

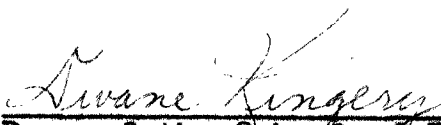


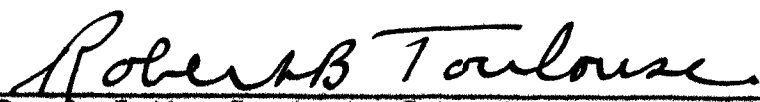
A COMPARISON ON CERTAIN RORSCHACH INDICES BETWEEN
SUCCESSFUL AND UNSUCCESSFUL STUDENTS

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SUCCESSFUL AND UNSUCCESSFUL STUDENTS

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CHAPTER I

INTRODUCTION

Intellectual ability, as measured by some of the scored factors of the Rorschach Test, is believed by most authorities to be a facet of personality structure. Studies (1, 2, 17, 22) reveal a linear relationship between these factors and intelligence quotients obtained on standardized tests of intelligence. The present study was undertaken to demonstrate that a similar relationship could be found between Rorschach indices and intelligence test scores of children in the elementary grades and that a high degree of relationship exists between several of the Rorschach factors and intelligence as revealed by the Wechsler Intelligence Scale for Children and academic success or failure.

Statement of the Problem

It was the purpose of this study to determine the relationship between a subject's performance as revealed by intellectual indices of the Rorschach, his intellectual ability as revealed by the Wechsler Intelligence Scale for Children, and academic success or failure in the form of promotion or nonpromotion.

Definition and Rationale of the Rorschach Indices

The Rorschach utilizes a number of letters in its scoring procedure. The letters and their rationale used in this study follow:

1. Form Level (F+%).--The F+ per cent, in intelligent persons, should always be high. This per cent should optimally be 80 to 95. It is a measure of observational capacity, recall capacity, ability to concentrate, and good attention and persistence. "The principal test factor through which the individual shows his ability to direct his thinking from higher centers, i. e., with conscious attention and discriminating judgment, is the accurate or good form response, the F+ percept" (5, p. 19).
2. The percentage of whole responses (W%).--This per cent is believed to be a reflection of one's sense of theoretical relationships. It is the ability to organize ambiguous stimuli into a meaningful whole. The W per cent is also a reflection of the individual's drive for achievement. These responses must also have good form (F+ or M+) to be indicative of intelligence. "The higher the intelligence potential of an individual, the more W he can produce. The number of W is therefore an index to its subject's present functioning intelligence" (5, p. 10).
3. The number of popular responses (P).--The P index is considered to be "an intellectual adjustment to the community and environment" (7). The number of P seems to be,

primarily, an index of "common sense" intelligence. Too few P responses, less than four, suggests an inability or unwillingness to participate in common thinking. Too many (P) popular responses may indicate an over-conformity. "The main requirement of a popular response is that it be numbered among those responses which are given by healthy subjects more frequently than are any other responses" (19, p. 108).

4. The movement response (M).--M is an indication of productive, creative intelligence. Creative imagination and fantasy activity are reflected in the M response. The ability to make use of inner resources through the production of good M is an index of intelligence. "Rorschach stressed the idea that the M are positively correlated with creative imagination and with the level of intelligence although the correlations need not be high" (20, p. 143).

5. The number of content categories (K).--A wide range of content usually indicates broad interests. "The variety of content is significant even for the quantitative evaluation of intelligence" (7). Rorschach (20), Beck (5, p. 41), and Klopfer (14) all considered the breadth of content to be directly related to intelligence.

Hypotheses

It was hypothesized that there would be significant differences between the successful and unsuccessful students indicated by the superior scores of the successful group on

the following indices:

1. The successful group will make a significantly higher mean score on the F+ $\%$ than will the unsuccessful group.
2. The successful group will make a significantly higher mean score on the W $\%$ than will the unsuccessful group.
3. The successful group will make a significantly higher mean score on the number of P responses than will the unsuccessful group.
4. The successful group will make a significantly higher mean score on the number of M responses than will the unsuccessful group.
5. The successful group will make a significantly higher mean score on the number of content categories (K) than will the unsuccessful group.

Survey of the Literature

The Rorschach Ink Blot Test from its inception has been regarded as an essentially subjective instrument. Investigations that have attempted to objectify the test have met with various degrees of success. Consistent with the attempt to objectify the Rorschach, many studies have dealt with the relationship of the Rorschach to intelligence.

Hertz (11), in an extensive review of the research done up to 1935, found that many investigations reported ability to differentiate groups into superior, average, and subnormal intelligence on the basis of the Rorschach response patterns;

but statistical reliability of the differences was not always indicated. Hertz also pointed out that up to 1935 correlational procedure relating intelligence to the Rorschach had not been generally successful. "The case studies on record illustrating the claim that the Rorschach Test can gauge intelligence are interesting but have little scientific value" (11, p. 47). In another study by Hertz (12), a correlation of .460 was reported between intelligence and F+ percentage; .398 between intelligence and O+ percentage; -.108 between intelligence and A per cent; .209 between color score and intelligence; .241 between whole answers and intelligence, and .259 between movement answers and intelligence. In 1941 Hertz reported that in spite of the "subjectivity in scoring, the sparsity of the norms, the reliance on clinical validation, the interpretation in terms of results from adult or psychiatric material, the method, from the pragmatic point of view, is valid for use with normal children" (13).

Wishner (23) tested forty-two neurotic patients in the psychiatric out-patient clinic of Michael Reese Hospital in Chicago with the Rorschach and the Wechsler-Bellvue tests. Fifteen of the Rorschach factors were correlated with each of fourteen Wechsler-Bellvue scores, and with age. "R, W%, and Z were found to be the most significant intelligence indicators in the Rorschach for this group. F plus % did not correlate significantly with any Wechsler-Bellvue scores" (23, p. 278).

Altus and Thompson (2) attempted to determine, by quantitative means, certain correlates of intelligence in the Group Rorschach. The first sample consisted of 128 elementary psychology students in attendance at Santa Barbara College in 1946. Munroe's directions for the administration of the Group Rorschach were followed. A second sample of 100 elementary psychology students was given the Group Rorschach in 1947. This second sample was given the Group Rorschach twice to permit the calculation of test-retest reliability coefficients. Seventy-five aspects of the Rorschach were quantified, permitting the interquartile item-analysis technique to be employed in the attempt to find correlates of intelligence. The Altus' Measure of Verbal Aptitude and the Ohio Psychological Examination, Form 21, were the criteria of intelligence. "An inspection of the Q4-Q1 item analyses for the 1946 and 1947 groups revealed that fifteen Rorschach items held, even though the criterion of intelligence was changed from one testing to the other" (2, p.342). Intelligence appeared to be most highly related to the number of M and W responses. The F+ $\frac{1}{2}$ was not found to be a valid indicator of intelligence. M yielded a Pearson product-moment coefficient of .43 with the Measure of Verbal Aptitude and a coefficient of .34 with the Ohio Psychological.

Cronbach (9), in a rather complete analysis of Rorschach research methodology, suggests why multiple regression and linear discriminate functions such as Abrams' (1) design

reveal little of the relationships of Rorschach scores with other variables.

Multiple regression and linear discriminate functions are unlikely to reveal the relationships of Rorschach scores with other variables, since the assumption of linear compensation is contrary to the test theory (7, p. 401).

Wittenborn (24), in an attempt to determine the relationship between scores on mental tests and the Rorschach scoring categories for location and determinate factors, used a sample of sixty-eight Yale students who were freshmen at the time of the study. The students were separated into a high group and a low group on the basis of the mental tests, and the means of the two groups on the Rorschach criteria were contrasted with the t test. The conclusions drawn from the study were:

If the relationships between any Rorschach location or determinate category and any of the types of mental ability used in the present study is linear, the evidence from this sample indicates that their value for predicting individual mental ability is so scant as to make their use at any ability level uneconomical and misleading (24, p. 337).

Tucker (22), in an investigation of the relationship between intelligence and the different types of Rorschach movement, used a sample of 100 married and unmarried neurotic veterans of World Wars I and II. Each subject was administered the Wechsler-Bellvue Adult Intelligence Scale, Form I, and the Rorschach. The Rorschachs were scored after the Klopfer method (14). The study was made in an attempt to determine

whether there was a significant difference between M responses as an estimate of intelligence and FM+m responses as an estimate of intelligence.

It was found that human movement (M) scores and summed animal and minor movement (FM+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 (22, p. 285).

Neff and Lidz (18) conducted a study to determine "the variation of the Rorschach responses and patterns with intelligence, and the analysis of the trends disclosed" (18, p. 45). The subjects were a representative sample of 100 enlisted men. These men were considered to be representative specifically in regard to intelligence distribution. Intelligence was operationally defined as the score on the Army General Classification Test. Neff and Lidz listed six factors which "appeared to be more sensitive to the effects of intelligence" (18, p. 49). These were the O, the W:M ratio, W% and D%, and productivity of M and FM.

Bialick and Hamlin (6) designed a study using twenty-five outpatients of the Pittsburgh Veterans Administration Mental Hygiene Clinic to test the hypothesis that the experienced clinical psychologists can make valid judgments of intelligence based on five Rorschach W responses for each subject. The results are reported below:

The rhos for individual judges against intelligence ranged from .71 to .87. The combined rankings of all four judges yielded a rho of .77, significant

at the .01 level of confidence. The reliability rho for the ratings of two judges against two judges was .87, significant at the .01 level (6, p. 240).

Armitage *et. al.* (3) undertook a study to "determine the accuracy with which the level of intelligence (operationally defined as Wechsler-Bellvue IQ) of the individual neuropsychiatric hospital patient can be predicted from the Rorschach" (3, p. 321). Two approaches to the study were made: one was an objective, statistical approach and the other a judgmental approach. A discussion of their findings follows:

In the present study, the attempt to directly relate single Rorschach variables to intelligence was unproductive. Even the attempt to allow for more complex combinations of determinant relationships by means of the multiple regression equation failed to yield useful estimates of intelligence. A further approach utilizing those variables most highly related to IQ in an effort to establish cutting scores for the prediction of intelligence was not productive despite the use of a number of different patterns of weighting (3, p. 327).

The judgmental approach, using the protocol and the psychogram, showed greater accuracy of prediction. The judges' estimates were correct (within ± 10 points of the criterion) in a greater percentage of cases than would have been expected by chance (significant beyond the .001 level in each case). A slightly lower level of significance ($p=.01$) was obtained with the psychograms.

Through a study of 400 clinic patients at the Veterans' Administration Regional Office, Newark, New Jersey, Abrams (1) found that full-scale Wechsler-Bellvue Intelligence Quotients correlated +.354 with F+ percentage, +.360 with M, +.358 with

W, and +.329 with R. The following formula was developed to convert Rorschach data to an intelligence-level score:

$$x = \frac{2a + 17b + 9c + 2d}{10} + 76$$

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 full-scale Intelligence Quotient.

Benjamin Fielding and Fred Brown, in an attempt to test Abrams' formula, made use of 107 cases from Mount Sinai Hospital, New York, New York. This group was comprised of an equal number of psychotic and psychoneurotic male patients.

The following results were obtained:

The results indicate that the formula is satisfactory for those groups whose Wechsler-Bellvue IQ'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).

Ram Lal administered the Rorschach to a group of thirty-nine normal Indian subjects and obtained the following results:

Scores 1 to 6 for intelligence were assigned to placings from Very Superior to Imbeciles on the basis of the tables of W, M, F+%, and A%. Scores in each column were totalled and a rank order obtained for each subject. This score gave positive IQ's on the Stanford-Binet Test. It was found that appraisal of intelligence on the basis of the Rorschach Test under Indian conditions, is in consonance with the results obtained elsewhere (15).

Herman Rorschach postulated seven characteristics to be found in the protocols of intelligent subjects, on the basis of his study of 120 such individuals. These included, in brief, an optimum F+% (80 to 95), many M, high W%, orderly sequence both within each card and throughout the test, low A%, and optimum original responses. These characteristics refer to the psychological functions of clarity of perception and association (F+%), capacity for inner creation (many M), ability and energy for thought and organization (high W%), orderliness and control of thinking (sequence), flexibility rather than stereotypy (low A%), and optimum originality within the framework of good reality-contact (originals). Rorschach felt that productivity, in terms of the number of responses, was not relevant in intellectual evaluation (21).

Spiegleman (21) gave the Wechsler-Bellvue (Verbal Scale) and the Rorschach to 120 neuro-psychiatric subjects at the Clinical Psychology Section of Fitzsimons Army Hospital. The mean age of the subjects was 26 years. There were 106 male and 14 female patients. A much higher level of correlation (.55, significant beyond the 1% level) was found between the average form level and IQ than was found between the number of responses (R) and IQ (.32, 6% level).

From a study of the factorial composition of the Rorschach test in terms of intelligence by Conrad Consalvi and Arthur Canter comes some information on the significant role played by the movement factor (M).

Movement may be regarded as a separate factor which included both M and FM+m within it. The chief differentiation between the two major movement categories appears in the finding that M loaded on the intelligence factor while FM did not (8).

In a survey of seventeen studies investigating the relationship between M and intelligence, Levine, Spivack, and

Wight (16) found a median correlation of .26. Only one of these studies reported the correlation between M and IQ in a population of normal children; and no work reported the correlation with atypical children.

Beck (5) believed the number of content categories or range of content to be directly related to intelligence:

But content is information also structurally, with reference to S's intelligence. Evaluation of content must therefore take account of breadth, or the number of different categories into which the content is distributed. Breadth varies directly as functioning intelligence, as a brief experience with the test demonstrates. In the most superior, those who have had opportunity for cultivation, breadth of associational content is therefore one index not only of potential, but also of the degree of its actual development through formal education, advanced training, broadening contacts with the arts, travel. Conversely, the fewer the content categories, the less intelligent, or the less intelligently functioning, the individual is--i. e., he is of low endowment, or anxious or depressed, or habitually rigid and inhibited (5, pp. 41-42).

Although the evidence regarding the use of certain Rorschach variables as an indicator of measurable intelligence is sometimes contradictory, the literature supports the general statement that the Rorschach possesses predictive merit as an indicator of intelligence.

Subjects and Methodology

The subjects used in this study consisted of 60 white pupils, all boys, in the fifth and sixth grades. Their ages ranged from ten years and nine months to thirteen years and eleven months. There were thirty subjects in the successful

group and thirty subjects in the unsuccessful group. Comprising the unsuccessful group were thirty subjects from six elementary schools who had failed, in that they had not been promoted, two grades at the time of the study. These pupils made up the entire population of those who had failed two grades in the entire elementary school system except for pupils in special education. The successful group was made up of thirty pupils from one elementary school who had been regularly promoted and whose school work was considered to be satisfactory. Subjects in the successful group were necessarily selected on the basis of availability rather than that of randomness.

Rorschach Administration and Scoring Procedures

The Beck system (4) was used for the administration and scoring of the Rorschach. The following administrative instructions were given:

You will be given a series of ten cards, one by one. The cards have on them designs made up out of ink blots. Look at each card, and tell the examiner what you see on each card, or anything that might be represented there. Look at each card as long as you like; only be sure to tell the examiner everything that you see on the card as you look at it. When you have finished with a card, give it to the examiner as a sign that you are through with it (4, p. 2).

The Rorschach cards were presented to the subject one at a time, and the subject was allowed to give his associations as to what he thought the cards represented. The responses for each card were recorded verbatim. The cards were presented

to each subject in the same order. This was the free association period.

Immediately following the free association period, after the subject had given his final association to Card X, the inquiry commenced. In the inquiry the subject was asked to elaborate on the percepts that he reported during the free association period. The purpose of the inquiry was to obtain the determinants. The subject's responses were again recorded verbatim.

Responses were considered scorable if the percept given in the free association period was again recognized in the inquiry. Each response was judged in three major ways: Location--the area of the blot initiating the percept; Determinants--the aspect of the ink blot that determined the response; and Content--that which was seen.

Location responses were scored as whole (W); large frequently seen details as (D); and small infrequently seen details as (Dd).

Determinant responses were scored as to the quality of the design, (F+) or (F-). Other determinants were: human movement (M), pure color (C), form dominating color (FC), color dominating form (CF), form primary with shading secondary (FY), shading primary with form secondary (YF), form primary with texture secondary (FT), texture primary with form secondary (TF), pure distant perspective (V), form primary with distant perspective secondary (FV), and distant per-

spective primary with form secondary (VF). When that aspect of the ink blot that determined the response was a combination of determinants, the responses were evaluated as blends. Form primary with distant perspective secondary and with shading also being a factor (FV.Y) was a commonly scored blend.

Content responses were scored as follows: human being (H), part of a human being (Hd), animal (A), anatomy (An), architecture (Ar), antiquity (Aq), botany (Bt), clothing (Cg), clouds (Cl), death (Dh), fire (F1), food (Fd), geography (Ge), landscape (Ls), mythology (My), personal (Pr), and science (Sc).

The total number of elements for each category (location, determinants, and content) was added together according to type and set down in three columns. Each of the location factors was converted to a percentage of the total number of responses. These percentages determined the approach, the emphasis placed upon W, D, and Dd; and also the sequence or the orderliness with which the subject proceeds from one location to another.

Two percentages were obtained from the determinants. The total number of F+ and F- responses were added, and this sum was then divided by the number of responses in the protocol to obtain the F%. The total number of F+ responses were added to the total number of F- responses, and this sum was divided by the total number of F+ responses to obtain the F+%.

The relation between the total number of scored M responses and C sum was also derived from the determinants and

referred to as the Experience Balance. All M responses were scored 1. The C sum was derived from the values given the FC, CF, and C responses. FC was given the value of .5, CF the value of 1, and C the value of 1.5.

The total number of animal responses was divided by the total number of responses to obtain the animal per cent (A%).

Another factor used in this study was the number of popular (P) responses. These are the responses that occur most often and were judged P if they were included in Beck's list of twenty-one popular responses (4, p. 208).

The total number of content categories was added to obtain K.

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CHAPTER II

RESULTS

Analytic Procedure

The evaluations were standardized as much as possible by administering and scoring of the Rorschachs according to Beck's method (1); the Rorschachs were administered and scored by the same examiner. All Rorschachs were evaluated before the examiner saw the results of the subjects' performance on the Wechsler Intelligence Scale for Children.

The procedure for the administration and scoring of the Rorschach was to administer the test to each subject in the successful and unsuccessful groups and to score it by Beck's method. The Rorschach factors of the successful and unsuccessful groups, as stated in the hypotheses, were tested with Fisher's t test of significance (2). The level of significance was obtained for each Rorschach factor.

Differences Between Groups on WISC Data

Each subject, from both the unsuccessful and successful groups, was administered the Wechsler Intelligence Scale for Children (WISC) as directed by Wechsler (3). The results of this testing and their statistical treatment are shown in Table I.

TABLE I

LEVELS OF SIGNIFICANCE OF THE DIFFERENCE BETWEEN MEANS
OF THE SUCCESSFUL AND UNSUCCESSFUL GROUPS ON THE
WECHSLER INTELLIGENCE SCALE FOR CHILDREN

Criterion	N	Successful		Unsuccessful		Mean Diff. (S-U)	t Ratio
		M	S.D.	M	S.D.		
Verbal I.Q.	60	102	11.38	84	8.62	18.00	6.38**
Performance I.Q.	60	97	9.48	92	9.57	5.00	1.93*
Full Scale I.Q.	60	100	9.60	87	7.85	13.00	5.57**

* $P \leq .05$.

** $P \leq .01$.

The means of the successful group were significantly higher than those of the unsuccessful group on all WISC IQ's. The difference on Verbal IQ (18.00) is about four times as great as the difference on Performance IQ (5.00). Greater emphasis is placed on verbal skills than on nonverbal in the elementary grades, and this striking difference between the groups helps account for the unsuccessful group's academic failure. Various Rorschach factors were compared with the WISC IQ's by contrasting the successful and unsuccessful groups with Fisher's t test. If a highly significant difference existed between the two groups, it would permit the objective deriving of IQ from the Rorschach factors with which this study was concerned; the absence of a significant difference would indicate the lack of such a relationship.

Analysis of Rorschach Scores

In the first chapter five hypotheses were presented, and in order to test them, the Fisher t test was used to test the significance of the difference between means of the successful and unsuccessful groups. Table II presents the results of this statistical treatment.

TABLE II

LEVELS OF SIGNIFICANCE OF THE DIFFERENCE BETWEEN MEANS OF
THE SUCCESSFUL AND UNSUCCESSFUL GROUPS ON THE
RORSCHACH INDICES

Criterion	N	Successful		Unsuccessful		Mean Diff. (S-U)	t Ratio
		M.	S.D.	M	S.D.		
F+%	60	65.83	8.48	60.53	10.27	5.30	2.14*
W%	60	14.76	8.67	16.03	12.91	-1.27	-.43
P	60	5.03	1.60	4.56	1.54	.47	1.13
M	60	1.56	1.45	1.10	1.07	.46	1.38
K	60	8.93	2.80	7.43	2.36	1.50	2.20*

* $p \leq .05$.

The first hypothesis was that the successful group will make a significantly higher mean score on the F+% than will the unsuccessful group.

The results show that the F+ per cent was significant beyond the five per cent level of significance ($t = 2.1409$), indicating that this index may be a valid predictor of intelligence. The ability to make the same percepts that most people make and to make good form of ambiguous stimuli suggests

a high level of intellectual functioning consistent with Rorschach theory of intelligence. The hypothesis was accepted.

The second hypothesis was that the successful group will make a significantly higher mean score on the W% than will the unsuccessful group.

This hypothesis was not supported by the findings of this study, for the t score was not significant at the five per cent level ($t = -.4384$). Neither group made as many percepts involving organized wholes as might have been expected; the mean W per cent for the successful group was 14.7, and the mean for the unsuccessful group was 16.03. Perhaps, due to the low percentage of W responses found in both groups in this sample, whole responses are not as easily perceived by this age group and are therefore not good predictors of intelligence.

The third hypothesis was that the successful group will make a significantly higher mean score on the number of P responses than will the unsuccessful group.

Again this hypothesis was not supported by the results of this study. The t score was not significant at the five per cent level ($t = 1.1301$). The mean number of P responses for the successful group was 5.0333, and the mean for the unsuccessful group was 4.5666. Both groups seemed to have the ability and desire to participate in common thinking. The results of this study would not recommend the use of P as an

indicator of intelligence, but the direction of the difference in the P factor would warrant its inclusion in further research.

The fourth hypothesis was that the successful group will make a significantly higher mean score on the number of M responses than will the unsuccessful group.

There appeared to be no significant difference in the number of M responses, and the hypothesis was rejected; but, again the findings were in the direction hypothesized ($t = 1.3899$). Since M was scored only as human movement, the age of the subjects may have depressed the number of M responses. The mean number of M responses was for both groups quite low, 1.5666 for the control group and 1.1000 for the experimental group.

The fifth hypothesis was that the successful group will make a significantly higher mean score on the number of content categories (K) than will the unsuccessful group.

The results show that the difference between groups on the K factor or number of content categories was significant beyond the five per cent level ($t = 2.2032$), and the hypothesis was accepted. These findings would indicate that the number of content categories (K) may be a valid predictor of intelligence. This broad range of interests, inferred from K, is consistent with Rorschach theory of intellectual functioning.

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CHAPTER III

SUMMARY AND CONCLUSION

Sixty boys, fifth and sixth grade children, from the Mesquite elementary schools were administered the Rorschach Test to examine the hypothesis that measurable intelligence, operationally defined as WISC Full Scale IQ, can be predicted from certain Rorschach factors. The sample was divided into a control group (those who had never failed a grade) and an experimental group (those who had failed two grades at the time of the study).

The Fisher t test was used to determine group performance on each of five Rorschach indices, F+%, W%, P, M, and K. The results of the two groups' performance on each of these five Rorschach indices follow:

1. The children in the successful group had significantly higher t scores on the F+ per cent factor of the Rorschach. This difference was significant beyond the five per cent level, indicating that the F+ per cent may be a valid indicator of intelligence for children of this age.
2. The hypothesis concerning W per cent was rejected as it did not reach the level of significance required.
3. Although the hypothesis concerning the number of P responses was not supported, the factor approached the desired level of significance and should be included in further research.

4. Again the hypothesis concerning the number of M responses was not supported, but the findings were in the direction hypothesized. It might be beneficial, because of the age of the subjects, to include the FM (animal movement) factor in future studies.

5. The hypothesis concerning the K factor or number of content categories was supported, indicating that K might be a valid indicator of intelligence.

The data obtained from this study appear to warrant the following conclusions:

The objective use of the Rorschach as a predictor of intelligence in elementary school-age children does not appear to hold much promise. Statistical validation with a tool as complex as the Rorschach is most difficult; subjective approximation of intelligence based on Rorschach performance gives a more accurate picture of mental ability.

The Rorschach was designed, primarily, to measure variations in emotional states and is very sensitive to affective variation (1). But, unfortunately, estimates of mental ability are sometimes distorted by emotional states; and another measure such as the WISC, which is resistant to such distortion, is necessary for the accurate estimation of intelligence.

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