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ROBERT BAIN BAILEY

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A STUDY OF PREDICTING ACADEMIC SUCCESS IN ELEMENTARY SCHOOL READING FROM PROJECTIVE TESTS

APPROVED BY

G. T. Tesha

W B Ragsdale

F. F. Gaither

A. Heilman

F. A. Balyeat

DISSERTATION COMMITTEE

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A STUDY OF PREDICTING ACADEMIC SUCCESS IN ELEMENTARY SCHOOL READING FROM PROJECTIVE TESTS

CHAPTER I

THE PROBLEM AREA

The wide differences existing in the scholastic performance of individuals create a current challenge to the school faculty and its curriculum. Whether these academic differences are attributed to differences of intelligence, differences of social background, differences of adjustment, or a combination of the above factors, the school is confronted with the challenge of presenting a program that recognizes individual differences and that provides the most favorable conditions for adequately meeting them.

Progress toward a more thorough understanding of people and the emotional dynamics involved in their actions presumably would increase the opportunities to evolve techniques that would enable individuals to realize their capacities more completely. Projective tests are techniques that have been developed and are being used in acquiring information for a more thorough understanding of people. They are used in psychological laboratories for the recognition and diagnosis of personality disorders. Training in the use and the interpretation of projective tests is a requirement in the curriculum for clinical psycholo-

gists. Since 1940, the Metropolitan Reading Readiness Test has added the drawing of a man to its other techniques for assessing the readiness to read. These trends indicate the assumption that behavior is adjustment, and that projective techniques are methods that may yield valuable information about the adjustment status of individuals.

The present study is based on the assumption that academic performance in reading represents an adjustment to an academic and social situation. Presumably some relationship would exist between academic adjustment and scores on personality tests that assess adjustment status. If projective tests can be interpreted adequately to differentiate levels of intelligence or to identify sufficient maladjustment to impair intellectual functioning, they could be used to ascertain the potentially strong and weak readers in a class. The specific purpose of this study was to discover if three specified projective tests could be used successfully to predict the reading success of students at the elementary school level. This study was limited to three projective tests because the writer could not possibly investigate all of the projective techniques. The House Tree Person and the Machover Draw A Person Tests were selected because they are widely used. The Goodenough Draw A Man Test is widely used, and possesses objective scoring indices that bridge the gap between projective techniques and the usual tests that are administered such as group intelligence tests.

Following is a review of experimental data concerning the House Tree Person Test that is relevant to the present study.

Brown, in an analysis of projective tests, cites a work by Hammer in which Hammer attacked the problem of intellectual efficiency of Negro children by administering the House Tree Person Test to 207 Negro

subjects enrolled in the first grade of elementary school through the senior year of high school and compared the results with a comparable white group. He reports that an inspection of the drawings made by the Negro shildren and adolescents appeared to reveal a degree of maladjustment in most of the students sufficient in degree to account, in large measure for the disparity between the Negro mean IQ and the white IQ. While it is not contended that this necessarily suggests that the basic Negro IQ in this sample may be 100 and the obtained IQ of 75 produced by the depressing effect of emotional stress, it was felt that it may account, to a rather large degree, for much of the difference between the mean IQ of the Negro population and the mean IQ of the white population. In carrying forward this study, Hammer is making a statistical study of the drawings utilizing such variables as level of personality adjustment, traits, counter-hostility, conflicts, strengths and defences, using clinical judgments without the judges being aware of which drawings were obtained from Negro and which from whites.[1]

W. Sloan and W. H. Guertin compared the scores obtained from the House Tree Person Test with Wechsler IQ's and found them to be significant at less than the one per cent level of confidence. They state that in all comparisons it may be said that the House Tree Person score is significantly higher than the Wechsler-Bellevue score. They state that in its present form the House Tree Person Test is not comparable to the Wechsler-Bellevue as a measure of intelligence when the group that is tested consists of adult high grade mentally defective males. They

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[1] F. Brown, "House Tree Person and Human Figure Drawing," Progress in Clinical Psychology, I (1948), 181.

conclude that there still is a need for substantiating the premise that intelligence of adults can be measured reliably by drawings.[1]

Cotte and Tramer analyzed the drawings of children with special reference to the omission of hands, finding that this was related to unconscious identification with the drawings as a projection of intropunitive mechanisms.[2]

The criteria used by Isaac Jolles indicates that irrespective of the age at which it occurs, the Phallic Tree has sexual significance and seems to be related to a psycho-sexual disturbance. The data indicate that it would seem less significant from the standpoint of degree of sexual maladjustment, when the "Phallic Tree" occurs in the drawings of young children than older children and among girls than among boys.[3]

Weider and Noller used the House Tree Person Test in their normative studies while working with 153 children of average intelligence but of differing socio-economic status. In appraising sex patterning they found that of 73 boys, ages 8 to 10, 74 per cent drew their own figure first while of 80 girls, 97 per cent drew their own sex first. Concerning size of figures, 52 per cent of boys drew their own sex larger while 80 per cent of girls did likewise. The largest number of sex characteristics appeared in the drawings of the children from the lower socio-economic levels. They conclude that their findings uphold the

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[1] W. H. Guertin and W. Sloan, "A Comparison of the House Tree Person and Wechsler-Bellevue IQ's in Mental Defectives," Journal of Clinical Psychology, IV (1948), 425-26.

[2] Brown, Progress in Clinical Psychology, I (1948), 177.

[3] Isaac Jolles, "The Phallic Tree as an Indicator of Psycho-Sexual Conflict," Journal of Clinical Psychology, VII (1952), 254.

assumption that placement of the drawings in the upper-left quadrant represents regression, since 61 per cent of the younger children and only 48 per cent of the older ones so placed their drawings.[1]

H. Michal-Smith has attempted to identify cerebral pathological function through a comparison that includes details, proportions, time, line quality, and criticality from the House Tree Person Test with abnormal EEG tracings. He found that line quality and EEG criterian showed the highest relationship, with criticality and the sum of all predictor variables tending toward significance.[2]

Holzberg and Wexler, used a detailed check-list breakdown of the female human figure drawn by a group of 28 female schizophrenics compared with those produced by 78 student nurses, and found significant statistical differences between normals and schizophrenics and between normals and each of those schizophrenic subgroups. No reliable differences were found between the subgroups.[3]

Zucker, reporting on a case of obesity evaluated by means of Rorschach and figure drawing techniques administered upon admission and again after 13 months of therapy, points out a finding which has been noted by other psychologists using drawings; namely, that persistent negative features of the illness will be expressed in the drawings even when the Rorschach and the clinical material emphasizes improvement. Zucker states that this is an important consideration in the analysis of

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[1]Brown, Progress in Clinical Psychology, I (1948), 179-80.

[2]Ibid., 181.

[3]Ibid., 178.

drawings in general, since it would appear that the high sensitivity of the instrument to pathological trends is sometimes likely to lead to an overemphasis upon negative aspects of the personality.[1]

Royal compared 80 anxiety cases with 100 volunteer dental patients manifesting no overt anxiety, comparing the characteristics of drawings from each group. Fifty-four characteristics used in the comparison failed to differentiate between the groups. Stonesifer obtained the same results when he compared the drawings of the male figure by 39 schizophrenics with those of volunteer veterans awaiting dental treatment. Fred Brown in analyzing these studies states that this is rather surprising in view of the generally accepted indices for anxiety in figure drawings. He adds that it raises the question of whether or not incipient dental groups constitute an acceptable control group because of the possibility that situational "anxiety" interferes with their normal patterns of reaction.[2]

The review of experimental data based on the use of the House Tree Person Test in studies by Jolles, Weider and Noller, and Cotte and Tramer indicates that emotional disturbances affect behavior and are expressed in specific actions which can be interpreted. Hammer also found that the IQ score of Negroes was depressed by emotional stress. In Contrast, Royal and Stonesifer were not able to differentiate between the drawings completed by volunteer dental patients and those of anxiety or schizophrenic cases. Sloan and Guertin contribute the conclusion

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[1] Ibid., 177.

[2] Ibid., 179.

that there is still a need for substantiating the premise that intelligence of adults can be measured reliably by drawings. There were not any studies reported that indicate the use of the House Tree Person Test as a method of predicting academic success in school subjects.

Following is a review of experimental data concerning the Goodenough Draw A Man Test that is relevant to the present study.

Ochs conducted a study at Rockland State Hospital which implies the dynamic shifting of drawing components. Working with 120 patients diagnosed as primary behavior disorders, she noted little consistency in changes on specific scoring items of the figures although Goodenough scores increased or decreased in relation to adjustment status.[1]

Gunther and Havighurst administered the Goodenough Draw A Man Test to representative samples of children, 6 to 11 years old, in Sioux, Navaho, Papago, Hopi, Zuni, and Zia communities and in a small western white community. Indian children obtained higher IQ's on the drawing test. Indian boys did better than girls on the Goodenough Draw A Man Test in all communities where artistic expression or observation is encouraged in boys. Gunther and Havighurst state that the Goodenough Draw A Man Test seems to be a valid measure of the formation of concepts based on observation. They add that it may not be a valid measure of intelligence if observation is either encouraged or limited.[2]

R. F. Berdie in an appraisal of the literature concerning the

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[1] Ibid.

[2] M. K. Gunther and R. J. Havighurst, "Environment and the Draw-A-Man Test," Journal of Abnormal Social Psychology, XXI (1946), 50-63.

Goodenough Draw A Man Test states that it has been shown to be useful with adults of limited intelligence. He states that dull normal, borderline, and defective adults, like shildren, however, draw what they know, rather than what they see. He concludes that systematic observation of these drawings offers an index to level of intellectual development. He adds that were it to be used with normal and superior adults, the determining factor in test performance might shift from intelligence to artistic ability.[1]

McHugh gave the Goodenough Draw A Man Test along with the 1937 Revision of the Stanford-Binet to 83 children just before their admission to kindergarten and again within a period of one to three months later. The correlation between Binet and Goodenough M A's at these times were .41 and .45. McHugh states that the mean increase in Goodenough MA was 6.6 points, and the mean increase in Goodenough IQ was 7.4 points, both statistically significant. These changes in Goodenough scores showed only very low correlation with Binet changes over the same interval. McHugh suggests that the gains in scores may to some extent be explained by the differences between the kindergarten environment and the home environment. He adds that the latter may predispose children to score lower than their abilities warrant, but further investigation is needed to support this thesis.[2]

In a large state institution for mental defectives, N. R.

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[1]R. F. Berdie, "Measurement of Adult Intelligence by Drawings," Journal of Clinical Psychology, I (1945), 288-95.

[2]G. McHugh, "Changes in Goodenough IQ at the Public School Kindergarten Level," Journal of Educational Psychology, XXXVI (1945), 17-30.

Needham made a study of 50 patients whose performance on the Goodenough Draw A Man Test was at least two years and ten months below the general mental level indicated by the Stanford-Binet. These subjects were paired with patients matched for Binet mental age with a discrepancy of not more than 14 months on the Goodenough. Both groups were administered the Goldstein-Scheerer Cube Test, a modification of the Kohs Block Test. Needham found that mentally deficient patients who were differentiated by the Goodenough Draw A Man Test were also differentiated by the Goldstein-Scheerer Cube Test. Needham states that the question of cortical involvement is raised and that the difference in performance level is indicative of differences in the degree of severity of impairment of intellectual functioning, without regard for the specific causation.[1]

Hanvik writes that although significant correlation has been found to exist between Goodenough IQ and the IQ's obtained through use of other intelligence measures, both verbal and non-verbal, in unselected samples, the findings of his study indicate that Goodenough IQ's and WISC IQ's appear not to be comparable among patients in the child psychiatric clinic from which his sample was drawn. He suggests that the children in his sample were suffering, in varying degrees, a disturbance in their relationships with others, mainly adults, and that the drawing of a man results in a focus on this conflict area, possibly stirring up anxieties and impairing intellectual efficiency. He suggests in conclusion that the drawing of a man could be utilized not as a measure of

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[1]N. R. Needham, "A Comparative Study of the Performance of Feebleminded Subjects on the Goodenough Drawing, the Goldstein-Scheerer Cube Test, and the Stanford Binet," American Journal of Mental Deficiency, XLIX (1944), 155-61.

intelligence but, in disturbed children, as an index of neuroticism.[1]

Ansbacher writes that when reading items are eliminated the correlation between the Goodenough and the Primary Mental Abilities Test is raised from 41 to 45, which would indicate that the Goodenough performance is not related to reading proficiency. He states that the combined score for Reasoning, Space, and Perception yields the highest correlation of the study, .48. He concludes that this is a confirmation of Havighurst's hypothesis as to what the Goodenough measures, namely, "the ability to form concepts based upon observation." He adds the remark that his study leaves open the question of the absolute extent to which the Goodenough Draw A Man Test measures general intelligence or factors of intelligence.[2]

The study by McCurdy, making use of drawings of men produced by first-grade children on two occasions about three months apart and a series of drawings produced by one child over a period of more than four years, agrees with prior work in showing considerable variation in Goodenough scores after some lapse of time. McCurdy concludes that in this instance the variability of the group and the variability of the individual are of the same order of magnitude.[3]

McHugh writes that bi-serial correlations between individual

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[1]Leo J. Hanvik, "The Goodenough Test as a Measure of Intelligence in Child Psychiatric Patients," Journal of Clinical Psychology, IX (1953), 71-72.

[2]H. L. Ansbacher, "The Goodenough Draw A Man Test and Primary Mental Abilities," Journal of Consulting Psychology, XVI (1952), 176-80.

[3]H. G. McCurdy, "Group and Individual Variability on the Goodenough Draw A Man Test," Journal of Educational Psychology, XXXVIII (1947), 428-36.

items of the Goodenough Test and Binet IQ showed that only 30 of the 51 Goodenough scoring items contribute to the positive relationship between the tests. Correlations of the scores of the Goodenough and Form L of the 1937 Revision of the Stanford-Binet Test showed (1) an r of .45, PE .06, between the MA's and (2) an r of .41, PE .06, between the IQ's.[1]

The review of experimental data based on the use of the Goodenough Draw A Man Test presents studies by Ochs, Needham, McHugh and Hanvik in which the writers conclude that performance is affected by the adjustment status of the individuals included in their studies. Gunther, Havighurst, Berdie, and Ansbacher conclude that the Goodenough Draw A Man Test offers an index to level of intellectual development because it measures the ability to form concepts based upon experience. The review of literature did not present a study where the Goodenough Draw A Man Test was used as a method of predicting academic success in school subjects.

Following is a review of experimental data concerning the Machover Draw A Person Test that is relevant to the present study.

Lehner and Gunderson present the results of their study with the Machover Draw A Person Test in relation to the following three parts: (1) the agreement of the authors' ratings with their re-ratings; (2) agreement of other raters' ratings with those of the authors; and (3) consistency of ratings by the authors on first and second administrations of the test to the same persons.

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[1] G. McHugh, "Relationship between the Goodenough Drawing a Man Test and the 1937 Revision of the Stanford-Binet Test," Journal of Educational Psychology, XXXVI (1945), 119-24.

Comparing the variables with the highest in 1 above, the authors' re-ratings, and in 2, the raters' ratings against the authors', it is found that Perspective is highest in both uses, with 98.9% agreement for authors' re-ratings and 95.6% for raters' ratings with authors ratings. Next in order of agreement are Position on Page and Transparency, with 98.9% and 94.4% respectively, and 98.9% and 93.3% respectively. Next is Body Detail with 97.8% and 94.4%, and then Posture with 93.3% in both cases.

In the comparison of test re-test ratings, 3 above, the highest agreement was on the Body Type trait, 92.5%. The second highest agreement, 78.5%, is found in the Detail variable, in which localization and amount are involved. The relatively high consistency of the Detail variable tends to substantiate reliability for this factor in both the Goodenough and Machover tests. The most variable traits on test re-test are Breast Lines, with only 42.2% agreement; Position on Page, 45.3%; Mouth, 43.6%; and Position of Hands, 45.9%. It is often assumed that more difficulty is encountered in representing these features by the subjects because of conflicts associated with these parts.

The test re-test reliability was generally lower than rater reliability; nevertheless it indicates that there is a tendency for many of the traits to remain constant over a period of months. The more constant traits include both formal and content aspects. This fact seems to contradict somewhat the claim of clinicians that content aspects (e.g. body detail) are less constant than formal aspects of the drawings (i.e. the mechanics of graphic expression). Lehner and Gunderson state that a possible explanation of this finding is that certain of these

formal aspects may be vulnerable to transient disturbances in the personality.[1]

Lehner and Gunderson state that the results of employing the Machover Draw A Person Test to investigate the influence of sex and age of subjects on the height of the figures drawn indicate that the two factors together produce significant variations in height, resulting in a decrease in height of figure drawn beyond age of 30 for men and beyond age of 40 for women. They pointed out that the decrease in size of figure drawn for both men and women comes at the same time they begin to assign ages lower than their own to figures drawn instead of ages older than their own. They state that an interesting hypothesis based on this action is that size of figure drawn reflects the drawer's self-concept or self-evaluation.[2]

In the study by Whitmyre, human figure drawings were collected from psychiatric patients and "normal" veterans. Clinical psychologists ranked the drawings according to the level of personal adjustment which they felt was reflected in the drawings. Another group of clinical psychologists ranked the drawings according to degree of artistic excellence. Commercial artists also ranked the drawings for artistic excellence. The results indicate that the different groups of psychologists judged the drawings in much the same manner whether consciously judging according to art or adjustment. They further indicated that neither art

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[1]Erik K. Gunderson and George F. J. Lehner, "Reliability of Grafic Indices In A Projective Test," Journal of Clinical Psychology, VIII (1952), 125-28.

[2]Erik K. Gunderson and George F. J. Lehner, "Height Relationships on the Draw-A-Person Test," Journal of Personality, XXI (1952), 25-28.

nor adjustment ratings by artists or psychologists show any consistently significant relationship with the dichotomy psychiatric patient vs. non-psychiatric subject. Whitmyre concludes by stating an agreement with Roe that human figure drawings judged by the "average" clinical psychologist fail to show any consistent relationship to level of personal adjustment.[1]

The review of experimental data based on the use of the Machover Draw A Person Test presents a study by Lehner and Gunderson who conclude that given an objective and explicitly formulated rating system it is possible to obtain a relatively high per cent of agreement in evaluating the indices commonly utilized in using the test. In another study, the same writers state that both men and women draw smaller figures of their sex at the same time that they begin to assign ages lower than their own to figures drawn instead of ages older than their own. They state the hypothesis that this action indicates that size of figure drawn reflects the drawer's self-concept or self-evaluation. In contrast, Whitmyre concludes that "average" clinical psychologists cannot judge adjustment level from drawings and should draw inferences about features other than adjustment status from the drawings. The review did not indicate any study where the Machover Draw A Person Test had been used as a method of predicting academic success in school subjects.

The reviews of experimental data concerning the House Tree

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[1]John W. Whitmyre, "The Significance of Artistic Excellence in the Judgment of Adjustment Inferred from Human Figure Drawings," Journal of Consulting Psychology, XVII (1953), 421-24.

Person Test, the Goodenough Draw A Man Test, and the Machover Draw A Person Test do not present one study where any of these specified projective tests have been used as a method of predicting academic success in school subjects. Although there was disagreement expressed by the studies of Royal and Stonesifer, the majority of studies included in the reviews of this study express findings that are interpreted by their writers as indicating that emotional disturbances affect behavior. Jolles, Weider and Noller, Cotte and Tramer, and Lehner and Gunderson present specific actions which they interpret as being the result of emotional disturbances affecting behavior. Hammer, Ochs, Needham, McHugh, and Hanvik conclude that performance is affected by the adjustment status of the individuals included in their studies. In contrast, Whitmyre and Roe conclude that human figure drawings judged by the "average" clinical psychologist fail to show any consistent relationship to level of personal adjustment. Gunther, Havighurst, Berdie, and Ansbacher express agreement that the Goodenough Draw A Man Test offers an index to level of intellectual development because it measures the ability to form concepts based upon experience. Lehner and Gunderson present the conclusion that given an objective and explicitly formulated rating system it is possible to obtain a relatively high per cent of agreement in evaluating the indices commonly utilized in using the Goodenough Draw A Man Test and the Machover Draw A Person Test.

Purpose of the Study

The survey of literature demonstrated that whatever projective tests measure or however well they do it, there is the possibility that

they are in some fashion getting at personality factors which are related to academic success. The survey also indicated some evidence that the Goodenough Draw A Man Test offers an index to level of intellectual development. The individual's personality development and the level of his intellectual development would presumably affect his performance in reading. It was the purpose of this study to determine if the performances of students on the House Tree Person Test, the Goodenough Draw A Man Test, and the Machover Draw A Person Test could be used to predict their academic reading success at the elementary school level. The following questions are studied:

1. Can the psychologists in this study select with statistical significance the readers and non-readers by means of the three specified projective tests?
2. Can the psychologists in this study select with statistical significance more readers and non-readers from the drawings of women, men, houses, or trees at the second, fourth, and sixth grades?
3. Can the teachers in this study select with statistical significance the readers and non-readers by means of the three specified projective tests?
4. Can the teachers in this study select with statistical significance more readers and non-readers from the drawings of women, men, houses, or trees at the second, fourth, and sixth grades?
5. Can the psychologists or the teachers of this study select with statistical significance more readers and non-readers

from the drawings of women, men, houses, and trees at the second, fourth, and sixth grades?

6. Can the control teachers, who are using the test again but without specific training, select with statistical significance the readers and non-readers from the specified projective tests?
7. Can the control teachers, who are using the test again but without specific training, select with statistical significance more readers and non-readers from the drawings of women, men, houses, or trees at the second, fourth, and sixth grades?
8. Can the experimental teachers, who have received one hour of specified training and who are using the test again, select with statistical significance the readers and non-readers from the specified projective tests?
9. Can the experimental teachers, who have received one hour of specified training and who are using the test again, select with statistical significance more readers and non-readers from the drawings of women, men, houses, or trees at the second, fourth, and sixth grades?
10. Can the experimental teachers, who have received one hour of specified training and who are using the test again, or the control teachers, who are using the test again without specific training, select with statistical significance more readers and non-readers from the drawings of women, men, houses and trees at the second, fourth, and sixth

grades?

The answers to the preceding ten questions make it possible to accept or reject the following null hypotheses at the second, fourth, and sixth grades according to the data of this study.

1. There is no statistically significant relationship between the selections of readers and non-readers and the procedure of basing the selections upon the analysis of three specified projective tests.
2. There is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the particular drawing analyzed in making the selections.
3. There is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the training of the selectors.

This study is not an attempt to check the validity or reliability of depression, adequacy, fear, or any specific characteristic purportedly measured. Neither is it an attempt to set up a specific theory of personality based on the relationships to the tests that are used in the study. The specific purpose of this study was to discover if the specified projective tests could be used to successfully predict the academic reading success of students at the elementary school level. Additional purposes were to determine if the different drawings analyzed in making the selections and the differences of training possessed by the selecting groups were factors of statistical significance affecting

the selections of readers and non-readers at the second, fourth, and sixth grade levels.

CHAPTER II

EXPERIMENTAL DESIGN

The pilot study and study include four groups of adults who selected the readers and non-readers from the drawings of women, men, houses, and threes at the second, fourth, and sixth grade levels. Two students completing work toward their doctorate degrees in clinical psychology at the University of Oklahoma acted as the psychologists. Thirty-six teachers at the second grade and thirty-nine at the fourth and sixth grades participated in the tests as the groups without specific training with projective techniques. These teachers were attending the University of Oklahoma and were selected because of their willingness to participate in the tests. The control group included fourteen of the teachers who completed the same test a second time without additional training or experience. The selection of this group was their willingness to participate again. The experimental group included fourteen of the teachers who completed the same test a second time as the group with some training. This group received one hour of instruction from Dr. P. T. Teska, Director of Special Education at the University of Oklahoma. The instruction emphasized the recognition and evaluation of characteristics in children's drawings. According to Dr. P. T. Teska, the instruction emphasized developmental sequence and maturity level

rather than a specific analysis of items like a large chimney on a house meaning a specific thing. For example in the treatment of a woman or a man, the typical four year old drawing would present a large head with arms and legs from the head. At the five year level, the head would be larger than the trunk. At later levels, the head and body would become proportionate. The quantity of details included in the drawing of a woman or a man would be increased with the advanced maturity of the drawer. In addition to presenting the head, trunk, arms, and legs of the figure, the drawing of the more mature student will present the eyes, nose, mouth, hair, ears, fingers, wrists, and clothing of the figures. With regard to the drawing of a house, it will be developed from a box or barn-like appearance at the immature level to that of the more mature student who will include details of landscaping like flowers, trees, hedges, grass, and sidewalks as well as adding windows to the house, a roof to the house, and a foundation to the structure. The drawing of a tree will advance from a shaded area with a stem for a trunk to that of a clearly defined trunk that is proportionate to the branch structure of the tree. Other additions may include the drawing of a ground line, the addition of smaller limbs to the tree, and the drawing of leaves. While some attention was placed on transparencies, profiles of human figures, and obscuring the face, the primary concern was based on the maturity of developmental sequence and upon feelings toward emptiness in the drawings. The basis for selection of this group was their willingness to participate again.

The data of this study are analyzed by the X^2 (chi-square) distribution. G. Milton Smith in his book, A Simplified Guide to Statistics

for Psychology and Education, writes that whenever our data constitute a random sample which can be classified into separate categories, we can test the agreement between the observed frequencies and the frequencies to be expected on the basis of some hypothesis by means of the X^2 test. He adds that one of its common uses is testing goodness of fit between theory and fact. Smith explains this as being a method of determining whether the differences between the theoretical and the observed frequencies in any number of categories can reasonably be attributed to chance variations in sampling. He states that the statistic X^2 has another important application in tests of independence. Smith explains that in this class of tests we test the hypothesis that two variables or traits are independent of each other.[1]

The chi-square test is applicable to this study. The data constitute random samples which are classified into separate categories. The chi-square statistic is used to test goodness of fit between theory and fact when it is applied to the internal comparisons of the groups. It determines whether the differences between the theoretical and the observed frequencies of the categories can reasonably be attributed to chance variations in sampling. The chi-square statistic is used as a test of independence in the comparisons between the groups. In this class of tests it is used to test the hypothesis that the two variables of specific training and absence of specific training are independent of each other in their effect upon the selections of readers and non-readers from the specified projective tests.

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[1]Milton G. Smith, A Simplified Guide to Statistics (New York: Rinehart and Company, Publishers, 1950), pp. 86-93.

This study rejects hypotheses at the .05 and .95 and better levels of confidence because of the conventional, although arbitrary, rule of drawing the lines at these points. One degree of freedom is used in calculating chi-square from the 2X2 tables of this study. These 2X2 tables have the requirement that both rows and columns have fixed totals. Therefore, a frequency entered in any one of the four cells at once determines all of the others.[1]

The arrangement of data presents the scoring keys that were used by all of the groups at the three grade levels in Appendix A, and the raw scores for the groups by grade levels in Appendix B of the study. The internal comparisons of the psychologists' selections of readers and non-readers at the three grade levels are presented in Appendix C of this study. Those of the teachers appear in Appendix D of the study. The group comparisons between the psychologists and teachers for the four drawings at the second grade are presented in Appendix E, at the fourth grade in Appendix F, and at the sixth grade in Appendix G of the study. The quantitative analysis of data concerning the psychologists and teachers is presented in the appendices. These data are derived from the pilot study. The conclusions of the pilot study regarding the acceptance or rejection of the three null hypotheses at the various grade levels are presented in the third chapter. The quantitative analysis of internal and group comparisons concerning the control and experimental groups is stated in the fourth chapter. The conclusions of this study regarding the rejection and acceptance of the three null hypotheses at the three grade levels are presented in the fifth

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[1] Ibid.

chapter

Procedure

The materials of the test that was used by all of the selecting groups were developed in the following manner:

1. Teachers in the second, fourth and sixth grades of the John Adams School in Norman, Oklahoma prepared a list of their five most proficient students and their five least proficient students.
2. All students were administered a House Tree Person Test, a Machover Draw A Person Test, and a Goodenough Draw A Man Test. Each test was an individual test. The same person administered all of the tests in a separate room.
3. The name of each student was written on the reverse side of each of his four drawings.
4. The order by which the drawings of women, men, houses, and trees were separately displayed was changed so that when the groups saw the drawings from left to right on the tables they did not look at four drawings of one person placed in the same position on all of the tables.
5. Different order in the presentation of drawings for the selections of readers and non-readers was used at the second, fourth, and sixth grade levels. This prevented all of the drawings of any one student from being presented in the same order to the different groups.
6. All of the groups selected five readers and five non-

readers respectively from the drawings of women, men, houses, and trees at the second, fourth, and sixth grade levels.

The following procedure was used in administering the test to all of the groups.

1. The use of two rooms was obtained by permission from the university.
2. The chairs in one room were divided into two equal groups.
3. The forty drawings at the second grade were placed on top of the chairs in one of these groups.
4. The forty drawings at the fourth grade were placed on the top of the chairs in the remaining group.
5. The forty drawings at the sixth grade level were placed on the top of the chairs in the other room.
6. The drawings were presented in the order of a woman, a man, a house, and a tree at each grade.
7. All of the drawings were identified by two letters on the front and the student's name on the back.
8. The drawings were arranged so that the student's drawing of a woman, a man, a house, and a tree did not appear in the same position.
9. Uniform instructions for completing the scoring keys and for proceeding through the different steps of the test were given.
10. Supervision was maintained to prevent the exchange of information between members of the groups completing the

tests.

This chapter has included the definitions of the groups participating in the study, the presentation of the training afforded to the experimental group, the interpretation of the chi-square statistic in its applicability to this study, the arrangement of the data, and an explanation of the development of the tests and the procedure used in administering them for the study.

CHAPTER III

THE PILOT STUDY

The data pertaining to the internal comparisons of the psychologists and teachers and the group comparisons between them in the selections of readers and non-readers from the drawings of women, men, houses, and trees at the second, fourth, and sixth grade levels are presented in the appendixes. Only the interpretation of the statistical data as they result in the acceptance or rejection of the three null hypotheses at the three grade levels is presented in this chapter. This procedure is used because of weaknesses in the conditions under which the hypotheses were tested. These weaknesses were: that the size of the groups involved in the pilot study were unequal; that there were less than ten individuals who acted as psychologists with some training; and that the differences of training between the teachers and psychologists were unknown. Although these conditions under which the hypotheses were tested in the pilot study would have to be corrected before its findings could be regarded as substantiated, it is possible that the findings of the pilot study could be useful as a source of information for future research. For this reason, the findings of the pilot study are presented.

The quantitative analysis of data in Appendix C indicates that

the null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing that is analyzed in making the selections, is rejected at the .05 or better level of confidence at the second grade when it is applied to the selections of the psychologists in the following instances:

1. The psychologists selected the same number of readers and non-readers when they used either the drawings of women or men.
2. The psychologists selected more readers and non-readers when they used the drawings of women and men as compared to either the drawings of houses or trees.

The null hypothesis is accepted in comparing the selections of readers and non-readers from houses to trees because the difference was not statistically significant.

The quantitative analysis of data in Appendix D indicates that the null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing that is analyzed in making the selections, is rejected at better than the .05 level of confidence at the second grade when it is applied to the selections of the teachers in the following instances:

1. The teachers selected more readers and non-readers when they used the drawings of women than when they used the drawings of men, houses, or trees.

The null hypothesis is accepted in comparing the selections of readers

and non-readers from men to those of houses or trees or in comparing the selections from houses to those from trees because the differences were not statistically significant.

The quantitative analysis of data in Appendix C indicates that the null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is rejected at better than the .05 level of confidence at the fourth grade when it is applied to the selections of the psychologists in the following instances:

1. The psychologists selected the same number of readers and non-readers when they used either the drawings of women, men, or trees.

The null hypothesis is accepted in comparing the selections of readers and non-readers from women to those from houses, from men to those of houses, and from houses to those from trees because the differences were not statistically significant.

The quantitative analysis of data in Appendix D indicates that the null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is accepted at the fourth grade when it is applied to the selections of teachers because none of the differences are significant at the .05 level of confidence.

The quantitative analysis of data in Appendix C indicates that the null hypothesis, that there is no statistically significant relation-

ship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is rejected at better than the .05 level of confidence at the sixth grade when it is applied to the selections of the psychologists in the following instance:

1. The psychologists selected the same number of readers and non-readers from the drawings of women as compared to the drawings of men.

The null hypothesis is accepted in comparing the selections of readers and non-readers from the drawings of women and men to those from houses or trees because the differences are not statistically significant.

The quantitative analysis of data in Appendix D indicates that the null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is rejected at the .05 or better level of confidence at the sixth grade when it is applied to the selections of the teachers in the following instances:

1. The teachers selected more readers and non-readers from the drawings of men, houses, and trees than they did from the drawings of women.

The null hypothesis is accepted in comparing the selections of readers and non-readers from the drawings of men to those from houses or trees and in the comparison of the selections from houses to trees because the differences are not statistically significant.

In summary, the data of the pilot study as it relates to the

rejection of the null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, indicate that:

1. The psychologists significantly selected the same number of readers and non-readers at the second grade level when they used either the drawings of women or men and significantly more from these drawings than from the drawings of houses or trees.
2. The teachers significantly selected more readers and non-readers at the second grade level when they used the drawings of women than when they used either the drawings of men, houses, or trees.
3. The psychologists significantly selected the same number of readers and non-readers when they used either the drawings of women, men, or trees at the fourth grade level.
4. There were not any significant differences between the teachers' selections of readers and non-readers and any of the drawings used in making the selections at the fourth grade level.
5. The psychologists significantly selected the same number of readers and non-readers at the sixth grade level when they used either the drawings of women or men.
6. The teachers significantly selected more readers and non-readers at the sixth grade level when they used the drawings of men, houses, and trees than when they used the

drawings of women.

The analysis of data comparing the selections of readers and non-readers by the psychologists and teachers is presented by grade levels. The selections of the groups are compared from the drawings of women, men, houses, and trees at the second, fourth, and sixth grade levels.

The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the training of the selectors, is rejected at better than the .05 level of confidence at the second grade in the following instances:

1. The psychologists were significantly more accurate in their selections of readers and non-readers from the drawings of women than were the teachers.
2. The psychologists were significantly more accurate in their selections of readers and non-readers from the drawings of men than were the teachers.

The null hypothesis was accepted in its application to the drawings of houses and trees because the differences were not significant at the .05 or better level of confidence.

The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the training of the selectors, is accepted in regard to its application to all four drawings at the fourth grade because none of the differences were significant at the .05 or better level of confidence.

The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the training of the selectors, is rejected at better than the .05 level of confidence at the sixth grade in the following instance:

1. The teachers were significantly more accurate in their selections of readers and non-readers from the drawings of houses than were the psychologists.

The null hypothesis was accepted in its application to the drawings of women, men, and trees because the differences were not significant at the .05 or better level of confidence.

In summary, the data of the pilot study as it relates to the rejection of the null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the training of the selectors, indicate that:

1. The psychologists were significantly more accurate in their selections of readers and non-readers from the drawings of women than were the teachers at the second grade level.
2. The psychologists were significantly more accurate in their selections of readers and non-readers from the drawings of men than were the teachers at the second grade level.
3. There were not any significant differences between the psychologists' and teachers' selections of readers and non-readers and any of the drawings used in making the selec-

tions at the fourth grade level.

4. The teachers were significantly more accurate in their selections of readers and non-readers from the drawings of houses than were the psychologists at the sixth grade level.

The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers and the procedure of basing the selections upon the analysis of three specified projective tests, is rejected at the .05 or better levels of confidence by the data obtained from the internal and group comparisons. These data indicated that the particular drawing used and the training background of the group selecting the readers and non-readers were both factors that affected the selections. The observed frequencies were established as being significantly higher than could be expected from chance variations of sampling. The fact of establishing these observed frequencies above the level of chance variations of sampling indicates that there is a statistically significant relationship between the selections of readers and non-readers in these instances and the procedure of basing them on the analysis of the specified projective tests. Since some of these instances occurred at each of the three grade levels, the null hypothesis is rejected at the second, fourth, and sixth grade levels.

Comparisons of rejections concerning the testing of the null hypotheses at the different grade levels indicate that the largest number or rejections occurred at the second grade and the least number at the fourth grade. These findings, as well as those derived from the

internal and group comparisons, are only tentative. They are not completely comparable to those derived from the following study, because the possible differences of training that exist between the psychologists and the experimental group are not specified and because the groups used in the study took the test for the second time. However, the implications of these findings may be of sufficient interest to encourage additional study designed to substantiate or to reject them.

CHAPTER IV

QUANTITATIVE ANALYSIS

The two groups used in the study have been designated as the control and experimental groups. In the second chapter it was indicated that each group consisted of 14 teachers who participated willingly in the tests a second time. The specific training received by the experimental group was also presented there. The facts that the groups were composed of the same number of individuals, that there were 10 or more in each group, and that the variable of training received by the experimental group was specified eliminates the weaknesses under which the null hypotheses were tested in the pilot study.

The 2X2 tables of X^2 calculations are presented in this chapter. The internal comparisons and the group comparisons are presented by grade levels. A summary of findings indicates those that are established as being statistically significant as well as those that are not by each grade level and for each group. The rejection and acceptance of the three null hypotheses at the second, fourth, and sixth grade levels is presented in the last chapter.

To facilitate the interpretation of the 2X2 tables presented in this chapter or in any appendix, the writer states that the numbers enclosed in parentheses represent those theoretical frequencies expected

through chance variations of sampling. All of the tables are based on one degree of freedom. Data are accepted as being statistically significant at the .05 or lower levels of confidence.

The internal comparisons of the control and experimental teachers are presented at the second, fourth, and sixth grade levels. These are followed by the group comparisons at the second, fourth, and sixth grade levels. A summary of results after the presentation of data at each grade level indicates the findings established as being statistically significant.

TABLE 1.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman and a man by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	97 (97.000)	43 (50.000)	140
Drawing of a Man	83 (90.000)	57 (50.000)	140
	180	100	280

Obtained $X^2 = 3.048$. Not significant at .05 level of confidence.

TABLE 2.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman and a house by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	97 (87.000)	43 (53.000)	140
Drawing of a House	77 (87.000)	63 (53.000)	140
	174	106	280

Obtained $X^2 = 6.072$. Significant at better than .02 level of confidence.

TABLE 3.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman and a tree by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	97 (88.500)	43 (51.500)	140
Drawing of a Tree	80 (88.500)	60 (51.500)	140
	177	103	280

Obtained $X^2 = 4.438$. Significant at .05 level of confidence.

TABLE 4.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a man and a house by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	83 (80.000)	57 (60.000)	140
Drawing of a House	77 (80.000)	63 (60.000)	140
	160	120	280

Obtained $X^2 = .526$. Not significant at .05 level of confidence.

TABLE 5.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a man and a tree by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	83 (81.500)	57 (58.500)	140
Drawing of a Tree	80 (81.500)	60 (58.500)	140
	163	117	280

Obtained $X^2 = .132$. Not significant at .05 level of confidence.

TABLE 6.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a house and a tree by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a House	77 (78.500)	63 (61.500)	140
Drawing of a Tree	80 (78.500)	60 (61.500)	140
	157	123	280

Obtained X^2 = .132. Not significant at .05 level of confidence.

Summary of Second Grade Internal Comparisons for the Control Teachers

The data from Table 2 and Table 3 are established at the .05 or better level of confidence and indicate that the Control Teachers selected significantly more readers and non-readers when they based their appraisals on the drawing of a woman than when they based them on either the drawing of a house or the drawing of a tree. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is rejected in these instances.

The data from Tables 1, 4, 5, and 6 were not established at the .05 or better level of confidence. The Control Teachers did not significantly select more readers and non-readers when they based their appraisals upon the drawing of a woman as compared to the drawing of a man. Neither did they select significantly more readers and non-readers

when they based their selections upon the drawing of a man as compared to either the drawing of a house or the drawing of a tree or when they based their selections upon the drawing of a house as compared to the drawing of a tree. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is accepted in the comparisons of selections from the drawing of a woman to a man, a man to a house, a man to a tree, and a house to a tree.

TABLE 7.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman and a man by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	112 (101.500)	28 (38.500)	140
Drawing of a Man	91 (101.500)	49 (38.500)	140
	203	77	280

Obtained $X^2 = 7.898$. Significant at better than the .01 level of confidence.

TABLE 8.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman and a house by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	112 (105.000)	28 (35.000)	140
Drawing of a House	98 (105.000)	42 (35.000)	140
	210	70	280

Obtained $X^2 = 3.734$. Not significant at .05 level of confidence.

TABLE 9.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman and a tree by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	112 (105.500)	28 (34.500)	140
Drawing of a Tree	99 (105.500)	41 (34.500)	140
	211	69	280

Obtained $X^2 = 3.250$. Not significant at .05 level of confidence.

TABLE 10.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a man and a house by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	91 (94.500)	49 (45.500)	140
Drawing of a House	98 (94.500)	42 (45.500)	140
	189	91	280

Obtained X^2 = .798. Not significant at .05 level of confidence.

TABLE 11.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a man and a tree by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	91 (95.000)	49 (45.000)	140
Drawing of a Tree	99 (95.000)	41 (45.000)	140
	190	90	280

Obtained X^2 = 1.048. Not significant at .05 level of confidence.

TABLE 12.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a house and a tree by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a House	98 (98.500)	42 (41.500)	140
Drawing of a Tree	99 (98.500)	41 (41.500)	140
	197	83	280

Obtained X^2 = .018. Not significant at .05 level of confidence.

Summary of Second Grade Internal Comparisons for the Experimental Teachers

The data from Table 7 are established at better than the .01 level of confidence and indicate that the Experimental Teachers selected significantly more readers and non-readers when they based their appraisals on the drawing of a woman than when they based them on the drawing of a man. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is rejected in this comparison.

The data from Tables 8, 9, 10, 11, and 12 were not established at the .05 or better level of confidence. The Experimental Teachers did not select significantly more readers and non-readers when they based their selections upon the drawing of a woman as compared to the drawing

of a house or tree, upon the drawing of a man as compared to the drawing of a house or tree, or upon the drawing of a house as compared to the drawing of a tree. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is accepted in these comparisons.

TABLE 13.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman and a man by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	87 (88.000)	53 (52.000)	140
Drawing of a Man	89 (88.000)	51 (52.000)	140
	176	104	280

Obtained $X^2 = .060$. Not significant at .05 level of confidence.

TABLE 14.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman and a house by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	87 (91.500)	53 (48.500)	140
Drawing of a House	96 (91.500)	44 (48.500)	140
	183	97	280

Obtained $X^2 = 1.278$. Not significant at .05 level of confidence.

TABLE 15.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman and a tree by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	87 (88.000)	53 (52.000)	140
Drawing of a Tree	89 (88.000)	51 (52.000)	140
	176	104	280

Obtained $X^2 = .060$. Not significant at .05 level of confidence.

TABLE 16.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a man and a house by the Control Teachers.

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	89 (92.500)	51 (47.500)	140
Drawing of a House	96 (92.500)	44 (47.500)	140
	185	95	280

Obtained X^2 = .780. Not significant at .05 level of confidence.

TABLE 17.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a man and a tree by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	89 (89.000)	51 (51.000)	140
Drawing of a Tree	89 (89.000)	51 (51.000)	140
	178	102	280

Obtained X^2 = .000. Significant at better than .01 level of confidence.

TABLE 18.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a house and a tree by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a House	96 (92.500)	44 (47.500)	140
Drawing of a Tree	89 (92.500)	51 (47.500)	140
	185	95	280

Obtained $X^2 = .780$. Not significant at .05 level of confidence.

Summary of Fourth Grade Internal Comparisons for the Control Teachers

The data from Table 17 are established at better than the .01 level of confidence and indicate that the Control Teachers selected significantly the same number of readers and non-readers from the drawing of a man as from the drawing of a tree. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is rejected in this comparison.

The data from Tables 13, 14, 15, 16, and 18 were not established at the .05 or better level of confidence. The Control Teachers did not select significantly more readers and non-readers when they based their selections upon the drawing of a woman as compared to the drawing of a man, house, or tree; upon the drawing of a man as compared

to the drawing of a house; or upon the drawing of a house as compared to the drawing of a tree. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is accepted in these comparisons.

TABLE 19.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman and a man by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	92 (95.500)	48 (44.500)	140
Drawing of a Man	99 (95.500)	41 (44.500)	140
	191	89	280

Obtained X^2 = .806. Not significant at .05 level of confidence.

TABLE 20.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman and a house by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	92 (92.000)	48 (48.000)	140
Drawing of a House	92 (92.000)	48 (48.000)	140
	184	96	280

Obtained X^2 = .000. Significant at better than the .01 level of confidence.

TABLE 21.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman and a tree by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	92 (99.500)	48 (40.500)	140
Drawing of a Tree	107 (99.500)	33 (40.500)	140
	199	81	280

Obtained X^2 = 3.908. Significant at .05 level of confidence.

TABLE 22.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a man and a house by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	99 (95.500)	41 (44.500)	140
Drawing of a House	92 (95.500)	48 (44.500)	140
	191	89	280

Obtained $X^2 = .806$. Not significant at .05 level of confidence.

TABLE 23.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a man and a tree by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	99 (103.000)	41 (37.000)	140
Drawing of a Tree	107 (103.000)	33 (37.000)	140
	206	74	280

Obtained $X^2 = 1.174$. Not significant at .05 level of confidence.

TABLE 24.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a house and a tree by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a House	92 (99.500)	48 (40.500)	140
Drawing of a Tree	107 (99.500)	33 (40.500)	140
	199	81	280

Obtained $X^2 = 3.908$. Significant at .05 level of confidence.

Summary of Fourth Grade Internal Comparisons for the Experimental Teachers

The data of Table 20 are established at better than the .01 level of confidence and indicate that the Experimental Teachers selected significantly the same number of readers and non-readers when they used either the drawing of a woman or a house. The data of Tables 21 and 24 are established at the .05 level of confidence and indicate that the Experimental Teachers selected significantly more readers and non-readers when they based their selections upon an appraisal of the drawing of a tree as compared to either the drawing of a woman or the drawing of a house. The null hypothesis that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is rejected in these comparisons.

The data of Tables 19, 22, and 23 are not established at the .05 or better level of confidence. The Experimental Teachers did not select significantly more readers and non-readers when they based their selections upon the appraisal of the drawing of a woman as compared to the drawing of a man, upon the drawing of a man compared to the drawing of a house, or upon the drawing of a man compared to the drawing of a tree. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is accepted in these comparisons.

TABLE 25.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman and a man by the Control Teachers.

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	85 (87.000)	55 (53.000)	140
Drawing of a Man	89 (87.000)	51 (53.000)	140
	174	106	280

Obtained X^2 = .242. Not significant at .05 level of confidence.

TABLE 26.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman and a house by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	85 (92.500)	55 (47.500)	140
Drawing of a House	100 (92.500)	40 (47.500)	140
	185	95	280

Obtained $X^2 = 3.584$. Not significant at .05 level of confidence.

TABLE 27.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman and a tree by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	85 (84.000)	55 (56.000)	140
Drawing of a Tree	83 (84.000)	57 (56.000)	140
	168	112	280

Obtained $X^2 = .060$. Not significant at .05 level of confidence.

TABLE 28.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a man and a house by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	89 (94.500)	51 (45.500)	140
Drawing of a House	100 (94.500)	40 (45.500)	140
	189	91	280

Obtained $X^2 = 1.970$. Not significant at .05 level of confidence.

TABLE 29.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a man and a tree by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	89 (86.000)	51 (54.000)	140
Drawing of a Tree	83 (86.000)	57 (54.000)	140
	172	108	280

Obtained $X^2 = .544$. Not significant at .05 level of confidence.

TABLE 30.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a house and a tree by the Control Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a House	100 (91.500)	40 (48.500	140
Drawing of a Tree	83 (91.500)	57 (48.500)	140
	183	97	280

Obtained $X^2 = 4.560$. Significant at better than the .05 level of confidence.

Summary of Sixth Grade Internal Comparisons for the Control Group

The data of Table 30 are established at better than the .05 level of confidence and indicate that the Control Teachers selected significantly more readers and non-readers when they based their appraisals upon the drawing of a house than when they based them upon the drawing of a tree. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is rejected in this comparison.

The data of Tables 25, 26, 27, 28, and 29 are not established at the .05 level of confidence. A statistically significant relationship was not established when the selections of readers and non-readers based upon the drawing of a woman were compared to those based upon the drawing of a man, house, or tree. Neither was a statistically signifi-

cant relationship established when the selections based upon the drawing of a man were compared with the selections based upon the drawing of a house or the drawing of a tree. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is accepted in these comparisons.

TABLE 31.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman and a man by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	100 (102.000)	40 (38.000)	140
Drawing of a Man	104 (102.000)	36 (38.000)	140
	204	76	280

Obtained X^2 = .288. Not significant at .05 level of confidence.

TABLE 32.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman and a house by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	100 (93.000)	40 (47.000)	140
Drawing of a House	86 (93.000)	54 (47.000)	140
	186	94	280

Obtained $X^2 = 3.138$. Not significant at .05 level of confidence.

TABLE 33.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman and a tree by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	100 (95.000)	40 (45.000)	140
Drawing of a Tree	90 (95.000)	50 (45.000)	140
	190	90	280

Obtained $X^2 = 1.638$. Not significant at .05 level of confidence.

TABLE 34.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a man and a house by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	104 (95.000)	36 (45.000)	140
Drawing of a House	86 (95.000)	54 (45.000)	140
	190	90	280

Obtained $X^2 = 5.306$. Significant at better than the .05 level of confidence.

TABLE 35.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a man and a tree by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	104 (97.000)	36 (43.000)	140
Drawing of a Tree	90 (97.000)	50 (43.000)	140
	194	86	280

Obtained $X^2 = 3.290$. Not significant at .05 level of confidence.

TABLE 36.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a house and a tree by the Experimental Teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a House	86 (88.000)	54 (52.000)	140
Drawing of a Tree	90 (88.000)	50 (52.000)	140
	176	104	280

Obtained X^2 = .244. Not significant at .05 level of confidence.

Summary of Sixth Grade Internal Comparisons for the Experimental Teachers

The data of Table 34 are established at better than the .05 level of confidence. This indicates that the Experimental Teachers selected significantly more readers and non-readers when they based their appraisals upon the drawing of a man as compared to the drawing of a house. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is rejected in this comparison.

The data of Tables 31, 32, 33, 35, and 36 are not established at the .05 level of confidence. A statistically significant relationship was not established when the selections of readers and non-readers based upon the drawing of a woman were compared to those based on the drawing of a man, house, or tree. Neither was a statistically signifi-

cant relationship established when the selections based upon the drawing of a man were compared to those based upon the drawing of a tree, or when the selections based upon the drawing of a house were compared to those based upon the drawing of a tree. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the drawing analyzed in making the selections, is accepted in these comparisons.

TABLE 37.--Summary of the enumerated data required to compute the X^2 test for possible differences between the Control Teachers and the Experimental Teachers with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman

	Correct Selections	Incorrect Selections	Totals
Control Group	97 (104.500)	43 (35.500)	140
Experimental Group	112 (104.500)	28 (35.500)	140
	209	71	280

Obtained $X^2 = 4.246$. Significant at better than .05 level of confidence.

TABLE 38.--Summary of the enumerated data required to compute the X^2 test for possible differences between the Control Teachers and the Experimental Teachers with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a man

	Correct Selections	Incorrect Selections	Totals
Control Group	83 (87.000)	57 (53.000)	140
Experimental Group	91 (87.000)	49 (53.000)	140
	174	106	280

Obtained $X^2 = .972$. Not significant at .05 level of confidence.

TABLE 39.--Summary of the enumerated data required to compute the X^2 test for possible differences between the Control Teachers and the Experimental Teachers with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a house

	Correct Selections	Incorrect Selections	Totals
Control Group	77 (87.500)	63 (52.500)	140
Experimental Group	98 (87.500)	42 (52.500)	140
	175	105	280

Obtained $X^2 = 6.720$. Significant at .01 level of confidence.

TABLE 40.--Summary of the enumerated data required to compute the X^2 test for possible differences between the Control Teachers and the Experimental Teachers with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a tree

	Correct Selections	Incorrect Selections	Totals
Control Group	80 (89.500)	60 (50.500)	140
Experimental Group	99 (89.500)	41 (50.500)	140
	179	101	280

Obtained $X^2 = 5.590$. Significant at .02 level of confidence.

Summary of the Comparisons between the Control and Experimental Teachers at the Second Grade

The data of Tables 37, 39, and 40 are established at the .05 or better level of confidence. These data indicate that the Experimental Teachers selected significantly more readers and non-readers from the drawings of a woman, a house, and a tree at the second grade level than the Control Teachers. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the training of the selectors, is rejected in these comparisons.

The data of Table 38 are not established at the .05 or better level of confidence. These data indicate that there is not a statistically significant difference between the selections of readers and non-readers by the Control and Experimental Teachers when the drawing of a man is appraised at the second grade level. The null hypothesis, that

there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the training of the selectors, is accepted in this comparison.

TABLE 41.--Summary of the enumerated data required to compute the X^2 test for possible differences between the Control Teachers and the Experimental Teachers with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman

	Correct Selections	Incorrect Selections	Totals
Control Group	87 (89.500)	53 (50.500)	140
Experimental Group	92 (89.500)	48 (50.500)	140
	179	101	280

Obtained X^2 = .262. Not significant at .05 level of confidence.

TABLE 42.--Summary of the enumerated data required to compute the X^2 test for possible differences between the Control Teachers and the Experimental Teachers with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a man

	Correct Selections	Incorrect Selections	Totals
Control Group	89 (94.000)	51 (46.000)	140
Experimental Group	99 (94.000)	41 (46.000)	140
	188	92	280

Obtained X^2 = 1.618. Not significant at .05 level of confidence.

TABLE 43.--Summary of the enumerated data required to compute the X^2 test for possible differences between the Control Teachers and the Experimental Teachers with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a house

	Correct Selections	Incorrect Selections	Totals
Control Group	96 (94.000)	44 (46.000)	140
Experimental Group	92 (94.000)	48 (46.000)	140
	188	92	280

Obtained $X^2 = .259$. Not significant at .05 level of confidence.

TABLE 44.--Summary of the enumerated data required to compute the X^2 test for possible differences between the Control Teachers and the Experimental Teachers with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a tree

	Correct Selections	Incorrect Selections	Totals
Control Group	89 (98.000)	51 (42.000)	140
Experimental Group	107 (98.000)	33 (42.000)	140
	196	84	280

Obtained $X^2 = 5.512$. Significant at .02 level of confidence.

Summary of the Comparisons between the Control and Experimental Teachers at the Fourth Grade

The data of Table 44 are established at the .02 level of confidence. They indicate that the Experimental Teachers selected significantly more readers and non-readers when they appraised the drawings of a tree at the fourth grade level than did the Control Teachers. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the training of the selectors, is rejected in this comparison.

The data of Tables 41, 42, and 43 are not established at the .05 level of confidence. This indicates that there is not a statistically significant difference between the selections of readers and non-readers by the Control Teachers and Experimental Teachers when the drawings of a woman, a man, or a house are used as the basis for selections. The null hypothesis that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the training of the selectors, is accepted in these comparisons.

TABLE 45.--Summary of the enumerated data required to compute the X^2 test for possible differences between the Control Teachers and the Experimental Teachers with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman

	Correct Selections	Incorrect Selections	Totals
Control Group	85 (92.500)	55 (47.500)	140
Experimental Group	100 (92.500)	40 (47.500)	140
	185	95	280

Obtained $X^2 = 3.584$. Not significant at .05 level of confidence.

TABLE 46.--Summary of the enumerated data required to compute the X^2 test for possible differences between the Control Teachers and the Experimental Teachers with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a man

	Correct Selections	Incorrect Selections	Totals
Control Group	89 (96.500)	51 (43.500)	140
Experimental Group	104 (96.500)	36 (43.500)	140
	193	87	280

Obtained $X^2 = 3.752$. Not significant at .05 level of confidence.

TABLE 47.--Summary of the enumerated data required to compute the X^2 test for possible differences between the Control Teachers and the Experimental Teachers with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a house

	Correct Selections	Incorrect Selections	Totals
Control Group	100 (93.000)	40 (47.000)	140
Experimental Group	86 (93.000)	54 (47.000)	140
	186	94	280

Obtained $X^2 = 3.140$. Not significant at .05 level of confidence.

TABLE 48.--Summary of the enumerated data required to compute the X^2 test for possible differences between the Control Teachers and the Experimental Teachers with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a tree

	Correct Selections	Incorrect Selections	Totals
Control Group	83 (86.500)	57 (53.500)	140
Experimental Group	90 (86.500)	50 (53.500)	140
	173	107	280

Obtained $X^2 = .655$. Not significant at .05 level of confidence.

Summary of the Comparisons between the Control and Experimental Teachers at the Sixth Grade

The data of Tables 45, 46, 47, and 48 are not established at the .05 level of confidence. These data do not indicate a statistically significant difference between the selections of readers and non-readers by the Control Teachers and the Experimental Teachers when the groups used the drawing of a woman, the drawing of a man, the drawing of a house, or the drawing of a tree as the basis for their selections. The null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the training of the selectors, is accepted in all of the comparisons at the sixth grade level.

CHAPTER V

RESULTS AND CONCLUSIONS

Three null hypotheses have been tested at the second, fourth, and sixth grade levels by the data of this study. The results, in terms of the specific instances whereby the null hypotheses are rejected or accepted, are presented respectively at the second, fourth, and sixth grade levels. The data concerning the instances of rejection and acceptance for the three null hypotheses are presented in the following sequence at each grade level:

1. Data concerning the null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the particular drawing analyzed in making the selections.
2. Data concerning the null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers from the three specified projective tests and the training of the selectors.
3. Data concerning the null hypothesis, that there is no statistically significant relationship between the selections of readers and non-readers and the procedure of basing the

selections upon the analysis of three specified projective tests.

The following results concerning the first null hypothesis are established at the second grade level by Tables 1-12 of the study:

1. The null hypothesis is rejected in the instances of its application to the selections of readers and non-readers by the Control Teachers when they used the drawing of a woman as compared to either the drawing of a house or the drawing of a tree.
2. The null hypothesis is accepted in the instances of its application to the selections of readers and non-readers by the Control Teachers when they used the drawing of a woman as compared to the drawing of a man, the drawing of a man as compared to either the drawing of a house or a tree, and the drawing of a house as compared to the drawing of a tree.
3. The null hypothesis is rejected in the instances of its application to the selections of readers and non-readers by the Experimental Teachers when they used the drawing of a woman as compared to the drawing of a man.
4. The null hypothesis is accepted in the instances of its application to the selections of readers and non-readers by the Experimental Teachers when they used the drawing of a woman as compared to either the drawing of a house or a tree, the drawing of a man as compared to either the drawing of a house or a tree, and the drawing of a house as

compared to the drawing of a tree.

The following results concerning the second null hypothesis are established at the second grade level by Tables 36-40 of the study:

1. The null hypothesis is rejected in its application to the comparisons of the Experimental Teachers and Control Teachers as they apply to the drawing of a woman, the drawing of a house, and the drawing of a tree.
2. The null hypothesis is accepted in its application to the comparisons of the Experimental Teachers and Control Teachers as they apply to the drawing of a man.

The following results concerning the thirde null hypothesis are established at the second grade level by the rejections of the first two null hypotheses at a number beyond the expectation of chance:

1. The null hypothesis is rejected in its application to the selections of the Control Teachers that are based upon the analysis of the drawing of a woman as compared to either the drawing of a house or the drawing of a tree.
2. The null hypothesis is rejected in its application to the selections of the Experimental Teachers that are based upon the analysis of the drawing of a woman as compared to the drawing of a man.
3. The null hypothesis is rejected in its application to the selections of the Experimental Teachers as compared to the Control Teachers when the groups analyzed the drawing of a woman, the drawing of a house, and the drawing of a tree.

The following results for the first null hypothesis are estab-

lished at the fourth grade level by Tables 13-24 of the study:

1. The null hypothesis is rejected in the instance of its application to the selections of readers and non-readers by the Control Teachers when they used the drawing of a man as compared to the drawing of a tree.
2. The null hypothesis is accepted in the instances of its application to the selections of readers and non-readers by the Control Teachers when they used the drawing of a woman as compared to the drawing of a man, the drawing of a house, or the drawing of a tree; the drawing of a man as compared to the drawing of a tree; and the drawing of a house as compared to the drawing of a tree.
3. The null hypothesis is rejected in the instances of its application to the selections of readers and non-readers by the Experimental Teachers when they used the drawing of a woman as compared to the drawing of a house, the drawing of a woman as compared to the drawing of a tree, and the drawing of a house as compared to the drawing of a tree.
4. The null hypothesis is accepted in the instances of its application to the selections of readers and non-readers by the Experimental Teachers when they used the drawing of a woman as compared to the drawing of a man, the drawing of a man as compared to the drawing of a house, and the drawing of a man as compared to the drawing of a tree.

The following results concerning the second null hypothesis are established at the fourth grade level by Tables 41-44 of the study:

1. The null hypothesis is rejected in its application to the comparisons of the Experimental Teachers and Control Teachers as they apply to the drawing of a tree.
2. The null hypothesis is accepted in its application to the comparisons of the Experimental Teachers and Control Teachers as they apply to the drawing of a woman, the drawing of a man, and the drawing of a house.

The following results of the third null hypothesis are established at the fourth grade level by the rejections of the first two null hypotheses at a number beyond the expectation of chance:

1. The null hypothesis is rejected in its application to the selections of the Experimental Teachers that are based upon the analysis of the drawing of a tree as compared to either the analysis of the drawing of a woman or the drawing of a house.
2. The null hypothesis is rejected in its application to the selections of the Experimental Teachers as compared to the Control Teachers when the groups analyzed the drawing of a tree.

The following results concerning the first null hypothesis are established at the sixth grade level by Tables 25-36 of the study:

1. The null hypothesis is rejected in the instances of its application to the selections of readers and non-readers by the Control Teachers when they used the drawing of a house as compared to either the drawing of a woman or the drawing of a tree.

2. The null hypothesis is accepted in the instances of its application to the selections of readers and non-readers by the Control Teachers when they used the drawing of a woman as compared to either the drawing of a man or a tree and when they used the drawing of a man as compared to either the drawing of a house or a tree.
3. The null hypothesis is rejected in the instance of its application to the selections of readers and non-readers by the Experimental Teachers when they used the drawing of a man as compared to the drawing of a house.
4. The null hypothesis is accepted in the instances of its application to the selections of readers and non-readers by the Experimental Teachers when they used the drawing of a woman as compared to the drawing of a man, house, or tree; the drawing of a man as compared to the drawing of a tree; and the drawing of a house as compared to the drawing of a tree.

The following results concerning the second null hypothesis are established at the sixth grade level by Tables 45-48 of the study:

1. The null hypothesis is accepted in its application to the comparisons of the Experimental Teachers and Control Teachers as they apply to the drawing of a woman, a man, a house, and a tree.

The following results concerning the third null hypothesis are established at the sixth grade level by the rejections of the first null hypothesis at a number beyond the expectation of chance:

1. The null hypothesis is rejected in its application to the selections of the Control Teachers that are based upon the analysis of the drawing of a house as compared to either the drawing of a woman or the drawing of a tree.
2. The null hypothesis is rejected in its application to the selections of the Experimental Teachers that are based upon the analysis of the drawing of a man as compared to the drawing of a house.

The data of this study indicate that the particular drawing analyzed in making the selections was of statistical significance at each grade level for each group. The Control Teachers selected significantly more readers and non-readers from the drawing of a woman than from the drawing of a house or a tree at the second grade level, the same number from the drawing of a man as compared to the drawing of a tree at the fourth grade, and significantly more readers and non-readers from the drawing of a house as compared to the drawing of a tree at the sixth grade level. The Experimental Teachers selected significantly more readers and non-readers from the drawing of a woman than from the drawing of a man at the second grade level, significantly more from the drawing of a tree as compared to either the drawing of a woman or a house at the fourth grade, and significantly more from the drawing of a man as compared to the drawing of a house at the sixth grade level.

The data of this study indicate that the training of the selectors was of statistical significance at the second and fourth grade levels. The Experimental Teachers selected significantly more readers and non-readers from the drawing of a woman, a house, and a tree at the

second grade level. They also selected significantly more readers and non-readers from the drawing of a tree at the fourth grade.

The Control Teachers selected their greatest number of readers and non-readers from the drawing of a woman at the second grade, from the drawing of a man at the fourth grade, and from the drawing of a house at the sixth grade. The Experimental Teachers selected their greatest number of readers and non-readers from the drawing of a woman at the second grade, from the drawing of a tree at the fourth grade, and from the drawing of a man at the sixth grade.

The data of this study indicate that the greatest number of correct selections occurred when the trained group used the drawing of a woman at the second grade. The data indicate that the factor of training was more influential in its effect upon the selections of readers and non-readers at the second grade than it was at the fourth or sixth grade levels. The data indicate that at each grade level the highest number of correct selections identifying readers and non-readers from a single drawing was obtained by the Experimental Teachers.

The results of the study, as indicated by the rejection of the null hypotheses at the three grade levels, indicate that the House Tree Person, the Goodenough Draw A Man, and the Machover Draw A Person Tests can be used as a method of predicting reading success in an elementary school. The results indicate that the highest number of correct predictions identifying readers and non-readers at the second grade was attained by a trained group basing its selections upon the drawing of a woman. The results indicate that the highest number of correct predictions identifying readers and non-readers at the fourth grade was

attained by a trained group basing its selections upon the drawing of a tree. The results indicate that the highest number of correct predictions identifying readers and non-readers at the sixth grade was attained by a trained group basing its selections upon the drawing of a man.

A possible implication for future studies would be to increase the training period of the experimental group and determine if the results further substantiated the findings of this study. However, the results of these tests in indicating the significance to the selections of readers and non-readers of the particular figure analyzed, the grade level at which it is used, and the training of the group that uses it are contributions to the literature of projective tests. The fact that the null hypotheses were rejected at a number exceeding the expectation of chance at the three grade levels indicates the instances where the specified projective tests can be used to select significantly readers and non-readers.

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APPENDIX A

SCORING KEYS

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TABLE 1.--Presentation of Second Grade Scoring Key

	Readers	Non-readers
	Drawing of Women	
1	GH	LJ
2	BB	WX
3	ZZ	RX
4	BU	XX
5	CU	HO
	Drawing of Men	
1	KL	MN
2	LL	YZ
3	TT	PU
4	HH	OO
5	KU	ME
	Drawing of Houses	
1	OP	QR
2	MM	AA
3	YY	NW
4	FF	FE
5	SC	ZA
	Drawing of Trees	
1	ST	UV
2	RR	DD
3	EE	SE
4	CK	PZ
5	LA	GE

TABLE 2.--Presentation of Fourth Grade Scoring Key

	Readers	Non-readers
	Drawing of Women	
1	GH	IJ
2	BB	WX
3	HO	RX
4	BU	XX
5	CU	ZZ
	Drawing of Men	
1	KL	MN
2	LL	YZ
3	ME	PU
4	HH	OO
5	KU	TT
	Drawing of Houses	
1	OP	QR
2	MM	AA
3	ZA	NW
4	FF	FE
5	SC	YY
	Drawing of Trees	
1	ST	UV
2	RR	DD
3	GE	SE
4	CK	PZ
5	LA	EE

TABLE 3.--Presentation of Sixth Grade Scoring Key

	Readers	Non-readers
	Drawing of Women	
1	GH	IJ
2	BB	WX
3	HQ	RX
4	BU	XX
5	CU	ZZ
	Drawing of Men	
1	KL	MN
2	LL	YZ
3	ME	PU
4	HH	OO
5	KU	TT
	Drawing of Houses	
1	OP	QR
2	MM	PZ
3	ZA	NW
4	FF	FE
5	SC	YY
	Drawing of Trees	
1	ST	UV
2	RR	DD
3	GE	SE
4	CK	AA
5	LA	EE

APPENDIX B

RAW SCORES ON SELECTIONS OF READERS AND NON-READERS BY GROUPS

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TABLE 1.--Presentation of Raw Scores

Selecting Groups	Second Grade	Fourth Grade	Sixth Grade
	Drawings of Women		
Psychologists	20/20	12/20	14/20
Teachers	282/360	256/390	222/390
Control Group	97/140	87/140	85/140
Experimental Group	112/140	92/140	100/140
	Drawings of Men		
Psychologists	20/20	12/20	14/20
Teachers	224/360	276/390	262/390
Control Group	83/140	89/140	89/140
Experimental Group	91/140	99/140	104/140
	Drawings of Houses		
Psychologists	16/20	9/20	9/20
Teachers	213/360	254/390	264/390
Control Group	77/140	96/140	100/140
Experimental Group	98/140	92/140	86/140
	Drawings of Trees		
Psychologists	14/20	12/20	11/20
Teachers	228/360	264/390	250/390
Control Group	80/140	89/140	83/140
Experimental Group	99/140	107/140	190/140

APPENDIX C

INTERNAL COMPARISONS OF PSYCHOLOGISTS' SELECTIONS OF READERS AND NON-READERS FROM DRAWINGS

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Table 1.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman and a man by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	20 (20.000)	0 (0.000)	20
Drawing of a Man	20 (20.000)	0 (0.000)	20
	40	0	40

Obtained X^2 = .000. Significant at better than .01 level of confidence.

TABLE 2.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman and a house by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	20 (18.000)	0 (2.000)	20
Drawing of a House	16 (18.000)	4 (2.000)	20
	36	4	40

Obtained X^2 = 4.444. Significant at better than .05 level of confidence.

TABLE 3.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman and a tree by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	20 (17.000)	0 (3.000)	20
Drawing of a Tree	14 (17.000)	6 (3.000)	20
	34	6	40

Obtained $X^2 = 7.058$. Significant at better than .01 level of confidence.

TABLE 4.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a man and a house by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	20 (18.000)	0 (2.000)	20
Drawing of a House	16 (18.000)	4 (2.000)	20
	36	4	40

Obtained $X^2 = 4.444$. Significant at better than .05 level of confidence.

TABLE 5.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a man and a tree by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	20 (17.000)	0 (3.000)	20
Drawing of a Tree	14 (17.000)	6 (3.000)	20
	34	6	40

Obtained $X^2 = 7.058$. Significant at better than .01 level of confidence.

TABLE 6.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a house and a tree by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a House	16 (15.000)	4 (5.000)	20
Drawing of a Tree	14 (15.000)	6 (5.000)	20
	30	10	40

Obtained $X^2 = .534$. Not significant at .05 level of confidence.

TABLE 7.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman and a man by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	12 (12.000)	8 (8.000)	20
Drawing of a Man	12 (12.000)	8 (8.000)	20
	24	16	40

Obtained X^2 = .000. Significant at better than .01 level of confidence.

TABLE 8.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman and a house by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	12 (10.500)	8 (9.500)	20
Drawing of a House	9 (10.500)	11 (9.500)	20
	21	19	40

Obtained X^2 = .902. Not significant at .05 level of confidence.

TABLE 9.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman and a tree by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	12 (12.000)	8 (8.000)	20
Drawing of a Tree	12 (12.000)	8 (8.000)	20
	24	16	40

Obtained X^2 = .000. Significant at better than .01 level of confidence.

TABLE 10.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a man and a house by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	12 (10.500)	8 (9.500)	20
Drawing of a House	9 (10.500)	11 (9.500)	20
	21	19	40

Obtained X^2 = .902. Not significant at .05 level of confidence.

TABLE 11.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a man and a tree by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	12 (12.000)	8 (8.000)	20
Drawing of a Tree	12 (12.000)	8 (8.000)	20
	24	16	40

Obtained X^2 = .000. Significant at better than .01 level of confidence.

TABLE 12.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a house and a tree by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a House	9 (10.500)	11 (9.500)	20
Drawing of a Tree	12 (10.500)	8 (9.500)	20
	21	19	40

Obtained X^2 = .902. Not significant at .05 level of confidence.

TABLE 13.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman and a man by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	14 (14.000)	6 (6.000)	20
Drawing of a Man	14 (14.000)	6 (6.000)	20
	28	12	40

Obtained X^2 = .000. Significant at better than .01 level of confidence.

TABLE 14.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman and a house by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	14 (11.500)	6 (8.500)	20
Drawing of a House	9 (11.500)	11 (8.500)	20
	23	17	40

Obtained X^2 = 2.556. Not significant at .05 level of confidence.

TABLE 15.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman and a tree by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	14 (12.500)	6 (7.500)	20
Drawing of a Tree	11 (12.500)	9 (7.500)	20
	25	15	40

Obtained $X^2 = .960$. Not significant at .05 level of confidence.

TABLE 16.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a man and a house by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	14 (11.500)	6 (8.500)	20
Drawing of a House	9 (11.500)	11 (8.500)	20
	23	17	40

Obtained $X^2 = 2.556$. Not significant at .05 level of confidence.

TABLE 17.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a man and a tree by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	14 (12.500)	6 (7.500)	20
Drawing of a Tree	11 (12.500)	9 (7.500)	20
	25	15	40

Obtained X^2 = .960. Not significant at .05 level of confidence.

TABLE 18.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a house and a tree by psychologists

	Correct Selections	Incorrect Selections	Totals
Drawing of a House	9 (10.000)	11 (10.000)	20
Drawing of a Tree	11 (10.000)	9 (10.000)	20
	20	20	40

Obtained X^2 = .400. Not significant at .05 level of confidence.

APPENDIX D

INTERNAL COMPARISONS OF TEACHERS' SELECTIONS OF READERS AND NON-READERS FROM DRAWINGS

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18. Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a house and a tree by teachers 110

TABLE 1.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman and a man by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	282 (253.000)	78 (107.000)	360
Drawing of a Man	224 (253.000)	136 (107.000)	360
	506	214	720

Obtained $X^2 = 22.368$. Significant at better than .01 level of confidence.

TABLE 2.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman and a house by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	282 (247.500)	78 (112.500)	360
Drawing of a House	213 (247.500)	147 (112.500)	360
	495	225	720

Obtained $X^2 = 30.778$. Significant at better than .01 level of confidence.

TABLE 3.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman and a tree by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	282 (255.000)	78 (105.000)	360
Drawing of a Tree	228 (255.000)	132 (105.000)	360
	510	210	720

Obtained $X^2 = 19.604$. Significant at better than .01 level of confidence.

TABLE 4.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a man and a house by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	224 (218.500)	136 (141.500)	360
Drawing of a House	213 (218.500)	147 (141.500)	360
	437	283	720

Obtained $X^2 = .704$. Not significant at .05 level of confidence.

TABLE 5.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a man and a tree by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	224 (226.000)	136 (134.000)	360
Drawing of a Tree	228 (226.000)	132 (134.000)	360
	452	268	720

Obtained X^2 = .096. Not significant at .05 level of confidence.

TABLE 6.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a house and a tree by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a House	213 (220.500)	147 (139.500)	360
Drawing of a Tree	228 (220.500)	132 (139.500)	360
	441	279	720

Obtained X^2 = 1.316. Not significant at .05 level of confidence.

TABLE 7.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman and a man by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	256 (266.000)	134 (124.000)	390
Drawing of a Man	276 (266.000)	114 (124.000)	390
	532	248	780

Obtained $X^2 = 2.364$. Not significant at .05 level of confidence.

TABLE 8.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman and a house by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	256 (255.000)	134 (135.000)	390
Drawing of a House	254 (255.000)	136 (135.000)	390
	510	270	780

Obtained $X^2 = .022$. Not significant at .05 level of confidence.

TABLE 9.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman and a tree by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	256 (260.000)	134 (130.000)	390
Drawing of a Tree	264 (260.000)	126 (130.000)	390
	520	260	780

Obtained X^2 = .370. Not significant at .05 level of confidence.

TABLE 10.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a man and a house by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	276 (265.000)	114 (125.000)	390
Drawing of a House	254 (265.000)	136 (125.000)	390
	530	250	780

Obtained X^2 = 2.850. Not significant at .05 level of confidence.

TABLE 11.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a man and a tree by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	276 (270.000)	114 (120.000)	390
Drawing of a Tree	264 (270.000)	126 (120.000)	390
	540	240	780

Obtained X^2 = .866. Not significant at .05 level of confidence.

TABLE 12.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a house and a tree by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a House	254 (259.000)	136 (131.000)	390
Drawing of a Tree	264 (259.000)	126 (131.000)	390
	518	262	780

Obtained X^2 = .576. Not significant at .05 level of confidence.

TABLE 13.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman and a man by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	222 (242.000)	168 (148.000)	390
Drawing of a Man	262 (242.000)	128 (148.000)	390
	484	296	780

Obtained $X^2 = 8.712$. Significant at better than .02 level of confidence.

TABLE 14.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman and a house by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	222 (243.000)	168 (147.000)	390
Drawing of a House	264 (243.000)	126 (147.000)	390
	486	294	780

Obtained $X^2 = 9.630$. Significant at better than .02 level of confidence.

TABLE 15.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a soman and a tree by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Woman	222 (236.000)	168 (154.000)	390
Drawing of a Tree	250 (236.000)	140 (154.000)	390
	472	308	780

Obtained $X^2 = 4.208$. Significant at better than .05 level of confidence.

TABLE 16.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a man and a house by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	262 (263.000)	128 (127.000)	390
Drawing of a House	264 (263.000)	126 (127.000)	390
	526	254	780

Obtained $X^2 = .024$. Not significant at .05 level of confidence.

TABLE 17.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a man and a tree by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a Man	262 (256.000)	128 (134.000)	390
Drawing of a Tree	250 (256.000)	140 (134.000)	390
	512	268	780

Obtained X^2 = .820. Not significant at .05 level of confidence.

TABLE 18.--Summary of the enumerated data required to compute the X^2 test for possible differences with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a house and a tree by teachers

	Correct Selections	Incorrect Selections	Totals
Drawing of a House	264 (257.000)	126 (133.000)	390
Drawing of a Tree	250 (257.000)	140 (133.000)	390
	514	266	780

Obtained X^2 = 1.118. Not significant at .05 level of confidence.

APPENDIX E

SECOND GRADE COMPARISONS BETWEEN PSYCHOLOGISTS AND TEACHERS

Table | Page

1. Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman 112

2. Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a man 112

3. Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a house 113

4. Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a tree 113

TABLE 1.--Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a woman

	Correct Selections	Incorrect Selections	Totals
Psychologists	20 (15.895)	0 (4.105)	20
Teachers	282 (286.105)	78 (73.895)	360
	302	78	380

Obtained $X^2 = 5.452$. Significant at better than .02 level of confidence.

TABLE 2.--Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a man

	Correct Selections	Incorrect Selections	Totals
Psychologists	20 (12.842)	0 (7.158)	20
Teachers	224 (231.158)	136 (128.842)	360
	244	136	380

Obtained $X^2 = 11.768$. Significant at better than .01 level of confidence.

TABLE 3.--Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a house

	Correct Selections	Incorrect Selections	Totals
Psychologists	16 (12.053)	4 (7.947)	20
Teachers	213 (216.947)	147 (143.053)	360
	229	151	380

Obtained $X^2 = 3.434$. Not significant at .05 level of confidence.

TABLE 4.--Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the second grade level from the drawing of a tree

	Correct Selections	Incorrect Selections	Totals
Psychologists	14 (12.737)	6 (7.263)	20
Teachers	228 (229.263)	132 (130.737)	360
	242	138	380

Obtained $X^2 = .364$. Not significant at .05 level of confidence.

APPENDIX F

FOURTH GRADE COMPARISONS BETWEEN PSYCHOLOGISTS AND TEACHERS

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1. Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman 115

2. Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a man 115

3. Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a house 116

4. Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a tree 116

TABLE 1.--Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a woman

	Correct Selections	Incorrect Selections	Totals
Psychologists	12 (13.073)	8 (6.927)	20
Teachers	256 (254.927)	134 (135.073)	390
	268	142	410

Obtained X^2 = .268. Not significant at .05 level of confidence.

TABLE 2.--Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a man

	Correct Selections	Incorrect Selections	Totals
Psychologists	12 (14.049)	8 (5.951)	20
Teachers	276 (273.951)	114 (116.049)	390
	288	122	410

Obtained X^2 = 1.055. Not significant at .05 level of confidence.

TABLE 3.--Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a house

	Correct Selections	Incorrect Selections	Totals
Psychologists	9 (12.829)	11 (7.171)	20
Teachers	254 (250.171)	136 (139.829)	390
	263	147	410

Obtained $X^2 = 3.350$. Not significant at .05 level of confidence.

TABLE 4.--Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the fourth grade level from the drawing of a tree

	Correct Selections	Incorrect Selections	Totals
Psychologists	12 (13.463)	8 (6.537)	20
Teachers	264 (262.537)	126 (127.463)	390
	276	134	410

Obtained $X^2 = .511$. Not significant at .05 level of confidence.

APPENDIX G

SIXTH GRADE COMPARISONS BETWEEN PSYCHOLOGISTS AND TEACHERS

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1. Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman 118

2. Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a man 118

3. Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a house 119

4. Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a tree 119

TABLE 1.--Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a woman

	Correct Selections	Incorrect Selections	Totals
Psychologists	14 (11.756)	6 (8.244)	20
Teachers	222 (224.244)	168 (165.756)	390
	236	174	410

Obtained $X^2 = 1.091$. Not significant at .05 level of confidence.

TABLE 2.--Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a man

	Correct Selections	Incorrect Selections	Totals
Psychologists	14 (13.463)	6 (6.537)	20
Teachers	262 (262.537)	128 (127.463)	390
	276	134	410

Obtained $X^2 = .068$. Not significant at .05 level of confidence.

TABLE 3.--Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a house

	Correct Selections	Incorrect Selections	Totals
Psychologists	9 (13.317)	11 (6.683)	20
Teachers	264 (259.683)	126 (130.317)	390
	273	137	410

Obtained $X^2 = 4.403$. Significant at better than .05 level of confidence.

TABLE 4.--Summary of the enumerated data required to compute the X^2 test for possible differences between the psychologists and teachers with respect to proficiency in identifying readers and non-readers at the sixth grade level from the drawing of a tree

	Correct Selections	Incorrect Selections	Totals
Psychologists	11 (12.732)	9 (7.268)	20
Teachers	250 (248.268)	140 (141.732)	390
	261	149	410

Obtained $X^2 = .682$. Not significant at .05 level of confidence.