1972

The Relationship Between Self Concept and the Draw-a-Person Test

William Maurice Schaefer

Eastern Illinois University

This research is a product of the graduate program in [Psychology](#) at Eastern Illinois University. [Find out more](#) about the program.

Recommended Citation

Schaefer, William Maurice, "The Relationship Between Self Concept and the Draw-a-Person Test" (1972). *Masters Theses*. 3909.
<https://thekeep.eiu.edu/theses/3909>

This is brought to you for free and open access by the Student Theses & Publications at The Keep. It has been accepted for inclusion in Masters Theses by an authorized administrator of The Keep. For more information, please contact tabruns@eiu.edu.

PAPER CERTIFICATE #2

TO: Graduate Degree Candidates who have written formal theses.

SUBJECT: Permission to reproduce theses.

The University Library is receiving a number of requests from other institutions asking permission to reproduce dissertations for inclusion in their library holdings. Although no copyright laws are involved, we feel that professional courtesy demands that permission be obtained from the author before we allow theses to be copied.

Please sign one of the following statements:

Booth Library of Eastern Illinois University has my permission to lend my thesis to a reputable college or university for the purpose of copying it for inclusion in that institution's library or research holdings.

8 / 9 / 72

Date

I respectfully request Booth Library of Eastern Illinois University not allow my thesis be reproduced because _____

Date

Author

pdm

THE RELATIONSHIP BETWEEN SELF CONCEPT

AND THE DRAW-A-PERSON TEST

(TITLE)

BY

WILLIAM MAURICE SCHAEFER

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

M.A. in PSYCHOLOGY

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

1972

YEAR

I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING
THIS PART OF THE GRADUATE DEGREE CITED ABOVE

August 8, 1972
DATE

August 8, 1972
DATE

APPROVED BY THE THESIS COMMITTEE:

Acknowledgements

I would like to express my sincere appreciation to the people who were so helpful to me in my efforts to complete this study. I would especially like to thank the members of my committee Dr. John Rearden, and Dr. Shirley Moore who were so thorough in their analyses, and so helpful in their criticisms. I feel particularly grateful to my committee chairman Dr. Randall Best who labored long and hard to assist me in the pursuit of this goal.

Additional thanks go to Sue Stoner, and William Ackerman who acted as judges.

This paper is dedicated to my parents, Diane, and Morgan, all of whom were especially important to my successful completion of this task.

Abstract

This study sought to expand a study by Kamano (1960) to a normal population. In that work, Kamano used the D.A.P. in conjunction with the Semantic Differential. He concluded that the Ss (schizophrenics) analyzed their drawings consistent with their own self concepts. In the present study the relation between Ss ratings of the D.A.P., their self concept, and judges ratings of the drawings were sought. It was predicted that the Ss would rate themselves and the Drawings similarly. This prediction was upheld for the Potency factor. There was interjudge reliability for this factor, but the prediction that there would be a difference between the judges' and the Ss' ratings was not supported. Neither the Evaluative or the Activity factor gave significant results.

The Ss were 20 members of an introductory psychology class.

The correlations were calculated by using the Spearman rank formula which is a rank difference statistic.

TABLE OF CONTENTS

HISTORY OF RESEARCH

Introduction -----	p. 1
Molar vs. Molecular -----	p. 3
Reliability -----	p. 6
Validity -----	p. 10
Self-Concept -----	p. 12
Statement of the Problem -----	p. 17
Hypotheses -----	p. 20

METHOD

Subjects -----	p. 21
Judges -----	p. 22
Tests -----	p. 22
Procedure -----	p. 23
Instructions -----	p. 24
Materials -----	p. 26
Judges Ratings -----	p. 26
Analysis -----	p. 26

RESULTS

Potency factor -----	p. 27
Evaluative factor -----	p. 28
Activity factor -----	p. 28

DISCUSSION

Variation in Results -----	p. 29
Limitations -----	p. 31
Implications -----	p. 33
Applications for further research -----	p. 35
References -----	p. 37
Appendix Table One -----	<u>i</u>
Appendix Table Two -----	<u>ii</u>
Original Data -----	<u>iii</u>
Appendix Figure one -----	<u>iv</u>

A. Introduction

One of the most interesting and controversial of the projective tests is the one devised by Karen Machover (1949). This is commonly known as the D.A.P. or Draw-A-Person Test. Factors or details of drawings are reported to have diagnostic significance. Some of these include: heaviness of line, continuity or lack of continuity, accentuation of various features (i.e. large eyes may be indicative of paranoid tendencies) size, movement, omissions, clothing and other factors. Her theory holds that the figure drawn by a person represents that individual's view of his own body. Machover therefore concludes that aspects of the personality are revealed by a consideration of the specific details considered in the drawing.

The great majority of research has not supported the specific hypotheses developed by Machover. Validation studies have generally proven negative or inconclusive at best. Swensen in his review of the research on the D.A.P. (1957) concluded that research in the eight years, between 1949 and 1957, did little to support Machover's beliefs about, either the specific hypotheses she believes appropriate or,

the D.A.P. as a projective technique. A subsequent review by Swensen (1968) covering all the research on the D.A.P. between the years 1957 and 1966, comes to essentially the same conclusion as in the earlier paper. However, as research techniques become more sophisticated they lead to increasing evidence that human figure drawings may be useful as diagnostic instruments.

Swensen (1957), and Roback (1968) have criticized the drawing of human figures as projective technique on the basis of existing research findings. However, in spite of the conflicting and negative research data, the D.A.P. remains one of the most widely used of all the projective tests. Its appeal to the clinician has contradicted the scientific data, "... The D.A.P. is next to the Rorschach as the test clinicians most prefer (Schaeffer, 1963, p. 383)."

"Although much research has derived from theoretical orientation, there does not appear to be a congruent relationship between personality theory and clinical inferences based upon specific indicies of figure drawings (Arbit, 1959, p. 325)." Arbit, Lakin, Mathis and others feel that clinicians do not rely on specific indicies nor refer them to specific conflicts.

The fact that so many studies show negative results may only indicate that the difficulty is one of ambiguity of diagnostic usage which has resulted in research unrelated to the more relevant aspects of the drawing. (Guinian & Hurley, 1965).

What contributes to the disparity between the use by clinicians and the unsupported data may be the result of an inappropriate research technique. The principal problem may stem from the unfounded assumption that specific aspects of the drawings may be meaningful, whereas the overall gestalt of the drawing is not. This conflict may be analyzed in terms of a molar vs. molecular interpretation. The molecular approach is one that uses specific indicies to determine specific aspects of personality. Machover's approach may be considered molecular in this context. On the other hand, the molar approach does not use specific indicies but encourages interpretations based on the overall picture or gestalt of the drawing; i.e. the general impression that the clinician gets from the drawing. The molar approach is also suggested in those studies that use the term "global impression."

B. Molar vs. Molecular

Both of these methods have come under scrutiny, and both have some limitations. Hamlin (1954) obtained negative results when he used the molecular approach. This was particularly the case when the criteria were too simple. For example: It is an oversimplification to state that all individuals who draw large eyes are paranoid. It would be very advantageous for the clinician if the human personality were so easily revealed. Based on the research studies, this is not the case. As Swensen (1957) points out in his re-

view of the D.A.P. literature, specific indicies of human figure drawings have been consistently unsupported by research findings.

The central problem in using the molar method of analyzing human figure drawings is the complexity of communication and the subjective nature of the judgments used. This subjectivity inhibits effective communication of the diagnostic impressions of the drawing. Since specific indicies are not used, the clinician may not be able to give the reasons for his diagnostic impressions.

According to Strumpher (1962) "It is obvious that even less communicability is achieved by a molar approach than by Machover's approach. The former is by definition, unformulated, insightful and intuitive... It would appear that the material to be judged is so complex that only its most prominent aspects can be handled adequately (p. 343)."

It is inaccurate to conclude that the molar approach cannot be used effectively in analyzing human figure drawings. In spite of the problems involved with the molar approach, some of the most significant studies (Albee, 1949, 1950; Guinian, 1965; Strumpher, 1963) have used this particular method. Arbit (1959) showed that clinicians analyze human figure drawings in universals as opposed to specific categories. However, the molar approach becomes even more effective when used in conjunction with separate scales or measures as in Albee (1950) or Kamano (1960).

In one study, Albee and Hamlin (1949) investigated the question of molar vs. molecular. Machover's approach to the D.A.P. may be considered molecular in that emphasis is placed upon interpretations of specific features. These authors, without questioning the efficacy of Machover's approach, attempted to deal with the D.A.P. in what they considered to be a more clinically consistent method. It was their observation that "... Many, if not most, clinicians make judgments and interpretations of patients' drawings with little conscious attention to specific, molecular factors of constant significance; But rather as a result of global impression, of unverbilized comparison of a present drawing with a past experience of intuitive or insightful impressions (Albee, 1949, p. 389)."

As previously indicated, one of the primary problems in using a molar approach for the D.A.P. has been its complexity of communication. This problem has been investigated in studies that used a product scale and a partial solution found. A product scale may consist of drawings which have been arranged in a graduated scale using some criterion (i.e. degree of pathology). This scale is used to compare drawings made by others using the same criterion.

In studies by Albee and Hamlin (1949, 1950) "... a product scale consisting of samples of the projective material under consideration was first established. Significant correlations were found between outside criteria and judgments with the aid of these scales (Strumpher, 1963, p. 343)."

As Strumpher (1963) refers to these cases, the essential difference appears to be the simplification of a molar approach. Generally the task was limited to simply matching the D,A.P. material with illustrative materials of a scale. Such judgments appear to be a compromise between oversimplification and the complexity of a totally molar approach.

Thus, the modest success already achieved by using product scales with the molar approach suggests this method may be useful in establishing the reliability and validity of human figure drawing.

C. Reliability

The reliability of scores is essential to the use of any test. There does, however, seem to be particular difficulty in dealing with reliability in relation to projective test. Granick and Sheflen (1958) have stated that the reliability of scoring in effect, is dependent on the reliability of judgments.

"The problem essentially seems to be the development of objective communicable scores which reflect the integrity or gestalt of the performance of the individual tested. (Granick, 1958, p. 138)." In discussing the problems of reliability of a projective test, Granick and Sheflen (1958) point out that there have been three traditional approaches to reliability. The first of these may be considered interjudge reliability, where the reliability is measured in

terms of agreement between judges rating the same data. Secondly what may be considered test-retest reliability or temporal reliability is based on repeated administration over a period of time. This establishes whether there is reliability over repeated administration. And thirdly, internal reliability must be considered. An example of internal consistency is where comparison of two or more parts of the same test data is made.

A preliminary approach to reliability is to determine whether the technique being used is consistent. The question of reliability in dealing with the D.A.P. from a molar approach was attempted by James Guinian and John Hurley from Michigan State University. They used this method because "clinicians have claimed that the use of the D.A.P. in practice has been to obtain global, personalized, impressions. (Guinian, 1965, p. 300)." In that study reliability was stability of discrimination over time. For this purpose 20 freshman and sophomores were asked to draw a person and then one of the opposite sex. After five weeks they were asked to again draw a person and then a member of the opposite sex. These were then judged by three Ph.D.s, three graduate students, and three freshmen. All of the judges were able to match the drawings to the same people far beyond the chance level ($p < .001$). The authors conclude that: "Whereas before the methods of criteria of judgment were in question, here the ability to judge was measured. Whereas specific indicies have been found to be unreliable..."

Here the ability to match drawings done by the same individual was found to indicate a high reliability (Guinian, 1965, p. 303)."

Guinian and Hurley (1965) showed that in using a molar approach they are better able to discriminate similar drawings than previous studies which have used the molecular approach. This in itself is not a sufficient criteria for establishing credibility for the use of the D.A.P. as a projective technique, but it indicates an important preliminary step in its study.

"Strumpher (1963) assessed the reliability of six standardized methods of judging overall aspects of the drawings, and found the following test-retest reliabilities: overall drawing quality - .89; adjustment - .84; sexual differentiation - .79; maturity - .85; body image disturbance - .74 (Swensen, 1968, p.21)." The subjects were psychotics of varying ages.

"Starr and Marcuse (1959) assessed the reliability of seven aspects of figures, taking into account the base rate problem. They had three groups of college students: Group A drew on two separate occasions one month apart with the same examiner, Group B drew on two separate occasions one month apart with two different examiners, and Group C drew two sets of drawings on the same occasion with the same examiner. They found no differences among the three groups (Swensen, 1968, p. 21)." Six of the seven criteria were significant to the .01 level.

The determination of interjudge reliability is essential to an evaluation of the D.A.P. It is of little value to show that drawings are similar over a period of time if judges are unable to determine this to a significant degree. Support for the position that judges cannot only be shown to agree, but that they can be trained to discriminate particular variables is shown in a study by Cassel (1958). He reported that "...after three training sessions the judgments of judges on the presence or absence of signs correlated with each other above .90. In the first session the correlations averaged only .33 (Swensen, 1968, p. 21)."

Strumpher (1963) assessed interjudge correlations. "His interrator correlations ranged from .79 to .97 with the most being above .90. These two studies (Cassel, 1958; Strumpher, 1963) suggest that with explicit instructions, or some training, judges can judge figure drawings with satisfactory reliability. (Swensen, 1968, p. 21)."

In a study by Albee and Hamlin (1949) fifteen judges were asked to rank pairs of drawings as to the most adjusted. There was no significant difference in intelligence among the group of people who drew the pictures. The authors concluded that something other than intelligence was operating as a determinant. In terms of reliability the linear correlation between judges was .995. This value was significant at the .01 level.

In a subsequent study by Albee and Hamlin (1950) interjudge reliability was again considered in conjunction

with a rating scale. Four judges were asked to compare drawings with the drawings which had been obtained in the previous study. The interjudge reliability was .89 which is significant at the .01 level of confidence.

The range of the the interjudge reliability scores cited is between .79 and .99. The mean of these scores is .91. It may be concluded that the studies mentioned, based on the molar approach, would all be considered scientifically reliable.

D. Validity

One of the most difficult problems in dealing with human figure drawings, or with projective techniques in general, is that they are not good subjects for validity studies. There are many reasons for these difficulties. Frequently the variables employed are too numerous or vague to be adequately analyzed. Further, the ambiguous nature of the stimuli presented creates difficulties for subsequent interpretation. It has been stated that the tests may reveal more about the clinician who interprets them than the subject who takes them.

Although there are problems in validating psychological tests, there are some strategies which have been shown to be effective. In particular, those which have dealt with criterion or predictive validity have been the most successful. Some of the most conclusive studies of human figure drawings have used these approaches.

Lewinson (1965) correlated the overall quality of drawings with several personality and behavioral measures. Drawings were obtained from mental patients on admission to a hospital and just before discharge. The qualities of these drawings were correlated with several personality and behavioral measures. Drawings of good quality were positively and significantly correlated with good adjustment following discharge from the hospital and cooperation while taking the test. These findings indicate that the molar approach has high predictive validity when used to make D.A.P. predictions.

In another study aimed at predictive validity, Kahn and Jones (1965) used drawings to predict whether or not the individuals tested would be admitted to a psychiatric hospital. Their sample consisted of 104 people who applied for admission. Judges were asked to rate the drawings using nine molar areas which were related to pathology. Two of these, severity of illness and impulsivity, were significantly related to subsequent admissions to the hospital. These predictions were significant at the .0001 level.

In a study by Albee and Hamlin (1949) validity was seen as the rank order correlation between the degree of pathology accorded the individuals as determined by their case records, and the rank which represented the consensus of the fifteen judges. The rank order correlation was .62 which is significant at the .05 level. Thus the molar

approach to the D.A.P. is helpful in determining the degree of personal and social adjustment.

In their subsequent study (Albee, 1950), the use of a criterion scale represented a more objective method for dealing with molar concepts. Using the ten drawings from the previous study as a criterion scale, schizophrenics, anxiety neurotics, and non-mental patients were compared. There was a significant difference between the normal and neurotic groups. There was also a significant difference between the normal and schizophrenic groups. The study did not show any significant difference between the neurotic and schizophrenic groups. The authors concluded that this method of inferring adjustment through agreement with a criterion scale shows promise and warrants further investigation. They believe that the neurotic and schizophrenic groups were not able to be distinguished because the latter group was composed of out-patients, many of whom were considered to be in fair remission and holding jobs.

E. Self-concept

Arbit, Lakin and Mathis (1959) attempted to discover what criteria were used by clinicians in analyzing the D.A.P. They constructed a list of twenty six items in bipolar concepts which were divided a priori into universals and specifics. "Universals are concerned with such general dimensions as applied by the bipolar concepts of health-illness, intelligent-

stupid, or broad behavioral orientations as active-passive. Specifics referred to particular defenses, symptoms, fixation points and diagnostic formulations. Of the 26 items used five were used significantly more than chance, and five were used significantly less than chance. All of the items in the used scale were of the universal type. These had been selected a priori by the experimentors. Their belief that these represented universal concepts was confirmed by the clinicians used in the study. Four out of five of the items in the do-not-use category are specifics. This was also supported by a subsequent rating of the items by the clinicians into universal and specific categories. It is particularly relevant to this paper that the universals primarily referred to areas of self-concept. The following table illustrates this point.

 Insert table one
 about here

Before the D.A.P. can be used with any degree of confidence, it is crucial to show that it measures certain personality characteristics. This may be particularly relevant as it is used to measure the individual's self-concept. If it can be determined that in figure drawing a person reveals the way he sees himself, we may then draw conclusions about the specific nature of these revelations.

Some investigators have attempted to show the D.A.P. is valuable as a measure of self-concept. Particular attention has been paid to the sex of the first drawn figure. The basic hypothesis in these studies is that , if the first human figure drawn is the same sex as the subject, then that person has a more realistic self image and is better adjusted sexually than someone who draws a member of their opposite sex first. Studies have not supported this conclusion. Although a significant number of men drew their same sex first, this percentage was not as high for women.

Brown and Tolar (1957), and Fisher (1959) all concluded that "There is no convincing evidence that adequacy of psychosexual identification or adjustment is reflected in the choice of sex in the drawing of human figures." In Fisher's study 277 male and 230 female neuropsychiatric patients and 32 male sexual deviates were examined for sex of the first drawn figure, 88% of the subjects drew the male figure first, for both sex deviates and neuropsychiatrists. In the female group, 62% of the subjects drew the female figure first.

Although the first drawn sex approach seemed to have little value as a measure of self concept, Kamano (1960) tested the hypothesis that human figure drawings do represent the drawer's perception of himself. He used the D.A.P. in conjunction with the semantic differential. If the hypothesis is valid clinically the human figure drawn by the person should be similar in meaning to his own self

perception. That is, there should be a significant semantic similarity (smaller D values) between the rating he gives the figure drawing and the rating he accords himself.

In order to test his hypothesis, Kamano utilized the semantic differential in four different ways. First, he instructed the Ss to draw a person of the same sex. Each person was then asked to rate the drawing he had made on the fifteen bipolar scales that Kamano believes relevant to the study of self-concept. Included in these scales were six representative of the evaluative factor (e.g., attractive-repelling, healthy-sick), five for the potency factor (e.g., large-small, hard-soft), and four for the activity factor (e.g., active-passive, tense-relaxed).

After the Ss rated the drawings they were asked to rate themselves on the same scale. However, these ratings were based on the Ss "least liked self (LLS)," "ideal self (IS)," and "actual self (AS)."

"For each S, the D values between the figure drawing and the concepts IS, AS, and LLS were determined by summing the squared differences over the fifteen scales and taking the square root of the sums. Rank order correlations between the figure drawing and each of the three concepts were also determined with results given in table 1 (Kamano, 1960, p. 430)." This table is listed below as table 2.

 Insert table two
 about here

The correlation of .59 as seen in the table is significant at the .01 level. These results support the hypothesis that human figure drawings do represent the drawer's perception of himself. The actual self scale was the only one which correlated significantly with the analysis of the drawings by the Ss.

One of the limitations in Kamano's study is related to the subjects used. All of the Ss in his study were classified as schizophrenic, all of them were hospitalized, and all of them were female. Despite the select population used in Kamano's study, it seems logical that his approach will lead to similar results when applied to a more normal population. This, however, is an assumption that cannot be accepted until additional research data is obtained.

In summary it appears that the D.A.P. has considerable potential as a projective technique. However, at present the few research studies fail to provide adequate evidence for the validity of the D.A.P. as a measure of personality. The molar approach to drawing analysis may be the most plausible method for its eventual validation. When the molar approach has been used, the most consistent results have been obtained; particularly for interjudge reliability. Whatever the criteria used by the individual clinician, there is a high degree of interjudge reliability when they use the molar approach. This approach has enabled judges to differentiate between pairs of drawings. Further clinicians have determined degree of pathology; or made accurate predictions

about future hospitalization.

Another approach which includes a greater specification of the molar concept uses a separate scale. This scale is used to compare drawings with those that have been previously ranked. This method has the advantage of being able to differentiate the degree of pathology involved. However, these methods have not shown that they may be discriminatory for particular types of pathology.

F. Statement of the Problem

The most logical step in assessing the D.A.P. as a projective technique is to consider how the clinician is able to discriminate, or be consistent with, what the subject believes to be semantic interpretations of his actual self. To the extent that the clinician is able to do this, through human figure drawings, it may be considered that he is aware of revealed characteristics of the individual's personality as related to self-concept.

The most relevant study to date would seem to be the one done by Kamano (1960). He was able to specify, what may be, a revealed characteristic of the individual in using the D.A.P.. His study supported the idea that the individual considers the drawing to be more consistent with his actual self-concept than his least liked self, or ideal self. This represents an important breakthrough. By using the semantic differential, as Kamano did in his study, we may conclude that some aspect of self-concept is being revealed.

The specific problem is to test how well the interpreter of the human figure drawing is able to agree or disagree with the person's own conception of himself. Kamano also stated that "... while the hypothesis was supported, the extent to which such relationship could be accurately discerned by clinical observers remains unspecified (Kamano, 1960, p. 430)."

Although Kamano used a limited population, there seems little to indicate that the special nature of the population (schizophrenics) was an extraneous variable. It appears that this method of investigation human figure drawings may be generalized to a normal population. This may be a useful method for developing an approach to drawing analysis which accurately reveals self-concept.

It may be useful to compare the diagnostic impressions of clinicians, using human figure drawings, with individuals' self evaluations. Based on Kamano's study (1960), individuals tend to analyze their human figure drawings in a way that is consistent with their own self concepts. It is a logical consequence of this hypothesis that judges who rate these drawings in the same manner will either agree or disagree about these self ratings.

Judges impressions may correlate with individuals' self ratings. It may be concluded that they are determining, through use of the D.A.P., revealed aspects of the individuals' selves. However, judges may not agree with the individual's self rating as indicated by his semantic differential. It

would then be logical to conclude that some other areas of the personality, possibly non-revealed characteristics, were being evaluated by the judges. A study by J. Siddiqi (1969) may indicate which of these results will occur. In that study 10 artists, 50 art experts, and 82 laymen judged 25 pictures. The artists only judged their own. One of the methods used for evaluation was the semantic differential. There was high interjudge reliability but there was no significant correlation between the artists and the judges on the semantic differential. "The judgments of the artist about his own painting show no consistent correlation with either the expert or the laymen (Siddiqi, 1969, p. 517)."

The semantic differential was not used in relation to a projective technique in the abovementioned study. However there would appear to be a close association between paintings by artists, how they are interpreted, and human figure drawings. They are both, in a real sense, creative expressions of the individual.

Long before people used the D.A.P. as a projective technique, people sought to relate artistic expression to the artist's personality. Of particular significance in Siddiqi's study (1969) was the high interjudge reliability in evaluating the paintings. This indicates that independent observers are able to agree upon evaluations of artistic expression when placed on a semantic scale. And yet these correlations are not in accord with the artists' own semantic interpretations

of their work.

G. Hypotheses

Human figure drawings may be useful in measuring personality characteristics. Based on previous studies, the most advantageous method for evaluating the utility of figure drawings appears to be a combination of the molar approach in conjunction with another test measure.

The semantic differential has been shown in several instances to significantly distinguish between different aspects of creative expression. Based upon the results of these studies, and the relevant research, the following hypotheses have been derived:

(1) Null Hypothesis- There will be no significant correlation between a normal population's self ratings and ratings of each person's human figure drawings as determined by the Semantic Differential.

(2) Null Hypothesis- There will be no difference in correlation between the self ratings and the judgments of raters using the Semantic Differential to rate Ss' drawings.

(3) Null Hypothesis- There will be no difference in correlation between the Ss' ratings of their drawings and the judgments of independent raters using the Semantic Differential to rate these drawings.

Method

A. Subjects

The subjects were chosen at random from an introductory psychology course at Eastern Illinois University. The subjects were chosen in this way to gain the following advantages: A normal college population, a limited age range, an acceptable minimum level of intelligence, and ease of conducting a group administration of the materials.

A sample of college students were chosen to establish the general applicability of this approach to analysis of human figure drawings. Although it might have been preferable to use a sample from the general population, there were distinct advantages in using college students. It was important that the subjects have a sufficient understanding of the instructions and the materials presented. This was necessary to insure that they would complete the tasks as directed. In addition this limited the possibility of intelligence being an extraneous variable. The selection of college students also limited the possibility of age differentiation being an unknown variable.

A review of the research by Swensen (1968) showed that significant results were not obtainable using the molar approach to human figure drawings when applied to young children. Finally there availability in a group setting facillitated the use of a group administration.

B. Judges

Three judges were used to rate the drawings of each person using the fifteen bipolar scales of the Semantic Differential. These judges all had attained at least their masters degree in psychology and had had a year or more of practical experience in using the D.A.P..

It is the author's opinion that some prior knowledge of the D.A.P. was helpful in an analysis of the drawings. Though this may not have been essential to the subsequent agreement by the judges. Some studies as Siddiqi (1960) and Arbit (1959) have shown that the degree or level of sophistication in relation to the D.A.P. is not an essential determinant for significant results. The concern, for this paper was to determine how well psychologists were able to discriminate personality characteristics using the Semantic Differential in analyzing the D.A.P..

C. Tests

The tests used included the D.A.P., and the Semantic Differential. The D.A.P. is Machover's technique for approaching human figure drawing as a measure of personality. The test is easily administered. The principal requirement is that the individual, having been given a blank 8½ by 11 piece of paper, simply draw a person. The theory behind this approach is that some aspect of the individual's personality or his characteristics are revealed in drawing a human figure. This is the essential rationale of using the D.A.P. as a projective technique.

The semantic differential test as developed by Osgood and his associates at the University of Illinois, is considered a measurement of meaning. It uses carefully selected adjectives or nouns which are felt to be polar or opposite. Words such as good and bad have been shown to have a very high opposite meaning. This indicates there is very little chance of attributing these two words to the same thing in the same way. Numerous statistical analyses have been run on all the pairs to show their degree of antithesis of meaning.

The actual selection of the words used in this particular sample of the semantic differential are those taken from Kamamo's study (1960). He believed these pairs relevant to an analysis of self concept. His study had significant results using these words. It is logical to use these same pairs in an extension of that study. A sample of the semantic differential which was used in this study is shown below in figure 1:

 Insert figure one
 about here

D. Procedure

The subjects were all in the general classroom situation, without prior knowledge of a test administration. The testing materials were brought into the room and the people were all asked to participate in a psychology experiment. Final knowledge of the purpose of the experiment was

given to them upon completion of all aspects of the test. The instructions were printed on the materials presented, but they were also read orally. Care was taken to see that each individual had understood the instructions.

The same subjects were first asked to draw a person of the same sex. This is a commonly used modification of the instruction to "draw a person" as used in Kamano's study (1960). They were told in advance that they would have fifteen minutes to complete the drawings. Any questions raised by the subjects such as "Whether this is a test of artistic ability?" were met with such statements as "No, you are simply being asked to draw a person." All other questions related to purpose were answered with a similar statement. This was the only specific type of answer given. The following are the specific instruction that were used:

Today instead of participating in your usual classroom situation, I am going to ask you to take part in a psychology experiment. I am going to give you a blank piece of paper. When I tell you to begin, please draw a person of your own sex. This is not a test of artistic ability. You may erase if you wish. This will not be graded. If there are no questions, please begin.

You will have fifteen minutes to complete this part of the experiment. When you have finished, please remain quiet and wait for further instructions.

Upon completion of the time limit, the Ss were asked to rate their drawing according to the fifteen bipolar scales on the Semantic Differential. This was given to the subjects after they had completed the

drawings so there was be no confounding of the test variables. The instructions given to the subjects relating to the semantic differential were as follows:

You have just completed the drawing of a person as requested. I would now like you to rate the person you have drawn. This does not mean that you are to rate your own artistic effort, but you are to rate the drawing according to how you feel that person would be if it were a living individual. In other words you are to describe what his or her personality would be like. This rating will be done by the semantic differential which I am now going to give you.

You will note on the semantic differential there is a list of fifteen pairs of words. Each of these pairs is separated by seven spaces. All of the pairs are felt to be opposites. In evaluating the drawings you have made, would you please please put a check in the space which most closely approximates the relation between these words and the figure you have drawn. For example: If you had a pair of words such as cruel and kind, and you felt that the person drawn was a cruel individual, then you would check one of the spaces closest to the word cruel. If you felt the person was extremely cruel you might wish to check the one closest. If you felt neither of these were reflected in the drawing you would check the middle space.

If there are no further questions please begin. You will have fifteen minutes to complete this part.

There were two separate administrations to complete the experiment. The second administration occurred on the following week. There was a necessity for the two separate administrations. There is a similarity in the type of analysis being made between that of the drawing and the self-analysis. If the two are administered consecutively there may be confounding of the variables. In addition, the Ss were asked to rate Pablo Picasso after the first administration to further prevent the possibility of carry over.

On the following administration, the subjects were asked to rate themselves using the same scale of the Semantic Differential. The instructions were as follows:

The other day we completed an analysis of drawings you had made using the Semantic Differential. Today I would like you to use this scale in another way. Will you please take the scale and analyze yourself. In other words, please evaluate your personality as you feel it really is. No names are being used so your self evaluation will remain completely anonymous.

E. Materials

The materials given to the subjects consisted of an 8½ by 11 piece of paper, a #2 pencil with an erasure, and two copies of the Semantic Differential.

F. Judges ratings

The completed drawings were submitted to the three psychologists. They were rated using the same scale as the subjects used for their analysis of the drawings and the self reports. Correlations between ratings were computed to determine the degree of interjudge reliability. The judges scores were averaged for the factor on which they all correlated significantly.

G. Analysis

The type of statistics used consisted of rank difference correlations which were subsequently converted into t scores to determine whether they were significant at the specified level of probability. The level of probability sought was .05. Correlations were run for each of the factors on the semantic differential. These were the potency, evaluative, and activity factors.

RESULTS

Only the first null hypothesis for the potency factor was rejected. Correlations were significant between Ss' ratings of their drawings and the ratings of their self concepts. Interjudge reliability was also satisfactory. Judges' ratings were averaged and then compared to the Ss' ratings. Correlations were significant between the judges' ratings and both the ratings of the Ss. This resulted in not being able to reject the null hypothesis for the potency factor.

None of the three null hypotheses could be rejected for the evaluative or activity factors. In neither case did the Ss ratings of their self concepts and the ratings of their drawings correlate significantly with each other. In addition, interjudge reliability was not satisfactory for either the evaluative or potency factor.

Analysis of the potency factor on the Semantic Differential led to the following results: The correlation was significant between the Ss' ratings of the drawings and their ratings of self concepts. A Spearman rank difference analysis of this relationship resulted in a Rho of .88 ($p < .01$). All of the interjudge correlations were significant. The correlation between judges 1 and 2 was .74 ($p < .01$), between judges 1 and 3 it was .66 ($p < .01$), between judges 2 and 3 it was .69 ($p < .01$).

The averaged scores of the judges were compared to the Ss' analyses of the drawings. In disagreement with the

predicted outcome, this correlation was significant. The correlation was .55 ($p < .01$). The relationship between the judges' ratings and the Ss' ratings of their own self concept was also not in accord with the predicted outcomes. The correlation was .57 ($p < .01$).

On the Evaluative factor the correlations were positive but not significant. The correlation between Ss' ratings of the drawings and their self ratings was .41. Between judges 1 and 2 the correlation was .49, between judges 1 and 3 it was .52, and the correlation between judges 2 and 3 was .34. Because the correlations between judges were not significant, no further correlations were calculated for the evaluative factor.

On the Activity factor the correlation between the Ss' ratings of the drawings and their self concepts was positive but not significant. The correlation between these two ratings was .38 ($p > .05$). Correlations between the pairs of judges' ratings were not significant. On the Activity factor judges 1 and 2 had a correlation of .20, judges 1 and 3 did correlate significantly at .61, judges 2 and 3 correlated with .11. The correlation between one pair of judges was significant. It was necessary, however, that all the pairs correlate in order to average these for further analysis. Since interjudge reliability was not satisfactory in this case, no further analyses were made on the Activity factor.

DISCUSSION

A. Variation in results

The results indicate that, only the first null hypothesis for the Potency factor could be rejected. The null hypothesis stated that there would not be significant agreement between individuals' ratings of their own drawings and the ratings of their self concepts. This, however, did occur for the Potency factor. The .88 correlation was even higher than had been anticipated. Secondly, the judges agreed in their ratings of the drawings. This had been expected. However, the judges also correlated with the Ss' ratings of the drawings and the ratings of themselves. This had not been predicted. Before considering what this means in using the D.A.P. as a projective technique, the disparity between the results obtained for the Potency factor and those of the Evaluative and Activity factors must be analyzed.

There are two possible explanations for the disparities in the results. Both of these involve the use of the semantic differential technique as a measuring scale. The Semantic Differential has been used effectively in a variety of ways, however, its use for any particular purpose requires special attention and consideration. The polarity of meaning for the words used on the Semantic Differential has been statistically determined. The words used all have a high degree of polarity or discriminative value. That is, they are generally considered by people to be opposite in

meaning. An example of polarity would be a pair of words such as good and bad; they are semantically opposite. Although they have a high polarity, this does not assure that their use will be equally meaningful in every situation. They may not clearly apply when used in a given situation. It may be meaningful for people to use the words high and low in referring to the spirits of an individual, or the height of a building. But it may be difficult for judges, as it was in this case, to distinguish between the words high and low as they relate to a drawing. Do the words relate to the position of the drawing on the paper, the apparent mood of the person drawn, or the size of the person? It is the ambiguity of meaning, in this particular context, that may have created problems in the interpretation. This may have caused the disparity between the high correlations for the Potency factor and the insignificant correlations for the Evaluative and Activity factors.

A second possibility for the variance may lie in the time factor. The separate administrations were a necessary part of the test to avoid carry over. This may have resulted in some attitude change due to time. It may be that individuals are more consistent in their ratings about aspects related to their potency than they are to those of activity or evaluation. On a given day, a person may regard himself, in some ways, in a better or worse light than he did previously. In order for the test results to be

significant, the Semantic Differential had to consider aspects of the individual's self concept that remained fairly consistent over time. This was necessitated by the separate administration between the analyses of the drawings and the ratings of the self concepts. Potency factors such as strong - weak, or masculine - feminine, may remain more constant as measures of self concept than words such as hot - cold, or tense - relaxed.

Either of these problems inherent in using the Semantic Differential, or both, may have contributed to the variations in results for the different factors. Further use of the Semantic Differential as a discriminative scale for the D.A.P. will necessitate more research into the appropriateness of each factor and the pairs of words used in each of those factors. It appears justifiable to conclude that the Potency factor will be useful in this context. The Evaluative and Activity factors may also be valuable. This may depend on the words used for each. Their powers to discriminate for drawings, and their effectiveness over time, will be important. Their value cannot be determined at this time and this determination will depend on further research.

B. Limitations

Several of the factors which enabled the study to be conducted with the maximum degree of efficiency and simplicity contributed to the limitations regarding generalization. Because of their easy access for group test-

ing purposes, a college class was used as the sample population. The class used was an introductory psychology class which is required to be taken by all undergraduate students. This guaranteed a fairly good cross section of the student population. In addition, it could be fairly assumed that these subjects were relatively naive about testing in general and the purposes of the administration of the human figure drawings in particular.

Although the students chosen could be considered a normal college population, this does not permit the conclusion that they are also representative of the population at large. In fact, in some ways, this is definitely not the case. One of the advantages in using a college population was their higher than average level of intelligence. The ability to discriminate meaningfully between the words on the semantic scale should be very useful in establishing the degree of relationship between their analyses of their own drawings, and that of their self concepts.

The Potency scale showed these assumptions to be accurate. However, the reaction of the general population still remains to be determined. In light of Kamano's study with schizophrenics, and this study which dealt with a college population, it seems reasonable that the hypothesis would be supported for the population at large.

C. Implications

One of the most important underlying assumptions of not only the D.A.P., but projective techniques in general is the idea that, through testing, aspects of the individual's personality will be revealed which would have remained undisclosed. If this assumption is applied to the D.A.P. one may say it purports to reveal undisclosed aspects of the individual's personality. The extent to which clinicians are able to become aware of the undisclosed aspects of personality through the study of human figure drawings is the principal task of research on the D.A.P.. In that light the implications of this study must be considered; particularly as they pertain to the Potency factor.

It was predicted that people would analyze their drawings in much the same way as they would rate their own self concepts. The prediction was shown to be true for the population tested. The high correlation warranted a rejection of the null hypothesis that there would be no agreement. This result supports Kamano's study which hypothesized that there would be significant correlations between the two.

In this study it was also demonstrated that, for at least the Potency factor, interjudge reliability existed. The important question to consider presently concerns the relationship between the judges' opinions about the drawings and those of the Ss. If they had been shown to be significantly different, speculation might have been

raised as to the meaning for the D.A.P. as a projective technique. The results might have suggested that human figure drawings actually do reflect some undisclosed aspects of the individual's personality. It may have been hypothesized that the differences in agreement were due to the differences in the levels of consciousness that were being analyzed.

This study did not support that predicted outcome. There was, in fact, a significant correlation between the judges' ratings and those of the Ss ratings of their own drawings. The implication may be that the D.A.P. should not be used only as a projective technique. The agreement would tend to support the hypothesis that the D.A.P. is not actually revealing unconscious material. It may be used as a conscious level test in much the same way that self report inventories are used. If the mere significance of the correlations are taken into consideration than this may be the only reasonable conclusion.

There may be, However, some possible support for the use of the D.A.P. as a projective technique implied in the results; although, they are not currently susceptible to statistical inference. Although the judges' and the Ss' ratings correlated significantly, they did not do so to a very high degree. The correlation of .55, although significant, does leave room for speculation. Why was this correlation considerably lower than the correlation between the ratings of the Ss' self concepts and their own drawings? Analyses of the judges drawings and the ratings of the Ss may require more

more sensitive measures to interpret the full meaning. This study may have provided a possible approach to that eventual determination.

Heretofore there has been much criticism of the D.A.P. because its judgmental consistency could not be demonstrated. Evaluations of human figure drawings were often, and still are, based on rather esoteric considerations and untested hypotheses. This has led to inconsistent opinions and numerous discrepancies. This has been especially true when a molecular approach was used.

As stated earlier, there has been some success in using a molar approach at least in getting agreement or interjudge reliability. I believe this study has taken the research one step farther in using the molar approach to human figure drawing with a specific scale. It has now been shown that members of a normal population rate their drawings as they rate themselves, at least for the Potency factor. Secondly, by using the semantic scale, which evaluates molar concepts, there is a high degree of interjudge reliability. Thirdly, for some as yet unspecified reason, these judges as a group agree with the opinions of the individual's who drew the pictures. Thus, additional research in this area is clearly indicated.

D. Applications for further research

It has been demonstrated in this study that semantic analyses may be used meaningfully in evaluating molar aspects of human figure drawings. It will now be relevant to determine the extent to which this approach will support

the validity of the D.A.P. test as a projective technique. A preliminary approach will require an evaluation of the non-significant factors of Evaluation and Activity that were used in this study. Further research is necessary on these factors to determine whether other words may be more appropriate as they relate to human figure drawings. It may be shown that only the potency factor is sufficiently consistent and discriminative over time to be useful in analysis.

The use of projective techniques has practical implications, not the least of which is its predictive validity. Once the use of the semantic scale has been shown to be consistent in analyzing drawings, regardless of the populations concerned, it will then be crucial to determine how well these analyses are able to be used in diagnosis. When the D.A.P. has been shown to significantly aid in diagnosis and prediction then its use as a successful projective tool will be established.

REFERENCES

- Albee, G., & Hamlin, R. An investigation of the reliability and validity of judgments of adjustment inferred from drawings. Journal of Clinical Psychology, 1949, 5, 389-392.
- Albee, G., & Hamlin, R. Judgment of adjustment from drawings; the applicability rating scale methods. Journal of Clinical Psychology, 1950, 6, 363-365.
- Arbit, J., Lakin, M., & Mathis, A. G. Clinical psychologists' diagnostic utilization of human figure drawings. Journal of Clinical Psychology, 1959, 15, 325-327.
- Bodwin, R. & Bruck, M. The adaptation and validation of the DAP as a measure of self concept. Journal of Clinical Psychology, 1960, 16, 427-429.
- Brown, D. G., & Tolar, A. Human figure drawings as indicators of sexual identification and inversion. Perceptual and Motor Skills, 1957, 7, 199-211.
- Cassel, R. H., Johnson, A., & Burns, W. H. Examiner, ego defense, and the H-T-P Test. Journal of Clinical Psychology, 1958, 14, 157-160.
- Graddick, R. A. The self image in the Draw-A-Person Test and self-portrait drawings. Journal of Projective Techniques and Personality Assessment, 1963, 27, 288-291.
- Fisher, S. Body reactivity gradients and figure drawing variables. Journal of Consulting Psychology, 1959, 23, 54-49.
- Granick, S., & Scheflen, N. Approaches to reliability of projective tests with special reference to Blacky Pictures Test. Journal of Consulting Psychology, 1958, 22, 137-141.
- Guinian, J. F., & Hurley, J. R. An investigation of the reliability of human figure drawings. Journal of Projective Techniques, 1965, 29, 300-304.
- Hamlin, R. M. The clinician as a judge: implications of a series of studies. Journal of Consulting Psychology, 1954, 18, 233-238.
- Hammer, M., & Kaplan, A. M. The reliability of children's human figure drawings. Journal of Clinical Psychology, 1966, 22, 316-319.

- Kahn, M. W., & Jones, N.F. Human figure drawings as predictors of admission to a psychiatric hospital. Journal of Projective Techniques, 1965, 29, 319-322.
- Kamano, D..K. An investigation of the meaning of human figure drawing. Journal of Clinical Psychology, 1960, 16, 429-430.
- Lewinsohn, P. M. Psychological correlates of overt quality of figure drawings. Journal of Consulting Psychology, 1965, 29, 504-512.
- Machover, K. Personality projection in the drawing of the human figure. Springfield, Ill., Charles Thomas, 1949.
- Osgood, C. E. The measurement of meaning, Urbana: University of Illinois Press, 1957.
- Roback, J.B. Utility of human figure drawings. Psychological Bulletin, 1968, 70, 14-17.
- Schaeffer, R. W. Clinical psychologist's ability to use the Draw-A-Person Test as an indicator of personality adjustment. Journal of Consulting Psychology, 1964, 28, 383.
- Siddiqi, J. A., & Thieme, T. The lost messages. Zeitschrift fur Experimentelle und Angewandte Psychologie, 1969, 16(3), 507-518.
- Starr, S., & Marcuse, F. L. Reliability in the Draw-A-Person Test. Journal of Projective Techniques, 1959, 23, 83-86.
- Strumpher, D. J. W. The relation of Draw-A-Person Test variables to to age and chronicity in psychotic groups. Journal of Clinical Psychology, 1963, 19, 208-211.
- Strumpher, D. W. J., & Nichols, R. C. A study of some communicable measures of the evaluation of Human Figure Drawings. Journal of Projective Techniques, 1962, 26, 342-353.
- Swensen, C. H. Empirical evaluations of Human Figure Drawings. Psychological Bulletin, 1957, 54, 431-466.
- Swensen, C. H. Empirical evaluations of Human Figure Drawings. Psychological Bulletin, 1968, 70, 21-43.

TABLE I

A list of five items clinicians employ in evaluating human figure drawings as well as five items they do not use with probability levels and classification (universal- specific)

SCALE OF ITEMS USED	p	CLASS	SCALE OF ITEMS NOT USED	p	CLASS
Self-concept: grandiose-self depreciating	.01	U	Clinical alcoholic: severe-not present	.01	S
Psychosexually in- tegrated- not p.s.i.	.04	U	Hypochondriacal: severe-not present	.01	S
Integrated-disin- tigrated	.07	U	Intellectualizes- does not intellectualize	.01	S
Hostile-friendly	.10	U	Overly demanding- Not demanding	.01	S
Self-confidence: High-low	.18	U	Introvert-extravert	.04	U

TABLE II

Table II. Mean D-Scores (Upper Values) and Correlations (Lower Values) Between Figure Drawing and IS, AS, and LLS.

	IS	AS	LLS
	9.63	8.68	11.04
Figure Drawing	.35	.59*	.36

*Significant at the .01 level

CORRELATION FOR POTENCY
ANALYSIS OF DRAWING AND SELF CONCEPT

Drawing Score	R	Self Score	R	D	D ²
33	1	34	1	0	0
32	2	28	3.5	1.5	2.25
30	3	28	3.5	.5	.25
29	4	31	2	2	4
27	5	25	5	0	0
25	6	24	8.5	2.5	6.25
25	7	25	6.5	.5	.25
24	8	24	8.5	.5	.25
23	9	18	14	5	25
22	10	17	17	5	25
21	11	17	17	4	16
19	12	20	11	1	1
19	13	17	17	2	4
19	14	25	6.5	6	36
18	15	18	14	0	0
18	16	18	14	0	0
16	17	20	11	4	16
16	18	20	11	4	16
14	19	14	19	00	0
14	20	14	20	1	1
					<hr/>
					153.25

$$r = .88$$

$$t = 7.4$$

INTERJUDGE CORRELATION FOR POTENCY
JUDGES 1 AND 2

Judge 1	R	Judge 2	R	D	D ²
31	1	30	1	1	1
29	2	27	2.5	.5	.25
28	3	27	2.5	.5	.25
26	4	26	4.5	.5	.25
21	5	20	11	6	36
21	6	25	6.5	.5	.25
21	7	24	8.5	1.5	2.25
19	8	25	6.5	1.5	2.25
19	9	24	8.5	.5	.25
17	10	21	10	0	0
17	11	17	15	4	16
17	12	16	17.5	5.5	30.25
16	13	18	13.5	.5	.25
16	14	16	7.5	3.5	12.25
15	15	16	17.5	2.5	6.25
14	16	18	3.5	2.5	6.25
13	17	16	17.5	.5	.25
13	18	26	4.5	13.5	182.25
12	19	19	12	7	49
11	20	14	20	0	0
					<hr/>
					345

$$r = .74 \quad t = 4.6$$

INTERJUDGE CORRELATION FOR POTENCY

JUDGES 1 AND 3

Judge 1	R	Judge 3	R	D	D ²
31	1	27	0	0	
29	2	25	2.5	.5	.25
28	3	22	6.5	3.5	12.25
26	4	23	4.5	.5	.25
21	5	19	13	8	64
21	6	25	2.5	3.5	12.25
21	7	19	13	6	36
19	8	20	10	2	4
19	9	23	4.5	4.5	20.25
17	10	18	6.5	6.5	42.25
17	11	19	13	24	4
17	12	21	8.5	3.5	12.25
16	13	16	18	5.0	25
16	14	19	13	3	9
13	17	15	19	1	1
13	18	21	8.5	9.5	90.25
12	19	18	16.5	2.5	6.25
11	20	14	20	1	1
					<hr/>
					388

$$r = .69$$

$$t = 3.9$$

INTERJUDGE CORRELATION FOR POTENCY
JUDGES 2 AND 3

Judge 2	R	Judge 3	R	D	D ²
30	1	27	1	0	0
27	2	25	2.5	.5	.25
26	4	21	8.5	4.5	20.25
26	4	22	6.5	2.5	6.25
26	4	23	4.5	.5	.25
25	7.5	25	2.5	5	25
25	7.5	19	13	5.5	30.25
24	9.5	20	10	.5	.25
24	9.5	23	4.5	5	25
21	11	18	6.5	5.5	30.25
20	12	19	13	1	1
19	13	18	16.5	3.5	12.25
18	14.5	19	13	1.5	2.25
18	14.5	16	18.1	3.5	12.25
17	16	19	13	3	9
16	18.5	21	8.5	10	100
16	18.5	19	13	5.5	30.25
16	18.5	22	6.5	12	144
16	18.5	15	19	.5	.25
14	20	14	20	0	0
					<hr/> 449

$r = .66 \quad t = 3.8$

CORRELATION FOR POTENCY

JUDGES AND Ss ANALYSES OF DRAWINGS

<u>Ss'</u> <u>Analysis</u>	R	Judges' <u>Analysis</u>	R	D	D ²
33	1	25.3	3	2	4
32	2	27	2	0	0
30	3	23.6	5	2	4
29	4	29.3	1	3	9
27	5	13	20	15	225
25	6.5	20	9.5	3	9
25	6.5	21.3	7.5	1	1
24	8	22	6	2	4
23	9	16.3	19	10	100
22	10	18.6	11.5	1.5	2.25
21	11	4	25	7	49
19	13	18.6	11.5	1.5	2.25
19	13	18	13	0	0
19	13	21.3	7.5	5.5	30.25
18	15.5	16.6	17	1.5	2.25
18	15.5	.7	15.5	0	0
16	17.5	15.5	17	2	4
16	17.5	14.6	20	2.5	6.25
14	19.5	20	9.5	10	100
14	19.5	17.6	14	5.5	<u>30.25</u>
					578.25

$$r = .55 \quad t = 2.7$$

CORRELATION FOR POTENCY
JUDGES AND Ss ANALYSES OF SELF CONCEPTS

<u>Ss'</u> Analysis	R	Judges' Analysis	R	D	D ²
34	1	25.3	3	2	4
31	2	29.3	1	1	1
28	3.5	27	2	1.5	2.25
28	3.5	23.6	5	1.5	2.25
26	5	13	20	15	225
25	6.5	21.3	7.5	1	1
25	6.5	21.3	7.5	1	1
24	8.5	20	9.5	1	1
24	8.5	22	6	2.5	6.25
20	11	18	13	3	4
20	11	17	15.5	4.5	20.25
20	11	14.6	20	9	81
18	14	16.3	13	1	1
18	14	17	15.5	1.5	2.25
18	14	17	16.6	3	9
17	17	18.6	11.5	5.5	30.25
14	19	20	9.5	10	100
13	20	17.6	14	6	<u>36</u>
					566.75

$$r = .57 \quad t = 2.9$$

CORRELATION FOR EVALUATION
ANALYSIS OF DRAWING AND SELF CONCEPT

Drawing Score	R	Self Score	R	D	D ²
24	1.5	30	1	.5	.25
24	1.5	17	10.5	9	81
23	3	15	16.5	13.5	182.25
22	4	28	2	2	4
21	5	16	13.5	8.5	72.25
20	6	17	10.5	4.5	20.25
19	7	23	3	4	16
18	8	15	16.5	8.5	72.25
16	10.5	22	4	6.5	42.25
16	10.5	20	6	4.5	20.25
16	10.5	20	6	4.5	20.25
16	10.5	17	10.5	0	0
15	13.5	15	16.5	3	9
15	13.5	15	16.5	3	9
14	16	20	6	10	100
14	16	19	8	8	64
14	16	17	10.5	5.5	30.25
12	18	13	19	11	1
10	19	12	20	1	1
7	20	16	13.5	6.5	<u>42.25</u>
					787.50

$r = .41$ $t = 2.3$

CORRELATION FOR EVALUATION
JUDGES 1 AND 2

Judge 1	R	Judge 2	R	D	D ²
41	1	25	3.5	2.5	6.25
40	2	21	11	9	81
37	3	18	15	12	144
36	4	24	5.5	1.5	2.25
35	5.5	22	9	3.5	12.25
35	5.5	21	11	5.5	30.25
34	7.5	27	1.5	6	36
34	7.5	24	5.5	2	4
33	9	14	17.5	8.5	72.25
28	10	27	1.5	8.5	72.25
27	11	23	7.5	2.5	6.25
24	12	21	11	1	1
22	13	25	3.5	9.5	90.25
19	14	23	7.5	6.5	42.25
18	15	11	20	5	25
17	16	19	13	3	9
15	17	19	13.5	3.5	12.25
14	18.5	16	16	2.5	6.25
14	18.5	19	13.5	5	25
12	20	14	17.5	2.5	6.25
					<u>681</u>

$$r = .49 \quad t = 2.4$$

CORRELATION FOR EVALUATION
JUDGES 1 AND 3

Judge 1	R	Judge 3	R	D	D ²
41	1	28	3	2	4
40	2	16	17.5	15.5	240.25
37	3	24	9	6	36
36	4	33	1	3	9
35	5.5	18	16	9.5	90.25
35	5.5	32	2	3.5	12.25
34	7.5	26	5.5	2	4
34	7.5	26	5.5	2	4
33	9	25	7.5	1.5	2.25
28	10	23	10	0	0
27	11	20	13	2	4
24	11	22	11	1	1
22	13	16	17.5	4.5	20.25
19	14	19	14.5	.5	.25
18	15	13	20	5	25
17	16	19	14.5	1.5	2.25
15	17	19	14	2	4
14	18.5	21	12	6.5	42.25
14	18.5	27	4	14.5	210.25
12	20	25	7.5	12.5	<u>156.25</u>
					677.50

$r = .48$ $t = 2.3$

CORRELATION FOR EVALUATION
JUDGES 2 AND 3

Judge 2	R	Judge 3	R	D	D ²
25	3.5	28	3	.5	.25
21	11	16	17.5	6.5	42.5
18	15	24	9	6	36
24	5.5	33	1	4.5	20.25
22	9	18	16	7	49
21	11	32	2	9	81
27	1.5	26	5.5	4	16
24	5.5	26	5.5	0	0
14	17.5	25	7.5	10	100
27	1.5	23	1.0	.5	.25
23	7.5	20	13	5.5	30.25
21	11	22	11	0	0
25	3.5	16	17.5	14	196
23	7.5	19	14.5	7	49
11	20	13	20	0	0
13	19	19	14.5	4.5	20.25
19	13.5	14	19	5.5	30.25
16	16	21	12	4	16
19	13.5	27	4	9.5	90.25
14	17.5	25	7.5	.0	<u>100</u>
					877

$$r = .34 \quad t = 1.5$$

CORRELATION FOR ACTIVITY
ANALYSIS OF DRAWING AND SELF CONCEPT

Drawing Score	R	Self Score	R	D	D ²
21	2	23	2	0	0
21	2	19	6	4	16
21	2	16	14	12	144
20	4	23	2	2	4
19	6	14	19	13	169
19	6	16	14	8	64
19	6	21	4	2	4
18	8.5	16	14	5.5	30.25
18	8.5	6	19	2.5	6.25
17	12.5	16	14	1.5	2.25
17	12.5	23	2	10.5	110.25
17	12.5	19	14	6.5	42.50
17	12.5	18	8.5	4	16
17	12.5	16	14	1.5	2.25
17	12.5	19	6	6.5	42.5
16	17	14	16	3	9
16	17	8.5	18	8.5	72.25
16	17	14	16	3	9
14	19	17	10	9	81
12	20	14	19	1	<u>1</u>
					825.50

$r = .38$ $t = 1.7$

CORRELATION FOR ACTIVITY

JUDGES 1 AND 2

Judge 1	R	Judge 2	R	D	D ²
22	1	17	11	10	100
26	2	17	11	9	81
21	3	16	14.5	11.5	132.25
19	4.5	22	1	3.5	12.25
19	4.5	15	17	12.5	156.25
18	6.5	18	7.5	1	1
18	6.5	15	17	10.5	110.25
17	8.5	8	7.5	1	1
17	8.5	19	4.5	4	16
16	12	17	11	1	1
16	12	13	19	7	49
16	12	19	4.5	7.5	56.25
16	12	19	4.5	7.5	56.25
16	12	19	4.5	7.5	56.25
15	15	17	11	4	16
14	16.5	12	20	3.5	12.25
14	16.5	20	2	14.5	210.25
12	18	15	17	1	1
11	19.5	17	11	8.5	72.25
11	19.5	16	14.5	5	25
					<u>1064.5</u>

$$r = .20$$

$$t = .86$$

CORRELATION FOR ACTIVITY
JUDGES 1 AND 3

Judge 1	R	Judge 3	R	D	D ²
27	1	24	1	0	0
26	2	20	2.5	.5	.25
21	31	19	5.5	2.5	6.25
19	4.5	20	2.5	2	4
19	4.5	16	10	5.5	30.25
18	6.5	17	8	2.5	6.25
18	6.5	19	5.5	1	1
17	8.5	13	18	9.5	90.25
17	8.5	15	13	4.5	20.25
16	12	16	10	2	4
16	12	15	13	1	1
16	12	12	20	8	64
16	12	14	15.5	3.5	12.25
16	12	13	18	6	36
15	15	19	5.5	9.5	90.25
14	16.5	16	10	4	16
14	16.5	14	15.5	1.5	2.25
12	18	19	5.5	6.5	42.25
11	19.5	15	13	2	4
11	19.5	13	18	9	81
					<hr/>
					511.50

$$\underline{r} = .61 \quad \underline{t} = 3.5$$

CORRELATION FOR ACTIVITY
JUDGES 2 AND 3

Judge 2	R	Judge 3	R	D	D ²
17	11	24	1	9	81
17	11	20	2.5	8.5	72.25
16	14.5	19	5.5	9	81
22	1	20	2.5	1.5	2.25
15	16.5	16	10	6.5	42.25
18	7.5	17	8	.5	.25
15	17	19	5.5	11.5	132.25
18	7.5	13	18	10.5	110.25
19	4.5	15	13	8.5	72.25
17	11	16	10	1	1
13	19	15	13	6	36
19	4.5	12	20	15.5	240.25
19	4.5	14	15.5	11.5	132.25
19	4.5	13	18	13.5	182.25
17	11	19	5.5	5.5	30.25
12	20	16	10	10	100
20	2	14	15.5	13.5	182.25
15	17	19	5.5	11.5	132.25
17	11	15	13	2	4
16	14.5	13	18	3.5	12.25
					<u>1646.50</u>

$r = -.11$ $t = .47$