

**AN ANALYSIS OF THE SIZE OF HUMAN FIGURE
DRAWINGS AND LEVEL OF SELF-ESTEEM
IN SCHOOL-AGE CHILDREN**

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An Analysis of the Size of Human Figure Drawings and Level of Self-Esteem in
School-age Children

An Abstract

Presented to
the Graduate Council of
Austin Peay State University

In Partial Fulfillment
of the Requirements for the Degree
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in Psychology

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Richard Wayne Hollings
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ABSTRACT

The significance of the size of human figure drawings is an issue which has been debated, studied, and researched since Karen Machover stated her body image hypothesis in 1949. Studies dealing with the meaning of size of human figure drawings have been contradictory and inconsistent.

Nine hundred male and female children, ages 9 through 14 were used to examine the effects of low and high self-esteem on the size of human figure drawings. Subjects were tested using the Coopersmith Self-Esteem Inventory (SEI) and the Draw-A-Person Test (DAP). Each child was asked to complete drawings of a "BOY," "GIRL" and "MYSELF."

Subjects were tested by class on two separate occasions. Drawings of subjects who achieved high or low scores on the SEI were analyzed for height, width, and area. Drawings of subjects who achieved scores of plus or minus one standard deviation on the SEI were scored for height, width and area. An analysis of variance employing sex x age x level of self-esteem with repeated measure on the drawing factor was used to analyze the data.

In general the results were found to be nonsignificant. However, there was a general tendency for low self-esteem subjects to make smaller drawings than high self-esteem subjects. The failure to obtain significant results was attributed to: (1) the use of instructions such as "Draw a boy/girl" rather than "Draw a person"; (2) the possibility of the SEI being invalid; and (3) peer pressure caused by group administration of the DAP.

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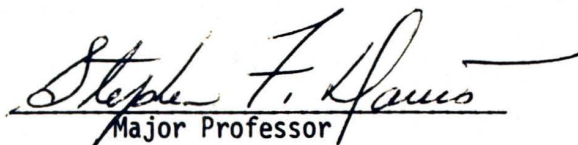
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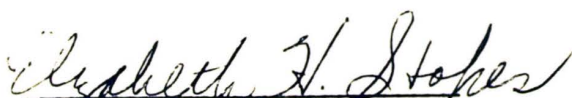
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I am submitting herewith a Thesis written by Richard W. Hollings entitled "An Analysis of the Size of Human Figure Drawings and Level of Self-Esteem in School-age Children." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

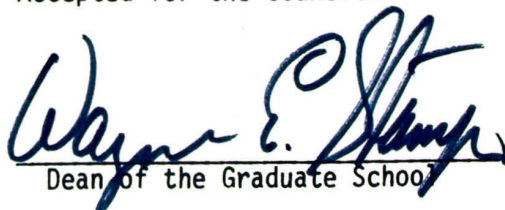

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CHAPTER I

INTRODUCTION

Investigations into the meaning of size in human figure drawings date back to the 1940s, and most notably to the work of John Buck (1948) and Karen Machover (1949). In Machover's 1949 book, Personality Projection In The Drawings Of The Human Figure, she proposed a "Body Image Hypothesis," and stated that "the human figure drawn by the 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 the person, and the paper corresponds to the environment" (p. 35). As a corollary to this hypothesis, Machover (1949) stated that "Tiny figures suggest low self-esteem and low energy levels" (p. 91). This position was somewhat in agreement with Hammer (1958), and Buck (1948) who believed that the unusually small drawing indicated one of several possibilities including "a feeling of inadequacy on the part of the subject" (p. 16).

Since the publication of Machover's book in 1949, the Draw-A-Person Test (DAP) has gained widespread usage and by 1961 was, according to Sundberg (1961), the second most frequently used projective technique in clinics and hospitals in the United States. While size is only one of a number of structural factors considered in evaluating the individual DAP, its meaning appears to be controversial, somewhat contradictory, and as yet unresolved in the literature. Of the 37 studies reported since 1949 that have dealt with size, 25 have indicated a significant relationship

between size and other variables whereas 12 have yielded no significance. Variables under investigation have included: culture, race, self concept, chronological age (CA), I.Q., sex, actual height of subject, character disorder, obesity, psychosis, neuroses, organicity, alcoholism, drugs, effects of institutionalization on orphans and aged, school achievement, dominance and submissiveness, instructions given subjects, and the use of size to predict improvement in psychotherapy.

The central issue in dealing with the size variable is whether or not it is, as Machover (1949) contends, indicative of level of self-esteem or self concept. Coopersmith (1967) defines self-esteem as "a personal judgment of worthiness that is expressed in the attitudes the individual holds toward himself" (p. 4). Bennett (1964) examined the drawings of 198 sixth graders in an attempt to determine if, in fact, size and level of self-esteem were related. She used a self concept Q sort, school achievement, I.Q., the child's actual body size, and sex as indicators of self concept. Her results indicated no significant differences between the size of figures drawn by children with high self concepts and children with low self concepts. Prytula and Thompson (1973) found somewhat inconsistent results in the drawings of 218 Caucasian children, ages 10-12. After completing Coopersmith's Self-Esteem Inventory, classes of fifth and sixth graders were given four sheets of paper labeled "Myself," "Man," "Woman" and "Eskimo," respectively. An explanation of the task required was given after which each subject completed all four drawings. An analysis of the drawings indicated that: high self-esteem children drew the Eskimo significantly larger than other figures; high self-esteem children drew the Eskimo larger than either "Woman" or "Self" figures; however, high self-esteem subjects did not draw all figures significantly

larger than low self-esteem subjects, nor did high self-esteem subjects draw the "Self" figure significantly larger than low self-esteem subjects.

Conflicting results were also found in several studies which attempted to control for level of self-esteem. Ludwig (1969) attempted to alter self image and thus size of drawings by the introduction of positive or negative feedback conditions in 50 eighth and ninth grade boys enrolled in two gym classes in junior high school. Subjects were asked to complete a physical self scale and the DAP test as part of a physical fitness survey. Two months later, all subjects were given a set of simple exercises to complete during a second administration period. Experimental group subjects were told that they would be evaluated on how well each person completed individual tasks, while control group subjects were told that their performance would not be evaluated. No comments were made to control group subjects, either during or after their performance, while experimental group subjects were told how poorly they had performed. At the end of the exercise, all subjects completed another physical self scale and DAP test. The results indicated that while the drawings of the control group showed insignificant minor changes, the drawings of the experimental group decreased significantly. Gray and Pepitone (1964) attempted a similar experiment using 88 undergraduate men enrolled in psychology courses at the University of Pennsylvania. All subjects were given a battery of personality tests which served to induce, or make the subject believe that he possessed a given level of self-esteem, which was predetermined by the authors. Subjects were scheduled in random pairs for a second session. During this session, those subjects who were asked to complete the DAP test prior to reviewing results were designated as the control group while those individuals who were told the "results" of

the personality tests prior to completing the DAP test fell randomly into either the HSE or LSE group. HSE subjects were told that their scores were unusually favorable, that they indicated that the subject was mature, personally efficient, etc., while LSE subjects were told just the opposite. The results indicated that LSE subjects did not draw figures significantly smaller than HSE subjects; however, among those who drew backgrounds for their figures, a significantly larger percentage of LSE subjects drew isolated figures and the total area of pictures was significantly smaller than those of HSE or control subjects.

Gutman (1952) hypothesized that HFDs could be used as a means of predicting improvement in psychotherapy. She tested this hypothesis using a control group of 20 patients, and one experimental group consisting of 44 subjects who had benefitted most and 44 subjects who had benefitted least from psychotherapy done by several therapists at a hospital mental health center. Height was one of a large number of variables examined for significance on the HFD, and it was one of several found to significantly discriminate between the presence or absence of progress in therapy. The authors contended that these results supported Machover's hypothesis by showing that individuals who improve in therapy have not lost their sense of self-esteem and/or personal adequacy. In conclusion, the results of these studies appear to be inconsistent and contradictory to say the least.

The remainder of this review deals with those studies which measure the effect of variables other than self-esteem on the size of human figure drawings (HFD). In order to grasp some idea of the scope and possible meaning of size of figure drawings, it is necessary to briefly review the relationship between these other variables and size. It is

interesting to note that even though most of the more than 40 studies in the literature on size do not deal directly with self-esteem, most of them allude to it either indirectly in their review of the literature, or directly in attempting to conclude the possible meaning of obtained results.

A number of articles have been written on the use of the DAP test in discriminating between normals and various types of deviant behavior. For example, Koppitz (1966a) tried to determine which of some 30 drawing traits could be true emotional indicators in children, ages 5 through 12. Tiny figures (2 inches or less) and large figures (9 inches or more) were included as two of these 30 traits. The "tiny figure" trait was one among four that appeared significantly more often among 76 patients at a child guidance center than among a control group matched for sex and age. It is also worthy of note that the tiny figure trait did not appear at all among the control group subjects. In another study Koppitz (1966b) used 31 pairs of children matched for sex and age, and 21 of the 30 traits used on the aforementioned study. All of the children were patients at a child guidance clinic; one group had a history of aggressiveness, whereas the other group was known to be quite shy, withdrawn and depressed. It was hypothesized, in keeping with Machover's hypothesis (1949), that aggressive subjects would manifest their aggressiveness by drawing larger, more expansive figures while shy subjects would draw significantly smaller, more constricted drawings. The results were not significant, but did indicate that the shy children tended to draw tiny figures more often than the aggressive children.

Bradfield (1964) also hypothesized that children who acted out would produce drawings larger in size than timid, withdrawn subjects. "Acting Out" and "Withdrawn" were two of five categories into which a group of 85 previously identified boys were placed. Drawings obtained from all subjects not only indicated no significant differences, but tended to show that the largest mean size was found to be among the "Withdrawn" as opposed to the "Acting Out" group. Bradfield states "We must also raise the question, does the withdrawn child compensate for his feelings of inferiority primarily in fantasy and express his 'Ideal Self Concept' in his figure drawing?" (p. 172).

In a related study, Goldstein and Rawn (1957) attempted to determine the effect of imposed aggression upon the size of HFDs completed by a group of male and female attendants at a state mental hospital. A comparison of these drawings with those done by a control group not experiencing the aggression-provoking situation yielded nonsignificant results. McHugh (1966) compared the figure drawings of a sample of children manifesting conduct disturbances with others showing neurotic symptoms. Once again, using Machover's (1949) hypothesis, one might hypothesize that the neurotic with a low energy level would draw a small figure, whereas the person with a conduct disturbance would have a tendency to draw large figures as a result of a high energy level and/or grandiose feelings. He found that when the subjects were asked to draw HFDs of both sexes, the figure drawn first by children with neurotic trends was significantly shorter than the one drawn first by children with conduct disturbances.

In a study by Exner (1962), measuring the effects of induced anxiety (via electric shock) on the size of HFDs, no significant differences in

the size of HFDs between neurotics, persons suffering from character disorders, and normal subjects at a university were found. In conclusion, any attempt to arrive at a general statement based upon the results of the aforementioned studies would be quite weak and inconsistent.

Several studies have been conducted to determine if there is any relationship between depression and height of human figure drawings. In a comparison of depressed and nondepressed adult psychiatric patients, Lewinsohn (1964) found that the drawings of depressed subjects were significantly shorter than those of nondepressed subjects. Furthermore, there was a significant correlation between Lorr's Factor A (retarded depression versus manic excitement) and height of the same sex drawings for men and women. The results of this study tended to support the hypothesis that the height of HFDs is negatively related to depression in a population of psychiatric patients. However, two additional studies dealing with depression and size of HFDs among psychiatric patients have yielded inconsistent and somewhat opposing results. In two related studies Roback and Webersonn (1966) found that the drawings of a depressed group tended to be smaller than those of a nondepressed group, but not significantly so. In the first part of the experiment, depression was defined as a T score below 67 on the D scale of the MMPI. Comparisons of the drawings by two groups of 25 male and 25 female patients scoring below 67 with the drawings of two comparable groups scoring above 67 yielded nonsignificant results. In the second part of the study, subjects in the depressed group were so diagnosed by doctors as opposed to a paper and pencil test diagnosis upon admission to the hospital. It was found that the clinically diagnosed depressed females drew significantly smaller drawings than the

clinically diagnosed nondepressed females. Thus it would appear that the type of diagnosis used in determining depression may be a variable influencing the size of HFDs. Salzman and Harway (1967) compared the drawings of a group of 18 psychotically depressed women patients with a control group of 20 women volunteer workers and hospital employees, none of whom had a psychiatric history. Psychotic subjects were tested with a DAP upon admission, and 30 days subsequent to their last electroshock treatment. Control subjects were also given the DAP twice within a comparable 46-day interval. The results indicated no significant difference between height and area of HFDs of the control group and the experimental group. However, once again there was a tendency from the depressed group to draw smaller figures than the control group as indicated by a lower mean height score for the former group. While the inconsistencies are obvious, it is worth pointing out, as did Salzman and Harway (1967) that "It would be erroneous to conclude that size perception is unrelated to the affective state of the individual" (p. 206). However, Machover's hypothesis (1949) that tiny figures frequently represent the neurotically depressed individual may be questioned as a result of findings of the above-mentioned studies.

A further possible use of the size of figure in human figure drawings has been as a detector of paranoid tendencies. Machover (1949) stated that, "The very large figure,...is seen most often in the grandiose paranoid individual who possesses a high fantasy self-esteem" (p. 91). Fisher and Fisher (1950) tried to determine if one could objectively detect paranoid trends in figure drawings, using six criteria (including large grandiose figure) mentioned by Machover (1949). Their subjects consisted of 32 patients diagnosed as paranoid schizophrenic.

Two groups of raters, one of which was aware of the diagnosis, were asked to pick from the 32 drawings those which they believed showed strong paranoid trends. The results indicated that the rater group which knew that the subjects were paranoid were in 80% agreement, while the second group agreed upon only 18% of the drawings designated as paranoid. Thirteen of the 32 drawings (41%) showed the size trait. The authors concluded that the evaluation of paranoid trends without external cues and additional information is difficult and unreliable. No specific conclusion was made by the authors with reference to size. They did state, however, that the presence of three or more paranoid signs should be considered as an arbitrary indicative cut-off point. Using such a point, 13 of 32 drawings would fall in the paranoid category. What is worth noting about these 13 drawings is that nine of them (69%) showed the grandiose figure as one of the three or more traits. Reznikoff and Nichols (1958) evaluated 61 hospitalized patients: 31 diagnosed as paranoid, and 31 as nonparanoid for the presence and extent of paranoid symptomatology using 26 characteristic paranoid traits (size being one of those). The mean figure drawing size of both groups was not significantly different.

In this same vein, Holzberg and Wexler (1950) attempted to determine if the HFD could be used to objectively discriminate between normals and schizophrenics. The drawings of 78 student nurses as compared with those of 38 women schizophrenics (18 paranoid, 12 hebephrenic, 6 catatonic, 1 simple and 1 mixed) revealed that all schizophrenics tested drew a significantly more constricted drawing than normals and further that the hebephrenics drew significantly more restricted drawings than normals.

Machover (1949) held a similar view about the size of drawings made by psychopaths as that concerning the size of drawings made by paranoids (i.e., that both would have a tendency to draw large figures). Craddick (1962) investigated the validity of her hypothesis by comparing the drawings of 25 prisoners who had shown high Psychopathic Deviate (Pd) and Hypomanic (Ma) scales on the MMPI with 20 randomly selected drawings done by college sophomores. The results indicated no statistically significant difference between the mean height of the two groups. Craddick (1962) concluded that the height variable cannot be used as a distinguishing variable for psychopaths. Once again the inconsistency in obtained results would lead one to question Machover's hypothesis.

Another area in which the DAP has been used is that of drug and alcohol addictions. Pantleo and Kelling (1972) compared the male and female drawings of 295 male narcotic addicts in an attempt to clarify the relationship between the addict and his mother. They found that the mean height for female figures was significantly larger than for male figures. This result, plus the fact that 68% of the subjects drew the female drawing either first, larger, or both, than the male drawing, indicates, according to Pantleo and Kelling (1970), a certain amount of involvement between the male addict and his mother.

In a case study using adrenocorticotropin hormone, a brain stimulant, to treat a victim of depression resulting from exposure to beryllium dust, Cramer-Azima (1956) noted a marked change in size of HFDs during the treatment period. The patient, a 27 year old male, was given the DAP test on the day prior to the start of treatment, the 10th and 21st days of treatment, and two months following cessation of

treatment. Upon admittance to the hospital, the patient was depressed and unable to work. Prior to therapy, his drawings were 3-3/4 inches high for the male and 3½ inches high for the female. He improved rapidly during treatment, and on the 21st day of treatment, became verbally aggressive and expressive of his feelings of resentment towards the company for which he had worked, concerning the accident which had caused his exposure to beryllium. Drawings on the 10th day had increased in size on the average of two inches. Drawings completed on the 21st day were three inches taller than those done on the 10th day (5½" to 8½" increase). The subject developed a fear of the hormone and treatment was stopped on the 28th day. Two months after the last treatment, the size of figures had decreased from 8½ to 6½ inches. The author concluded that "structural changes in size...appear to provide even more graphic indices of personality than do content analysis when using longitudinal studies" (p. 148). It should be added that this study would tend to support Machover's hypothesis (1949) that the constricted drawing is frequently completed by the depressed subject, and that the large figure is indicative of the aggressive personality.

With respect to alcoholics, Machover (1949) believed that their self-esteem and corresponding figure drawings would be small. Craddick and Leipold (1968) compared the mean height of male and female drawings of 200 institutionalized male alcoholics, and found that subjects drew males significantly smaller than females, thus supporting Machover's (1949) hypothesis. Additionally, these results supported the authors' specific hypothesis that male alcoholics would indeed draw smaller male than female drawings because they attached more anxiety to their own body image.

The effect of organic problems such as brain tumors, various handicaps, and/or amputations on the size of HFDs is another area that has been explored to some degree. For example, Mabry (1964) described the effect of a brain tumor in an adult businessman on the figure drawings that were made during the last two years of life. Prior to diagnosis, the figure drawn was eight inches tall. A drawing made four weeks postoperatively, the subject knowing he had terminal cancer, had decreased in size to $7\frac{1}{2}$ inches in height. Six months prior to death, another completed DAP was $3\frac{1}{2}$ inches tall. Several studies dealing with the body image of crippled and amputee children have been reported. For example, Centers and Centers (1963) attempted to determine if, in fact, amputees represent themselves differently in any systematic way from non-amputee children on the DAP test. A control group of 26 subjects was matched for chronological age, sex, and mental age with 26 subjects with amputations of the upper extremities. All subjects were asked individually to complete drawings of a male, a female, and a picture of themselves. The average measurement of three judges was taken with no significant difference in size being found. Wysocki and Whitney (1965) attempted a similar study using 50 crippled and 50 non-crippled children. Size was one of 15 aspects measured. The children were asked to complete three drawings as in the Centers and Centers (1963) study. Unlike the Centers and Centers (1963) study, the results of the Wysocki and Whitney (1965) study revealed that large figure size appeared significantly more among crippled subjects than among non-cripples. The authors concluded that extremes in figure size represented a positive way of expressing anxiety among crippled subjects.

Weininger, Rotenberg, and Henry (1972) compared the differences between two groups of patients with Spina Bifida (a malformation in which the arches and dorsal spines of the vertebrae are absent); one group at home, the other institutionalized, and a group of matched control subjects. Subjects were given their choice of materials (such as styrofoam shapes, various colored heavy drinking straws, scissors, and a stylus) with the instructions to make a person. The results indicated that there was no significant difference between the size of figures made by control subjects and handicapped subjects living at home. However, there was a significant difference in size between institutionalized handicapped and both of the former groups. These data supported the authors' hypothesis that institutionalized handicapped viewed themselves differently than did non-institutionalized subjects, whether they were handicapped or not. However, it should be noted that there may possibly be a confounding of variables because the subjects had to make a person rather than draw a person. The difference in tasks may be measuring factors (i.e., fine motor coordination) other than those intended.

The effects of institutionalization on the size of HFDs have also been studied using aged and orphans as subjects. In both cases, it was hypothesized that the institutionalized would draw figures smaller than their non-institutionalized counterparts. Lakin (1960) compared drawings of 36 institutionalized Eastern or Central European Jews with 36 similar non-institutionalized subjects, all ranging in age from 67 to 85. He found that the non-institutionalized subjects drew significantly larger and taller figures than institutionalized subjects regardless of age. Prytula and Leigh (1972) compared size of

figure drawings of a group of institutionalized orphans with a matched group of randomly selected children from intact families. Each subject was asked to make separate drawings of Mother, Father, Teacher, School, Home and You. While the difference between the two groups was significant, all other between-subject effects (e.g., sex) were nonsignificant. Additional results indicated that the drawn size of the school was significantly larger than that of the home, as well as all other objects. Also, the drawn size of the home was significantly larger than all other objects except school. Prytula and Leigh (1972) concluded that orphans irrespective of sex, draw significantly larger figures and objects than non-institutionalized subjects and therefore rejected their original hypothesis.

Kotkov and Goodman (1953) used the DAP to compare obese and non-obese (ideal) subjects and found that while the ratio of height to width at the mid-line for the drawings completed by the obese was significantly smaller than those completed by the ideal female, the horizontal area covered by the drawing made by the obese female is greater than that made by the "ideal" female subject. The authors concluded that although the results appear "to signify a direct projection of body size into the drawings, certain inconsistencies lead us to look for the operation of dynamic personality principles in the determination of differences between groups" (p. 364).

Shry (1966) tested the hypothesis that subjects who drew the same sex figure larger than the opposite sex figure are more dominant (i.e., less submissive) than those who drew the same sex figure smaller than the opposite sex figure. His subjects consisted of 30 male and female college students who were members of fraternities and sororities. An

analysis of variance of DAP size scores, Factor E of the 16 Pf and the ICL Dominance scores failed to reveal any distinctive personality correlates for any of the DAP size scores of the same or opposite sex human figure drawings.

A final area that has received attention is that of culture and race, and their relationship to the size of human figure drawings. McHugh (1963) analyzed among other variables, height and width, using the House-Tree-Person Test on English-speaking Puerto Ricans and Blacks in comparison with matched groups of white children. He found that Black subjects drew the Person significantly narrower than white subjects, while Puerto Rican children drew the Person significantly shorter than white subjects. Pantleo and Kelling (1972) found in their study of male and female drawings of narcotic addicts that female figure drawings are taller than male drawings for Black and Mexican-American subjects; however, Anglos drew male figures slightly, but not significantly, larger than female figure drawings. Baugh and Prytula (1974) examined the predictive relationship between matched groups of black and white juvenile incarcerates and several aspects of the DAP (including size). They found that Black subjects drew significantly taller figures than white subjects; all subjects drew male figures larger, and wider than female figures; and that first offenders drew male figures significantly larger than female figures. Since the self-esteem of Blacks has been reported to be higher than that of whites (see McDonald and Gynther, 1965; and Baughman, 1971), this study is supportive of Machover's (1949) hypothesis. Lourenso, Greenberg, and Davidson (1965) attempted to relate personality traits of 111 black children who differed in school achievement with HFDs. Subjects were

divided into three groups on the basis of scores on the Metropolitan Primary Reading Test. Subjects were asked to complete two drawings: "a child in school" and "my family," and were asked to circle themselves in the latter drawing. Inspection of means and standard deviations of size of "self" drawings indicated that the group of "average achievers" (the middle of the three groups) drew larger drawings than either the "below average" or "above average" groups. However, among girls, the size of parent figures was positively but not significantly related to the level of achievement. The authors concluded that a linear relationship cannot be assumed between achievement level and aspects of self concept (which was considered to be positively related to size in the analysis of achievement behavior). Koppitz (1966c) also studied the effect of school achievement on size, and found no significant relationship between the two variables.

Other variables not closely related to Machover's (1949) hypothesis, but nevertheless studies investigating the size dimension of the DAP, include: sex of the subject, age of the subject, actual height of the drawer, I.Q., MA, and school grade of the drawer. Cohen, Money and Uhlenhuth (1972) found that girls tend to draw themselves taller than boys, whereas Starr and Marcuse (1959) found no significance between sexes and the height of their respective drawings. Lehner and Gunderson (1953) found significance between the size of drawings of men and women age 40. Craddick (1963) found no significance between the size of drawings completed by both sexes.

With respect to drawing size and age, Lehner and Gunderson (1953) found that men tend to draw increasingly larger figures up to age 30 followed by a decline in drawing size; women follow a similar pattern

with the decline in size occurring after age 40. Black (1972) concluded that children tend to draw figures of a size more closely related to their actual age and height than they did perceptions of their own height. Cohen, et al. (1972) asked 385 children in an elementary school to draw a picture of themselves and their best friend, and another of themselves and the examiner. The results indicated that between the ages of 6 and 10, size more accurately increased as age increased. Between ages 10 and 13, there was a significant tendency to represent oneself a few millimeters taller than one's friend. With "Self and Examiner" there was a tendency to more accurately represent oneself with increased age. Black (1972) found a positive but non-significant relationship between I.Q. and height of human figures, while Zuk (1962) found that the size of HFDs increased significantly with age. Koppitz (1968) found, however, that figures 9" or taller did not attain significance until age 8. Although Koppitz' (1968) position appears to be somewhat in opposition to the aforementioned findings, it is significant to note that she is apparently the only researcher who specifically stated that size becomes a clinically significant factor when the drawing is of a particular size (i.e., 2 inches or smaller or 9 inches or larger). Gravitz (1968) attempted to determine what the "normal" size of a human figure drawing was for a nonpathological individual. He used 200 men and women with mean ages of 20.6 and 18.7 respectively. He found that the average height for both groups was 132.8 mm ($SD=38.9$) which represented 60% of the space available on the test form. The difference between male and female group mean heights was not significant.

Obviously, the area of human figure drawing is an area replete with many inconsistencies and contradictions. To summarize the results of these findings, the effects of 26 variables on the size of human figure drawings have been measured in 51 separate studies. Two or more studies have been reported for 12 of these variables. Eight of the 14 single-study variables indicated significance at the .05 level, while only one variable for which two or more studies were completed showed significance in 100% of the cases. Table 1 presents a summary of these 51 studies. What is the cause(s) of these apparent inconsistencies which exist even among studies investigating similar or the same variables? In Swensen's (1957) seven-year review of the literature, he concluded, with reference to Machover's (1949) hypothesis concerning size and level of self-esteem, that a carefully controlled, definitive study of the numerous hypotheses propounded needed to be undertaken to clear up existing discrepancies. In a second review completed in 1968, Swensen concluded that while the size of human figure drawings appeared to be related to self-esteem, there still existed an element of inconsistency which reflected a lack of reliability in the size of the drawings.

In an 18-year review of the literature, Roback (1968) indicated only that there was a marked amount of inconsistency in findings dealing with the size hypothesis. The results of these three reviews tend to indicate that the inconsistencies in obtained results are probably due to a lack of standardized and validated scales and too much dependence upon "clinical judgment" rather than upon empirical data.

As previously stated, one possible explanation for these inconsistencies could itself be the reliability of the size factor. Swensen

(1968) noted that 17 studies dealing with size reliability were significant at the 5% level while eight were not. Among the correlational studies, the interjudge (IJ) reliability range was .51 and no test-retest (T-RT) reliability range was shown indicating that no studies using T-RT method were reviewed. This writer reviewed three studies which were not mentioned in Swensen's (1968) review that did employ the T-RT method to measure reliability. Lehner and Gunderson (1953) examined the reliability of the height dimension in a study primarily measuring the relationship between sex, age and the height of HFDs. The results indicated that there was a significant interaction between age and sex of drawers on the height of figures drawn. Also, there was a significant difference in the mean height of drawings between: 25 and 40 year age groups of women, between men and women at age 40, and between mean heights for ages 20, 25 and 30 for both sexes. However, a test-retest comparison on the height variable between the two sets of drawings completed by each subject four months apart did not show any significant difference. In Strumpfer's (1963) study dealing with the effect of age and chronicity of functional psychosis on the DAP test, height measurements were obtained by dividing the height of the male drawing by that of the female drawing (M/F), and by the sum of the heights of the two figures ($M + F$). His subjects were a group of 81 hospitalized white male and female, functional psychotics. Of the original 81 subjects tested, 44 were retested four to eleven days after completion of the first set of drawings. Two independent raters were used in the study, and a reliability check revealed coefficients of .46 for height (M/F) and .83 for height ($M + F$). The later also showed a significant relationship with chronicity of psychosis. Starr

and Marcuse (1959) designed a study to specifically investigate the reliability of using different examiners and different time intervals between the administration of drawings. Three groups of college students were used. Group A (N=70) used the same examiner with a month interval between administrations of the DAP; Group B (N=57) used two different examiners with a month interval between tests; while Group C (N=66) received both administrations immediately following one another. The height of the figure was shown to be significantly reliable between first and second administrations. Hammer and Kaplan (1964) found the size factor to be highly reliable between average size drawings using the test-retest method with a one week interval between administrations. However, they noted that extremely large and small drawings tended to be unreliable. Additionally, they noted that some children who drew average size drawings on the first administration drew very small drawings on the second administration and vice-versa.

While reliability of the size factor (or rather possible unreliability) may provide us with a partial answer to the observed discrepancies, it cannot be held solely accountable. It is worth calling to the reader's attention that 19 of the 26 variables reviewed appear to be related to the way the subject perceives his "self." The other seven variables are of a developmental nature. While self concept appears to be the common thread among these 19 variables, it still does not help to explain the great amount of inconsistency and contradiction both within and between studies. It would appear that methodological problems may be at the root cause of these inconsistencies. Prior to isolating significantly related variables there would appear to be a more pressing need for the development of a standardized definition of

size, and a method for computing it; a common unit of measure for dealing with the size variable; studies with larger samples; and operational definitions for all variables. While these changes may not give the researcher the complete answer to the size/self-esteem question, at least they may make progress toward the resolution of the myriad of conflicting results.

Probably one of the best examples of the type of studies that would appear to be necessary for the determination of the meaning of the size of HFDs was reported by Koppitz (1968). Koppitz' book, Psychological Evaluation of Children's Human Figure Drawings, provides the only explanation which approaches a normative study. Koppitz used 1856 children, ages 5 years-0 months through 12 years-0 months from towns and cities in a metropolitan midwestern state and an eastern state. She measured a total of 68 developmental and emotional signs taken from the work of Machover, Hammer, Goodenough and Harris (1950) and her own work. As previously stated, tiny figure and large figure were found to be emotional indicators. An emotional indicator had to meet three criteria: it had to be clinically valid; it could not be related to age or maturation; and it had to be unusual in its occurrence (i.e., present in 16% or less HFDs).

The aforementioned review of the literature coupled with personal experience has led the writer to further examine Machover's (1949) hypothesis that size of human figure drawings is related to level of self-esteem. Hence, the purpose of the present study was to examine the effects of low and high self-esteem as measured by Coopersmith's Self-Esteem Inventory on the size of human figure drawings.

CHAPTER II

METHOD

Subjects: The original subject pool consisted of 900 male and female children, ages 9 years-0 months through 13 years-11 months from Waverly Junior High School, Waverly, Tennessee. From this group, 175 subjects who met the criteria for high and low self-esteem comprised the groups used for the actual study.

Apparatus: The apparatus given to each subject consisted of: (1) one Number 2 pencil with eraser, (2) three sheets of 8½" x 11" white ditto paper, with one of three words, BOY, GIRL, or MYSELF respectively on each sheet, (3) one copy of the Coopersmith Self-Esteem Inventory (SEI), and (4) a piece of black construction paper. Additionally, a cassette tape recorder was utilized to insure uniform administration of the instructions.

Procedure: Testing was carried out in the following manner: 25 classes of 4th through 8th grade students were tested in the traditional classroom setting on two separate occasions. Subjects were seated at individual desks spaced so as to keep them from seeing the responses and drawings made by adjacent subjects. One person served as the examiner in all cases.

During the first session with each class, the examiner asked subjects to listen to the following instructions which were recorded on the cassette tape:

I am going to give you a piece of black construction paper, a pencil, and a paper with 58 questions on it: please do not pick up or write on the paper until I tell you to do so...(Tape stopped-test items handed out)...On the back of the questionnaire is a space for your name: please print your name on that space. Next, print your teacher's name. Now put your age at your last birthday. Let me repeat that: put down your age at your last birthday. For instance if on your last birthday you were 9, put down 9. Now circle whether you are a boy or a girl. When you are finished doing this, please do not make any other marks or turn over your questionnaire. Any questions? Lay down your pencils and turn over your questionnaire. Notice that it has 58 questions on it. When I tell you to begin I would like you to answer all questions as honestly and as best you can. The reason you have been given a sheet of construction paper is to help you make sure that you won't skip any blanks. Here is how to use it. (Examiner shows subjects.) Place the black paper over your answer sheet so that only question one and the two blocks are showing. Then if statement one tells how you usually feel, place a check in the column "like me"; if the statement does not describe how you usually feel, place a check in the column "unlike me." Now move your black paper down to question two and do the same thing. Again, by using the black paper, you can help yourself not to skip any questions. There are no right or wrong answers. You have all the time you need to finish the questions. Before you begin look at question 34. "Scolded" means to be bawled out. On question 38 "opinion" means what I think of myself. On question 56 "discouraged" means to feel sad or low. When you finish, please bring your pencil, questionnaire and construction paper up to me. Any questions? You may begin.

If any subject did not know the meaning of a word, a standard answer was given by the examiner (e.g., parents - folks). No time limit was imposed and subjects were allowed to work at their own speed. All protocols were checked upon completion by examiner to insure that no answers were inadvertently omitted. Omitted answers were pointed out and subjects were asked to make appropriate corrections.

Approximately one month later, subjects were given the DAP. Individual packets of three sheets of paper stapled together, arranged in random order both within and between subjects were given face down to all subjects. They were told to turn over the papers and listen

carefully to a second set of recorded instructions:

I have given to each of you three sheets of paper. On one is the word MYSELF, on another GIRL, and on another BOY. I want you to draw the picture that should go on each page. For example, if your first sheet has MYSELF printed at the top, then you are to draw a picture of yourself. Draw a picture as it looks to you. When you are drawing, do not draw stick figures or profiles. (Examiner demonstrates a profile.) Draw the people as if they are looking straight at you. When you have completed the first drawing, go on to the next until you have finished all three drawings. When you have finished all three drawings, bring your papers to me. You have all the time you need. Are there any questions?

If students needed or asked for help, or were hesitant to complete the drawings, they were encouraged by neutral comments such as, "You're doing fine," or "Do the best you can."

Scoring the SEI - Coopersmith's Self-Esteem Inventory consists of an eight item Lie Scale and a 50 item forced-choice questionnaire with "Like Me" and "Unlike Me" as possible alternatives. The Lie Scale consists of items such as: "I'm never shy," and "I always tell the truth," etc. If the subject answered more than three items of the Lie Scale "Like Me," or if the subject improperly followed directions, he was eliminated from the study. On the SEI, each positive statement was assigned a value of one, thus making 50 a maximum high self-esteem score. Individual means and standard deviations for each age and sex were computed and an arbitrary Z score of plus or minus one was used as a cut-off point for high and low self-esteem (See Table 2). The DAPs for those subjects in the HSE and LSE group as measured by the SEI were then measured.

Scoring the DAP - Using an $8\frac{1}{2}$ " x $11\frac{1}{2}$ " centimeter grid square, the three drawn figures from each subject were scored on six indicators as follow:

Body Height was defined as the distance between the uppermost point on the drawing and the lowermost point to the nearest centimeter. Clothing such as hats and shoes was included in determining height. Artifacts such as sticks, bats, etc. were not.

Body Width was defined as the distance between extreme right and left points of the drawing as measured to the nearest centimeter. Straight vertical lines were extended from the extreme right and left points and the distance between parallel lines was measured. As with height, clothing was included in the determination of width, but artifacts were not.

Area was obtained by multiplying height x width.

CHAPTER III

RESULTS

Analysis of variance with repeated measures on the Drawing factor was used to compare low and high self-esteem subjects at each age level. Analysis of height, width and area failed to show significance at any age for either boys or girls of high or low self-esteem with the exception of the height factor for 10 ($F=4.14$, $df=2/20$, $p < .05$) and 12 ($F=6.475$, $df=2/24$, $p < .02$) year old boys. But subsequent Newman-Keuls analysis indicated the 10 year old boys drew "BOY" significantly ($p < .05$) taller than "GIRL" while the 12 year old boys drew "GIRL" significantly ($p < .02$) taller than "BOY" or "MYSELF." It is also worth noting that there was a general tendency for LSE subjects to make smaller drawings than HSE subjects.

CHAPTER IV

DISCUSSION

With the exception of the height factor in 10 and 12 year old boys, the results of this study do not support Machover's Body Image Hypothesis (1949) that LSE subjects draw constricted figures and HSE subjects draw expansive figures. There are several possible reasons for lack of support. First, it is possible that the specific instructions given to the subjects may affect the size of the drawing. Testing children in groups and insuring that instructions are followed correctly also presents a problem. Even with older children (ages 9 - 12), instructions must be succinct and simple in order to insure that every child follows them correctly. To tell a group of 30 children to "draw a person," then to ask them to turn their papers over and draw a person of the opposite sex to the one just drawn, may be a bit too complicated for some children - to say nothing of inherent control problems. On the other hand, to ask children to draw a boy/girl or man/woman may have the effect of restricting possible projections of the subject. Simply stated, on the one hand there is a problem obtaining accurate data while on the other, there is a problem obtaining valid data. These problems might well be avoided through the use of the individual testing situation.

Second, there is a possibility that the SEI does not measure what it is purported to measure. It was noticed by the author on several drawings that factors other than size which are indicative of LSE (Koppitz, 1968) were noted on the drawings of HSE subjects (e.g.,

monster drawings). However, once again, it is difficult to know whether or not the SEI should be considered invalid if in fact demand characteristics resulting from group administration could be causing low self-esteem indicators to appear on protocols of HSE subjects.

In conjunction with this last observation, it is worth noting that most of the subjects appeared quite threatened by having to draw HFDs. From the general behavior manifested by subjects in all 25 classes tested, it is felt that the threat was quite possibly a result of peer pressure; that is, being expected to draw as proficiently as each subject felt others expected him to draw, and to make drawings which in content met perceived expectation levels of the peers and the examiner. Supportive of this position were comments such as "I can't draw," "I don't know what I look like," "I'm not very good at drawing people" which were encountered numerous times in each class.

The three aforementioned factors all point to what may be a main reason for failure to attain significance in this study as well as a number of other studies. Simply stated, the demand characteristics in group administration of the DAP may be so apparently different from those encountered in individual administration as to make obtained results significant in the latter case and not in the former. In an attempt to support this hypothesis, the author classified the 37 DAP studies which reported either significance or no significance into those administered to a group or individually. Of the 37, 15 fell in the Group category, 22 in the Individual category. Of those cases in the Group category, eight were significant, seven were not. However, 17 of those cases in the Individual category were significant and five were not. Chi square analyses supported the contention that signifi-

cantly more positive results were obtained ($\chi^2 = 5.50$, $p < .02$) through the use of individual testing as compared with group testing.

In reviewing the findings of significance of the height factor for the 10 year old boys, it seems conceivable that this finding may represent simply a chance phenomenon as opposed to an event with meaning germane to this study. On the other hand, it may be that 10 year old boys are at a point socially where there is a higher positive valence in their perception of other boys which manifests itself in larger drawings of boys and/or a higher negative valence toward girls with resultant smaller drawings of girls. It is also conceivable that the significantly larger GIRL drawing for the 12 year old boys may represent a high point in the shift in interest from other boys to girls.

In conclusion, it is quite possible that what is occurring in the research setting using group administration may not be the same as what is seen in the clinic. If this is the case, then the results of research obtained employing group administration of the DAP may have little meaning to the practitioner. It is felt however that the issue of a possible relationship between size of HFDs and level of self-esteem is far from being settled. While it is felt by this writer that the effect of HSE and LSE on the size of DAPs is and probably will remain insignificant in the group setting, the findings of a significant number of studies in the literature which obtained significance using individual administration of the DAP coupled with this writer's personal clinical experience suggests that more research is needed in the area of the effect of group versus individual administration of the DAP.

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APPENDIX: TABLES

Table 1

Variables Tentatively Thought to Influence Size/Height of Human
Figure Drawings

Variable	No. Studies completed/ No. significant at .05 level	Variable Function of Machover's Hypothesis
Chronological Age	4/3	No
Actual Height	2/2	No
Sex	4/2	No
Race	3/2	Yes
Self Concept	6/4	Yes
I.Q.	1/0	No
Mental Age	1/1	No
Amputee	1/0	Yes
Psychotic	3/2	Yes
Psychopathic	3/0	Yes
Neurotic	1/1	Yes
School Grade of S	1/1	No
Alcohol	2/1	Yes
Drugs	1/1	Yes
Emotional Indicators	3/2	Yes
Obesity	1/1	Yes
Aged	1/1	Yes
Orphans	1/1	Yes
Depression	2/2	Yes
Aggression	3/2	Yes
Crippled	1/1	Yes
Dominance/Submission	1/0	

Table 1 (Continued)

Variable	No. Studies completed/ No. significant at .05 level	Variable Function of Machover's Hypothesis
Achievement	2/0	Yes
Organicity	1/1	Yes
Improvement in Therapy	1/1	Yes
Handicapped	<u>1/1</u>	Yes
	51/33	

Table 2

Mean Scores and Standard Deviations for High and Low Self-Esteem Groups

Group	<u>n</u>	\bar{X}	SD	+1SD	-1SD
9 year old Boys	51	32.8	7.3	40.1	25.5
9 year old Girls	54	31.9	6.5	38.4	25.4
10 year old Boys	53	34.2	8.4	42.6	25.8
10 year old Girls	57	34.5	7.5	42.0	27.0
11 year old Boys	51	36.0	8.4	44.4	27.6
11 year old Girls	57	32.8	7.5	40.3	25.3
12 year old Boys	81	31.5	7.9	39.5	23.5
12 year old Girls	78	32.2	8.0	40.2	24.2
13 year old Boys	65	33.4	8.1	41.5	25.3
13 year old Girls	56	32.9	6.7	39.6	26.2

TOTALS

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