A STUDY OF RORSCHACH INTELLECTUAL

INDICATORS IN ADOLESCENTS

APPROVED:

Roy W Johnson
Major Professor

Jack R. Hayes
Minor Professor

Duane Lingerey
Dean of the School of Education

Robert B. Toulouse
Dean of the Graduate School

A STUDY OF RORSCHACH INTELLECTUAL INDICATORS IN ADOLESCENTS

THESIS

Presented to the Graduate Council of the
North Texas State University in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

By

Melvyn Eugene Giller, B. A.
Denton, Texas
August, 1967

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Hermann Rorschach (19) used ten simple inkblots in the development of his technique of personality measurement. The subject was instructed to relate what he saw on each card, or anything that might be represented there. Elements of these responses were classified into indices of personality and made quantifiable for measurement purposes. Rorschach noted in his initial manuscript that several of the indices reflected the subject's intelligence or intellectual attainment. The ones suggested were high F+%, many kinesthetically determined responses, large W, optimum distribution of W, D, and Dd, orderly sequence, small A%, and a moderate amount of original responses.

Klopfer and Kelly (13) in discussing the estimation of intellectual level from Rorschach responses stress the number and quality of W, the number and quality of M, form accuracy, original responses, variety of content, and succession of responses.

Beck (7) added an organization variable, which he designated Z. "This was an extension of Rorschach's W concept and measured the ability to grasp, new, meaningful, relations between portions of the figures not usually so organized" (4, p. 107).

Statement of Problem

There is little agreement among authors as to which Rorschach indices reflect the subject's intellectual level. It was the purpose of this study to determine if there is a relationship between Rorschach indices of intelligence and scores on the Wechsler Intelligence Scale for Children.

Definitions of and Rationale for Rorschach Indices of Intelligence

Associational Productivity (R).--This index refers to the total number of scored associations on the test. "When the associations are scored consecutively in the ten cards, the number of the last association is R" (7, p. 212). In past research (25, 26) R has been shown to positively correlate with intelligence, especially verbal intelligence.

Number and Percentage of Whole Responses with good form (W, W%).--This index indicates that the subject used the entire inkblot to form an association. "A relatively high number of W represents an emphasis on the abstract forms of thinking and the higher forms of mental activity" (13, p. 259). W is an indicator of psychic strength and creative imagination. Klopfer and Kelly also state:

> Certain W's are achieved by mental inability to organize the whole card into subdivisions, an inability frequently found in certain severe forms of brain diseases. Furthermore, vague or noncommital W interpretations show a minimum of effort to organize the stimulus material or to build up an all-inclusive concept (13, p. 259).

It is for this reason that only W responses with good form will be used in the statistical analysis.

Percentage of Major Detail Responses (D%).--"The D response reflects the degree of importance which one places upon the most practical aspects of daily living" (23). It is a common down to earth type of response; the more average approach to a problem. "D% indicates, in general, an interest in the specific, in details, in the concrete. This may be interpreted as a systematic, everyday, common-sense application of intelligence" (13, p. 260).

Form Level (F+%).--"The F+% indicates the extent to which an individual is capable of structuring his world along the lines of reality; it provides us with an index to his degree of perceptual accuracy and ego control" (23). It is the principal test factor through which an individual shows his thinking from the highest centers and ability to consciously control his mental resources. In reviewing past literature this index is almost universally agreed upon as the best indicator of intelligence (4, 8, 19). Several studies (1, 11, 21) have derived significant correlations between F+% and intelligence.

Percentage of Animal and Animal Detail Responses (A%).--A response is scored as A if the content refers to any species other than man: mammals, birds, fish, invertebrates, and insects (7). Rorschach (19) described the A response as

indicating mental inflexibility. A high A% is indicative of stereotypy of thought processes and negatively correlated to intelligence. This is borne out by Beck (6) who found a significant negative correlation between A% and intelligence.

Number and Percentage of Human and Human Detail Responses (H, H%).--Beck states: "A scoring of H tells that the subject has associated with a human form. These responses may be most significant in what they tell us about the patient's percept of himself, and of persons of importance to him" (7, p. 217). A progressive increase in H may be considered as representing the striving for increased contact with one's fellow man. It reflects the increase in socialization which accompanies advance in age. Thetford et al. (24) state that the number of H responses varies directly with intelligence.

The Human Movement Response (M).--The M response is scored when human movement, either overt or inferred, is observed. "The response, as Rorschach understands it, really reproduces movements or activities that the subject is carrying on within his mental life" (7, p. 72). "The movement score generally relates to an individual's attitude and feelings about the inner reality of his experiences: his self concept, his tensions and conflicts surrounding the acceptance of his self, his fantasies and impulses" (13, p. 268). An M response is a function of psychic creativity which would seem to

correlate with intelligence. Many studies (3, 14, 21, 22, 24) have produced significant correlations, especially with verbal intelligence.

The Number of Content Categories (N).--Rorschach (19) and Klopfer and Kelly (13) believed that the variety of content indicates the intelligence level in the subject. The number of content categories used is a function of experience as well as intelligence. Studies by Spaner (20) and Pauker (18) have shown N to correlate significantly with intelligence.

Survey of the Literature

Much has been written concerning the Rorschach and intelligence. Some studies have drawn their subjects from psychiatric populations and others have employed "normal" populations. Some studies have sought to explore many Rorschach indices and still others have been restricted to a study of only one index. Nevertheless, all are individually important in obtaining a general knowledge of the subject.

An early study by Hertz (11) sought to test several of the Rorschach's intellectual indicators. Using a sample of 300 normal subjects, a correlation of .460 between F+% and I. Q. was computed with all other correlations being somewhat lower and not significant. It is important to note that a correlation of -.108 between A% and I. Q. shows a small negative relationship which is predicted by many authors.

In a study which dealt primarily with establishing Rorschach norms for various age groups, Kerr (12) correlated W and A% with I. Q. A significant correlation of .57 was derived between the number of W responses and I. Q.

Wishner (25) sought to determine the psychometric significance of several Rorschach intellectual indicators in a group of 42 neurotic patients in a psychiatric outpatient clinic. Using the Wechsler-Bellvue intelligence test as the criterion of intelligence, 17 reputed intelligence indicators in the Rorschach were explored. Wishner thought his use of a restricted sample of neurotic patients was highly significant because as he states, "Almost all of the research has utilized college populations or children and most of it is with subjects of superior intelligence. The normal adult population has barely been touched, neurotics hardly at all" (25, p. 266).

Of all the Rorschach factors utilized, R yielded the highest correlations: .801 with verbal scaled score, .753 with information, and .532 with similarities. W correlated .745 with vocabulary and .634 with digit symbol.

Altus and Thompson (3) attempted to determine certain correlates of intelligence in the group Rorschach. A group of 128 college students were given the group Rorschach in 1946 and a second group of 100 college students were twice given the Rorschach in the summer of 1947. The second group was given the group Rorschach twice to permit the calculation

of test-retest reliability coefficients. The Altus Measure of Verbal Aptitude and the Ohio Psychological Examination Form 21 were used as the criteria of intelligence. From 75 factors which were extracted from the individual Rorschach protocols, 15 items saturated with intelligence were abstracted and used in a statistical analysis.

Their findings showed that the absolute number of M's and W's were most highly correlated with intelligence (.63, .53). "A large number of M in an individual Rorschach protocol appears to be prima facie evidence of relatively superior intelligence" (3, p. 346).

A 1949 study by Burnham (9) sought to find the degree of empirical relationship, dependent upon intelligence or other factors, between the Rorschach H% and Wechsler-Bellvue Picture Arrangement scores. The author's rationale is expressed, "It is assumed that if both Rorschach human movement responses and Wechsler-Bellvue Picture Arrangement scores are indicative of 'social intelligence' or 'interest in people' and are also related to general intelligence, some relationship should be demonstrable between them" (9, p. 206).

A randomly selected group of ninety adult male Mental Hygiene clinic patients was the sample used and a correlation of .09 was established between the two scores. Burnham summarizes: "For this particular group there appears to be no relationship between these criteria. The combined operation

of general and social intelligence factors produces a correlation which is negligible" (9, p. 209).

Wittenborn (26) attempted to determine the relationship between scores on mental tests and the Rorschach scoring categories for location and determinant factors. Sixty-eight Yale freshmen were divided into high and low groups on the basis of scores on the College Entrance Examination and the Yale Freshman Aptitude Test. The Rorschach was administered to each subject and several indices were correlated with mental ability scores derived from the two tests. From the results the author concluded that if the relationship between any Rorschach location or determinant factor and any of the mental ability scores used in the study was linear, the evidence from the sample indicated that the value of the scores for predicting individual mental ability was scant. Wittenborn also mentioned the slight tendency for total number of Rorschach responses (R) and number of human movement responses to be positively correlated with several measures of mental ability.

Tucker (24) sought to investigate the relationship between Rorschach human and other movement responses and intelligence. Subjects in the study were 100 married and unmarried male adult neurotic veterans of World Wars I and II. The Rorschach and Wechsler-Bellvue Intelligence Scale were administered to each subject. Tucker concluded from the results: "It was found that human movement (M) scores and

minor movement (F M & m) scores correlated at the same level of significance with intelligence test scores and that the difference in the two correlations was not statistically significant. Both movement scores correlated positively and significantly with I. Q. (.262, .350), but neither correlation was high enough to indicate that movement scores could be considered predictive of intelligence" (24, p. 286).

An unpublished doctoral thesis by Spaner (20) had as its purpose to investigate the relationship between the Rorschach and the Wechsler-Bellvue Intelligence Scale. The author states that in performing the tasks presented by either of these instruments, the subject is revealing himself as a whole, and that the personality characteristics and intelligence factors all play a part in his handling of the problems. Fifteen hypotheses were formulated, each predicting a relationship between a Rorschach index and a Wechsler-Bellvue subtest score, based on past research and general rationale.

Rorschach test and Wechsler-Bellvue Intelligence Scale records of 229 white male patients of three Veterans Administration neuropsychiatric installations were used for the data in this study. Only three hypotheses produced correlations which are statistically significant at the 1 per cent level. They were Vocabulary and number of content categories used (.339), Picture Arrangement and H% (-.328), and Picture Arrangement and M (.356).

After administering the Rorschach to thirty undergraduate students, Lotsof (15) asked each student to write verbal descriptions of five hypothetical situations. These descriptions were scored on the basis of total words, total adjectives, and total verbs, and were correlated with several of the Rorschach indices. The correlations were then submitted to a factor analysis with the four factors obtained being "Verbal Intelligence," "Productivity," "Elaboration," and "Individuality." It is significant to note that four Rorschach indices (M, R, W%, A%) supported by many as intellectual indicators did not have high loadings under "Verbal Intelligence."

Rorschach and Wechsler-Bellvue test records of a 400 case group of clinic patients were used in a study by Elias Abrams (1). The objectives of the study were to determine the relationships between certain Rorschach elements (F+%, M, W, R) and the Wechsler-Bellvue Full Scale I. Q. and to estimate the Full Scale I. Q. from a composite of these elements. The Wechsler-Bellvue Full Scale I. Q. correlated .354 with F+%, .360 with M, .358 with W, and .329 with R. Abrams derived the following formula as a product of his statistical results:

$$X=\frac{2a + 176 + 9c + 2d}{10} + 76$$

Where: a is F+ per cent

b is the number of M's

c is the number of W's

d is the total number of responses (R)

x is the estimated measure of intelligence equivalent to a Wechsler-Bellvue Intelligence Quotiant (1, p. 83).

Fielding and Brown (10) tested Abrams' formula on 107 cases comprising an equal number of psychotic and psychoneurotic male patients. Their results indicate that the formula is satisfactory for those groups whose W-B I. Q.'s fall between 90 and 110, and for those Rorschachs in which M is greater than 3. "Borderline patients, those brighter than 110, and those with M inhibition in the Rorschach cannot be evaluated reliably by means of the Abrams formula" (10).

A study by Armitage et al. (5) was undertaken to determine if the accuracy with which the level of intelligence (operationally defined as Wechsler-Bellvue I. Q.) of the individual neuropsychiatric hospital patient could be predicted from the Rorschach. Two approaches were used to study this problem. One was an objective, statistical approach in which a number of Rorschach factors were correlated with Wechsler-Bellvue Form I total I. Q. R, M, and N correlated .26, .26 and .23, respectively, with total I. Q. ($p \leq .01$). However W, A%, and F+% correlated only .04, -.01, and -.14, respectively. The authors believed this approach to be ineffective in the estimation of intelligence. The second approach involved subjective estimates of the intellectual status of each individual patient, based upon (a) the Rorschach

psychogram and (b) the Rorschach protocol. Four clinicians, unfamiliar with the study, estimated the I. Q. levels of each of a sample of 120 cases from their Rorschach protocols. The same clinicians then estimated the I. Q. levels of 120 more cases from the Rorschach psychograms. For each of these procedures the estimates of each of the judges were correct (within $\pm$ 10 points of the criterion) in a greater percentage of cases than would be expected by chance (significant beyond the .001 level in each case).

An abstract of a doctoral dissertation by Ogdon (17) stated that the study used as subjects sixty familial mental defectives at the Missouri State School for the Feeble Minded and Epileptic. All subjects were examined with the Rorschach and Wechsler-Bellvue Scale. The study posed two questions, one of which was, "Are the purported Rorschach signs of intelligence significantly correlated with Wechsler I. Q. in this diagnostic group?" (17). Eight purported signs of intelligence (R, F, M, FM, W, P, N, C) correlated significantly with Wechsler I. Q.

Spiegelman (21) investigated the relationship between intellectual evaluation by means of Rorschach form-level assessment and psychometric I. Q. assessment as given in the Wechsler-Bellvue Intelligence Scale (Verbal scale). Both tests were administered to 120 neuro-psychiatric patients with a mean age of 26. The results of the study were: "A correlation of .55, significant beyond the 1% level, between

F+% and I. Q. was found, which was significantly higher (6% level) than the correlations between the number of responses and I. Q. (.32) and the number of human movement responses and I. Q. (.30)" (21, p. 342).

Another study by Lotsof et al. (16) hypothesized that the Rorschach should exhibit a high degree of overlap with the measure of verbal intelligence. The verbal portion of the WISC was selected as the external measure of verbal intelligence.

Fifty-four boys and eighteen girls were administered both the Rorschach and WISC as part of a routine battery of tests. Selected Rorschach variables and WISC subtests were intercorrelated and the resulting correlation matrix subjected to a factor analysis. W correlated .24 with Performance I. Q. and .29 with information, M correlated .30 with Verbal I. Q. and .33 with vocabulary, H and Hd correlated .27 with object assembly, and R correlated .23 with picture completion. As in his previous study (15) four factors were extracted, one of them being Verbal Intelligence.

The results are in agreement with the past study in that the Rorschach variables did not appear to load on the verbal intelligence factor to a high degree. "Thus it would appear that if the clinician attempted to use individual variables of the Rorschach to predict intellectual performance it would result in inaccurate prediction" (16, p. 300).

Tanaka (22), employing a sample of 100 delinquent boys, sought to test the Rorschach movement responses in relation to intelligence. The Wechsler scale was used as the criterion of intelligence. The author found a positive correlation between M and I. Q. (.36) and added that the correlation was higher with verbal I. Q. than non-verbal I. Q.

A study by Levine, Spivack, and Wight (14) found that in a survey of studies in which M was correlated with I. Q., a median value of .26 was found. None of the studies dealt with atypical children, and the two studies dealing with adult schizophrenics reported near zero correlations.

The M-I. Q. correlations obtained for a group of 155 atypical children was .20, .41 for a group of 132 psychiatric outpatients, .49 for a group of 91 psychiatrically hospitalized, non-schizophrenic patients, and .37 for a group of 209 schizophrenic patients.

Pauker (18) used a sample of 51 psychiatric patients, ranging in WAIS Full Scale I. Q. from 53 to 120, in determining if there was a relationship between the number of Rorschach content categories and I. Q. A correlation of .47 was found, which is statistically significant at the .01 level.

Allison and Blatt (2) sought to examine the relationship between whole responses and intelligence, stressing the qualitative features of the whole responses. Five subjects were selected in each of eight ten-point WAIS I. Q. intervals ranging from 60-70 to 130-140. The Friedman qualitative

scoring system was used to divide all whole responses into seven categories based on both the level of cognitive complexity and the degree and accuracy of adherence to reality. The authors found that only the cognitively complex and accurately perceived whole responses had a positive significant relationship to I. Q. (.74, .77, .87).

From this brief review of the literature it is evident that some of the data is contradictory to the beliefs of Rorschach, Klopfer and Kelly, and Beck as to the indices that correlate with intelligence. Such indices as F+%, W, M, and R have in general correlated significantly with intelligence and D%, A%, and N have produced only rare significant correlations. It is important to note that most of the studies used as subjects either college students or adult populations. None of the studies used subjects of adolescent age.

There seems to be a need for further exploration in this area for the purpose of clarifying which Rorschach indices are indicators of intelligence. R. W. W%, D%, F+%, A%, H, H%, M, and N have each been selected for statistical analysis on the basis of one or more of these three factors; (1) Rorschach, Klopfer and Kelly, and Beck have stated that the index is an indicator of intelligence, (2) extensive definition of the index implies some relation to intelligence, (3) past literature indicates that the index correlates positively with intelligence.

Subjects and Scoring Procedures

The subjects used in this study were 52 white pupils, 43 boys and 9 girls between the ages of 12 and 15. All the subjects had, at one time, been referred to the testing bureau of the Dallas Independent School District and were administered, among other tests, the Wechsler Intelligence Scale for Children and the Rorschach. The reason for referral to the testing bureau was the same for each pupil: child shows overt signs of emotional disturbance, nervousness, restlessness, lack of interest in school work.

Each WISC raw score and scale score was rechecked to prevent any previous mistakes in score calculation. The corresponding Rorschach protocols received two independent scorings, using the Beck system (7), one by the author and again by a fellow graduate student. Differences in scoring were discussed and a mutually agreed-upon choice was the result.

CHAPTER BIBLIOGRAPHY

1. Abrams, Elias, "Prediction of Intelligence from Certain Rorschach Factors," Journal of Clinical Psychology, XI (1955), 81-83.

2. Allison, Joel and Sidney J. Blatt, "The Relationship of Rorschach Whole Responses to Intelligence," Journal of Projective Techniques and Personality Assessment, XXVIII (1964), 255-260.

3. Altus, W. D. and Grace M. Thompson, "The Rorschach as a Measure of Intelligence," Journal of Consulting Psychology, XIII (1949), 341-347.

4. Anderson, Harold H. and Gladys L. Anderson, An Introduction to Projective Techniques, Englewood Cliffs, New Jersey, Prentice-Hall, 1951.

5. Armitage, S., P. Greenberg and P. Daston, "Predicting Intelligence from the Rorschach," Journal of Consulting Psychology, XIX (1955), 321-329.

6. Beck, S. J., "Configurational Tendencies in Rorschach Responses," American Journal of Psychology, XIII (1933), 519-532.

7. _____, Rorschach's Test: I. Basic Processes, New York, Grune and Stratton, 1950.

8. Bohm, Ewald, Rorschach Test Diagnosis, New York, Grune and Stratton, 1958.

9. Burnham, Catherine A., "A Study of the Degree of Relationship Between Rorschach H% and Wechsler-Bellvue Picture Arrangement Scores," Rorschach Research Exchange, XIII (1949), 206-209.

10. Fielding, Benjamin and Ted Brown, "Prediction of Intelligence from Certain Rorschach Factors," Journal of Clinical Psychology, XII (1956), 196-197.

11. Hertz, Marguerite, "The Reliability of the Rorschach Ink Blot Test," Journal of Applied Psychology, XVIII (1934), 461-477.

12. Kerr, Martin, "The Rorschach Test Applied to Children," British Journal of Psychology, XXV (1934), 170-185.

13. Klopfer, Bruno and D. M. Kelly, The Rorschach Technique, New York, World Book Company, 1942.

14. Levine, Murray, George Spivack and Byron Wight, "The Inhibition Process, Rorschach Human Movement Responses and Intelligence," Journal of Consulting Psychology, XXIII (1959), 306-311.

15. Lotsof, Erwin J., "Intelligence, Verbal Fluency, and the Rorschach Test," Journal of Consulting Psychology, XVII (1953), 21-24.

16. _____, Andrew Comrey, W. Bogartz and P. Armsfield, "A Factor Analysis of the WISC and Rorschach," Journal of Projective Techniques, XXII (1958), 297-301.

17. Ogdon, Donald P., "Rorschach Relationships with Intelligence among Familial Mental Defectives," unpublished doctoral dissertation, Department of Psychology, Missouri University, Columbia, Missouri, 1955.

18. Pauker, J. D., "Relationship of Rorschach Content Categories to Intelligence," Journal of Projective Techniques and Personality Assessment, XXVII (1963), 220-221.

19. Rorschach, H., Psychodiagnostik: Methodik und Ergenbnisse eines Wahrenhungsdiagnostichen Experiments, 2nd ed., Bern and Berlin, Huber, 1932, translated by P. Lemkau and B. Kronenberg, New York, Grune and Stratton (distr.), 1942.

20. Spaner, Fred E., "An Analysis of the Relationships Between Some Rorschach Test Determinants and Subtest Scores on the Wechsler-Bellvue Scale," unpublished doctoral dissertation, Department of Psychology, Purdue University, Lafayette, Indiana, 1950.

21. Spiegelman, Marvin, "Rorschach Form-Level, Intellectual Functioning and Potential," Journal of Projective Techniques, XX (1956), 335-343.

22. Tanaka, Fuzio, "Rorschach Movement Responses in Relation to Intelligence," Japanese Journal of Educational Psychology, VI (1958), 85-91.

23. Thetford, William N., Herman B. Molish and Samuel J. Beck, "Developmental Aspects of Personality Structure in Normal Children," Journal of Projective Techniques, XV (1951), 58-78.

24. Tucker, J. E., "Rorschach Human and Other Movement in Relation to Intelligence," Journal of Consulting Psychology, XIV (1950), 283-286.

25. Wishner, Julius, "Rorschach Intellectual Indicators in Neurotics," American Journal of Orthopsychiatry, XVIII (1948), 265-279.

26. Wittenborn, J. R., "Certain Rorschach Response Categories and Mental Abilities," Journal of Applied Psychology, XXXIII (1949), 330-338.

CHAPTER II

RESULTS

Statistical Procedure

Each of the ten Rorschach indices was correlated with thirteen scores on the Wechsler Intelligence Scale for Children. The scores included total I. Q., verbal I. Q., performance I. Q., and each of the verbal and performance subtest scores. The Pearson Product Moment Correlation was used as the statistic.

Analysis of Correlational Data

Associational Productivity (R).--As shown in Table I, the total number of scored associations did not correlate significantly with any of the WISC scores. This is

TABLE I

CORRELATIONS OF R WITH WISC SCORES

WISC Scores	R
TIQ	.083
VIQ	.042
PIQ	.115
INFO	-.018
COMP	.068
ARITH	.121
SIM	-.033
VOC	.048
PC	.172
PA	.118
BD	-.041
OA	.239
COD	-.091

inconsistent with the work of Wishner (7), who derived correlations of .801, .753, and .532 in correlating R with verbal scaled score, information, and similarities, respectively, in his sample of neurotics. Klopfer and Davidson (5) state that the total number of responses generally indicates the productive capacity of an individual, the more intelligent persons usually being the more productive. "A small number of responses may indicate unproductivity because of limited capacity or because of disturbed emotionality" (5, p. 145). The subjects in this study were referred to the testing bureau for reasons closely related to "disturbed emotionality." As shown in Table II, R for this group differed beyond the .01 level of significance from the Ames study (2) of normal adolescents of the same age group. Therefore, it is suggested

TABLE II

MEAN AND STANDARD DEVIATION OF RORSCHACH SCORES AS COMPARED WITH AMES STUDY

Rorschach Scores	Giller, N=52		Ames, N=100		t
	M	SD	M	SD	
R	13.23	5.05	20.95	11.98	5.626***
W	7.85	2.44	. . .*	. . .	. . .
W%	63.56	22.00	46.55	25.28	4.295***
D%	20.12	19.54	45.38	20.0	7.496***
F+%	74.96	23.84	92.50	6.9	4.418***
A%	63.06	19.99	47.32	14.3	5.045***
H	1.94	1.49	. . .*	. . .	. . .
H%	14.65	10.62	18.5	11.95	2.036**
M	1.42	1.26	2.22	2.2	2.847***
N	5.00	1.87	. . .*	. . .	. . .

*Data not available

**Significant $p \leq .05$

***Significant $p \leq .01$

that the results of correlations with R were contaminated to some extent due to the sample used.

Number and Percentage of Whole Responses with good form (W, W%).--Both W and W% showed several significant correlations. The number of good whole responses (W) correlated .330

TABLE III

CORRELATIONS OF W AND W% WITH WISC SCORES

WISC Scores	W	W%
TIQ	.330*	.291*
VIQ	.316*	.279*
PIQ	.290*	.265
INFO	.262	.286*
COMP	.245	.205
ARITH	.247	.156
SIM	.182	.211
VOC	.375**	.296*
PC	.325*	.198
PA	.178	.087
BD	.246	.335*
OA	.162	.046
COD	.087	.264

*Significant $p \leq .05$

**Significant $p \leq .01$

with total I. Q., .316 with verbal I. Q., .290 with performance I. Q., and .325 with picture completion, all of which are significant at the .05 level. W also correlated .375 with vocabulary, significant at the .01 level. W% correlated .291 with total I. Q., .279 with performance I. Q., .286 with information, .296 with vocabulary, and .335 with block design.

These results would seem to indicate that both W and W% are indicators of intelligence, especially verbal intelligence, as Rorschach previously stated (6) and as presented in several studies (1, 4, 7). Verbal facility, ability to reflect a range of ideas, memory, and concept formation are characteristics common to both the use of good W's and high verbal scorings on the WISC. An organizing and concept-oriented mind (W) would be one with a vast reservoir of information and experience (verbal intelligence). Thus the relationship between verbal intelligence and vocabulary, which is explicitly a product of memory and concept formation, and W seems a logical one.

Percentage of Major Detail Responses (D%).--Because D% is supposed to represent a practical approach to the world, a relation between this factor and one of the performance series might be expected. However, D% did not correlate with any of

TABLE IV

CORRELATIONS OF D% WITH WISC SCORES

WISC Scores	D%
TIQ	.084
VIQ	.074
PIQ	.077
INFO	-.015
COMP	.082
ARITH	.173
SIM	.095
VOC	.042
PC	.070
PA	.204
BD	-.136
OA	.156
COD	-.070

the WISC scores. This lack of correlation might again be the result of the sample used in this study. D% for this sample differed beyond the .01 level of significance from the Ames normative data, as shown in Table II. It is doubtful whether emotionally disturbed children possess the practical common-sense qualities used in the production of D, as evidenced by their impractical adjustment to their daily life. In general, D% is not an efficient indicator of intelligence in this group. Past research with D% is in agreement with these results.

Form Level (F+%).--The one Rorschach factor found in the past to correlate with intelligence most consistently is F+%. This factor was highly correlated ($p \leq .01$) with all WISC scores except object assembly and coding. It appears that

TABLE V

CORRELATIONS OF F+% WITH WISC SCORES

WISC Scores	F+%
TIQ	.557**
VIQ	.482**
PIQ	.540**
INFO	.426**
COMP	.387**
ARITH	.463**
SIM	.407**
VOC	.444**
PC	.612**
PA	.404**
BD	.417**
OA	.098
COD	.293*

*Significant $p \leq .05$

**Significant $p \leq .01$

F+% is a good indicator of both verbal I. Q. and performance I. Q. Apparently almost all factors of verbal intelligence such as memory, concept formation, attention, experience, and judgment, are used in producing good clear perceptual form. As far as the relationship between F+% and a high performance score is concerned, good visual organization, concentration, and attention (PA, PC) and good concept formation (BD) are the qualities that appear to be synonymous with high form level.

Percentage of Animal and Animal Detail Responses (A%).--A% did not correlate significantly with any WISC score. The possibility of a significant negative correlation was hypothesized, but as in most of the previous research no results

TABLE VI

CORRELATIONS OF A% WITH WISC SCORES

WISC Scores	A%
TIQ	-.132
VIQ	-.144
PIQ	-.068
INFO	-.173
COMP	-.133
ARITH	-.141
SIM	-.046
VOC	-.168
PC	-.105
PA	.052
BD	-.161
OA	.086
COD	-.153

were found. Again, reference may be made to Table II to show that possible contamination may have resulted with the use of

this sample. It is obvious from these data that stereotyped thought processes and inflexibility are not indicative of low intelligence in this group.

Number and Percentage of Human and Human Detail Responses (H, H%).--H and H% both correlated significantly with total I. Q. ($p \leq .05$) and with verbal I. Q. (H, $p \leq .05$; H%, $p \leq .01$). And each factor correlated significantly with four of five verbal subtests. From this evidence there seems to be a

TABLE VII

CORRELATIONS OF H AND H% WITH WISC SCORES

WISC Scores	H	H%
TIQ	.327*	.330*
VIQ	.347*	.367**
PIQ	.218	.200
INFO	.317*	.363**
COMP	.298*	.325*
ARITH	.282*	.258
SIM	.313*	.330*
VOC	.255	.285*
PC	.290*	.248
PA	.290*	.217
BD	.083	.123
OA	-.104	-.235
COD	.175	.316*

*Significant $p \leq .05$

** Significant $p \leq .01$

definite relationship between verbal I. Q. and the human content response. However, past research has shown this relationship to be inconclusive and generally unsupported.

It has been said that H indicates degree of socialization and strength of self-concept. These data indicate that a

person high in these qualities would seemingly be high in general intelligence.

Anderson and Anderson (3) state that one's educational environment, intellectual enrichment, and experience are factors that affect all verbal subtests and verbal I. Q. Perhaps in adolescents a high degree of socialization and strong self-concept are the products of these factors.

The Human Movement Response (M).--The past results have shown that M is significantly correlated with verbal intelligence, and the results of this study agree. A person with a

TABLE VIII

CORRELATIONS OF M WITH WISC SCORES

WISC Scores	M
TIQ	.312*
VIQ	.337*
PIQ	.202
INFO	.370**
COMP	.232
ARITH	.223
SIM	.305*
VOC	.250
PC	.312*
PA	.298*
BD	.063
OA	-.102
COD	.113

*Significant $p \leq .05$

**Significant $p \leq .01$

high number of M responses is a creative thinker who possesses a rich imagination and psychic strength. Such qualities are also involved in verbal intelligence.

The relation of M and performance I. Q. is questionable though it is significantly correlated with picture arrangement and picture completion ($p \leq .05$).

The Number of Content Categories (N).--Small but significant correlations were found between N and total I. Q., vocabulary, and picture completion ($p \leq .05$). Some relationship between N and vocabulary is plausible because both of

TABLE IX

CORRELATIONS OF N WITH WISC SCORES

WISC Scores	N
TIQ	.285*
VIQ	.235
PIQ	.270
INFO	.204
COMP	.194
ARITH	.261
SIM	.148
VOC	.279*
PC	.278*
PA	.049
BD	.250
OA	.258
COD	.170

*Significant $p \leq .05$

these to some extent measure the subject's range of ideas or diversity of interests. The relationship between N and picture completion is small but surprising. Any rationale for this correlation would be only speculation.

CHAPTER BIBLIOGRAPHY

1. Altus, W. D. and Grace M. Thompson, "The Rorschach as a Measure of Intelligence," Journal of Consulting Psychology, XIII (1949), 341-347.

2. Ames, L. B., R. W. Metraux and R. N. Walker, Adolescent Rorschach Responses, New York, Harper and Brothers, 1959.

3. Anderson, Harold H. and Gladys L. Anderson, An Introduction to Projective Techniques, Englewood Cliffs, New Jersey, Prentice-Hall, 1951.

4. Kerr, Martin, "The Rorschach Test as Applied to Children," British Journal of Psychology, XXV (1934), 170-185.

5. Klopfer, Bruno and Helen H. Davidson, The Rorschach Technique, New York, Harcourt Brace, 1962.

6. Rorschach, H., Psychodiagnostik: Methodik und Ergenbnisse eines Wahrenhungsdiagnostichen Experiments, 2nd ed., Bern and Berlin, Huber, 1932, translated by P. Lemkau and B. Kronenberg, New York, Grune and Stratton (distr.), 1942.

7. Wishner, Julius, "Rorschach Intellectual Indicators in Neurotics," American Journal of Orthopsychiatry, XVIII (1948), 265-279.

CHAPTER III

SUMMARY AND CONCLUSION

Rorschach protocols and WISC records of 52 pupils between the ages of 12 and 15 were used as the sources of data for this study. All the subjects had, at one time, been referred to the Dallas Independent School District testing bureau for reasons of overt emotional disturbance.

Ten Rorschach indices (R, W, W%, D%, F+%, A%, H, H%, M, N) were selected as possible indicators of intelligence, and were correlated with 13 scores on the WISC. The Pearson r was used as the statistic. The results of these correlations follow:

1. R did not correlate with any WISC score. The possibility of contamination of results due to the sample used in this study is projected.

2. Results indicate that W and W% are indicators of intelligence, especially verbal intelligence. Each correlated significantly with five WISC scores.

3. D% did not correlate with any of the WISC scores. Though the basis for the support of a positive D% - I. Q. relationship was tenuous, sample contamination can be projected as a possible reason for the negligible results.

4. F+% correlated ($p \leq .01$) with all WISC scores except object assembly and coding. It appears that this factor

is a good indicator of both verbal I. Q. and performance I. Q.

5. A% did not correlate significantly with any WISC score. The projected A% - I. Q. negative correlation, as in most of the previous research, did not result.

6. H and H% correlated significantly with verbal I. Q. and four of five verbal subtests. From these results it would seem that both factors are good indicators of verbal intelligence.

7. M correlated significantly with verbal I. Q. and was highly correlated with vocabulary. The relation of M and performance I. Q. is questionable.

8. N correlated significantly with 3 WISC scores. From these results no definite conclusion can be made of the relationship of N to intelligence. However, the possibility of further research with this factor would be warranted.

In conclusion it is evident from these data that F+% is the best indicator of both verbal and performance I. Q. W, W%, H, H%, and M are good indicators of verbal I. Q. However, their relationship with performance I. Q. is questionable and warrants further investigation.

APPENDIX

TABLE X

MEAN, STANDARD DEVIATION, AND RANGE OF RORSCHACH SCORES

Rorschach Scores	M	SD	R
R	13.23	5.05	8-38
W	7.85	2.44	2-17
W%	63.56	22.00	15-100
D%	20.12	19.54	0-66
F+%	74.96	23.84	9-100
A%	63.06	19.99	18-100
H	1.94	1.49	0-6
H%	14.65	10.62	0-40
M	1.42	1.26	0-5
N	5.00	1.87	1-10

TABLE XI

CORRELATIONS OF RORSCHACH FACTORS WITH WISC SCORES

WISC Scores	R	W	W%	D%	F+%	A%	H	H%	M	N
TIQ	.083	.330*	.291*	.084	.557**	-.132	.327*	.330*	.312*	.285*
VIQ	.042	.316*	.279*	.074	.482**	-.144	.347*	.367**	.337*	.235
PIQ	.115	.290*	.265	.077	.540**	-.068	.218	.200	.202	.270
INFO	-.018	.262	.286*	-.015	.426**	-.173	.317*	.363**	.370**	.204
COMP	.068	.245	.205	.082	.387**	-.133	.298*	.325*	.232	.194
ARITH	.121	.247	.156	.173	.463**	-.141	.282*	.258	.223	.261
SIM	-.033	.182	.211	.095	.407**	-.046	.313*	.330*	.305*	.148
VOC	.048	.375**	.296*	.042	.444**	-.168	.255	.285*	.250	.279*
PC	.172	.325*	.198	.070	.612**	-.105	.290*	.248	.312*	.278*
PA	.118	.178	.087	.204	.404**	.052	.290*	.217	.298*	.049
BD	-.041	.246	.335*	-.136	.417**	-.161	.083	.123	.063	.250
OA	.239	.162	.046	.156	.098	.086	-.104	-.235	-.102	.258
COD	-.091	.087	.264	-.070	.293*	-.153	.175	.316*	.113	.170

*Significant $p \leq .05$

**Significant $p \leq .01$

TABLE XII

WISC AND RORSCHACH SCORES OF SUBJECTS

Subject	WISC Scores												
	TIQ	VIQ	PIQ	INFO	COMP	ARITH	SIM	VOC	PC	PA	BD	OA	COD
1	121	70	51	10	12	13	18	17	11	13	11	6	10
2	75	32	43	6	8	3	7	8	7	8	9	9	10
3	76	37	39	9	9	7	5	7	7	9	6	6	11
4	117	60	57	12	12	14	12	10	13	15	12	10	7
5	78	32	46	7	6	6	6	7	11	9	8	10	8
6	108	55	53	11	13	7	13	11	9	7	13	12	12
7	103	50	53	8	10	13	10	9	8	15	11	10	9
8	94	46	48	10	11	11	7	7	11	8	8	11	10
9	93	40	53	8	8	8	8	8	10	12	11	14	6
10	113	57	56	9	13	12	13	10	9	15	12	14	6
11	110	60	50	11	12	14	11	12	10	8	8	12	12
12	95	49	46	8	11	9	10	11	7	13	8	9	9
13	85	38	47	6	6	13	8	5	9	10	9	8	11
14	55	24	31	6	4	3	6	5	4	3	9	9	6
15	79	35	44	7	8	7	4	9	9	7	9	11	8
16	85	41	44	7	11	7	9	7	9	7	7	13	8
17	96	47	49	9	7	9	12	10	12	8	11	10	8
18	64	26	38	6	5	6	5	4	6	10	5	9	8
19	83	43	40	8	9	6	10	10	6	8	7	10	9
20	131	74	57	15	16	13	16	14	8	9	13	13	14
21	113	69	53	14	12	13	12	9	7	9	10	14	13
22	97	56	41	13	10	9	12	12	11	8	7	5	10
23	76	33	43	5	6	7	8	7	4	12	6	10	11
24	113	55	58	14	6	10	12	13	14	14	10	9	11
25	91	45	46	8	12	8	9	8	10	13	8	8	7
26	97	48	49	11	10	8	9	10	10	11	10	5	13
27	94	53	41	11	12	7	10	13	11	8	8	8	6
28	56	24	32	5	5	5	6	3	4	5	9	10	4
29	116	64	52	14	12	12	13	13	10	12	11	10	9
30	53	25	28	5	4	3	5	8	3	3	5	10	7
31	48	18	30	4	4	2	4	4	6	4	6	7	7
32	49	24	25	4	8	4	4	4	6	3	5	6	5
33	124	67	57	16	13	12	13	13	8	11	12	12	14
34	79	32	47	6	8	7	5	6	11	4	12	9	11
35	95	51	44	8	13	7	11	12	11	9	8	10	6
36	88	40	48	9	5	9	8	9	6	10	11	12	9
37	90	44	46	8	17	6	6	7	10	6	12	7	11

TABLE XII--Continued

Rorschach Scores									
R	W	W%	D%	F+%	A%	H	H%	M	N
15	9	60	40	83	28	4	27	1	10
16	9	56	44	66	81	2	12	8	4
12	8	67	8	74	50	3	25	2	6
16	10	62	31	56	81	1	6	1	3
17	8	47	53	100	70	3	17	2	7
10	10	100	0	74	50	1	10	0	5
13	10	77	23	83	69	1	8	1	5
23	7	30	56	80	52	4	17	3	7
10	10	100	0	80	70	1	10	1	5
20	8	40	50	83	55	6	30	3	6
17	8	47	47	100	88	1	6	1	6
14	9	64	36	88	100	0	0	1	2
10	9	90	0	100	50	3	30	1	5
10	9	90	0	50	40	0	0	0	5
38	17	45	45	55	47	2	5	1	10
16	9	56	44	89	75	0	0	0	5
17	7	41	41	100	88	1	6	1	5
18	4	22	66	42	61	3	11	1	7
10	8	80	0	25	100	1	10	1	3
10	9	90	10	100	60	3	30	3	5
10	9	90	0	50	70	1	10	1	4
16	9	56	38	100	62	6	38	5	2
13	8	62	38	91	85	2	15	1	3
9	9	100	0	100	44	2	22	2	5
11	3	27	9	33	100	0	0	0	2
10	8	80	0	80	50	2	20	1	4
15	11	73	20	100	47	4	27	4	5
10	4	40	0	50	100	0	0	0	1
17	10	59	41	100	70	3	18	3	5
13	4	31	23	20	69	0	0	0	4
11	2	18	9	9	82	1	9	0	4
10	6	60	0	50	70	0	0	0	2
11	5	45	18	70	36	2	18	1	7
12	7	58	8	62	75	1	8	1	7
11	9	82	9	83	36	2	18	1	7
10	7	70	0	50	30	1	10	0	5
10	7	70	20	88	60	3	30	1	7

TABLE XII--Continued

Subject	WISC Scores												
	TIQ	VIQ	PIQ	INFO	COMP	ARITH	SIM	VOC	PC	PA	BD	OA	COD
38	104	61	43	10	16	13	11	11	6	6	10	7	14
39	96	48	48	11	8	10	10	9	9	10	12	7	10
40	111	46	65	9	12	11	5	9	13	9	16	13	14
41	112	50	62	9	11	9	8	13	15	12	14	13	8
42	109	55	54	12	7	9	11	9	13	12	11	10	8
43	109	59	50	14	9	9	14	13	12	8	11	11	8
44	129	60	69	11	14	12	13	10	13	14	14	15	13
45	88	48	40	12	6	10	11	9	6	8	8	11	7
46	117	59	58	13	13	10	10	13	12	11	14	9	12
47	69	32	37	6	7	4	9	6	9	7	7	5	9
48	66	24	42	4	6	5	5	4	6	9	8	10	9
49	121	55	66	12	9	9	11	14	12	14	15	11	14
50	103	54	49	12	12	9	11	10	10	8	10	10	11
51	46	25	21	4	6	7	5	3	4	7	3	3	4
52	100	55	45	13	10	11	11	10	9	12	12	7	5

TABLE XII--Continued

Rorschach Scores									
R	W	W%	D%	F+%	A%	H	H%	M	N
10	7	70	10	50	40	2	20	1	5
8	4	50	25	100	88	0	0	0	4
11	10	91	9	100	18	1	9	0	6
10	8	80	0	100	70	0	0	0	5
14	10	71	7	86	64	4	28	4	4
11	8	73	18	80	45	1	9	0	7
26	4	15	62	100	81	4	15	4	7
12	6	50	25	50	75	1	8	1	8
10	10	100	0	100	50	3	30	3	4
10	7	70	0	80	60	2	20	3	3
10	6	60	20	50	40	2	20	2	4
10	7	70	0	75	90	2	20	2	4
10	10	100	0	100	60	4	40	2	5
10	6	60	10	75	50	2	20	2	3
15	9	60	33	86	47	3	20	3	6

BIBLIOGRAPHY

Books

Ames, L. B., R. W. Metraux and R. N. Walker, Adolescent Rorschach Responses, New York, Harper and Brothers, 1959.

Anderson, Harold H. and Gladys L. Anderson, An Introduction to Projective Techniques, Englewood Cliffs, New Jersey, Prentice-Hall, 1951.

Beck, S. J., Rorschach's Test: I. Basic Processes, New York, Grune and Stratton, 1950.

Bohm, Ewald, Rorschach Test Diagnosis, New York, Grune and Stratton, 1958.

Klopfer, Bruno and D. M. Kelly, The Rorschach Technique, New York, World Book Company, 1942.

_____ and Helen H. Davidson, The Rorschach Technique, New York, Harcourt Brace, 1962.

Rorschach, H., Psychodiagnostik: Methodik und Ergenbnisse eines Wahrenhungsdiagnostichen Experiments, 2nd ed., Bern and Berlin, Huber, 1932, translated by P. Lemkau and B. Kronenberg, New York, Grune and Stratton (distr.), 1942.

Articles

Abrams, Elias, "Prediction of Intelligence from Certain Rorschach Factors," Journal of Clinical Psychology, XI (1955), 81-83.

Allison, Joel and Sidney J. Blatt, "The Relationship of Rorschach Whole Responses to Intelligence," Journal of Projective Techniques and Personality Assessment, XXVIII (1964), 255-260.

Altus, W. D. and Grace M. Thompson, "The Rorschach as a Measure of Intelligence," Journal of Consulting Psychology, XIII (1949), 341-347.

Armitage, S., P. Greenberg and P. Daston, "Predicting Intelligence from the Rorschach," Journal of Consulting Psychology, XIX (1955), 321-329.

Beck, S. J., "Configurational Tendencies in Rorschach Responses," American Journal of Psychology, XIII (1933), 519-532.

Burnham, Catherine A., "A Study of the Degree of Relationship Between Rorschach H% and Wechsler-Bellvue Picture Arrangement Scores," Rorschach Research Exchange, XIII (1949), 206-209.

Fielding, Benjamin and Ted Brown, "Prediction of Intelligence from Certain Rorschach Factors," Journal of Clinical Psychology, XII (1956), 196-197.

Hertz, Marguerite, "The Reliability of the Rorschach Ink Blot Test," Journal of Applied Psychology, XVIII (1934), 461-477.

Kerr, Martin, "The Rorschach Test Applied to Children," British Journal of Psychology, XXV (1934), 170-185.

Levine, Murray, George Spivack and Byron Wight, "The Inhibition Process, Rorschach Human Movement Responses and Intelligence," Journal of Consulting Psychology, XXIII (1959), 306-311.

Lotsof, Erwin J., "Intelligence, Verbal Fluency, and the Rorschach Test," Journal of Consulting Psychology, XVII (1953), 21-24.

_____, Andrew Comrey, W. Bogartz and P. Armsfield, "A Factor Analysis of the WISC and Rorschach," Journal of Projective Techniques, XXII (1958), 297-201.

Pauker, J. D., "Relationship of Rorschach Content Categories to Intelligence," Journal of Projective Techniques and Personality Assessment, XXVII (1963), 220-221.

Spiegelman, Marvin, "Rorschach Form-Level, Intellectual Functioning and Potential," Journal of Projective Techniques, XX (1956), 335-343.

Tanaka, Fuzio, "Rorschach Movement Responses in Relation to Intelligence," Japanese Journal of Educational Psychology, VI (1958), 83-91.

Thetford, William N., Herman B. Molish and Samuel J. Beck, "Developmental Aspects of Personality Structure in Normal Children," Journal of Projective Techniques, XV (1951), 58-78.

Tucker, J. E., "Rorschach Human and Other Movement in Relation to Intelligence," Journal of Consulting Psychology, XIV (1950), 283-286.

Wishner, Julius, "Rorschach Intellectual Indicators in Neurotics," American Journal of Orthopsychiatry, XVIII (1948), 265-279.

Wittenborn, J. R., "Certain Rorschach Response Categories and Mental Abilities," Journal of Applied Psychology, XXXIII (1949), 330-338.

Unpublished Materials

Ogdon, Donald P., "Rorschach Relationships with Intelligence among Familial Mental Defectives," unpublished doctoral dissertation, Department of Psychology, Missouri University, Columbia, Missouri, 1955.

Spaner, Fred E., "An Analysis of the Relationships Between Some Rorschach Test Determinants and Subtest Scores on the Wechsler-Bellvue Scale," unpublished doctoral dissertation, Department of Psychology, Purdue University, Lafayette, Indiana, 1950.