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GRADUATE COLLEGE

JUNIOR HIGH SCHOOL HAND TEST NORMS FOR AMERICAN CHILDREN IN THE SEVENTH, EIGHTH AND NINTH GRADES

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

DOCTOR OF PHILOSOPHY

BY

ANTHONY JOHN CRANE

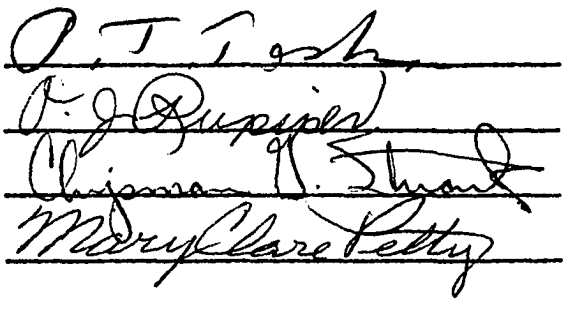
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JUNIOR HIGH SCHOOL HAND TEST NORMS FOR AMERICAN CHILDREN

IN THE SEVENTH, EIGHTH AND NINTH GRADES

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JUNIOR HIGH SCHOOL HAND TEST NORMS FOR AMERICAN CHILDREN IN THE SEVENTH, EIGHTH AND NINTH GRADES

CHAPTER I

INTRODUCTION

The projective test has evolved gradually as a personality assessment technique. Its foundations are rooted in early art forms that implied association made with paint splotches. Scientific research and investigation in recent years concerning the associations projected by individuals on ink blots, objects, pictures and drawings etc. has shown this technique to be a valuable tool in personality evaluation.

The Hand Test is a projective technique. The author of this paper feels therefore that a short historical survey of the major projective techniques and underlying theory is appropriate in order for the reader to assimilate the necessary background information of this particular diagnostic instrument.

The term "projection" is considered one of the central constructs in psychoanalytic theory. It was identified and defined as a defense mechanism in Freud's early writings. As early as 1895 Freud introduced this construct in a paper entitled, "The justification for detaching from neurasthenia a particular syndrome: the anxiety neurosis." He referred in a single brief statement to a process whereby inner stimulation is projected

into the outer world. In 1896 Freud applied the label projection to the mechanism whereby the paranoid subject escapes recognition of self-reproach or self-distrust by directing these tendencies upon others. (Lindzey 1961)

It is interesting to note that 100 years previous Goethe wrote: "It is not hard to observe that in this world man feels most free from his sins and most blameless when he can comfortably expiate on the same shortcomings in others." (Sanford and Wrightsman 1970)

Piotrowski (1965), Lewis (1928) and Lindzey (1961) all stress in their writings that Freud viewed projection not only as a means of defense utilized by neurotic and psychotic patients but also as an important construct in normal development. Lindzey (1961) refers to the creative process of an author or artist whereby "they unwittingly would strive to secure some expression for those unconscious impulses that were denied expression in their everyday existence (p. 28). Piotrowsky (1965) comments that "the perceptmalytic personality methods however, reveal not only the repressed and unacceptable traits but they disclose also completely accepted traits of which the subject is proud as well as conscious." (p. 4) Lewis (Piotrowsky 1965) revealed that the graphic productions of his patients showed not only their weaknesses but also their strengths are projected and expressed.

Holism should be mentioned also as a theoretical emphasis that influenced the growth of the projective movement. Originating in the field of anthropology it quickly was adopted by many leading practioners in the early 20th Century. Alfred Adler would be considered one of the major disciples, and his individual psychology is based on Holistic theory. This theory assumes that each person has his own motivational attitudes, purposes and goalsin life and in every life situation. All actions will re-

flect the individual goal, and the person's unconscious goal that the person pursues is determined partly by hereditary endowments and partly by the interpretations and evaluations of his total life experiences. The basic assumption is that no one part of the person can be dealt with separately without affecting the personality of the whole being.

There have been a number of attempts in recent years to delineate, refine and differentiate various types of projection. Cattell (1965) in his book The Scientific Analysis of Personality reports on two kinds of projection put forth by Dr. Wenig of correlational research fame. One involves projection of unconscious or barely conscious anti-social motives as described by the analysts, called true projection. The second involves a person interpreting the behavior of others in terms of his own personal and limited motivational system and is called naive projection.

Murray distinguishes between supplementary projection (the individual projects his own impulse directly upon another); complementary projection (individual perceives his environment in a way as to make it correspond with his own impulses) and contrast projection (individual perceives others as more dissimilar than they really are) (Lindzey, 1961).

Bellak (1954) does away with the broad term projection as such and substitutes the term apperceptive distortion. Under this heading would fall subcategories such as inverted projection (the unacceptable impulse takes on characteristics of the defense mechanism before being projected); simple projection (refers to the normal process whereby the individual misperceives the outer world as a result of inner states); sensitization (individual pays particular attention to those real stimuli in the outer world that are meaningful to and suitable with his inner states); and externaliza-

tion (conscious attempt of the individual to apply his own characteristics to the outside world). Rabin (1961) relates that Murstein and Pryer in an article entitled "The Concept of Projection: A Review," in the Psychological Bulletin 1959, refer to four categories of the concept of projection. (A) Classical, which involves Freud's original interpretation of projection; (B) Attributive, which is broader and refers to the process of "ascribing one's own motivation, feelings,etc. to other persons; (C) Autistic, whereby the perceived stimulus is influenced by the needs of the perceiver; (D) Rationalized projection, which involves the use of unconscious classical projection accompanied by attempts to justify it by inventing a rationale.

Lindsey (1961) comments that although we find a variety of labels and connotations for the term projection, two important meanings are most evident. One would be classic projection encompassing "the unconscious and pathological process whereby the individual defends against unacceptable impulses or qualities in himself by inaccurately ascribing them to individuals or objects in the outer world." (p. 31). The other he refers to is called generalized projection whereby "the individual's inner states or qualities influence his perception and interpretation of the outer world." (p. 31). He feels this latter meaning is part of the normal process of an individual.

Rabin (1960) commented that "perhaps the broader term 'externalization' is more appropriate in the case of projection techniques. It avoids the constricting misconception of projection as a mere defense mechanism" (p. 10).

With the growing popularity of psychoanalytic and holistic theory in the early twentieth century, a need was created in clinical settings for

the formulation of specific techniques that would measure in some degree the underlying and basic constructs of these theoretical implications. The milestones in this movement would have to originate with Freud's use of dream interpretation, as an avenue to the unconscious. Jung's work with word association techniques, in which he felt he could identify areas of unconscious conflict within individuals, came soon after and stimulated further research in this area. In 1921, the most popular and influential technique was presented to the world with the publication of the monograph Psychodiagnostik by Herman Rorschach.

We find that the literature reflects the use of ink blot interpretation by quite a few people prior to this time. Major contributors would include: Justinus Kerner in 1857, who is credited with the first recorded discussion concerning objects to be seen in ink blots; Binet and Henri in 1895 who suggested the ink blots as a method for studying individual differences in imagination; Kirkpatrick in 1900 felt that age was a factor in the quality of responses; Whipple in 1910 published the first standardized series of ink blots concentrating mainly on the imagination process of the subject; Bartlett in 1916 concluded that ink blots could point up the interest and perhaps the occupations of the subjects; and finally Parsons in 1917 utilizing Whipple's standardized blots reported that her results with 97 school children indicate significant individual differences. For the most part these predecessors of Rorschach were concerned with the use of ink blots as a method for studying visual imagination through the analysis of the content of the subject's responses. It remained for Rorschach with his psychiatric and scientific background to develop the possibility of using blots for personality diagnosis (Klopfer and Davidson 1962).

Lindsey (1961) feels that the sentence completion technique utilized

by Tendler in 1930 as a measure of emotional factors would be considered an important step in the "projective technique movement." "This is the first time," reports Lindsey, "that we do not find any intimate historical link with psychoanalysis," (p. 35). This technique received its biggest impetus during the early World War II years due to the demands for group personality assessment.

Another giant of the projective techniques, which gained practically immediate success and rivaled the Rorschach in clinical diagnosis was the Thematic Apperception Test. This instrument utilized the creative aspects of the subject in devising stories about specific pictures. Henry Murray was the key figure in the development of this technique along with Christina Morgan. Murray's book, Explorations in Personality, in 1938 gave a detailed report and discussed fully the TAT's application. Both Morgan and Murray were trained in psychoanalysis and their interpretation of this technique reflect this training.

There are many other techniques listed in the literature that will fall under the projective method. A brief list of the more popular ones are: Bender Gestalt Test; Blackey Pictures; Szcondi Test; Holtzman Inkblot Test; Rotter Incomplete Sentence Test; House-Tree-Person Drawing Test; Human Figure Drawing Test; Children's Apperception Test; Lowenfeld Mosaic Test.

It is interesting to note that the labels, "projective technique, projective method and projective test," came after the major tests in this area were fully entrenched in the psychological evaluation scene. Lawrence Frank in 1938 first used the term "projective methods" in a memorandum concerning the various measures to study personality. A year later he published his well known monograph on projective measures using the term

"projective techniques" to describe a series of procedures in the measurement of personality (Rabin 1968). Lindzey (1961) relates that the term projection test was first used by Murray in his work, Explorations in Personality (1938) without any prior influence from Frank.

In the literature we find many definitions of projective techniques with certain characteristics emphasized. Frank (Rabin 1968) in his description stressed the importance of the individual's expression of his private world. Piotrowski (1965) gives meaning and importance to the degree of vagueness or lack of structure of the stimulus. White (Lindzey 1961) emphasizes the ambiguity of the stimulus, the freedom permitted in responding and the unawareness of the subject to the intent of the examiner. Cronbach (1949) feels that the stimulus should be not familiar to the subject in order to negate habitual responses to the test. Anastasi (1961) identifies several distinguishing features of projective techniques (e.g., lack of structure, large number of responses afforded the subject, and the holistic view of the individual's personality). Lindzey's (1961) definition of a projective technique is found more often quoted in the literature and seems to encompass the basic ingredients of this method.

> A projective technique is an instrument that is considered especially sensitive to covert or unconscious aspects of behavior, it permits or encourages a wide variety of subject responses, is highly multidimensional, and it evokes unusually rich or profuse response data with a minimum of subject awareness concerning the purpose of the test. It is very often true that the stimulus material presented by the projective test is ambiguous, interpreters of the test depend upon holistic analysis, the test evokes fantasy responses and there are no correct or incorrect responses to the test. (p. 45)

The grouping of projective techniques would fall under several major classifications. L. K. Frank (Rabin 1968) listed a five fold grouping of methods as follows: Constitutive methods (imposition of structure upon

relatively unstructured material, e.g., Rorschach); Constructive methods (arrangement of materials into certain patterns, e.g., mosaics test); Interpretive methods (subject interprets and relates an experience that has a personal or affective significance, e.g., TAT); Cathartic methods (techniques that are expressive and stimulate emotional reactions, e.g., doll play); and Refractive methods (involve conventional modes of communication that are altered idiosyncratically, e.g., handwriting).

Lindzey (1961) and Anastasi (1961) classification of projective techniques are similar to each other. Five types are listed: Associative techniques (word association and Rorschach); Construction procedures (Thematic Apperception Test); Completion tasks (Rotter Incomplete Sentence Test); Choice or ordering devices (Szonci, Picture Arrangement Test) and Expressive techniques (Psychodrama and painting).

McReynolds (1968) in his book Advances in Psychological Assessment reflects on the status of projective techniques today. He feels that they are still a major focus of research and practice even though they are less utilized as they once were. Their difficulties in validity studies have influenced many psychologists to reject this approach as inherently unsatisfactory. Some, however, feel that the evidence for this attitude is not that definite and encourage more research into the field.

McReynolds lists two trends that characterize the current developments with projective techniques: "One is the trend toward greater objectivity in scoring" and the second which he feels is more important, "the development of new theoretical models of projective psychology" (p. 8).

One of the latest projective techniques, the Hand Test is the subject of the present study. It was created out of Dr. Edwin Wagner's

interest in the projection of aggression responses and his involvement concerning a more discrete measure of the human movement responses on the Rorschach.

Preceding Wagner's interest in the utilization of the hand for making inferences concerning human behavior, we find several major studies that deserve mention. Kretchmer in 1931 is crecited with the first scientific attempt to relate the hand to personality developed out of his studies of body types. Wolff in 1943 "stressed the relationship between the hand and brain via motoric and tactile representation of the hand in the brain" (p. 473). She derived a method of hand interpretation based on certain characteristics of the hand (e.g., its form, nails, lines, etc.). Carmichael, Roberts and Wessell are credited with the first empirical research in 1937 utilizing the human hand. They presented to several hundred students pictures of hands, asking them to judge the emotional expression portrayed by still or motion pictures of the hands. Werner Wolff in 1943 studied the expressive movements of the hand. He took photos of subjects' hands without their knowledge and then asked them to characterize the hand. The subjects demonstrated very little recognition of their own hands' expression (Rabin 1968).

In the test manual, Wagner (1971) relates the following concerning the rationale underlying the Hand Test:

> The Hand Test utilizes relatively structured stimuli (pictures of hands) in relatively unstructured poses, permitting individual variations in responses yet restricting these responses to definable and classifiable categories, namely, descriptions of hand actions and attitudes. It is assumed, in way of rationale, that prototypal action tendencies will be projected into pictures of hands since the hand, both ontogenetically and functionally, is crucial for interacting with and relating to the external world. In the development of the human organism the ongoing, reciprocal,

> feed-back relationship between the brain and the hand makes it likely that perceptions and cognitions of semi-structured pictures of hands will mirror significant perceptual, motor tendencies in the subject. Certainly, the importance of hands in establishing and maintaining reality contact cannot be denied. (p. 1)

Wagner introduced the Hand Test in 1959. He published his first study in 1961, attempting to differentiate normals from schizophrenics. Initially Bricklin, Piotrowski and Wagner provided the rationale and original scoring system for the Hand Test (American Lecture Series in Psychology 1962). Wagner in the latter half of 1962 published the first manual with a slightly modified scoring system. The first revision of the 1962 Hand Test was published in 1969 by Western Psychological Services and includes the manual by Wagner, stimulus cards and a book titled The Hand Test by Bricklin, Piotrowski, and Wagner. A second revision of the manual was published in 1971.

In discussing the various aspects of the Hand Test in the manual, Wagner (1971) makes mention of several important considerations of which the user should be cognizant. He cautions, that the Hand Test being short and fairly structured, disclosure of its rationale could invalidate its discrimination ability. He feels the test's use should be limited to individuals at or beyond the graduate level and familiar with personality dynamics and projective theory. Wagner makes the point that the Hand Test is more sensitive to the subjects' immediate psychological state.

A brief outline of the technical aspects and procedures involved in administering the Hand Test is referred to by Wagner (1971), when he states in the introduction section of the test manual:

> The Hand Test is a diagnostic technique consisting of ten cards approximately three by five inches in size, which utilizes

> pictures of hands as a projective medium. On each card, except the last, a different picture of a hand is portrayed. The tenth card is a blank. The cards are presented one at a time and the subject must "project" by telling what the hands are doing. Responses are recorded verbatim along with initial response times per card and other significant behavior, and then scored and interpreted according to prescribed procedures. (p. 1).

Review of Related Literature

Most of the research utilizing the Hand Test has been under the authorship of its creator, Edwin Wagner. In conjunction with several of his professional colleagues he has published studies whose content has ranged from predicting anti-social behavior in juvenile deliquents (1962) to predicting workshop performance of severely retarded adults (1965).

Wagner in 1962 reported in a speech to the Eastern Psychological Association, that the Hand Test was capable of indicating antisocial, inflexible and interpersonal aggression among delinquents.

Two years later, Wagner and Hawkins (1964) attempted to differentiate between assaultive and nonassaultive delinquents by using the Acting Out Ratio scores on the Hand Test. They reported that they had successfully differentiated 47 out of the 60 subjects.

In 1967 Wetsel, Shapiro and Wagner in an attempt to establish the predictive validity of the Hand Test reported that the Acting Out Ratio scores on the Hand Test were able to discriminate significantly delinquent recidivists from non-recidivists. They were able to categorize 66 percent of the subjects. They reported also that the Aggression score significantly differentiated the two groups.

Wagner (1961, 1962, 1966, 1970) in collaboration with Medvedeff (1963) and Hodge (1964) published studies attempting to classify or diagnose schizophrenics on the basis of their response to the Hand Test. Their work

indicated that the Hand Test can identify basic personality attributes and can successfully discriminate agressive and non-aggressive patients from a population of undifferentiated schizophrenics.

In a study attempting to identify male neurotics with marked psychosexual problems Wagner (1963) reported that based on content indicators on Hand Test the experimental group produced significantly (.02 level of confidence) more content indicators of sexual maladjustment (CYL and SEX) than a control group of neurotics with pronounced sexual aberration.

Wagner and Cooper (1963) in study conducted at the Goodwill Industries in Akron, Ohio, hypothesized that the active (ACT) score would differentiate between satisfactory and unsatisfactory workers. The immediate supervisors and the personnel director of the workers gave their evaluation of the individual workers. This was used as criterion. Forty-five out of fifty workers were correctly differentiated, at the statistically significant level of .001.

In 1965 Wagner and Hanver combined the active scores on the Hand Test along with seven other psychological tests. They were combined in a battery to develop predictors of workshop success for severely retarded adults. Each of the eight tests demonstrated highly significant predictive value. Because the sample was small and there was no cross validation the authors urged caution in the interpretation of the results. They felt also that the test may simply have measured present performance rather than skills which existed prior to admittance to the workshop.

Utilizing again the active score (ACT) on the Hand Test in 1966, Wagner and Capotosto successfully discriminated between a group of poor workers who required too much supervision to be occupationally productive

and a group of good workers who required only occasional supervision and who were occupationally productive. This was at the Lincoln State School in Illinois. The ACT score was able to correctly differentiate 74 percent of the subjects at the .01 level of confidence.

Outside of the author's personal involvement, we find a paucity of research utilizing the Hand Test. We do find among the published works several articles which tend to cast aspersion on the test as a predictor of behavior and also concerning its validity and reliability.

Huberman (1964) in attempting to cross-validate Wagner and Cooper's findings at Goodwill Industries, reported the failure of the Hand Test to discriminate among workers rated high, average and low on activity level and general acceptability. Huberman wrote that "neither the ACT score, nor any of the other scores derived from this test, showed any consistent trend in terms of postdicting activity level or general acceptability of the 18 Ss involved in the study." (p. 280).

Attempting to cross-validate Wagner's studies involving the discrimination of aggressive from non-aggressive behavior on the basis of the Acting Out Scores and the Withdrawal Score of the Hand Test, Drummond (1966) found very little difference with her subjects. In her study she included 66 undifferentiated schizophrenics that were rated aggressive or non-aggressive by certain definite criteria. The lack of significant results of her study was due she felt to the very nature of the schizophrenic disorder of unpredictable behavior.

Shaw and Linden (1964) in an article entitled "A Critique of the Hand Test" comment on what they feel is the author's confusion over predictive and concurrent validity.

> The source of this confusion seems to lie in the author's failure to discriminate between predictive and concurrent

> validity. The research which they cite has repeatedly verified the hypothesis that the Hand Test can differentiate between individuals who are currently exhibiting overt aggressive behavior and those who are not. However, the assumption of predictive validity is totally unsupported by research and appears to be based solely upon what has been termed "common sense validity. . . the product of confident ignorance." (p. 283)

Seig (1965) in a paper describing his attempt to demonstrate that the Hand Test can be used as an indicator of overt aggressive behavior in children, felt that the lack of parallel forms on the Hand Test was quite detrimental in making a valid reliability statement concerning the test.

Singer and Dawson (1969) in an experimental situation tentatively demonstrated that the Hand Test was open to falsification because its interpretive rationale is based on content of responses of which the subjects were aware.

The normative data that the first edition of the Hand Test was standardized on reflected the emphasis of its use with schizophrenics and juvenile delinquents. Since 1962 we find a broader compilation of data which includes small numbers of cross-cultural studies, mental retardation samples, prison inmates, and adult population, and studies on elementary and college students. Much of the data compiled by these studies suffer from lack of completeness and adequate representation of their sampling.

Mary Capotosto (Wagner 1971) reported means for matched groups of imbeciles and morons from the Lincoln State School in Illinois. Garvin Gloss, school psychologist selected every tenth child from 9 age groups of students (ages ranging from seven to fifteen, total number 205) in the Tallmadage Ohio School District and reported means in the 15 major scoring categories.

A. P. T. Loftus (Wagner 1971) of the Children's Welfare and Public Relief Dept. in Adelaide, Australia furnished means and medians on a stra-

tified sample of 114 boys from a technical high school there. The mean age for the boys was 14.6.

Irene H. Daugherty (Wagner 1971) tested 30 normal and 30 dyslexic children with the Hand Test. The children were selected from the fourth, fifth and sixth grades in two elementary schools of the Summit County (Ohio) School System. The children were matched for age, sex and I.Q. The results indicated more tension responses for the dyslexic group significant to the .01 level of confidence.

Roger Viers (Wagner 1971), school psychologist from the Ohio Public School System randomly selected 197 children from 35 elementary schools, (grades kindergarten through third grade). He administered the Hand Test to this sample and reported the results.

Psychologist Harry Wetzel (Wagner 1971) assembled means, standard deviations and intercorrelation matrix on 133 juvenile delinquents referred through the Summit County Juvenile Court, Ohio. Significant correlations were reported by Dr. Margaret Smith who programmed the data in the following categories: AFF/DEP = .249; DEP/AGG = .407; COM/EXH = .428; ACT/TEN = .312; AIRT/H-L = .850.

School counselor, Jack L. Neuber (Wagner 1971) compiled norms on samples of natives from the island of Guam. The samples were made up of 30 elementary school children, 30 high school students, 30 college students and 30 Guamanian adults. The results indicated definitely more responses were made by the Guamanians than United States samples. This was reported as being relevant by Wagner who felt that the Hand Test could reflect in an objective way, inter-cultural differences.

Psychologist Carl Thornton (Wagner 1971) tested a sample of engineers and technicians at Goodyear Aerospace Center and reported norms on

31 subjects.

Means for 100 boys at the National Training School, in Virginia were compiled by Azcarcate and Gutierrez. They reported that the MAL score coupled with AOR score could be used to predict overt, aggressive behavior.

Psychologist Tom Leckowick (Wagner 1971) reported that the Path score can be used as an approximate measure of psychopathology. He obtained a Rho of .509 when he correlated independent staff ratings of manifest psychopathology with the Hand Test Path score for 50 in-patients at the Fallsview Mental Health Center.

A more recent study by Roberts (1971), in which she attempted to develop norms for bright children and mentally retarded children on the Hand Test resulted in the conclusion that the test was capable of measuring differences between the frequency of responses of the two groups.

Puthoff (1972) attempted to establish norms on the Hand Test for rural first, second and third grade bilingual children in West Texas. She correlated the Path responses on the Hand Test with the children's raw scores on the Peabody Picture Vocabulary Test. She obtained only two statistically significant negative correlations which suggested "that female bilingual children in grade one and male children in grade two did not have difficulty in carrying out action tendencies in order to achieve need satisfaction," (p. 36). Also the responses of children who employed English as a second language were less than their counterparts as reported by Neuber in Guam, relates Puthoff.

Under the normative research reported in the Hand Test manual we find only one study utilizing junior high school students. This one was reported by Yasuko Minoura on 60 Japanese junior high school boys.

Statement of the Problem

The Hand Test being a relatively new projective technique is in need of more extensive norms on young children. Although there have been norms published on Japanese junior high school students, there has not been any on American junior high school students (grades seven, eight and nine). This study then, will attempt to provide normative information on junior high American students (boys and girls) at the three respective grade levels. Two special education classes (Educable Mentally Retarded and Learning Disabilities) will also be included and reported as separate entities.

Purpose of the Study

The present author feels that the absence of proper junior high school norms on the Hand Test reflects a significant void in this test's normative data. It is felt that the responses of these students (average age range 12 to 15 years) who are experiencing many psychological, social, and physical changes, would be most informative and add credence to this instrument as a diagnostic tool in personality assessment.

CHAPTER II

METHOD

The Subjects

The population for this study included all the seventh, eighth, and ninth grade students that are currently enrolled in the two junior high schools (e.g., A & B) of a medium size town in central Oklahoma. There are 1250 boys and girls attending junior high A and 928 attending junior high B. At junior high A there are 438 boys and girls in the seventh grade, 421 in the eighth grade and 391 in the ninth grade. At junior high B there are 311 boys and girls in the seventh grade, 317 in the eighth grade and 299 in the ninth grade. The sample was limited to 15 boys and 15 girls randomly chosen from each school at the three grade levels for a total of 180 children. The author felt that this number was adequate for a representative sample and likewise it lent itself to the individual schedules of the students involved. A table of random numbers was used for the randomization process. The one educable mentally retarded class and the single learning disabilities class for the two schools are represented in total since their number is small.

The Procedures

The identified members in each of the five grade placements were individually administered the Hand Test according to the published

standardized procedures. The testing took place during the regular school hours over a three month time period. With the exception of a few, all the subjects demonstrated cooperative behavior in taking the test. There were many inquiries put forth by individual students concerning the rationale for the test. The author replied in the manner described by Wagner in the test manual. There was no need to replace anyone of the chosen subjects. The principals and teachers of both schools cooperated fully with the examiner in releasing the children from class for the test and assisting in the randomization procedures. The administration and scoring of each subject's Hand Test protocol was done by the author who has academic training and clinical experience in the area.

Instrument

The reliability and validity of the Hand Test were ascertained by Wagner (1969), using the records compiled for his original norms (N = 1,020). The Spearmen-Brown split-half method of computing reliability coefficients was used independently by each of three scorers with the following results: scorer A, r = .85; scorer B, r = .84; scorer C, r = .85. Concurrent validity was established by comparing the results obtained in the normative groups to results of "known groups." Wagner (1969) stated that the meanings and interpretations of the scoring categories were based on a logically deduced projective rationale, validated against empirical data.

Administration time for the Hand Test takes 5 to 10 minutes for each subject. Every response on the test must then be categorically scored as predominately exhibiting one of the following, as defined by Wagner (1969):

Affection (AFF): Interpersonal responses involving an interchange

or bestowment of pleasure, affection or friendly feeling, e.g., "waving to someone, a greeting."

Dependence (DEP): Interpersonal responses involving an expressed dependence on or need for succor from another person, e.g., "Begging, . . . panhandling."

Communication (COM): Interpersonal responses involving a presentation or exchange of information, e.g., "giving a speech, wants to make a point."

Exhibition (EXH): Interpersonal responses which involve displaying or exhibiting oneself in order to obtain approval from others or to stress some special noteworthy characteristic of the hand, e.g., "making shadow pictures on the wall."

Direction (DIR): Interpersonal responses involving influencing the activities of, dominating, or directing others, e.g., "giving a command."

Aggression (AGG): Interpersonal responses involving the giving of pain, hostility, or aggression, e.g., "grabbing someone with violence."

Acquisition (ACQ): Environmental responses involving an attempt to acquire or obtain a goal or object. The movement is on-going and the goal is as yet unobtained and, to some extent, still in doubt, e.g., "reaching for something on a high shelf."

Active (ACT): Environmental responses involving an action or attitude designed to constructively manipulate, attain, or alter an object or goal. ACT responses are distinguished from ACQ responses in that the object or goal has been, or will be, accomplished and the issue is therefore not in doubt, e.g., "picking up a coin."

Passive (PAS): Environmental responses involving an attitude of rest and/or relaxation in relation to the force of gravity, and a deliberate and appropriate withdrawal of energy from the hand, e.g., "just resting."

Tension (TEN): Energy is being exerted but nothing or little is accomplished. A feeling of anxiety, tension or malaise is present. TEN responses also include cases where energy is exerted to support oneself against the pull of gravity accompanied by a definite feeling of strain and effort, e.g., "stretching and tensing the fingers."

Crippled (CRIP): Hand is crippled, sore, dead, disfigured, sick, injured, or incapacitated, e.g., "a dead person's hand."

Fear (FEAR): Responses in which the hand is threatened with pain, injury, incapacitation, or death. A FEAR response is also scored if the hand is clearly perceived as meting out pain, injury, incapacitation, or death to the subject or to a person with whom the subject identifies, e.g., "raised up to ward off a blow."

Description (DES): Subject can do no more than acknowledge the presence of the hand with perhaps a few accompanying inconsequential descriptive details or feeling tones, e.g., "a plain, ordinary hand."

Bizarre (BIZ): A response predicated on hallucinatory content, delusional ideation or other peculiar, pathological thinking. The response partially or completely ignores the drawn contours of the hand and/or incorporates bizarre, idiosyncratic or morbid content. One genuine BIZ response is pathognomic of serious disturbance, e.g., "death's head . . . skull, skeleton, death."

Failure (FAIL): Subject can give no scorable response whatsoever to a particular card. A FAIL is tabulated in computing summary

scoring, but it is not included in the response total, R, since it is not really a response but a failure to respond.

In addition to the fifteen scoring categories listed, Wagner (1969) defines four summation symbols which represent combinations of the symbols defined above. These are:

Interpersonal (ΣINT): AFF + DEP + COM + EXH + DIR + AGG = ΣINT. These responses are involved in relations with other people. An absence or dearth of ΣINT always has a negative connotation.

Environmental (ΣENV): ACQ + ACT + PAS = ΣENV. Environmental responses (ΣENV) are assumed to represent generalized attitudes toward the impersonal world, i.e., a readiness to respond to or come to grips with the environment in a characteristic fashion.

Maladjustive (ΣMAL): TEN + CRIP + FEAR = ΣMAL. This represents difficulty, of which the individual is at least partially aware, in successfully carrying out various action tendencies, and failure to achieve need satisfactions.

Withdrawal (ΣWITH): DES + FAIL + BIZ = ΣWITH. Withdrawal responses (ΣWITH) represent those who have found realistic interaction with people, objects, and ideas so traumatic, difficult, and non-reinforcing that meaningful, effective life-roles have been partially or completely abandoned.

Although the major use of the Hand Test is a personality assessment, a primary goal in the development of the test was the prediction of overt aggressive behavior. For this measurement the Acting Out Ratio (AOR) must be employed. This is shown as the ratio of the sum of the more socialized interpersonal responses (AFF + DEP + COM) to the sum of

the aggressive and more direct interpersonal responses (DIR + AGG).

Wagner (1969) also specifies symbols which retain enough interpretative consistency to be listed as qualitative content indicators. He feels these symbols are designed to supplement, not replace, the established scoring categories. These nine symbols are as follows:

Sexual Content (SEX): This is the most reliable of all content symbols. It is restricted to gross, non-symbolic sexual responses and occurs only in individuals who are pathologically preoccupied with sex.

Immature Content (IM): This occurs mostly in connection with ΣINT responses and its interpretive significance is restricted to adult protocols.

Inanimate Content (INAN): When the hand has been reduced to an inanimate object such as a statue or a poster drawing, it is hypothesized that the subject has sublimated, etherealized, and subjectified action tendencies.

Hiding Content (HID): It is postulated that hands perceived as hiding or concealing something represent a deliberate or partially deliberate attempt to prevent exposure of psychological traits, tendencies or experiences of which the subject is fully or partially aware.

Sensual Content (SEN): Immature, self-centered, and pleasure-seeking individuals give responses which emphasize tactual sensitivity.

Internalization Content (IN): This involves the turning of a feeling or action inward, toward the respondent.

Homosexual Content (HOM): Although it is not possible to predict the exact nature of the psychosexual difficulty, the (HOM) response is a reliable indicator of regressive and/or perverse sexual tendencies, latent or manifest.

Denial Content (DEN): When a subject deliberately denies, rejects, or expresses a doubt over a percept, he is projecting his ambivalence concerning the advisability of carrying out such an action tendency.

Movement Content (MOV): This response entails senseless, nonproductive activity.

The content indicators are not included in the summary scoring because the list is intended to be indicative rather than emphatic.

SCORING

The author scored each one of the two hundred tests protocols three times. This was done to safeguard against mistakes that may occur with only one scoring. The scoring was done only on the subjects' initial response. This was the only deviation from Wagner's instructions as stated in the Hand Test Manual (1971). The author utilized both the Hand Test Manual (1971) and the Hand Test, a book by Bricklin, Piotrowski and Wagner (1970) in scoring the responses.

Some difficulty was experienced by the author when trying to differentiate between responses that seemed capable of falling into several of the scoring categories, (e.g., ACT, DIR, ACQ). Oswald and Loftus (1967) commented disparingly that the distinction to be made between some of these categories was more or less arbitrary. Roberts (1971) related similar difficulty as the present author so the present author more or less followed her procedure by noting the responses in question and scoring them in a consistent manner.

CHAPTER III

RESULTS

The present study was attempted in order to establish norms on the Hand Test for American junior high school students. Two hundred students were chosen from the two junior high schools in central Oklahoma and individually administered the Hand Test. The sample was broken down by sex and grade level. Thirty girls and thirty boys from each grade level (e.g. 7th, 8th, 9th grades) completed the test. Also included were the total two classes of Special Education (e.g. educable mentally retarded and learning disabilities). Each of these classes had ten students in their present enrollment. All twenty students completed the test. The mean chronological age for the seventh graders was 12.8, 13.9 for the eighth graders and 14.9 for the ninth graders. The Special Education classes had a mean age of 14.5. All students in the sample were presently on roll and attending school.

The author first made an item analysis of each student's responses along with the major summation categories, acting out ratio average initial reaction time, the high-low ratio and the pathology score. The individual age of the student was also included. These are reported in tabular form. (See Appendix, by sex and grade level, tables 1 to 8).

The results were then totaled by sex and grade level in order to show the frequency of responses in each of the major scoring categories.

(See Appendix, table 9.) The median and the interquartile range was computed for each category.

The median is defined as that point on the scale of measurement above which are exactly half the cases and below which are the other half. Guilford (1956) lists four situations when it's advantageous to use the median as the measure of central tendency:

A. There is not sufficient time to compute a mean.

B. Distributions are badly skewed. This includes the case in which one or more extreme measurements are at one side of the distribution.

C. We are interested in whether cases fall within the upper or lower halves of the distribution and not particularly in how far from the central point.

D. An incomplete distribution is given.

The interquartile range is defined as the distance from the first quartile to the third quartile in a group of scores. It is represented by the formula Q3-Q1.

These statistics were chosen to present the norms (see Table 10) because of the obvious skewness of the scores and in order to best coincide and coordinate with the majority of norms reported in the Hand Test Manual (1969). Exceptions to this format are the presentation of the means and standard deviations of the Average Initial Reaction Times (AIRT) and the High Low Ratios (H-L). The chronological ages of the subjects are also shown as means. No further statistical procedures were applied to the results.

TABLE 9

FREQUENCY OF RESPONSES IN EACH SCORING CATEGORY BY 7TH, 8TH, 9TH GRADES AND MR AND L.D. GROUPS

Scoring Categories	7th		8th		9th		Special Education	
	Boys (N30)	Girls (N30)	Boys (N30)	Girls (N30)	Boys (N30)	Girls (N30)	L.D. (N10)	MR (N10)
AFF	56	43	69	67	62	74	16	21
DEP	11	6	12	6	8	14	0	0
COM	32	41	31	41	45	32	8	9
EXH	17	18	12	8	23	17	3	7
DIR	22	39	28	36	29	31	13	10
AGG	52	32	32	32	39	30	11	8
ΣINT	190	179	184	190	206	198	51	55
ACQ	38	37	21	35	35	33	18	7
ACT	26	34	40	30	18	22	13	16
PAS	9	5	13	9	11	10	6	5
ΣENV	73	76	74	74	64	65	37	28
TEN	13	10	19	14	8	7	6	8
CRIP	6	11	11	6	5	9	1	2
FEAR	0	0	0	0	1	3	1	0
ΣMAL	19	21	30	20	14	19	8	10
DES	11	21	10	10	14	9	4	4
FAIL	5	3	2	5	2	10	1	3
BIZ	0	0	0	0	0	0	0	0
ΣWITH	16	24	12	15	16	19	5	7
AFF+DEP+COM	99	90	112	114	115	120	24	30
DIR+AGG	74	71	60	68	68	61	24	18
R	295	297	298	295	298	290	99	97

TABLE 10

NORMS FOR AMERICAN JUNIOR HIGH SCHOOL STUDENTS ON THE HAND TEST

	Scoring Category	Seventh Grade Girls MDN	Seventh Grade (n=30) Girls Q3-Q1	Seventh Grade Boys MDN	Seventh Grade (n=30) Boys Q3-Q1	Eighth Grade Girls MDN	Eighth Grade (n=30) Girls Q3-Q1	Eighth Grade Boys MDN	Eighth Grade (n=30) Boys Q3-Q1	Ninth Grade Girls MDN	Ninth Grade (n=30) Girls Q3-Q1	Ninth Grade Boys MDN	Ninth Grade (n=30) Boys Q3-Q1	Special Education MR MDN	Special Education (n=10) MR Q3-Q1	Special Education LD MDN	Special Education (n=10) LD Q3-Q1
	AFF	1.25	1.63	1.83	2.29	2.59	2.27	2.25	1.73	2.77	2.25	2.16	1.99	1.90	1.07	1.75	1.62
	DEP	.10	.20	.25	.64	.12	.24	.25	2.68	.25	.72	.12	.22	0	0	0	0
	COM	1.33	1.97	.66	1.92	1.33	2.06	.90	1.57	.64	1.97	1.30	1.83	.50	1.33	.50	1.71
	EXH	.28	.97	.25	.88	.12	.24	.18	.46	.28	.97	.43	1.38	.33	1.14	.21	.52
	DIR	1.16	1.25	.50	1.33	1.06	1.03	.87	1.01	.91	1.33	.88	1.21	1.00	.50	1.21	.82
	AGG	1.03	1.05	1.50	1.81	.96	1.03	1.03	1.26	.83	1.27	1.13	1.77	.75	.25	1.00	.83
	INT	6.18	2.14	6.50	2.13	6.16	2.60	6.07	2.50	6.40	2.08	7.10	3.17	5.83	2.75	5.10	1.15
	ACQ	1.25	1.28	1.07	1.38	1.05	1.68	.43	1.27	1.00	1.88	.94	1.82	.90	1.08	1.83	.92
	ACT	.66	1.97	.70	1.31	.80	1.48	1.11	2.08	.33	1.48	.33	1.05	1.00	2.88	.90	1.07
	PAS	.10	.20	.18	.41	.15	.27	.33	.81	.21	.53	.21	.56	.33	.91	.50	1.12
	ENV	2.21	1.33	2.35	2.06	2.60	1.78	2.25	2.23	2.16	2.97	2.00	2.40	2.50	2.67	3.30	1.02
	TEN	.21	.53	.21	.60	.25	.78	.33	1.31	.15	.29	.12	.24	.50	1.66	.50	1.12
	CRIP	.28	.70	.12	.24	.12	.24	.25	.60	.21	.51	.07	.14	.12	.22	.05	.11
	FEAR	0	0	0	0	0	0	0	0	.05	.10	.01	.02	0	0	.05	.11
	MAL	.50	1.18	.38	.99	.33	.97	.66	1.74	.57	1.12	.28	.82	.83	1.63	.33	1.58
	DES	.38	1.22	.18	.42	.18	.42	.15	.29	.21	.51	.28	.77	.33	.76	.12	.23
	FAIL	.05	.10	.10	.20	.01	.10	.03	.06	.07	.14	.03	.06	.12	.24	.12	.11
	BIZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	WITH	.38	.62	.25	.72	.21	.60	.18	.46	.25	.78	.16	.94	.70	1.08	.12	.25
*	ADC	2.83	3.02	3.50	2.88	3.38	2.70	3.62	2.43	3.95	1.79	3.78	2.69	2.50	2.00	2.25	1.63
*	DA	2.40	1.44	2.40	1.57	2.13	1.66	1.90	1.76	2.03	1.05	2.38	1.49	1.75	1.25	2.16	1.25
	R	9.94	.56	9.90	.60	9.94	.56	9.96	.53	9.94	.58	9.96	.53	9.87	.63	9.94	9.56
**	AIRT	5.20	1.31	4.79	1.02	5.41	1.54	4.52	1.12	4.27	1.18	4.70	1.44	6.35	1.46	7.23	1.91
**	H-L	6.30	1.81	7.43	2.65	9.43	1.35	6.96	1.03	6.90	1.06	6.83	3.03	11.00	1.99	14.00	12.61
	PATH	1.83	2.79	1.16	2.74	1.50	2.01	1.25	2.53	1.07	2.48	1.00	2.55	2.25	1.65	1.50	1.79
***	AGE	12.8		12.9		13.8		14.0		15.2		14.7		14.6		14.4	

*ADC = AFF + DEP + COM; **These statistics are means and standard deviations; ***means only.

CHAPTER IV

DISCUSSION

The purpose of the present study was to present norms on the Hand Test, via the responses of two hundred American junior high school students. The literature reflects an absence of norms with this particular group with the exception of a small study (N=60) comprised of Japanese junior high school boys (average age 14).

Norms represent a descriptive framework for interpreting the score of an individual, a group or a larger population. They are a description of what is rather than a prescription of what should be. The norm is just an average not a rigid category into which all can be forced to fit. Norms make it possible to compare a person or a group with other persons and groups with respect to one or more aspects of achievement or personality. They do not in any absolute sense tell us whether the person or the group is doing "well" or "badly." (Thorndike and Hagen 1969).

Since no hypotheses were proposed or tested in this study and no other statistical procedures formulated with the data, (other than what was used for the normative representation), the author can only comment on some of the similarities, differences, and observations found in the study.

Although the initial responses were the only ones scored, in

this study the individual subjects were encouraged to make as many responses as possible. This follows Wagner's directions as stated in the Hand Test Manual (1969). The author found that only a handful of students out of the two hundred tested emitted more than one response. This seems to imply to the author that the figures on the cards may not be that stimulating to this age group.

The Initial Reaction Time for all the groups tested was uniformly low. Wagner (1969) states that for normal adults the range should be between five and ten seconds. There is no time range put for teenagers although he says they usually have the lowest scores. In comparison to other teen groups reported in the Hand Test Manual (1969) the present junior high group time would be considered quite low. Wagner interprets a low INRT as being characteristic of impulsive and labile individuals.

The High-Low scores of the subjects would also be considered borderline according to Wagner. He states in the Hand Test Manual (1969) that a H-L between ten and twenty seconds is not unusual. Below five seconds the individual lacks caution and circumspection.

The Acting Out Ratios (AFF + DEP + COM : DIR + AGG) is considered one of the more significant Hand Test predictors. It is interpreted as the more the DIR + AGG exceeds the AFF + DEP + COM the greater the expectancy of overt antisocial behavior. In the present study we find the ten L.D. subjects with an equal amount in these two categories which may reflect one of the characteristics of L.D. students to act impulsively and bring attention to themselves by overt acts.

In comparing the Path score of the American junior high students (med 1.2) with their counter parts in Japan (med 1.1) we find no appreciable difference.

It is interesting to note that neither the L.D. nor the M.R. groups emitted any Dependency responses. Although the samples for these two groups are small it may reflect in a minor way their reaction against their forced dependent state in the classroom and school situation.

Another interesting observation has to do with the Experience Ratio. (E.R.) It consists of the I.N.T., E.N.V., M.A.L. and W.I.T.H. responses arranged in that order. Wagner (1969) in the Hand Test Manual states that "it is intended to be an overall estimate of the nature and disposition of an individual's psychological energies and puts forth the ratio of 5:5:1:0 for the fictional adult model for these scores." (p. 75) He feels that in a normal protocol the INT and ENV scores should be approximately equal. In the present norm group we find this not to be true, with the INT far outweighing the ENV.

As Table 10 indicates many of the medians were fractionized due to the number of diverse responses and the accumulation of the responses in several of the main categories. The Bizarre category was the only one where we find a complete absence of responses for all grade levels. The larger median number of responses occurred in the summation classifications (e.g. INT, ENV and the AOR) and in the AFF, COM, AGG, and ACQ scoring categories. There seemed to be no obvious trend of the various responses emitted by the subjects that would serve to differentiate the groups involved in this study.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

> Two things are essential if testing is to contribute to understanding the individual: the test chosen must be appropriate for the person and the purpose of the testing and we must know something about how others have performed on the test. Norms provide this second essential. (Psychological Corp. p. 16)

The present study was undertaken to provide normative data on the Hand Test for American junior high school students. A short historical survey of projective techniques and theory prefaced this study. Two junior high schools in central Oklahoma, provided the population from which a sample of 180 children was chosen. Fifteen boys and fifteen girls were randomly chosen from each school at the three grade levels that comprise the junior high school (e.g. seventh, eighth and ninth grades). A table of random numbers was used for the randomization process. Also included in the study was the one educable mentally retarded class and the single learning disabilities class that serves the two schools. The total number in these classes were included since their population was small.

A total of two hundred children were administered the Hand Test and the medians and interquartile range was reported in tabular form for each scoring category. The mean and standard deviation for the Average Initial Reaction Time and the High-Low ratio was included. A short discussion was provided concerning the author's observations and the obvious

similarities and differences reflected by the data. There was no obvious trend reflected by the data that would tend to differentiate the groups involved in the study.

Recommendations for Further Study

The Hand Test being a relatively new projective technique is wide open to a number of research designs that would help prove or disprove its worth as an instrument for personality assessment. Following, listed in order of importance, are the recommendations that the present author would advocate:

A. More representative and complete normative data on the various groups contained in the population.

B. More intense, regulated, predictive validity studies on the test as a whole and on specific categories.

C. More statistical analysis of the individual scoring categories to ascertain their validity and reliability.

D. Correlative studies with more valid measures of personality assessment than are available.

E. A revision or modification of the scoring criterion to eliminate the ambiguous nature of the present form.

Other experimentation could be formulated by including women's and children's hands, by making the pictures of the hands more ambiguous and by additional shapes of hands included in the stimulus cards.

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APPENDIX

TABLE 1

ITEM ANALYSIS OF RESPONSES ON THE HAND TEST FOR 7TH GRADE BOYS

Ss	AFF	DEP	COM	EXH	DIR	AGG	INT	ACQ	ACT	PAS	ENV	TEN	CRIP	FEAR	MAL	DES	FAIL	BIZ	WITH	ADC	DA	R	AIRT	H-L	PATH	AGE
1	1	1	1	0	1	1	5	2	1	0	3	0	0	0	0	1	1	0	2	3	2	9	6.2	12	4	13.4
2	2	0	0	0	3	1	6	2	0	1	3	0	1	0	1	0	0	0	0	2	4	10	4.7	4	1	13.2
3	3	0	3	0	0	3	9	1	0	0	1	0	0	0	0	0	0	0	0	6	3	10	5.1	10	0	13.7
4	3	1	1	0	1	1	7	2	1	0	3	0	0	0	0	0	0	0	0	5	2	10	7.5	9	0	12.6
5	1	0	0	3	1	2	7	2	1	0	3	0	0	0	0	0	0	0	0	1	3	10	3.5	8	0	13.3
6	4	1	0	0	0	2	7	0	1	0	1	0	0	0	0	0	1	0	1	5	2	9	4.1	7	2	14.0
7	3	0	1	3	0	1	8	0	2	0	2	0	0	0	0	0	0	0	0	4	1	10	5.9	13	0	12.9
8	1	1	0	2	0	1	5	3	0	0	3	1	0	0	1	1	0	0	1	2	1	10	4.8	11	3	12.5
9	0	1	3	0	1	1	6	4	0	0	4	0	0	0	0	0	0	0	0	4	2	10	5.5	9	0	14.1
10	3	0	3	0	0	1	7	2	0	1	3	0	0	0	0	0	0	0	0	6	1	10	4.10	8	0	13.7
11	1	0	2	0	1	0	4	1	0	0	1	3	0	0	3	0	0	0	0	3	1	10	6.5	13	3	12.6
12	2	0	1	1	1	1	6	0	2	0	2	1	1	0	1	1	0	0	1	3	2	10	5.0	9	3	12.9
13	0	0	0	0	2	2	4	2	1	1	4	1	0	0	1	0	1	0	1	0	4	9	4.8	7	3	12.6
14	4	0	0	1	0	3	8	0	0	1	1	0	1	0	1	0	0	0	0	4	3	10	5.11	10	1	12.8
15	1	1	0	0	1	2	5	3	1	0	4	0	0	0	0	0	1	0	1	2	3	9	6.0	5	2	12.11
16	3	0	2	0	0	3	8	1	0	1	2	0	0	0	0	0	0	0	0	5	3	10	4.8	6	0	12.4
17	2	0	2	1	1	1	7	1	0	2	3	0	0	0	0	0	0	0	0	4	2	10	4.2	5	0	12.7
18	0	2	0	0	0	3	5	0	1	0	1	2	1	0	3	1	0	0	1	2	3	10	3.9	6	5	12.8
19	3	0	0	0	1	3	7	1	1	0	2	1	0	0	1	0	0	0	0	3	4	10	3.3	3	1	13.2
20	2	0	1	1	2	1	7	2	0	0	2	0	1	0	1	0	0	0	0	3	3	10	4.1	8	1	12.7
21	1	0	0	1	2	0	4	1	3	1	5	0	0	0	0	1	0	0	1	1	2	10	4.3	5	2	13.2
22	0	0	1	0	0	3	4	5	0	0	5	0	1	0	1	0	0	0	0	1	3	10	5.1	6	1	13.0
23	0	1	0	2	0	2	5	2	3	0	5	0	0	0	0	0	0	0	0	4	1	10	4.2	7	0	12.11
24	4	0	0	0	0	1	5	0	2	0	2	1	0	0	1	2	0	0	2	1	2	10	4.7	6	4	12.8
25	2	0	2	0	2	0	6	0	1	1	2	2	0	0	2	0	0	0	0	4	2	10	5.5	7	2	13.1
26	3	0	0	0	0	4	7	0	0	0	0	0	0	0	0	3	0	0	3	3	4	10	6.1	9	7	12.6
27	2	0	2	1	2	3	10	0	0	0	0	0	0	0	0	0	0	0	0	4	5	10	5.0	6	0	13.0
28	0	0	5	0	0	1	6	0	2	0	0	0	0	0	0	1	1	0	0	5	1	9	3.2	4	4	12.10
29	1	1	2	1	0	2	7	1	2	0	3	0	0	0	0	0	0	0	0	4	2	10	5.1	6	0	13.2
30	4	1	0	0	0	3	8	0	1	0	1	1	0	0	1	0	0	0	0	5	3	10	3.5	4	1	12.9

TABLE 2

ITEM ANALYSIS OF RESPONSES ON THE HAND TEST FOR 7TH GRADE GIRLS

Ss	AFF	DEP	COM	EXH	DIR	AGG	INT	ACQ	ACT	PAS	ENV	TEN	CRIP	FEAR	MAL	DES	FAIL	BIZ	WITH	ADC	DA	R	AIRT	H-L	PATH	AGE
1	0	1	1	0	2	0	4	2	0	0	2	0	0	0	0	4	0	0	4	2	2	10	5.3	8	8	12.7
2	2	0	2	1	1	0	7	1	1	0	2	0	0	0	0	2	0	0	2	4	1	10	4.3	6	4	12.8
3	0	0	1	2	1	2	6	0	3	0	3	0	1	0	1	0	0	0	0	1	3	10	3.9	5	1	12.3
4	3	0	2	0	2	1	8	0	0	0	0	1	0	0	1	1	0	0	1	5	3	10	4.2	6	3	12.5
5	1	0	2	0	1	1	5	1	3	0	4	0	1	0	1	0	0	0	0	3	2	10	4.1	7	1	13.1
6	1	0	3	0	1	1	6	1	0	1	2	0	0	0	0	2	0	0	2	4	2	10	5.0	7	0	13.3
7	0	0	0	0	2	0	2	2	5	0	7	1	0	0	1	0	0	0	0	0	2	10	3.2	6	1	12.9
8	3	0	0	1	1	1	6	2	0	1	3	0	1	0	1	0	0	0	0	3	2	10	4.5	7	1	12.10
9	1	0	0	0	1	2	4	2	4	0	6	0	0	0	0	0	0	0	0	1	3	10	4.4	6	0	12.10
10	1	1	0	2	0	1	5	0	2	0	2	1	1	0	2	1	0	0	1	2	1	10	5.9	8	4	12.8
11	2	0	0	1	1	1	5	3	0	0	3	0	0	0	0	2	0	0	2	2	2	10	8.2	10	4	12.9
12	2	1	0	1	1	1	6	1	1	0	2	0	1	0	1	1	0	0	1	3	2	10	4.8	5	3	12.7
13	1	0	1	0	1	1	4	1	1	1	3	1	0	0	1	2	0	0	2	2	2	10	3.7	6	5	12.5
14	1	0	0	1	2	2	6	1	0	0	1	0	0	0	0	2	1	0	3	1	4	9	8.4	10	6	12.7
15	0	0	3	0	1	2	6	1	2	0	3	0	0	0	0	1	0	0	1	3	3	10	4.8	4	2	13.1
16	3	0	2	0	3	0	8	2	0	0	2	0	0	0	0	0	0	0	0	5	3	10	5.8	5	0	12.11
17	1	0	1	0	2	1	5	1	2	0	3	0	1	0	1	1	0	0	1	2	3	10	5.5	7	3	12.7
18	3	0	3	0	0	1	7	2	0	0	2	0	0	0	0	1	0	0	1	6	1	10	5.0	6	2	12.8
19	0	0	0	0	3	1	4	2	3	1	7	0	0	0	0	0	0	0	0	0	4	10	4.7	4	0	12.8
20	1	0	2	0	3	0	6	1	1	0	2	1	1	0	2	0	0	0	0	3	3	10	9.2	10	2	13.5
21	1	0	4	0	3	0	8	2	0	0	2	0	0	0	0	0	0	0	0	5	3	10	5.3	8	0	12.11
22	2	0	2	0	1	2	7	2	0	0	2	0	0	0	0	0	1	0	1	4	3	9	4.1	7	2	13.2
23	1	1	0	1	1	3	7	0	1	1	2	1	0	0	0	0	0	0	0	2	4	10	6.1	5	1	12.11
24	4	0	2	0	0	1	7	1	0	0	1	1	1	0	2	0	0	0	0	7	1	10	5.0	7	2	13.0
25	0	0	1	3	1	2	7	1	2	0	3	0	0	0	0	0	0	0	0	1	3	10	5.2	3	0	13.4
26	3	0	2	2	0	1	8	2	0	0	2	0	0	0	0	0	0	0	0	5	1	10	5.0	5	0	13.2
27	1	0	0	3	1	1	6	0	1	0	1	2	1	0	3	0	0	0	0	1	2	10	4.8	3	3	13.2
28	2	2	1	0	2	1	8	1	0	0	1	1	0	0	1	0	0	0	0	5	3	10	4.9	5	2	13.0
29	2	0	4	0	1	0	7	2	0	0	2	0	1	0	1	0	0	0	0	6	1	10	5.3	6	1	12.9
30	1	0	2	0	0	2	5	0	2	0	2	0	1	0	1	1	1	0	0	3	2	9	5.5	7	5	13.3

TABLE 3

ITEM ANALYSIS OF RESPONSES ON THE HAND TEST FOR 8TH GRADE BOYS

Ss	AFF	DEP	COM	EXH	DIR	AGG	INT	ACQ	ACT	PAS	ENV	TEN	CRIP	FEAR	MAL	DES	FAIL	BIZ	WITH	ADC	DA	R	AIRTH	H-L	PATH	AGE
1	4	0	0	1	1	1	7	0	3	0	3	0	0	0	0	0	0	0	0	4	2	10	3.5	3	0	12.3
2	3	1	2	0	0	1	7	0	0	1	1	0	1	0	1	0	1	0	1	6	1	9	2.9	5	3	13.6
3	3	0	1	0	1	0	5	2	0	0	2	2	0	0	2	1	0	0	1	4	1	10	5.1	10	4	13.8
4	4	0	3	0	0	2	9	0	1	0	1	0	0	0	0	0	0	0	0	7	2	10	4.7	6	0	13.6
5	1	1	0	2	1	1	6	2	1	1	4	0	0	0	0	0	0	0	0	2	2	10	5.0	17	0	14.11
6	3	0	0	0	2	2	7	1	0	1	2	0	1	0	1	0	0	0	0	3	4	10	4.3	7	1	13.7
7	2	0	1	1	1	0	5	1	1	0	2	2	1	0	3	0	0	0	0	3	1	10	5.3	12	3	14.4
8	3	1	1	1	1	1	8	0	1	1	2	0	0	0	0	0	0	0	0	5	2	10	6.8	6	0	13.6
9	1	0	1	0	1	0	3	2	3	0	5	0	0	0	0	2	0	0	2	2	1	10	4.5	8	2	13.0
10	1	2	0	2	0	3	8	0	2	0	2	0	0	0	0	0	0	0	0	3	3	10	6.1	10	0	13.7
11	1	0	1	0	1	1	4	1	3	0	4	1	1	0	2	0	0	0	0	2	2	10	5.3	6	2	13.8
12	2	0	3	0	0	1	6	0	4	0	4	0	0	0	0	0	0	0	0	5	1	10	3.4	4	0	13.10
13	4	1	0	0	1	2	8	0	1	1	2	0	0	0	0	0	0	0	0	5	3	10	4.0	7	0	13.9
14	3	0	0	0	0	2	5	2	1	1	4	0	0	0	0	0	0	0	0	3	2	10	5.1	3	0	14.1
15	2	1	0	0	1	2	6	0	2	0	2	0	2	0	2	0	0	0	0	3	3	10	3.1	6	2	13.5
16	2	2	0	2	0	0	6	2	0	0	2	1	1	0	2	0	0	0	0	4	0	10	5.3	8	2	13.10
17	1	0	1	0	1	0	3	0	1	1	2	2	1	0	3	2	0	0	2	2	1	10	4.5	4	7	14.8
18	2	0	2	0	1	0	5	1	1	1	3	1	0	0	1	1	0	0	1	4	1	10	7.5	12	3	13.6
19	3	0	0	1	1	1	6	1	0	1	2	2	0	0	2	0	0	0	0	4	5	10	3.3	3	2	14.0
20	2	1	2	0	0	2	7	0	2	0	2	0	1	0	1	0	0	0	0	2	2	10	5.2	6	1	13.8
21	3	0	1	0	0	1	5	0	2	2	4	1	0	0	1	0	0	0	0	4	1	10	3.8	6	1	14.7
22	4	1	0	0	3	2	10	0	0	0	0	0	0	0	0	0	0	0	0	5	5	10	4.0	4	0	13.10
23	0	0	2	0	2	1	5	0	0	1	1	2	0	0	2	2	0	0	2	2	3	10	5.2	4	6	14.10
24	5	0	1	0	0	0	6	0	3	0	3	1	1	0	1	0	0	0	0	6	0	10	3.3	8	1	13.7
25	2	0	1	0	1	0	4	3	1	0	4	2	0	0	2	0	0	0	0	3	1	10	2.9	8	2	14.1
26	1	0	2	2	3	1	9	0	1	0	1	0	0	0	0	0	0	0	0	3	4	10	3.6	5	0	13.9
27	2	0	2	0	1	1	6	1	3	0	4	0	0	0	0	0	0	0	0	4	2	10	3.1	2	0	14.2
28	0	0	1	0	1	1	3	1	1	1	3	2	0	0	2	1	1	0	2	1	2	9	5.0	12	6	13.9
29	4	1	0	0	1	1	7	0	1	0	1	0	1	0	1	1	0	0	1	5	2	10	4.7	8	3	13.10
30	1	0	3	0	2	2	8	1	1	0	2	0	0	0	0	0	0	0	0	4	4	10	5.2	9	0	13.7

TABLE 4

ITEM ANALYSIS OF RESPONSES ON THE HAND TEST FOR 8TH GRADE GIRLS

Ss	AFF	DEP	COM	EXH	DIR	AGG	INT	ACQ	ACT	PAS	ENV	TEN	CRIP	FEAR	MAL	DES	FAIL	BIZ	WITH	ADC	DA	R	AIRTH	H-L	PATH	AGE
1	2	1	0	0	1	2	6	2	2	0	4	0	0	0	0	0	0	0	0	3	3	10	6.7	14	0	13.5
2	1	0	2	0	1	0	4	2	0	1	3	2	0	0	0	0	1	0	1	3	1	9	4.7	8	2	14.2
3	3	0	1	0	2	1	7	1	2	0	3	0	0	0	0	0	0	0	0	4	3	10	6.3	9	0	14.0
4	1	0	0	0	1	1	3	2	4	0	6	1	0	0	0	0	0	0	0	1	2	10	7.0	19	1	13.9
5	3	0	2	0	0	1	6	1	2	0	3	0	0	0	0	1	0	0	0	5	1	10	5.6	11	2	13.7
6	3	0	2	0	0	2	7	3	0	0	3	0	0	0	0	0	0	0	0	5	2	10	5.9	9	0	13.9
7	1	0	2	1	1	0	5	0	1	0	1	0	0	0	0	1	3	0	4	3	1	7	3.3	5	8	13.11
8	0	0	3	0	1	3	7	1	1	0	2	0	1	0	1	0	0	0	0	3	4	10	7.2	8	1	14.1
9	0	0	2	0	1	3	6	2	1	0	3	0	0	0	0	1	0	0	1	2	4	10	4.1	12	2	15.1
10	3	1	3	1	0	0	8	0	0	0	0	2	0	0	2	0	0	0	0	7	0	10	4.9	6	2	14.5
11	4	0	0	0	1	1	6	2	0	1	3	1	0	0	1	0	0	0	0	4	2	10	3.7	6	1	14.11
12	0	1	0	0	3	1	5	0	2	0	2	1	0	0	1	2	0	0	2	1	4	10	8.4	10	5	13.7
13	2	0	0	1	2	0	5	2	0	0	2	0	1	0	1	2	0	0	2	2	2	10	2.8	8	5	14.4
14	4	1	0	2	0	1	8	1	1	0	2	0	0	0	0	0	0	0	0	5	1	10	4.7	4	5	14.0
15	3	0	0	0	1	1	5	1	3	0	4	0	0	0	0	1	0	0	1	3	2	10	8.3	26	2	13.5
16	0	0	3	0	0	2	5	0	2	0	2	2	1	0	3	0	0	0	0	3	2	10	7.2	8	3	14.0
17	2	0	0	0	1	1	4	2	1	1	4	1	1	0	2	0	0	0	0	2	2	10	4.3	10	2	14.2
18	3	0	3	0	3	1	10	0	0	0	0	0	0	0	0	0	0	0	0	6	4	10	3.9	5	0	13.6
19	3	0	0	1	1	0	5	1	0	2	3	2	0	0	2	0	0	0	0	3	1	10	3.4	6	2	13.3
20	4	0	2	0	3	0	9	0	0	0	0	0	1	0	1	0	0	0	0	6	3	10	6.3	10	1	13.8
21	3	1	1	0	1	0	6	0	1	1	2	1	0	0	1	1	0	0	1	5	1	10	4.8	10	3	13.9
22	2	0	1	0	2	3	8	0	0	1	1	0	0	0	0	0	1	0	1	3	5	9	3.5	5	2	13.5
23	3	0	0	0	1	1	5	3	1	0	4	0	0	0	0	1	0	0	1	3	2	10	7.3	13	2	13.9
24	5	0	1	0	3	0	9	0	0	0	0	1	0	0	1	0	0	0	0	6	3	10	6.5	11	1	13.6
25	1	0	1	0	1	1	4	4	1	0	5	0	0	0	0	0	0	0	0	2	2	10	4.4	8	0	13.10
26	3	0	2	0	1	1	7	1	0	2	3	0	0	0	0	0	0	0	0	5	2	10	4.8	8	0	13.11
27	0	0	1	2	1	2	6	0	3	0	3	0	1	0	1	0	0	0	0	1	3	10	3.9	5	1	13.6
28	3	0	4	0	1	1	9	1	0	0	1	0	0	0	0	0	0	0	0	7	2	10	4.8	7	0	13.7
29	1	0	3	0	2	1	7	2	1	0	3	0	0	0	0	0	0	0	0	4	3	10	6.9	8	0	13.5
30	4	1	2	0	0	1	8	1	1	0	2	0	0	0	0	0	0	0	0	7	1	10	6.7	9	0	13.4

TABLE 5

ITEM ANALYSIS OF RESPONSES ON THE HAND TEST FOR 9TH GRADE GIRLS

Ss	AFF	DEP	COM	EXH	DIR	AGG	INT	ACQ	ACT	PAS	ENV	TEN	CRIP	FEAR	MAL	DES	FAIL	BIZ	WITH	ADC	DA	R	AIRT	H-L	PATH	AGE
1	0	3	2	0	1	1	7	2	1	0	3	0	0	0	0	0	0	0	0	5	2	10	5.1	12	0	15.3
2	4	0	0	0	0	1	6	1	0	1	2	0	0	1	1	1	1	0	2	4	1	9	7.3	8	5	14.9
3	2	1	1	1	1	1	7	1	0	0	1	0	1	1	2	0	0	0	0	4	2	10	2.7	2	2	15.4
4	1	0	3	0	0	0	4	1	1	1	3	1	1	0	2	1	0	0	1	4	0	10	3.6	3	4	14.5
5	3	0	1	0	1	0	5	2	0	0	2	1	0	0	1	0	2	0	2	4	1	8	4.6	12	5	14.11
6	5	1	0	0	1	1	8	1	0	0	1	1	0	0	1	0	0	0	0	6	2	10	3.1	4	1	14.8
7	0	0	1	0	2	0	3	0	0	0	0	0	0	0	0	1	6	0	7	1	2	4	3.3	2	14	16.3
8	3	0	1	0	2	1	7	1	0	0	1	0	1	0	1	1	0	0	1	4	3	10	5.2	8	3	14.6
9	1	0	3	1	1	1	7	2	0	0	2	1	0	0	1	0	0	0	0	4	2	10	4.4	4	1	14.8
10	4	1	0	1	0	2	8	0	0	1	1	0	0	0	0	1	0	0	1	5	2	10	3.7	10	2	14.9
11	3	0	0	1	1	1	6	0	2	2	4	0	0	0	0	0	0	0	0	3	2	10	2.3	1	0	15.10
12	3	0	3	0	0	3	9	0	0	0	0	0	1	0	1	0	0	0	0	6	3	10	4.6	6	1	14.6
13	4	0	0	0	1	1	6	3	1	0	4	0	0	0	0	0	0	0	0	4	2	10	4.4	9	0	15.1
14	1	0	1	2	2	0	6	2	0	1	3	0	1	0	1	0	0	0	0	2	2	10	5.1	8	1	14.9
15	3	0	0	0	1	2	6	2	2	0	4	0	0	0	0	0	0	0	0	3	3	10	2.4	1	0	15.1
16	0	1	4	0	2	3	10	0	0	0	0	0	0	0	0	0	0	0	0	5	5	10	3.5	4	0	14.9
17	2	0	0	0	1	1	4	3	2	0	5	1	0	0	1	0	0	0	0	2	2	10	3.9	7	1	15.1
18	4	0	2	0	0	0	6	2	2	0	4	0	0	0	0	0	0	0	0	6	0	10	4.0	8	0	14.6
19	3	1	0	0	1	1	6	2	2	0	4	0	0	0	0	0	0	0	0	4	2	10	3.6	7	0	14.11
20	5	1	1	0	1	1	9	0	0	0	0	0	1	0	1	0	0	0	0	7	2	10	3.11	10	1	14.7
21	3	0	0	1	2	0	6	2	0	1	3	0	0	0	0	1	0	0	1	3	2	10	5.2	13	2	15.4
22	3	0	0	0	0	3	6	0	2	0	2	1	0	0	1	1	1	0	2	3	3	9	4.11	12	5	14.8
23	1	2	1	1	1	0	6	1	0	1	2	0	0	1	1	1	0	0	1	4	1	10	6.1	7	3	14.8
24	3	0	2	0	3	0	8	0	0	0	0	1	1	0	2	0	0	0	0	5	3	10	5.9	6	2	14.7
25	3	1	0	2	0	0	6	2	1	1	4	0	0	0	0	0	0	0	0	4	0	10	4.3	5	0	15.0
26	1	0	3	0	4	0	8	0	0	0	0	0	1	0	1	1	0	0	1	4	4	10	4.0	7	3	14.10
27	4	2	0	2	0	1	9	0	0	1	1	0	0	0	0	0	0	0	0	6	1	10	5.2	6	0	14.9
28	3	0	0	2	0	3	8	0	2	0	2	0	0	0	0	0	0	0	0	3	3	10	4.2	12	0	14.7
29	2	0	0	3	2	0	7	3	0	0	3	0	0	0	0	0	0	0	0	2	2	10	6.1	8	0	15.1
30	0	0	3	0	0	2	5	0	4	0	4	0	1	0	1	0	0	0	0	3	2	10	3.7	5	1	14.6

TABLE 6

ITEM ANALYSIS OF RESPONSES ON THE HAND TEST FOR 9TH GRADE BOYS

Ss	AFF	DEP	COM	EXH	DIR	AGG	INT	ACQ	ACT	PAS	ENV	TEN	CRIP	FEAR	MAL	DES	FAIL	BIZ	WITH	ADC	DA	R	AIRT	H-L	PATH	AGE
1	2	0	0	0	1	1	4	2	1	1	4	0	1	0	1	1	0	0	1	2	2	10	3.3	8	3	14.11
2	3	0	1	0	0	0	4	3	0	1	4	0	0	1	1	1	0	0	1	4	0	10	2.9	3	3	14.9
3	3	0	2	0	2	2	9	1	0	0	1	0	0	0	0	0	0	0	0	5	4	10	3.8	6	0	15.0
4	4	1	0	0	1	1	7	1	1	1	3	0	0	0	0	0	0	0	0	5	2	10	4.2	5	0	14.5
5	1	0	2	1	4	0	8	0	1	0	1	0	0	0	0	1	0	0	1	3	4	10	3.3	5	2	16.2
6	3	1	0	0	0	3	7	1	2	0	3	0	0	0	0	0	0	0	0	4	3	10	6.8	11	0	15.3
7	1	0	1	1	1	1	5	2	0	0	2	0	2	0	2	1	0	0	1	2	2	10	3.5	7	4	14.8
8	0	0	4	0	0	3	7	0	0	0	0	2	0	0	2	1	0	0	1	4	3	10	3.8	4	4	14.7
9	4	0	1	0	1	1	7	2	1	0	3	0	0	0	0	0	0	0	0	5	2	10	2.8	2	0	15.3
10	3	0	3	3	0	0	9	0	0	1	1	0	0	0	0	0	0	0	0	6	0	10	6.1	7	0	14.6
11	1	0	1	1	1	1	5	3	0	2	5	0	0	0	0	0	0	0	0	2	2	10	3.1	4	0	14.6
12	4	0	4	0	2	0	10	0	0	0	0	0	0	0	0	0	0	0	0	8	2	10	5.1	2	0	14.4
13	3	0	2	1	1	0	7	1	0	0	1	0	0	0	0	2	0	0	2	5	1	10	2.8	2	4	14.10
14	1	0	0	1	0	3	5	3	0	0	3	1	0	0	1	1	0	0	1	1	3	10	3.9	5	3	14.3
15	3	0	1	0	1	2	7	0	2	0	2	1	0	0	1	0	0	0	0	4	3	10	5.0	12	1	15.3
16	2	0	0	2	2	1	7	1	0	1	2	0	0	0	0	1	0	0	1	2	3	10	7.1	8	2	14.4
17	1	0	1	0	1	2	5	4	0	0	4	1	0	0	1	0	0	0	0	2	3	10	3.4	7	1	15.2
18	3	0	1	2	0	1	7	2	0	1	3	0	0	0	0	0	0	0	0	4	1	10	4.	9	0	14.6
19	2	2	2	0	1	1	8	1	0	0	1	1	0	0	1	0	0	0	0	6	1	10	3.6	6	1	14.8
20	3	0	2	1	0	1	7	1	0	1	2	0	1	0	1	0	0	0	0	5	2	10	4.8	4	1	14.5
21	0	0	2	0	1	0	3	2	2	2	6	0	0	0	0	1	0	0	1	2	1	10	5.9	10	2	14.11
22	3	1	0	3	0	3	10	0	0	0	0	0	0	0	0	0	0	0	0	4	3	10	7.1	12	0	14.7
23	1	2	3	2	2	0	10	0	0	0	0	0	0	0	0	0	0	0	0	6	2	10	4.1	7	0	14.11
24	1	0	1	0	0	0	2	0	3	0	3	2	0	0	2	3	0	0	3	2	0	10	5.9	4	8	15.0
25	0	1	2	2	1	2	8	0	0	0	0	0	1	0	1	0	1	0	1	3	3	9	7.3	11	3	14.8
26	1	0	3	0	2	3	9	0	1	0	1	0	0	0	0	0	0	0	0	3	5	10	6.9	9	0	14.10
27	2	0	1	0	1	1	5	3	1	0	4	0	0	0	0	1	0	0	1	3	2	10	4.0	9	2	15.2
28	2	0	0	2	0	3	7	0	2	0	2	0	0	0	0	0	1	0	1	2	3	9	4.3	6	2	14.6
29	2	0	4	0	1	2	9	1	0	0	1	0	0	0	0	0	0	0	0	6	3	10	7.1	12	0	14.8
30	3	0	1	1	2	1	8	1	1	0	2	0	0	0	0	0	0	0	0	4	3	10	5.2	8	0	14.9

TABLE 7

ITEM ANALYSIS OF RESPONSES ON THE HAND TEST FOR JR. HIGH EDUCABLE MENTALLY RETARDED CHILDREN

Ss	AFF	DEP	COM	EXH	DIR	AGG	INT	ACQ	ACT	PAS	ENV	TEN	CRIP	FEAR	MAL	DES	FAIL	BIZ	WITH	ADC	DA	R	AIRT	H-L	PATH	AGE
1	5	0	0	0	1	0	6	2	0	1	3	0	0	0	0	1	0	0	1	5	1	10	3.9	5	2	15.2
2	1	0	4	1	1	1	8	0	0	1	1	0	0	0	0	1	0	0	1	5	2	10	4.2	6	2	14.2
3	1	0	1	0	1	0	3	1	1	2	4	2	0	0	2	1	0	0	1	2	1	10	5.2	9	4	13.6
4	2	0	0	0	1	0	3	1	5	0	6	0	0	0	0	1	0	0	1	2	1	10	11.7	29	2	14.5
5	2	0	1	1	1	0	5	1	0	1	2	2	1	0	3	0	0	0	0	3	1	10	7.1	11	3	14.8
6	2	0	0	3	1	1	7	0	2	0	2	1	0	0	1	0	0	0	0	2	2	10	10	11	1	14.10
7	2	0	0	2	1	2	7	0	1	0	1	0	1	0	1	0	1	0	1	2	3	9	5.4	9	3	13.8
8	3	0	0	0	1	2	6	1	0	0	1	1	0	0	1	0	2	0	2	3	3	8	5.1	10	5	15.4
9	2	0	2	0	1	1	6	0	4	0	4	0	0	0	0	0	0	0	0	4	2	10	5.2	12	0	13.9
10	1	0	1	0	1	1	4	1	3	0	4	2	0	0	2	0	0	0	0	2	2	10	4.7	9	2	15.3

TABLE 8

ITEM ANALYSIS OF RESPONSES ON THE HAND TEST FOR JR. HIGH LEARNING DISABLED CHILDREN

Ss	AFF	DEP	COM	EXH	DIR	AGG	INT	ACQ	ACT	PAS	ENV	TEN	CRIP	FEAR	MAL	DES	FAIL	BIZ	WITH	ADC	DA	R	AIRT	H-L	PATH	AGE
1	0	0	2	0	2	1	5	2	1	0	3	0	0	0	0	1	1	0	2	2	3	9	7.3	16	2	14.3
2	3	0	0	0	1	1	5	2	1	1	4	1	0	0	1	0	0	0	0	3	2	10	5.7	7	1	13.3
3	1	0	1	0	1	1	4	3	0	0	3	0	0	0	0	3	0	0	3	2	2	10	6.5	16	6	13.8
4	1	0	0	1	1	3	6	1	1	0	2	2	0	0	2	0	0	0	0	1	4	10	6.4	13	2	14.6
5	2	0	2	1	1	1	7	1	2	0	3	0	0	0	0	0	0	0	0	4	2	10	6.5	10	0	14.6
6	2	0	0	1	2	0	5	1	1	1	3	1	0	1	2	0	0	0	0	2	2	10	3.5	7	2	15.2
7	0	0	1	0	2	2	5	2	0	1	3	1	1	0	2	0	0	0	0	1	4	10	24.8	50	2	15.4
8	2	0	0	0	1	0	3	2	5	0	7	0	0	0	0	0	0	0	0	2	1	10	3.7	11	0	15.2
9	3	0	0	0	1	1	5	2	0	2	4	1	0	0	0	0	0	0	0	3	2	10	4.3	4	1	14.6
10	2	0	2	0	1	1	6	2	1	1	4	0	0	0	0	0	0	0	0	4	2	10	2.8	6	0	13.2