studies either not supporting the hypotheses or producing conflicting results. Swensen (1968) concluded: "the evidence suggests that for every study finding a significant relationship between placement and some other behavioral characteristics, there exists a study relating similar kinds of data without significant results.

APPENDIX F (cont.)

The reliability of placement suggests these results are precisely what should be expected." Reference is made to one of the three summaries mentioned above for a detailed discussion of the research.

Perspective

Drawing the figure in profile is hypothetically related to evasiveness (Machover, 1949). However, Swensen (1968) has concluded that it is more related to sex and handedness, with females drawing the figures facing forward. Those who do draw profiles, right handed subjects are more likely to draw profiles facing left, while left handed subjects draw the profiles facing equally in both directions. Exner (1962) found that neurotics and character disorders drew profiles more often than normals, but McHugh (1966) failed to find profile drawing related to behavior problems in children.

Stance

According to Machover (1949), stance indicated perceived stability with insecure subjects drawing figures that are falling down or floating. An early study by Goldworth (1950) reported a difference between normals and neurotics in the stance of the drawings. No normal subjects drew figures which lacked equilibrium or were floating. Drawings by schizophrenics tended to be similar to the drawings by neurotics, except that there were a substantial number of floating figures drawn by schizophrenics. The brain damaged subjects drew the least number of figures having a definite equilibrium. The reviews by Swensen (1957), (1968) and Handler and Reyer (1965) all tend to support this hypothesis, although the reported reliability is only between .31 and .43. All of the studies report-

APPENDIX F (cont.)

ing contradictory results used children and adolescents, which may be significant.

Line Quality

Heavy lines indicate assertive, aggressive individuals who wish to erect a strong barrier between themselves and the environment, while light lines are drawn by passive, meek persons who are unable to differentiate themselves from the environment (Machover, 1949; Hammer, 1958). Faint "ectoplasmic" lines are drawn by hysterics. Angular and jagged lines are masculine and indicate aggressiveness while curving lines are feminine.

Hammer (1958) reported line pressure as being reliable; however, there has not been adequate research in this area. It is more likely that the reliability is in the low range of the other structural variables. Swensen (1957) reported conflicting findings. The more recent reviews (Handler and Reyher, 1965); (Swensen, 1968) also report conflicting findings, but with substantially more significant than insignificant results.

An early study by Gutman (1952) reported that patients who did not improve in therapy tended to draw continuous and reinforced lines; while patients who did improve tended to draw their figures with light or sketch lines. Heavy emphasis has been associated with induced stress (Handler and Reyher, 1964), and paranoid subjects (Reznikoff and Nicholas (1958). Firm outer boundaries occurred for subjects less likely to be admitted to a hospital (Kahn and Jones, 1965). Sketch lines have been associated with low self concept (Bodwin and Bruck (1960) and character

APPENDIX F (cont.)

disorders and neurotics (Exner, 1962). Others found no differences between groups and no effects on anxiety: Goldstein and Rawn, 1957; Holt and Baron, 1958; McHugh, 1966; Hilter and Nesvig, 1965).

Handler and Reyher (1965) concludes that heavy line, and line pressure increase seem to be better predictors of anxiety than does light line. They also suggest that light line may indicate intrapsychic stress while heavy line may reflect external stress.

Swensen (1968) concludes that the one consistency is the inconsistency.

Shading

Shading is suppossed to indicate anxiety. However, the reported reliability is only .31, lower than for most other structural aspects of drawings. The early review by Swensen (1957) reported nonsignificant results. Handler and Reyher (1965) reported equal numbers of studies reporting significant, nonsignificant, and conflicting results, while Swensen (1968) found nonsignificant results predominating.

Shading has been associated with: adjustment problems (Koppotz, 1966); physical crippling (Wysocki and Whitney, 1965); and intrapsychic anxiety (Handler and Reyher, 1964).

Handler and Reyher (1966) have proposed several explanations for the conflicting results. The issue of internal vs. external sources of anxiety must be considered, as discussed in the introduction to this paper. The issue of methods of coping is also relevant. Some subjects cope with anxiety by shading while others withdraw and therefore do not shade, resulting in a cancellation effect or nonsignificant findings. The degree of external stress must also be considered.

APPENDIX F (cont.)

Swensen (1968) warns of another problem, that is that shading is a sign usually found in drawings of good quality. Since drawing quality is positively related to adjustment, shading is confounded with the adjustment variable.

Erasures

According to Machover (1949) "this form of conflict treatment is seen mostly in neurotics, obsessive compulsive characters, and in psychopaths with neurotic conflicts." The early studies indicated that where differences did exist, they occur in the opposite direction, with normal producing the greatest number of erasures (Rpyal, 1949; Holzberg and Wexler (1950) and Goldworth, 1950). Swensen (1968) found the significant and nonsignificant results about evenly divided. Handler and Reyher (1965) suggested similar explanations for erasures as they do for shading.

Omissions

Omitting significant details in drawings (Hammer, 1968) is related to using defenses of withdrawal, and feelings of emptiness. Omissions are found in relatively primitive drawings, and thus are more likely to be noted in the drawings of psychotics, organics, and young children.

Omissions appear to be somewhat more reliable than other structural indicators', with a reported test-retest reliability of .54, (Swensen, 1968). The majority of the studies report significant results (22 out of 24 in Handler and Reyher's 1965 review). Omissions have been positively related to: disturbed children and intelligence (Koppitz, 1966); stress (Handler and Reyher, 1964); disturbed adolescents (Hiler and Nesvig, 1965);

APPENDIX F (cont.)

admission to a psychiatric hospital (Kahn and Jones, 1965); the aged (Lorge et al, 1958); poorly adjusted kindergarten children (Vane and Eisen, 1962); regressed schizophrenics, (Baldwin, 1964); and anxiety (Morgar, 1962).

Other studies have found no significant results. These studies have generally related normals to outpatients or have related omissions to measures of anxiety.

Swensen concludes (1968): "Tt seems probable that omissions are characteristic of severly regressed patients, and thus to distinguish between normal, or relatively normal subjects and severly disturbed subjects, but fail to distinguish between normals and other patient groups, such as homosexuals and character disorders, who are not suffering from an overwhelming severe disorder. Omissions among the very young, would probably be a relatively sensitive indicator, but lose this sensitivity as the children grow older and their drawing skills improve. It must be concluded that, ingeneral, omission of significant body parts is a fairly dependable indicator of severe pathology."

Transparency

"A drawing contains a transparency when a body part shows through the clothing or internal organs show through the skin" (Swensen 1968). The reported reliability is quite low (.26). Handler and Reyher (1965) and Swensen (1968) both found about half of the studies obtaining significant results.

Transparencies have been positively related to: disturbed adolescents (Hiler and Nesvig, 1965); and negative self-concept (Bodwin and Bruck, 1960); and behavior promblems in children (Koppitz, 1966).

Distortion

Distortion is considered to indicate a subject suffering a severe emotional upheaval (Hammer, 1968), and is characterized by body parts being drawn out of proportion, parts not connected to the body, and parts drawn in inappropriate areas of the body.

Most studies have shown positive results: Swensen (1968); Handler and Reyher (1965). Distortions have been positively associated with: disturbed adolescents (Hiler and Nesvig, 1965); adolescents with a low self concept (Bodwin and Brusk, 1960); disturbed children and low achievement (Koppitz 1966); anxiety (Handler and Reyher, 1964); admission to a psychiatric hospital (Kahn and Jones, 1965); the aged (Kahn and Jones, 1965); and poorly adjusted kindergarten children (Vane and Eisen, 1962).

Swensen (1968) concluded: "The cited evidence overwhelmingly indicates that distorted drawings differentiate between severly disturbed subjects and other kinds of subjects. Distortion of the drawings is the external manifestation of severe emotional disruption.

Symmetry

Symmetry is the extent to which the two sides of the figure are symetrical. Presumably, a drawing which stresses bilateral symmetry of the figure indicates rigidity and obsessive-compulsiveness (Hammer, 1958). Swensen (1968) reported three out of four studies had nonsignificant results, Little research has been done in this area.

APPENDIX F(cont.)

V. Content Analysis of Drawings

There has been a large body of research dealing with the significance of the drawing of particular body parts. Swensen (1957) summarized the earlier research, reporting either that most of the hypotheses concerning the significance of a particular kind of treatment for a particular body part were not supported by the evidence, or the hypotheses had not been tested. In the later summary (Swensen), 1968, the evidence is either conflicting or negative. One clear exception is the sex of the first drawn person. This is the only area which will be discussed at length in this paper. All other content categories will be briefly summarized.

Swensen (1968) further summarized: "... for most of the body parts acceptable reliability information is either not available, or the rendering of a particular part in a particular manner is not consistent. Subjects' drawings of body parts are not reliable. This should not be surprising, since the drawing of a particular body part is a very small sample of behavior. Global ratings of the drawings encompass all of the behavior sampled by a drawing and have relatively high reliabilities. Structural aspects of the drawings sample a smaller amount of the universe of the figure drawing behavior, and have reliabilities that are somewhat lower than the global ratings. The drawing of a particular body part samples an even smaller sample of the subject's figure drawing behavior, and thus would be expected to have still lower reliability. Low reliabilities would be expected to result in few or no consistent relationships between the rendering of a particular body part, and a particular psychological symptom."

APPENDIX F (cont.)

Sex on the First Figure Drawn

Swensen (1968) stated: "Since the first figure drawn by a subject was presumed to be, in fact, the subject's drawing of his unconscious perception of himself, it was hypothesized that if the first figure the subject drew was of the opposite sex, then the subject was identified with the other sex. This hypothesis lent itself to relatively easy empirical tests, which failed to produce significant evidence (Swensen, 1957)." The evidence of more recent research suggests "that the sex of the first drawn figure is a more complex phenomenon than the simple sexual identification hypothesis would suggest. The sex of the first drawn figure is significantly related to a variety of behavior deviances. . . The proportion of subjects drawing the opposite sex on the first drawn figure varies with both age and sex, suggesting that this particular sign needs to be interpreted with some consideration of the specific subject producing the drawing."

Through grade school, both boys and girls predominantly draw their own sex first, (Butler and Marcuse, 1959; Hammer and Kaplan, 1964). After grade school, less than half the girls draw a female first (Butler and Marcuse, 1959); (Craddick, 1963; Gravitz, 1966). A recent study with adults (public school teachers) by Cull and Hardy (1971) indicated that the female figure is drawn first most of the time by females (79%) and is drawn first only by a minority of males (21%). A significant differentiation could also be made on the basis of a high or low masculinity score between females who draw the female figure first. In another recent study using Japanese, Navajo, American white and Negro seven year olds (Henderson, 1971), only one figure was drawn with the following results: girls drew

APPENDIX F (cont.)

self-sex more frequently than boys; both sexes drew their own sex more frequently than the opposite sex; and the tendency to draw the self-sex was the strongest among the Japanese.

The sex of the first figure drawn has also been related to: homosexuality (Whitaker, 1961; Armon, 1960); complications in delivering children (Davids and DeVault, 1960); drug addicts (Kurtzberg et al, 1966); male alcoholics (Laird, 1962: Wisotsky, 1959): impotence following priapism (Pollitt et al, 1964); neurotic children (McHugh, 1966); admission to a psychiatric hospital (Kahn and Jones, 1965); Identification with opposite sex parent (Armstrong and Hauck, 1961); and low self concept (Bodwin and Bruck, 1960).

Several recent studies have not followed the general trends. Gravitz (1969) found no significant relationship between the DAP and the sex of the subject drawing it. Vroegh (1970), using three to five year olds, found that sex role identity scores were not related to reported sex of the figure drawn. Gravitz (1969) reported that the normal female figure choice was not related to an MF score on the MMPI, and males with high MF scores drew more same-sex figures then didthose with low scores. Melikan and Wehab (1969) did a cross-cultural study, with a significantly larger number of women than men drawing a picture of the opposite sex first.

Swensen (1968) concluded: "The research review has produced enough significant results to suggest that the sex of the first-drawn figure is related to self concept, but in a complex manner that is not yet clear. The attempts to relate the sex of the first drawn person to symptoms of pathology have also produced significant results, but the proportions of

APPENDIX F (cont.)

abnormal persons drawing the opposite sex first do not deviate sharply enough from the base rates of normals drawing the opposite sex first to warrant using it as a diagnostic sign in the individual cases."

Other Content Categories

Roback (1968) has summarized the following: head, face, facial expression, mouth, lips, eyes, eyebrow, ear, hair, nose, contact features, and miscellaneous body features such as trunk, breasts, shoulders, hips and buttocks, waistline, anatomy indications, joints, and clothing.

For each of these categories, Roback presents Machover's (1949) hypothesis, Swenses's 1957 conclusion, a review of the literature since 1956, and the current (1968) summary. None of these signs have received adequate support, and thus will not be discussed further in this paper. For additional information on this area, referral is made to Roback's summary.

REFERENCES

Anastasi, A., and Foley, J. A survey of the literature on artistic behavior in the abnormal. Psychological Monographs; General and Applied. 1940, 52, No. 6.

Appeldorf, M., and Smith, W. The representation of the body self in human figure drawings. Journal of Projective Techniques and Personality Assessment. 1966, 30, 283-289.

Armon, V. Some personality variables in overt female homosexuality. Journal of Projective Techniques. 1960, 24, 292-309.

Armstrong, R., and Hauck, P. Sexual identification and the first figure drawing. Journal of Consulting Psychology. 1961, 25, 51-54.

Attkisson, C., Handler, L., and Shrader, R. The use of figure drawings to assess religious values. Journal of Psychology. 1969, 71 (1), 27-31.

Baldwin, I. The head-body ratio in human figure drawings of schizophrenic and normal adults. Journal of Projective Techniques. 1964, 28, 393-396.

Beck, M., and Bart, L. Inter-rater and test-retest reliability of a proportionality measure for the DAP. Perceptual and Motor Skills. 1970, 30 (1), 89-90.

Bennett, V. Does size of figure drawing reflect self-concept? Journal Consulting Psychology. 1964, 28, 285-286.

Bennett, V. Combination of figure drawing characteristics related to drawer's self concept. Journal of Projective Techniques. 1966, 30, 192-196.

Berman, S., and Laffal, J. Body type and figure drawing. Journal of Clinical Psychology. 1953, 9, 368-370.

Bieliauskas, V. and Bristow, R. The effect of formal art training upon the quantitative scores of the H-T-P. Journal of Clinical Psychology. 1959, 15, 57-59.

Bodwin, R., and Bruck, M. The adaptation and validation of the Draw-A-Person test as a measure of self concept. Journal of Clinical Psychology. 1960, 16, 427-429.

Bradshaw, D. A study of group consistencies on the Draw-A-Person Test in relation to personality projection. Unpublished master's thesis, Catholic University, 1952.

Bruck, M., and Bodwin, R. Age differences SCS-Dap test results and GPA. Journal of Clinical Psychology. 1963, 19, 315-316.

Buttler, R., and Marcuse, F. Sex identification at different ages using the Draw-A-Person Test. Journal of Projective Techniques. 1959, 23, 299-302.

Cassel, R., Johnson, A., and Burns, W. Examiner, ego defense, and the H-T-P Test. Journal of Clinical Psychology. 1958, 14, 157-160.

Cauthen, N., Sandman, C., Kilpatrick, D., and Deabler, N. DAP correlates of Sc scores on the MMPI. Journal of Projective Techniques and Personality Assessment. 1969, 33(3), 262-264.

Clodfelder, D., and Craddick, R. Variance in size of drawing in a psychotic population. Perceptual and Motor Skills. 1970, 30(1), 110.

Craddick, R. Identification with the aggressor through figure drawing. Perceptual and Motor Skills. 1969, 28(2), 547-550.

Craddick, R. The self-image in the Draw-A-Person Test and self-portrait drawings. Journal of Projective Techniques and Personality Assessment. 1963, 27, 288-291.

Craddick, R., Leipold, W., and Cacavas, P. The relationship of shading on the Draw-A-Person Test to manifest anxiety scores. Journal of Consulting Psychology. 1962, 25, 193.

Craddick, R., Leipold, W., and Leipold, V. Effect of role-empathy on height of human figures drawn by male alcholoics. Perceptual and Motor Skills. 1970, 30(3), 747-752.

Cramer-Azima, F. Personality changes and figure drawings: A case treated with ACTH. Journal of Clinical Psychology. 1956, 20, 143-149.

Cull, J. and Hardy, R. Concurrent validation information on the Machover DAP Test. Journal of Genetic Psychology. 1971, 118(2), 211-215.

Davids, A., and DeVault, S. Use of the TAT and human figure drawings in research on personality, pregnancy, and perception. Journal of Projective Techniques. 1960, 24, 362-365.

Engle, P., and Suppes, J., The relation between human figure drawing and test anxiety in children. Journal of Projective Techniques and Personality Assessment. 1970, 34(3), 223-231.

Exner, J. A comparison of the human figure drawings of psychoneurotics, character disturbances, normals, and subjects experiencing experimentally induced fear. Journal of Projective Techniques. 1962, 26, 392-397.

Eysenck, S., Russel, T., and Eysenck, H. Extraversion, intelligence, and ability to draw a person. Perceptual and Motor Skills. 1970, 30(3), 925-926.

Fisher, S. Body reactivity gradients and figure drawing variables. Journal of Consulting Psychology. 1959, 23, 54-49.

Fuller, G., Preuss, M., and Hawkins, W. The validity of the human figure drawings with disturbed and normal children. Journal of School Psychology. 1970, 8(1), 54-56.

Gardner, J. Indicators of homosexuality in the human figure drawings of heroin- and pill-using addicts. Perceptual and Motor Skills. 1969, 28(3), 705-706.

Goldstein, A., and Rawn, M. The validity of interpretive signs of aggression in the drawing of the human figure. Journal of Clinical Psychology. 1957, 13, 169-171.

Goldworth, S. A comparitive study of the drawings of a man and a woman done by normal, neurotic, schizophrenic, and brain damaged individuals. Unpublished doctoral dissertation. University of Pittsburg, 1950.

Goodenough, F. Measurement of Intelligence by Drawings. New York. Harcourt, Brace and World, 1926.

Gravitz, M., Direction of Psychosexual Interest and figure drawing choice. Journal of Clinical Psychology. 1969, 25(3), 311.

Gravitz, M. Normal adult differentiation patterns on the figure drawing test. Journal of Projective Techniques. 1966, 30, 471-473.

Gray, D., and Pepitone, A. Effect of self-esteem on drawings of the human figure. Journal of Consulting Psychology. 1964, 28, 452-455.

Guinan, J., and Hurley, J., An investigation of the reliability of human figure drawings. Journal of Projective Techniques. 1965, 29, 300-304.

Gunderson, E., and Lehner, G. Reliability in a projective test (the Draw-A-Person). American Psychologist. 1949, 4, 387.

Gutman, B. An investigation of the applicability of human figure drawings in predicting improvement in therapy. Unpublished doctoral dissertation. New York University. 1952.

Hammer, E. The Clinical Application of Projective Drawings. Springfield, Ill. Charles C. Thomas, 1958.

Hammer, M., and Kaplan, A. The reliability of sex of first drawn figure by children. Journal of Clinical Psychology. 1964, 20, 251-252.

Hammer, M., and Kaplan, A. The reliability of size of children's drawings. Journal of Clinical Psychology, 1964, 20, 121-122.

Hammer, M., and Kaplan, A. The reliability of children's human figure drawings. Journal of Clinical Psychology. 1966, 22, 316-319.

Handler, L., and Reyher, J. The effects of stress on the Draw-A-Person Test. Journal of Consulting Psychology. 1964, 28,259-264.

Handler, L., and Reyher, J. Figure drawing anxiety indices: A review of the literature. Journal of Projective Techniques. 1965, 29 305-313.

Handler, L., and Reyher, J. Relationship between GSR and anxiety indexes in projective drawings. Journal of Consulting Psychology. 1966, 30, 60-67.

Harris, D. Children's Drawings as Measures of Intellectual Maturity. New York: Harcourt, Brace and World. 1963.

Haworth, M., and Normington, C. A sexual differentiation scale for the D-A-P Test. Journal of Projective Techniques. 1961, 25, 441-450.

Henderson, N. Sex of person drawn by Japanese, Navajo, American white and Negro seven year olds. Journal of Personality Assessment. 1971, 35(3), 261-264.

Hiler, E., and Nesvig, D. An evaluation of criteria used by clinicians to infer pathology from figure drawings. Journal of Consulting Psychology. 1965, 29, 520-529.

Holzberg, J., and Wezler, M. The validity of human drawings as a measure of personality deviation, Journal of Projective Techniques. 1950, 14, 343-361.

Hoyt, T., and Baron, M. Anxiety indices in same sex drawings of psychiatric patients with high and low MAS scores. Journal of Consulting Psychology. 1958, 23, 448-452.

Hunt, R., and Feldman, M. Body image and rating of adjustment on human figure drawings. Journal of Clinical Psychology. 1960, 16, 35-38.

Jensen, D., Prandoni, J., and Abudabbeh, N. Figure drawings by sex offenders and a random sample of offenders. Perceptual and Motor Skills. 1971, 32(1), 295-311.

Jernigan, A. Judging whether a patient is white or black by his Draw-A-Person test. Journal of Projective Techniques and Personality Assessment. 1970, 34(6), 503-506.

Johnson, J. Note on the Validity of Machover's indicators of anxiety. Perceptual and Motor Skills. 1971, 33(1), 126.

Kahn, M, and Jones, M., Human figure drawings as predictors of admission to a psychiatric hospital. Journal of Projective Techniques. 1965, 29,319-322.

Kamano, D. An investigation of the meaning of human figure drawings. Journal of Clinical Psychology. 1960, 16,429-430.

Koppitz, E. Emotional indications on human figure drawings of boys and girls from lower and middle class backgrounds. Journal of Clinical Psychology, 1969, 25(4), 432-434.

Kotkov, B., and Goodman, M. The Draw-A-Person Test of obese women, Journal of Clinical Psychology. 1953,9,362-363.

Kurtzbery, R., and Cavior, N., and Lipton, D. Sex drawn first and sex drawn larger by oppiate addict and non-addict inmates on the Draw-A-Person Test. Journal of Projective Techniques, 1966,30,55-58.

Laird, J. A comparison of female normals, psychiatric patients, and alcoholics for sex drawn first. Journal of Clinical Psychology. 1962, 18,473.

Laird, J. A comparison of male normals, psychiatric patients, and alcoholics for sex drawn first. Journal of Clinical Psychology. 1962, 18,302.

Lakin, M. Formal characteristics of human figure drawings by instituitionalized and non-institutionalized aged. Journal of Gerontology. 1960, 15,76-78.

Lapkin, B., Hillaby, T., and Silverman, L. Manifestations of the schizophrenic process in the drawings of adolescents. Archives of General Psychiatry. 1968, 19 (4), 465-468.

Lawton, M., and Sechrest, L. Figure drawings of young boys from father-present and father-absent homes. Journal of Clinical Psychology. 1962, 18, 304-305.

Lewinsohn, P. Relationship between height of figure drawings and depression in psychiatric patients. Journal of Consulting Psychology. 1965, 29, 504-512.

Lingren, R. An attempted replication of emotional indicators in human drawings by shy and aggressive children. Psychological Reports. 1971, 29(1), 35-38.

Lorge, I., Tuckman, J., and Dunn, M., Human figure drawings by younger and older adults. Journal of Clinical Psychology. 1958, 14,54-56.

Mabry, M. Serial projective drawings in a patient with a malignant brain tumor. Journal of Projective Techniques. 1964, 28, 206-209.

Machover, K. Personality Projection in the Drawing of the Human Figure. Springfield, Ill. Charles C. Thomas. 1949.

Maloney, M., and Payne, L. Validity of the Draw-A-Person Test as a measure of body image. Perceptual and Motor Skills. 1969, 29(1), 119-122.

Marzolf, S., and Kirchner, J. Characteristics of House-Tree-Person drawings by college men and women. Journal of Projective Techniques and Personality Assessment. 1970, 34(2), 135-145.

McHugh, A. H-T-P proportion and perspective in Negro, Puerto Rican, and white children. Journal of Clinical Psychology, 1963, 19, 312-314.

McHugh, A. Age associations in children's figure drawings. Journal of Clinical Psychology. 1965, 21, 429-431.

McHugh, A. Children's figure drawings in neurotic and conduct disturbances. Journal of Clinical Psychology. 1966, 22, 219-221.

Mebane, D., and Die, T. A scoring system for human figure drawings as a measure of personality at Level III of the Leary Interpersonal Diagnostic System. Perceptual and Motor Skills. 1970, 30(2), 385-389.

Melikian, L., and Wehab, A. First-drawn picture: A cross-cultural investigation of the DAP. Journal of Projective Techniques and Personality Assessment. 1969, 33(6), 539-541.

Mogar, R. Anxiety indices in human figure drawings. Journal of Consulting Psychology. 1962, 26, 108.

Murphy, M. A Goodenough scale of evaluation of human figure drawings of three non-psychotic groups of adults. Journal of Clinical Psychology. 12, 1956, 397-399.

Murphy, M. Sexual differentiation of male and female job applicants on the Draw-A-Person Test. Journal of Clinical Psychology. 1957, 13, 87-88.

Pollit, E., Hirsch, S., and Money, J. Priapism, impotence, and human figure drawing. Journal of Nervous and Mental Disorders. 1964, 139, 161-168.

Pustel, G., Sternlicht, M., and Deutsch, M. Feminine tendencies in figure drawings by male homosexual retarded dyads. Journal of Clinical Psychology. 1971, 27(2), 260-261.

Rabin, A., and Limuaco, J. Sexual differentiation of American and Filipino children as reflected in the Draw-A-Person Test. Journal of Social Psychology. 1959, 50, 207-211.

Reznikoff, M., and Nichols, A. An evaluation of human figure drawing indicators of paranoid pathology. Journal of Consulting Psychology. 1958, 22, 395-397.

Roback, H. Human figure drawings: their utility in the clinical psychologist's armamentarium for personality assessment. Psychological Bulletin. 1968, 70(1), 1-19.

Rosen, A., and Boe, E. Frequency of nude figure drawings. Journal of Projective Techniques and Personality Assessment. 1968, 32(5), 483-485.

Rosenberg, L. Rapid changes in overt behavior reflected in the Draw-A-Person: A case report. Journal of Projective Techniques. 1965, 29, 348-351.

Royal, R. Drawing characteristics of neurotic patients using a drawing-of-a-man-and-woman technique. Journal of Clinical Psychology. 1949, 5, 392-395.

Sandman, C., Kilpatrick, D., and Deabler, N. Size of figure drawings in relation to depression. Perceptual and Motor Skills. 1968, 27(3), 945-946.

Schoeberle, E., and Craddick, R. Human figure drawings by freshman and senior student nurses. Perceptual and Motor Skills. 1968, 27(1), 11-14.

Schubert, D. Decrease of rated adjustment on repeat DAP Tests apparently due to lower motivation. Journal of Projective Techniques and Personality Assessment. 1969, 33(1), 34.

Sherman, L. The influence of artistic quality on judgements of patient and non-patient status from human figure drawings. Journal of Projective Techniques. 1958, 22, 338-340.

Sherman, L. Sexual differentiation or artistic ability? Journal of Clinical Psychology. 1958, 14, 170-171.

Silverstein, A., and Robinson, H. The representation of physique in children's figure drawings. Journal of Consulting Psychology. 1961, 25, 146-148.

Solar, D., Bruehl, D., and Kovacs, J. The Draw-A-Person Test: Social conformity or artistic ability? Journal of Clinical Psychology. 1970, 26(4), 524-525.

Starr, S., and Marcuse, F. Reliability in the Draw-A-Person Test. Journal of Projective Techniques. 1959, 23, 83-86.

Stumpfer, D. The relation of Draw-A-Person Test variables to age and chronicity in psychotic groups. Journal of Clinical Psychology. 1963, 19, 208-211.

Strumpfer, D. Validation of two quality scales for children's figure drawings. Perceptual and Motor Skills. 1971, 32(3), 887-893.

Swensen, C.. Empirical evaluations of human figure drawings. Psychological Bulletin. 1957, 54, 431-466.

Swensen, C. Empirical evaluations of human figure drawings: 1957-1966. Psychological Bulletin. 1968, 70, 20-45.

Vane, J., and Eisen, V. The Goodenough Draw-A-Man Test and signs of maladjustment in kindergarten children. Journal of Clinical Psychology. 1962, 18, 276-279.

Vroegh, K. Lack of sex-role differentiation in preschoolers' figure drawings. Journal of Projective Techniques and Personality Assessment. 1970, 34(1), 38-40.

Whitaker, L. The use on an extended Draw-A-Person Test to identify homosexual and effeminate men. Journal of Consulting Psychology. 1961, 25, 482-485.

Whitmyre, J. The significance of artistic excellence in the judgement of adjustment inferred from human figure drawings. Journal of Consulting Psychology. 1953, 17, 421-422.

Wisotsky, M. A note on the order of figure drawing among incarcerated alcoholics. Journal of Clinical Psychology. 1959, 15, 65.

Wysocki, B., and Whitney, E. Body image of crippled children as seen in Draw-A-Person Test behavior. Perceptual and Motor Skills. 1965, 21, 499-504.

Ziv, A. and Shechari, H. Human figure drawing as a measure of social adjustment in school. Journal of School Psychology. 1970, 8(2), 152-153.

Zuk, G. Relation of mental age to size of figures on the Draw-A-Person Test. Perceptual and Motor Skills. 1962, 14, 410.