Prediction of Academic Achievement and Professional Adjustment of Student Nurses by Use of the Group Rorschach Test

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PREDICTION OF ACADEMIC ACHIEVEMENT AND PROFESSIONAL ADJUSTMENT OF STUDENT NURSES BY USE OF THE GROUP RORSCHACH TEST

by

Henry Joseph Lambin, Jr.

A Thesis Submitted to the Faculty of the Graduate School of Loyola University in Partial Fulfillment of the Requirements for the Degree of Master of Arts

June 1953
LIFE

Henry Joseph Lambin, Jr. was born in Chicago, Illinois, June 10, 1921.

He was graduated from Loyola Academy, Chicago, Illinois, June 1940. He attended Loyola University, Chicago, Illinois from September, 1940 to March, 1943. From March 1943 to November, 1945 the author served as an Aerial Navigator in the Air Force. He returned to Loyola and received his Bachelor of Arts Degree in February, 1947.

He began his graduate studies at Loyola University in the same month. From September, 1949 to August, 1950, the writer acted as a Lecturer in Psychology at Loyola. He has also studied at Northwestern and Chicago University.

At present the author is employed as Psychologist on the staff of the Behavior Clinic of the Criminal Court of Cook County.
PREFACE

The intention of the author in conducting the research reported in this thesis was to explore the possibilities of using the Group Rorschach Test as an aid in the selection of applicants for admission to a school of nursing. The author is grateful to the staff and students of St. Francis School of Nursing for their participation in this experiment. A special note of thanks is due Miss Pearl Zemlicka, formerly the Director of Education at St. Francis, for her cooperation in this project; Rev. Louis B. Snider, S. J., Psychologist, Loyola Psychological Center, for his supervision of the scoring of the Rorschach records; and Mr. Joseph Devane for his assistance with the statistics.
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**I. INTRODUCTION**

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**II. REVIEW OF THE RELATED LITERATURE**

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**III. PLAN OF THE PRESENT STUDY**

Subjects--Grades in academic work--Ratings in nursing practice--Pilot study with the Group Rorschach--Administration of the Group Rorschach for the present study--Double inquiry in group setting--Individual Inquiry--Scoring procedure--Application of the Inspection Technique--Statistical treatment of data.

**IV. PRESENTATION AND DISCUSSION OF RESULTS**

Grades in academic work--Percentile scores on the ACE--Munroe Inspection Technique scores--Statistical figures obtained by applying chi-square technique to variables--Results from application of analysis of variance technique to Rorschach adjustment scores of the group--Personality characteristics of the group--Comparison of results with related studies--Summary of findings.
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CHAPTER I

INTRODUCTION

A variety of purposes may be served by the administration of a psychological test battery to applicants for admission to a school of nursing. The test data may be useful in screening candidates since the scores represent an objective evaluation of the individual. While in all probability the majority of nursing schools at times have difficulty in filling their quota of students rather than selecting the most promising individuals from a large number of applicants, evaluation is nevertheless appropriate because of the undesirability of registering a student who apparently has little chance of completing the program. Yet, regardless of the tests' merits as selective devices, they may perform a valuable function in assisting staff members to gain a more comprehensive understanding of the educational and behavior problems of the students. Most psychometric batteries employed in the nursing schools include several different tests. Most frequently included are tests of nursing aptitude, academic aptitude, vocational interests, reading skills, and occasionally a personality test of the objective type.

In the past, various studies have been conducted on the predictive value of these tests in the training program. However, up to this time no study known to the writer has included an evaluation by projective techniques of personality factors as related to success in the nursing program. Seemingly
ly, personality factors would be instrumental in influencing the student's performance. This particular training program represents a comprehensive schedule of activities. In addition to a full day of class work, the student frequently must spend several hours in nursing practice. The student is expected to follow instructions closely, yet develop sufficient initiative to handle an emergency situation. In the hospital, the nurse occasionally encounters troublesome, demanding patients who require tactful handling. Apparently, in addition to a basic minimum of academic aptitude, the student nurse must possess sufficient personal integration and emotional stability to persevere in the program until graduation.

In the school of nursing where this study was conducted selection is necessary since the number of applicants usually exceeds the facilities of the school. It is the purpose of this study to explore the possibilities of improving the selection program by inclusion of the Group Rorschach in the test battery. The data will be analyzed to determine the relation between test data and success in training and also to consider the feasibility of establishing minimum requirements of aptitude and personality essential for completion of the program. The level of adjustment of each member of the group will be estimated as well as the personality characteristics of the group in general.

Numerous studies have been conducted using the tests employed in this study. These investigations will be summarized in the next chapter.

Now the hypothesis to be tested in this thesis may be formulated in this way:

(1) A positive relation exists between adjustment scores received
by first year student nurses based on the application of the Munroe Inspection Technique to their Group Rorschach records, and both grades in academic work and ratings in nursing practice.

(2) Furthermore, a positive relation also exists between scores on the American Council on Education Test and these same grades and ratings.

(3) By combining the scores from both the Group Rorschach and the American Council on Education Test, a stronger positive relation will be found than from either test alone.

(4) Analysis of the data will reveal cut-off scores that may be used to identify the students who may be expected to do rather poor academic work.

Prior to outlining the procedure used in this study the literature related to this investigation will be reviewed.
CHAPTER II

REVIEW OF THE RELATED LITERATURE

In this chapter the previous studies on the reliability, validity and applications of the American Council on Education Test, the Rorschach Test, and the Group Rorschach Test will be reviewed.

THE AMERICAN COUNCIL ON EDUCATION TEST

The American Council on Education Test (ACE)\(^1\) was included in the test battery administered to applicants for admission to St. Francis School of Nursing. The test is a multiple choice timed examination yielding a Quantitative (Q), a Linguistic (L), and a total score. The raw scores are converted into percentiles. Evaluations are made on the basis of the student's relative standing among various subgroups of college students throughout the country.

Originally, the test was constructed by L. L. Thurstone and T. G. Thurstone\(^2\) and standardized on college freshmen. The authors designed the test to measure ability to manipulate symbols rather than the mastery of previously learned facts. To date, various editions of the test have been developed by


the authors.

Norms have been derived from over eighty-thousand cases. For the 1938 college edition the test authors report an odd-even reliability of .95 for the total score, and .87 and .95 for the Q and L scores respectively.

The validity of the test is usually evaluated in terms of predictability of academic success. Several workers have conducted studies in which the ACE scores were compared with academic achievement in a school of nursing. Rinehart\(^3\) found a Pearson product moment correlation (r) of .62 between grades and ACE percentile ranks, while Brooks\(^4\) found an r of .54 between these variables. Rainer\(^5\) and Fitzmaurice\(^6\) obtained almost identical Pearson product moment correlations between the ACE and grades with an r of .42 and .41 respectively. These correlations indicate that a substantial relationship exists between ACE scores and scholastic success. However, the correlations are not sufficiently high to predict with much accuracy the expected level of achievement of any of the individuals.

Now, let us turn to the literature on the Rorschach Test considering first the formulation of the test by the originator.

\(^3\) J. B. Rinehart, "An Attempt to Predict Success of Student Nurses by the Use of a Battery of Tests", *J. Appl. Psychol.*, XVIII, 1933, 292.


After extensive experimentation with clinical subjects, observing their manner of response to various ink blot designs, Rorschach selected ten blots to be used in a standard experiment. These original chance forms, as they are sometimes called, have been reproduced on cards to be presented to the subject in a prescribed manner.

Formally, the test may be divided into three parts: the Performance, Inquiry, and Testing the Limits—according to the procedure developed by Klopfer. In the Performance, the examiner instructs the subject to tell him what the blots look like, what they make him think of. The examiner records the responses of the subject verbatim. After the subject has responded to all ten cards, the examiner proceeds to the Inquiry. In this part of the test he endeavors to elicit from the subject information relative to the mental processes involved in the formation of the concepts. The cards are again presented to the subject in the original order, only this time the subject is requested to point out where he saw each response and what features of the blot influenced the formation of the concept. Regarding the location of the response, the examiner endeavors to find out whether the subject used the entire blot or a portion of it. Regarding the factors involved in the concept, the examiner directs his remarks and questions to determine whether the form, color, or the shading of the blot influenced the response and whether the object was

visualized in a static or mobile state. A Testing the Limits procedure is used if the subject fails to give some responses usually offered by most normal subjects. In this case, the examiner presents the appropriate cards to the testee to determine the amount of prompting and suggestion necessary to elicit these responses.

After administration, the examiner next summarizes the information in symbolic form by scoring the record. Rorschach formulated a scoring system and presented the same in his initial work. He scored the responses as to location, content, frequency, and the above mentioned determinants. In essence, his scoring system has been followed by almost all subsequent workers. Beck asserts that he closely follows the original Rorschach tradition. However, he introduced a Z score to measure the amount of organizational ability demonstrated by the subject in the test. Hertz and Klopfer have elaborated on Rorschach's original scoring categories to formulate a more refined quantitative evaluation of the record.

Beck and Hertz have endeavored to objectify the scoring procedure

9 Rorschach, Psychodiagnostik, 5-48
11 Ibid., 58-82.
14 Beck, Rorschach's Test, I, Basic Processes.
15 M. R. Hertz, Frequency Tables to be Used in Scoring the Rorschach Inkblot Test, rev. ed., Cleveland, 1942.
by compiling tables to be used in scoring some of the elements of a response. Klopfer did not publish tables for scoring but aimed at establishing scoring principles and procedures that would cover most of the problems the examiner would encounter. The scoring symbols of Klopfer and the modifications introduced by Munroe are included in Appendix I.

After scoring the test the data are ready for interpretation. Beck, Klopfer and Kelley, Rapaport as well as Rorschach himself are some of the leading experts in formulating techniques of test interpretation. The test may be interpreted qualitatively as well as quantitatively so as to give information relative to the structure of personality.

Workers have found numerous applications for the test. It has been used by clinicians in the diagnosis and study of neuroses, psychoses, organic brain pathology, epilepsy, and the effects of drugs and alcohol. Other investigators have found the test valuable in conducting anthropological studies, offering vocational guidance, and evaluating the efficacy of different approaches and techniques in therapy.


21 Rorschach, Psychodiagnostik.
Klopfer and Kelley\(^ {22}\) as well as Bell\(^ {23}\) have compiled bibliographies which include most of the published studies up to 1945 and 1948 respectively.

As the uses and applications of the test widened in scope, variations in the administration, scoring, and interpretation were developed. Bell\(^ {24}\) enumerates most of these developments. Administration of the test in group form was initiated by Hertz\(^ {25}\) and Harrower-Erickson\(^ {26}\). Quantitative evaluation of the Rorschach record with the Inspection Technique was formulated by Munroe\(^ {27}\). These and other modifications will be described in greater detail below.

THE RELIABILITY OF THE RORSCHACH TEST

One of the early studies of reliability of the Rorschach was made by Hertz\(^ {28}\). She used 150 subjects evenly divided between normals and patients attending psychiatric and psychological clinics. The odd number cards were given in one sitting, and the even number cards two weeks later. For each set of cards the author computed the W, D, Ds, M, total C, and F per cent. Relia-

\[\text{22 Klopfer and Kelley, } \text{The Rorschach Technique, } 407-430 \text{ and } 453-468.\]

\[\text{23 J. E. Bell, } \text{Projective Techniques, New York, } 1948, 152-201.\]

\[\text{24 Ibid., 137-151.}\]

\[\text{25 M. R. Hertz, } \text{"Modification of the Rorschach Ink Blot Test for Large Scale Application"}, \text{Amer. J. Orthopsychiat., XIII, 1943, 191-212.}\]

\[\text{26 M. R. Harrower-Erickson, } \text{"Developments of the Rorschach Test for Large Scale Application"}, \text{Rorschach Res. Exch., VIII, 1944, 125-140.}\]

\[\text{27 Munroe, } \text{Prediction of the Adjustment and Academic Performance of College Students, } 67-92.\]

\[\text{28 M. R. Hertz, } \text{Unpublished Study cited in the author's } \text{"The Reliability of the Rorschach Ink-Blot Test"}, \text{J. Appl. Psychol., XVIII, 1934, 461.}\]
bility coefficients were corrected by the Brown-Spearman probability formula. Correlations between .39 and .93 were obtained. The most reliable measures were found to be W, D, and P per cent. Total Color and per cent M were the least reliable of the scoring categories. In a later study Hertz selected one-hundred records at random from an adolescent group. She compared the responses of the odd and even number cards and found that At, O, and shading responses were the most reliable. The Pearson product moment correlations were .90 and higher. The next in order of reliability were per cent W, Dr, Do, S, Color, A, H, and R. The correlations within this group fell within the .80 to .89 range. Per cent P was the least reliable score with correlations falling in the .60 and .69 range. The Erlbnistyp yielded a correlation of .73. The author concluded that a rather high reliability for the various scoring categories has been demonstrated. She also compared her results with those published by Vernon. They both found R and per cent W the most reliable. However, Vernon did not find that per cent O, P, F/′, A, and the total Color represented stable measures. His reliability for the Erlbnistyp was .55. His average coefficient of correlation was .54 while that of Hertz was .829.

Of the various methods for testing the reliability of the Rorschach Test, Piotrowski regards the test-retest method as the only satisfactory


measure. He affirms that the methods cited above violate some of the fundamental premises of the test. The test-retest method was used by Kerr\(^\text{32}\) in studying the records of children. One year elapsed between the first and second administration. She found relatively low reliability, as may be expected in view of the rapid development throughout childhood. Brosin and Fromm\(^\text{33}\) reported relative stability of the M:C ratio, F/ per cent, and the presence of Color Shock, before, during, and after psychoanalysis.

Swift\(^\text{34}\) made a study of the reliability of the ink-blot test with children using the Behn-Rorschach with varying time intervals between administrations. The retests after fourteen and thirty days were only fairly satisfactory; after ten months, unsatisfactory. The scores on the Behn-Rorschach had a fairly reliable relation with the scores on the standard Rorschach with the exception of the FC responses. The data compared favorably with the test-retest reliability of the original plates.

Concerning the reliability of the scoring and interpretation of the Rorschach records, several studies have been conducted. A rather comprehensive study employing several methods of analysis on the records of children was conducted by Krugman\(^\text{35}\). In the first experiment, two independent interpreta-

\begin{enumerate}
\item J. W. Swift, "Reliability of the Rorschach Scoring Categories with Pre-School Children", Child Develpm., IV, 1944, 207-216.
\end{enumerate}
tions were made for each of twenty records. In turn, three judges were presented these records and instructed to match the interpretations. All three judges made a perfect score in matching. Then the judges rated the interpretations for the agreement or lack of agreement of the separate statements. They found essential agreement in 89.6 per cent of the statements, fair agreement in 10 per cent, a lack of agreement in 0.4 per cent. Next, the author had the judges match twenty-five scored Rorschach records with their interpretations. This matching procedure yielded a contingency coefficient (C) of .872. The maximum C is .894.

Ramzy and Pickard\(^\text{36}\) investigated the reliability of Rorschach scoring. Using Beck's system, they scored and then exchanged twenty-five records each. By comparing their results they arrived at a C of .812 for location (C of .866 is maximum); for Form and Color, a C of .866 (C of .926 is maximum); for Form and Movement, a C of .906 (C of .949 is maximum); for Shading and Content, a C of .863 (C of .866 is maximum). The author regards these results as indicative of a rather high reliability for the Rorschach scoring categories.

**THE VALIDITY OF THE RORSCHACH TEST**

While most investigations in some way test the validity of the Rorschach as a diagnostic instrument or a predictive device, the following studies have been conducted with the specific purpose of testing the validity

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36 I. Ramzy and P. M. Pickard, "A Study in the Reliability of Scoring the Rorschach Ink-Blot Test", *J. Genetic Psychol.*, 1941, 3-10.
of the test itself. Benjamin and Ebaugh\textsuperscript{37} compared blind analyses of forty-six records with psychiatric diagnoses. The Rorschach diagnoses were identical in thirty-nine cases and comparable in the remaining seven cases. Brussel and Hitch\textsuperscript{38} compared the Rorschach interpretations with clinical diagnoses of fifty patients. They found complete agreement in 66 per cent of the cases, essential agreement in 20 per cent, and partial agreement in 12 per cent. Swift\textsuperscript{39} found the ratings of thirty pre-school children when matched with the Rorschach interpretations yielded a score significant at the 1 per cent level. Young and Higgenbotham\textsuperscript{40} checked the Rorschach interpretations against behavior notes of twenty-one boys at a psychiatric camp. They reported that the Rorschach gave a total personality picture comparable to the records. However, single determinants in the Rorschach and simple relations between the scores were of little prognostic value as to adjustment at camp.

THE INSPECTION TECHNIQUE

Munroe\textsuperscript{41} developed a system for rapid evaluation of the Rorschach

\textsuperscript{37} J. D. Benjamin and F. G. Ebaugh, "The Diagnostic Validity of the Rorschach Test", \textit{Amer. J. Psychiat.}, LXXXIV, 1938, 1163-1178.


\textsuperscript{39} J. W. Swift, "Matching of Teachers' Descriptions and the Rorschach Analyses of Preschool Children", \textit{Child Develpm.}, XV, 1945, 196-205.

\textsuperscript{40} R. A. Young and S. A. Higgenbotham, "Behavior Checks on the Rorschach Method", \textit{Amer. J. Orthopsychiat.}, XII, 1942, 87-95.

\textsuperscript{41} Munroe, \textit{Prediction of the Adjustment and Academic Performance of College Students}, 21-43.
protocol. The record is examined with the aid of a check list prepared by the author. An outline of the check list appears in Appendix IV. This list is based on the scoring system of Klopfer. A check is entered whenever the responses in a given category either exceed or are less than normal limits. The checks are used as a basis for evaluating the level of adjustment of the student. Munroe states briefly her criteria for rating a student as either well or poorly adjusted:

For the adjustment rating of 'good' from the Rorschach we required merely that the student should be able to function reasonably well within the limits of her capacity, without serious inner tensions or distress.

A student receives a rating of "poor" if she gives any indication of personality disturbance, whether expressed outwardly in difficulties with the environment; or less openly in feelings of strain, moodiness, anxiety, or neurotic symptoms; or still more subtly in strong irrational limitations or peculiarities of interest, activity, or attitude.

These general criteria were used to construct a scale of adjustment with five categories of personality integration as follows:

A. Unusually sound integration of personality. Emotional problems are either very mild or very well handled.

B. Emotional problems observable, too slight to affect behavior markedly or cause serious inner discomfort.

C. Emotional difficulties rather marked, very likely to affect attitudes, interests and performance, but not to an extreme degree.

D. Serious difficulties in meeting reality demands adequately, or marked inner stress or both.

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43 Munroe, Prediction of the Adjustment and Academic Performance of College Students, 21.

44 Ibid.
E. Severe psychopathology.

It will be noted that the checks are to serve as a guide and not an inflexible system for assigning the student to a specific category. However, Munroe remarks that more than ten checks is indicative of serious maladjustment and over fifteen is probably indicative of pathology. Yet, in assigning a student to one of the five adjustment categories of the scale, the factor of the examiner's judgment has not been entirely eliminated. This step is probably neither possible nor desirable. What the technique assures is that every examiner will base his judgments on much the same data. She holds that reasonably qualified examiners could reach approximately the same conclusions.

The initial form of the Inspection Technique was used in a reliability study that employed eleven judges. Each judge evaluated the same eleven records by blind analysis. The judges ranged in experience from students in the first year of study to experts. The average rank order correlation of their ratings was .65. However, the most deviant decisions were made by those with the most experience. Munroe attributes this paradoxical outcome to the failure of these judges to adhere strictly to the procedure she outlined for evaluating the records.

Using 384 women students of Sarah Lawrence College as subjects, Munroe made two studies of validity. In one study the Rorschach interpretations were presented to the teachers to be judged as to accuracy and correctness. Of 1,934 specific statements, 75 per cent were judged correctly by every teacher; 17 per cent were judged correctly by at least one teacher, although

45 Ibid., 41.
false by at least one other teacher. Of 178 ratings of academic performance, only four were markedly discrepant, deviating by more than four points on a nine point scale.

In the other study of validity, the 384 students were each placed in one of four adjustment categories. The categories are listed in the order of severity: (1) referral to a psychiatrist, (2) faculty consultation, (3) rated as having an emotional problem by the committee on student work, (4) adequately adjusted. The students had been rated by the Inspection Technique and placed accordingly in one of the four Rorschach adjustment categories. No student was rated as manifesting a severe psychopathological condition. Of the seventy-five subjects rated "A", 84.5 per cent were well adjusted. Of 104 rated "B", 73.1 per cent were so rated. Of the eighty-four rated "C", only 44.6 per cent were so rated. The author remarks that these ratings were "slavishly objective" with the results that many of the discrepancies disappear with a qualitative examination of the individual records. In some cases the Rorschach displays a latent condition that as yet has not manifested itself on a behavioral level.46

46 Ibid., 1-43

THE GROUP RORSCHACH TEST

One of the most significant innovations in the development of the test was the modification for use in a group setting. Harrower-Erickson47 was one of the first to formulate a method for group administration of the

test. Colored slides were made from the standard blots for projection on a screen. The subjects were given essentially the same instructions as in the individual test, only in this case they are requested to write out their responses. Several modifications of the instructions and test procedure as well as different types of Inquiry were developed by Harrower-Erickson and Steiner and presented in their manual.

STUDIES RELATED TO THE FORMULATION OF THE GROUP RORSCHACH METHOD

The initial attempts to reproduce the blots on slides did not result in uniformly similar reproductions of the test material. However, variations in the slides have produced highly similar results according to studies conducted by Hertzman as well as Linder and Chapman. As a solution to this problem Harrower-Erickson suggested a psychological method to select acceptable slides.

Another problem that arises is related to the perceptual difference between the group and individual form of the test. In his study, Hertzman


noted this discrepancy and holds that it is the difference in the two methods that accounts for the differences in some of the results. These differences must be taken into account when evaluating records obtained in the group setting.

Different variations in administration were introduced in an effort to more closely simulate the individual setting. Originally, Hertz\textsuperscript{53} used a trial blot prior to administration of the test proper to compensate for the lack of clarity in the instructions for some of the subjects. Furthermore, she believed that this would also compensate for the hesitancy of the subject to reveal himself in the group situation. However, Hertz\textsuperscript{54} later rejected this procedure remarking that the use of the trial blot was no more justified in the group than in the individual setting. Concerning the rotation of the slides, Linder and Chapman\textsuperscript{55} maintain that this procedure merely introduces a greater disparity between the two methods as relatively few subjects rotate all the cards and even fewer view them in all four positions.

Various investigators have experimented with different exposure times for the slides. Sender\textsuperscript{56} found that one and one-half minutes was sufficient time for the Performance and two minutes per slide was enough time for the

\begin{flushleft}
\begin{itemize}
\item 54 M. R. Hertz, "Comments on the Standardization of the Rorschach Group Method", \textit{Rorschach Res. Exch.}, VI, 1942, 154.
\item 55 Linder and Chapman, "A Electric Group Method", \textit{Rorschach Res. Exch.}, VI, 140.
\item 56 S. Sender, "The Influence of Variation in Rorschach Method Administration upon the Scorability of the Records", \textit{Rorschach Res. Exch.}, VII, 1943, 68-69.
\end{itemize}
\end{flushleft}
Inquiry. Hertz$^{57}$ used two minutes in the Performance, while Steinzor$^{58}$ exposed the blot for two minutes in the upright and then two minutes in the inverted position. Harrower-Erickson maintains that for rough screening one and one-half is better than three minutes. Yet, Hertzman$^{60}$ asserts that the three minute limit reduces productivity for the college group as compared with their output on the individual test. For a less talented group Harrower-Erickson and Steiner$^{61}$ report no substantial difference between the group and the individual method. Furthermore, Hertzman$^{62}$ maintains that there is no change of signs that are used in screening if an exposure time of three minutes is used. Even less time may produce effective results.

Three types of Inquiry were developed for the group form of the test. They represent varying degrees of suggestion offered the subjects in an effort to closely simulate the individual test situation. The amount of prompting to be used in the group situation for most effective results is not easily determined. While meager instructions usually fail to elicit sufficient information


59 Harrower-Erickson, "Developments of the Rorschach Test for Large Scale Application", Rorschach Res. Exch., VIII, 128.


61 Harrower-Erickson and Steiner, Large Scale Rorschach Techniques, 37.

from most subjects, too much information would supposedly call the subject's attention to aspects of the blots he would leave unnoticed if left to his own initiative. The Inquiry methods listed below represent different approaches to this problem.

The Minimum Prodding Inquiry was originated by Hertzman\textsuperscript{63}. The subjects were instructed to locate their responses and explain what aspects of the blot gave rise to their concepts.

The Tutorial Inquiry was developed by Sender\textsuperscript{64}. This procedure permits the examiner to give the subjects examples of the use of the various determinants in their elaborations without specific mention of the determinants as such. For example, the examiner would remark that the subject may have seen the bears on Card VIII as climbing from rock to rock.

The Specific Factor Inquiry was formulated by Harrower-Erickson\textsuperscript{65}. She mentions each determinant by name and instructs the subject to check the corresponding symbol if this determinant more completely describes his experience in formulating the concept in question.

Several workers have experimented with the various types of inquiry outlined above. All investigators agree that some form of inquiry is necessary. The most essential part of any inquiry is the location of the responses on a location chart which contains miniature acromatic reproductions of the blots.

\textsuperscript{63} Ibid., 89-91

\textsuperscript{64} Sender, "The Influence of Variation in Rorschach Group Method Administration", \textit{Rorschach Res. Exch.}, VII, 68-69.

\textsuperscript{65} Harrower-Erickson, "Directions for the Administration of the Rorschach Group Test", \textit{Rorschach Res. Exch.}, V, 145-148.
Both Bertz and Harrower-Erickson found that records scored without this information were unreliable. Hertzman found the Minimum Prodding Inquiry satisfactory to elicit the desired facts when used with college students. Linder and Chapman compared the individual with the group test on a group of college students and reported similar results. Hertzman, Orlansky, and Seitz found that the Tutorial Inquiry was of some value when preceded by the Minimum Prodding Inquiry. In addition, on leaving the room the subjects were questioned on the doubtful responses. Sender compared three methods of inquiry. A qualitative evaluation of results indicated that the Minimum Prodding Inquiry yields meager material with a low intelligence group. Additional instructions are often necessary. The Tutorial Inquiry is generally more suitable according to Sender and is preferred by Hertz as well. The Specific Factor Inquiry is often misleading. The question arises as to whether or not the examiner should score the record according to the determinants listed by


67 Harrower-Erickson, "Developments of the Rorschach Test for Large Scale Applications", Rorschach Res. Exch., VIII, 125-129.


the subject.

In her own study, Sender conducted an investigation on the Minimum Prodding and Tutorial Inquiries with vocational school, junior college, and college students as subjects. Evaluation of the differences indicated that the vocational school students yielded the largest number of significant ratios indicating significant differences between the two methods of inquiry. The ratios for the $F_c/C'$ and $FC$ categories are significant for all the groups indicating that both methods produce greater divergencies of scores in these determinants. The highest significant ratios were in the $F$ determinant. This may be expected as any change in another determinant affects $F$. The critical ratios for $M$ are not significant.

There is no significant difference between the number of subjects affected by each inquiry method. Also, the number of subjects adding new information is not significant but the extent to which they give additional information is significant. Consequently, there are certain subjects who are induced by either method to add information about determinants, but these same subjects respond to the two methods to a significantly different extent. She concludes that the Minimum Prodding Inquiry gives less misleading information than does the Tutorial Inquiry.

Steinzor showed the slides for two minutes in the upright position and two minutes inverted. He used the Minimum Prodding Inquiry followed by


the Specific Factor Inquiry. A special set of additional blots was developed for testing the limits. He concluded that the Specific Factor Inquiry was the most suitable for all groups.

Linder 75 used the group form in federal prisons experimenting with different types of administration and inquiry. He concluded that satisfactory and comparable results are obtained even though variables such as rotation of the slides, varying time exposures, different groups of subjects, and poorly prepared transparencies are introduced.

**COMPARISON OF THE INDIVIDUAL AND GROUP RORSCHACH TEST**

Harrower-Erickson 76 was one of the first to study the differences between the individual and group forms of the test. Using 110 college students as subjects, she divided them into four groups: two control and two experimental. The control groups repeated the individual and the group test respectively. The two experimental groups took the individual and the group tests; one took the individual, the other, the group test first. Within five days the tests were repeated. In the second test, regardless of the form used, group or individual, there was a decrease in the number of W with an increase in all detail responses, as well as a slight decrease in CF with a concurrent increase in FC responses. There was also a change in the F per cent as well as

an occasional reversal of the M:C ratio. The author concluded that the changes that did occur may be attributed to the repetition of the test and not to the change in method. In addition, regardless of the experimental method used no subject gave a retest record identical to his original test.

Hertz\textsuperscript{77} maintains that for both forms of the test, the individual and the group, the various formulas for traits were similar as were the total personality pictures developed from the records.

Hertzman\textsuperscript{78} used two groups of matched subjects. One group was given the individual, the other, the group form of the test. There was no test repetition in this experiment. In the group form she noted more W with many of the W coming as the first response to the card. She also noted more M in the group form, often as a first response in a W area. In the individual form there was more FM, a greater number of color responses, more use of shading and a higher F per cent. On the contrary, Munroe\textsuperscript{79} as well as Buckle and Cook\textsuperscript{80} report a greater number of responses to the group form and an increased use of shading. The discrepancies are ascribed to the personality differences found in the various groups.

Hertzman and Seitz\textsuperscript{80} used the group form to study the effects of

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\textsuperscript{79} R. L Munroe, "Rorschach Findings on College Students", J. Consult. Psychol., X, 1946, 315-316.

Hertzman and Seitz \(^{81}\) used the group form to study the effects of simulated high altitude atmosphere conditions on personality. They find that the group form is at least as sensitive as the individual form of the test.

While the group form may be expected to yield satisfactory results with college students, satisfactory results from a less talented population were not anticipated. However, Barnay \(^{82}\) secured good cooperation from persons with an IQ range between seventy and ninety. These records could be scored and evaluated without difficulty. Furthermore, Harrower-Erickson \(^{83}\) found that psychotic patients have been brought to take the test in the group setting when, because of suspicion and an extremely negative attitude, the individual method failed. Similarly, Hutt \(^{84}\) discovered that in the group situation responses were elicited that were not expressed in the individual setting. Linder \(^{85}\) administered the group form to inmates in a federal penitentiary. He got essentially the same results from the group as from the individual form of the test. He found the Group Rorschach a useful device in the prison setting.

\(^{81}\) M. Hertzman and C. P. Seitz, "Rorschach Reactions at High Altitudes", J. Psychol., XII, 1942, 245-257.

\(^{82}\) R. S. Barnay, "Psychiatric Techniques and Rehabilitation", Yearbook of the American Probation Association, 1942.


\(^{84}\) M. Hutt, "Some notes on the Usefulness of the Rorschach Method and the Rorschach as a Group Test", paper read at the symposium on the use of the Rorschach method in the Armed Forces, 1944, cited in Harrower-Erickson and Steiner, Large Scale Rorschach Techniques, 47.

Hertz compiled a set of tables to serve as a scoring guide for use with the Rorschach Test. The tables list W, normal and rare detail responses, F/ and F- responses, as well as O/ and O- responses. To gather data for these tables, the Group Rorschach test was administered to three hundred students of Patrick Henry Junior High School, Cleveland, Ohio. The group was equally divided as to sex, and selected as representative of the average American born white adolescent. They were selected at random as to age, class standing, and school grade. Although the author endeavored to get a normal distribution of intelligence, the average IQ was 107.2 with a standard deviation of 14.3. This places the group slightly above average. The mean age of the group was 14.2 years with a standard deviation of 10.26 years.

In administering the test, a trial blot was used. The slides were exposed two minutes each. Reliability of scoring was tested by selecting one hundred records at random for scoring. There was very high agreement in scoring between several judges. The reliability of the test was checked by the split-half technique. These reliability scores ranged from .6 to .9, which were considered satisfactory. The author concluded that these norms correspond in general to those reported by Rorschach for adults and to those published by three other investigators for similar age groups. The discrepancies that do occur are probably accounted for by the fact that the present group is a high average group.

86 Hertz, Frequency Tables.

A specific procedure was used in scoring and classifying the responses. In scoring $F_1$ and $F_-$, all the form responses that occurred with a frequency of 50 per cent or better were scored plus. The remainder were evaluated separately by three to five judges, each working independently. Responses occurring 80 per cent or more were scored $P$; those occurring no more than one in a hundred were scored $0-$ or $0^+$ depending on the form quality.

THE RORSCHACH TEST APPLIED TO OCCUPATIONAL GROUPS

Numerous studies have been made on occupational groups with the Rorschach Test. Most investigators look for distinguishing characteristics which would differentiate an occupational group from the general population with the intention of using this information for vocational guidance and employment selection.

Piotrowski\textsuperscript{88} has developed tentative norms for use in vocational guidance and job placement. These norms were set up to aid the Rorschach examiner in predicting the attitudinal and behavioral tendencies of an individual in a job situation. Specifically, this method of analysis will give information relative to the person's drive, performance, persistence, his attitudes toward work, authority, and his own age group, as well as his willingness to accept responsibility and show initiative. Balinski\textsuperscript{89} found these


\textsuperscript{89} B. Balinski, "A Note on the Use of the Rorschach in the Selection of Supervisor Personnel", \textit{Rorschach Res. Exch.}, VIII, 1944, 184-188.
norms useful in selecting the more appropriate man for promotion to a supervisory position. The employe's immediate supervisor rated him after a year on the job. The supervisor not only found the man satisfactory but in addition his ratings of the individual confirmed most of the specific statements of the Rorschach evaluation.

In a later study Piotrowski used an empirical approach in evaluating mechanical workers with the Group Rorschach Test. He found a correlation of .846 between superior workers and four Rorschach signs: (1) at least one M, (2) no loss of productivity on Cards IV and VI, (3) high "evidence" or specification, (4) no W on the last three cards determined by form alone.

Ross, Ferguson, Chalke administered the Group Rorschach to one hundred officer candidates undergoing training. While the investigators found that eight signs occurred on the records of one group with greater frequency, when these norms were applied to two hundred additional officer candidates, selection was improved by only 10 per cent better than chance. The author concluded that the slight improvement does not justify the use of the test.

Prados was one of the first to conduct a study on artists (paint-


ers) using the individual form of the Rorschach. He found the records of the more outstanding ones deviated considerably from the majority of those of average success. The records indicate superior intelligence, dislike of routine matters, sensitive and emotional responsiveness to the environment. They compensate for their deficiency in environmental adjustment with a rich inner life.

Roe\textsuperscript{93} conducted a study on twenty eminent artists. The Rorschach records indicate they constitute an extremely heterogeneous group. The Munroe Inspection Technique ranged from three to eighteen with a mean of 10.3. In general, her results are similar to those of Prados mentioned above. However, these averages tend to be aggregates rather than representations of a dominant group tendency.

Later, Roe\textsuperscript{94} made a study of twenty eminent biologists with the Group Rorschach. More consistent trends appeared in these records. In general, M was low with an average of 2.5, W is increased but not excessive, Dd is increased with an emphasis on dr. While in some cases it is possible to note similarity of approach with type of work performed, a biologist cannot be identified from his Rorschach record. The Munroe Inspection Technique scores average 7.7, which is considerably below that of the artists, who had an average score of 10.3.


Anderson and Munroe\textsuperscript{95} administered the Group Rorschach to twenty students engaged in creative painting, twenty students in composition and design, and forty students from the general liberal arts population of Sarah Lawrence College. The authors found a marked difference between the painting and the design groups in their manner of elaboration of M responses. Also, several signs are significant at the 1 per cent level of confidence. The creative painting group is characterized by a low number of F, a high number of M, a wide range of response categories, and an absence of Color Shock. The design group shows contrary tendencies.

Kurtz\textsuperscript{96} made a study of life insurance managers using the Group Rorschach. Of the eighty sales managers, forty-two were rated very successful, while thirty-eight were rated very unsatisfactory. The author engaged Mar- guiles, Mehr, and other Rorschach experts to administer the test and analyze the data. They developed a set of signs that would correctly classify all the men in their respective category. The sign system was then applied to another group consisting of forty-one sales managers, twenty-one satisfactory and twenty poor. They found a correlation of .17 with performance ratings. The author regarded this finding as very unsatisfactory in view of the correlation of .30 between age and success.

\textsuperscript{95} I. Anderson and R. Munroe, "Personality Factors Involved in Student Concentration on Creative Painting and Commercial Art", \textit{Rorschach Res. Exch.}, XII, 1948, 141-154.

McCandless\textsuperscript{97} administered the Rorschach to students in an officer candidate school in the US Maritime Service to investigate the differential characteristics of achievers and nonachievers. The subjects were matched on the Army General Classification Test (AGCT) and averaged on the Mechanical Comprehension Test, Iowa Silent Reading Test, Stanford Advanced Arithmetic Reasoning Test, as well as for age, amount of education, marital status, and year in school enrollment. When the Rorschach results were analyzed according to the usual scoring categories, only the number of Popular responses (the achievers had more) differentiated the groups at the 1 per cent level. However, trends were noted. The achievers were characterized by more emotional control, greater productivity, less anxiety, increased frequency of signs indicative of conformity, more D, Dd, and S. The Munroe Inspection Technique scores averaged 12.1 for the achievers and 11.4 for the nonachievers.

Harrower and Cox\textsuperscript{98} made a study of institutional personnel using the Group Rorschach. The group examined included subgroups of Supervisors in the Engineering Division, Copywriters, Artists, Insurance Men, and Organists. In most of these groups only trends were noted. However, the data were not treated statistically. Yet, there were apparent differences between superior and inferior Copywriters. The superior group gave more responses, more M, less F per cent, and were predominantly introversion while the inferior group

\textsuperscript{97} B. R. McCandless, "The Rorschach as a Predictor of Academic Success", \textit{J. Appl. Psychol.}, XXXIII, 1949, 134-139.

were found to be predominantly ambiequal.

Steiner\(^99\) made a somewhat similar study on groups of industrial workers. She gave the Rorschach to Engineers, Clerical Workers, Advertising Copywriters, Commercial Artists. Both Harrower and Cox and Steiner agree that the Engineers emphasize W responses. However, Harrower and Cox report many M and more FC than CF, while Steiner finds few M and CF more frequent than FC in her group. The Copywriters in both groups studied gave a large number of responses and many M. The other scoring categories were not directly comparable since each investigator reported different scoring categories. In comparing the Commercial Artists with the Visualizers of the former study, we find that they both gave a very high number of responses, used CF twice as often as FC, emphasized W, and kept F within normal limits. In the studies cited above by Roe and Prados on artists, there is substantial agreement with the present findings in that the former investigators noted excessive use of W and a high sum C with reduced FC. Yet, while Harrower found an average M of seven, Roe reports reduced M but excessive movement. Prados reports M greater than FM. Roe pursued her study farther and noted striking parallels between style of painting and Rorschach reactions.

Reiger\(^100\) used the Rorschach in evaluating applicants for high level industrial jobs. The author rated the individual on a four point scale. A rating of one was superior while a rating of four constituted a rejection.


\(^{100}\) A. F. Reiger, "The Rorschach Test in Industrial Selection", *J. Appl. Psychol.*, XXXIII, 1949, 569-571.
The Rorschach Ratings correlated .75/.05 with the ratings of an interviewer using a patterned interview technique. Since the validity of the interview has been previously demonstrated, the author concluded that the Rorschach is a useful test and can predict job fitness. In another study, Reiger\textsuperscript{101} administered the Rorschach to members of various occupational groups. She concluded that this study showed few statistically significant differences between groups. The only important result is the distinction found between those who deal with verbal concepts (chiefly administrative but including salesmen, engineers, clerical workers, and personnel workers) and those who work with their hands (supervisors and farmers). Personality patterns cannot be reliably used for placement, selection, and guidance. These findings (the lack of patterns) should not be construed as a denial of the importance of the descriptive elements of the Rorschach results in selection and guidance.\textsuperscript{102}

Reiger recommends that the data be no longer used to look for general occupational patterns but rather for the specific requirements of the job and its place in the organization. The Rorschach will evaluate the strength and weaknesses of the applicants.

**THE RORSCHACH TEST APPLIED TO STUDENTS**

In the past, several investigators have used the Rorschach to predict academic success. Montalto\textsuperscript{103} conducted a study on ninety women students of the University of Cincinnati. They were all members of the junior and

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\textsuperscript{102} Ibid., 577.

senior class. There were forty-six achievers and forty-four nonachievers. They were given the ACE as well as the Group Rorschach. With intelligence held constant, five signs were found that would differentiate the two groups. Three of the signs are positive: (1) less than 50 per cent F, (2) two or more Fc/FK, (3) less than 50 per cent A; while two of the signs are negative: (4) W:M ratio is 2:1, (5) 40-60 per cent of the responses are on the last three cards. Using these signs she found a correlation of .398 between the Rorschach and grades; .207 between the Rorschach and the ACE; and .398 between grades and the ACE. With the ACE held constant she found a correlation of .255/.92 between the Rorschach and grades. She concluded that the achievers possess more signs of adjustment than the nonachievers. Yet the achievers have neurotic trends in their personalities which seem to be a pertinent factor contributing to their academic success.

Thompson administered the Group Rorschach to a freshman class at Santa Barbara College composed of 128 students of which 63 per cent were male and 37 per cent were female. The criterion used was grades at the close of the first semester. The extreme quartiles were chosen for comparison. Of the original fifty scoring categories and signs, thirty-four were found to discriminate between the two groups. These Rorschach signs correlated .52 with grades. The r dropped to .50 when the number of categories was cut to sixteen. However, the Altus Measure of Verbal Aptitude correlates .64 with grades and the Rorschach correlates .43 with the Altus. In view of the

common factors in both tests, twenty Rorschach signs were selected that correlated positively with grades and negatively with intelligence and aptitude. This group of signs yielded a correlation of .38 with grades and .04 with aptitude. By partialling out aptitude, the Rorschach data correlate .46 with grades and when combined with aptitude yields a multiple correlation of .73. If only thirteen Rorschach items are used, the correlation drops to .34 with grades but rises to .07 when compared with aptitude.

Shoemaker and Rohrer\textsuperscript{105} made a study of various factors leading to success in a medical college. They tested seventy-seven freshmen of the University of Oklahoma School of Medicine. They found the highest correlation between grades and the Professional Aptitude Test, an \( r \) of .48. A differential pattern was found in the Rorschach Test for the over and under achievers as measured by the results of the Professional Aptitude Test and the grade points earned at the end of the first year of medicine. The Rorschach data revealed (1) white-black shock in the students of high intelligence is an indication of over achievement, (2) the students with deep seated anxiety tend to over achieve, (3) Color Shock tends to accompany a lowering of academic efficiency.

The present investigation was patterned after the study conducted at Sarah Lawrence College by Ruth Munroe\textsuperscript{106}. In this research, the freshmen


\textsuperscript{106} Munroe, \textit{Prediction of the Adjustment and Academic Achievement of College Students}. 
classes from 1940 to 1942 comprising 348 women were used as subjects. The ACE and Group Rorschach were administered to the students on entering the college. The Inspection Technique, cited above, was used to evaluate the data. The ACE scores and Rorschach ratings were compared with grades in academic work. Using the chi-square technique, she found the following ratios significant at the 1 per cent level. A comparison of grades and ACE scores yielded a contingency coefficient (C) of .36 (.39 corrected)\(^{107}\), a comparison of grades and the Rorschach adjustment ratings gave a C of .43 (.49 corrected). Combining Rorschach and ACE data a chi-square was obtained significant at the .001 level. The author did not compute C. Her results will be presented in greater detail in a later chapter.

Cronbach\(^{108}\) in his critical evaluation of the previous Rorschach research as to the aptness of the statistical techniques employed, approved of the methodology used by Munroe in her study cited above. Later, he conducted an investigation\(^ {109}\) of his own to parallel her study. He administered the Group Rorschach to two hundred undergraduate students at the University of Chicago. The records were evaluated by the Inspection Technique. The adjustment ratings of the Inspection Technique compared with the average grade on the comprehensive examination of first year students yielded an r of .17.


The subjective rating of adjustment made by the heads of the dormitories correlated .25 with grades. Yet neither measure would enhance a multiple correlation. When comparisons were made between grades of second and fourth year students and Rorschach adjustment ratings, the correlations approached zero. While more extensive analysis showed that good adjustment may in part compensate for low academic aptitude, this finding is based on too few cases to be accepted with confidence. No significant correlation was found between achievers and any single Rorschach indicator when the ACE was held constant. Few single Rorschach indicators show any degree of relation with ACE scores. None are statistically significant.

Recently, Hertz reviewed current Rorschach problems. Her comments on the research using the Group Rorschach were rather severe. She remarks that the value of the test in educational and occupational settings has not been demonstrated. Prediction of performance has not been consistently demonstrated nor have the followup studies of the successful predictions confirmed the initial findings. She concludes that

to date no group method has been reliably established as valid, scoring norms for such factors as normal details, popular responses, form quality, and the like have not been determined, and adequate group norms have not been amassed for the age groups which have been studied by means of the group method.

Furthermore, she observes that we do not know if the same principles of interpretation apply to the group as to the individual Rorschach. The writer's comments on these remarks will appear below.

111 Ibid.
SUMMARY AND DISCUSSION

Comparisons of academic success and ACE scores yield correlations ranging from .41 to .52. These correlations are sufficiently high to indicate that there is a substantial relation between these variables.

The Rorschach Test presents several problems that are unique to this type of test. While problems of validity and reliability are inter-related in all tests, the relation is somewhat more inter-dependent in the Rorschach than in a group intelligence test of the multiple choice variety. While the Rorschach is purported to reveal the structure of personality, it is known to be influenced by transitory conditions such as high altitude atmospheric conditions. However, just exactly what factors are relatively stable and which are affected by temporary states are not precisely determined as yet. Consequently, in a study of reliability the examiner does not know whether the variations from test to retest represent a lack of stability of the measure, practice effect, or meaningful personality changes.

On any test a low index of reliability using the split-half technique would indicate that the test probably does not measure uniformly and consistently the factors involved. However, in evaluating the Rorschach Test data the variations from card to card and from response to response that are usually responsible for the low split-half reliability indices cannot be considered as an undesirable feature of the test. These intertest variations are one of the most significant diagnostic features of the technique especially in the records of clinical subjects. Consequently, at least for some records this method of evaluating reliability is unsuitable.
On the other hand, the test-retest method of reliability evaluation presents the problem of practice effect. While practice effect in an intelligence test usually amounts to nothing but an occasional slight increase in test score, the changes in the retest Rorschach are not so clearly defined. While the records are usually highly similar, there are definite changes that seemingly arise more from repeating the test than from interim modifications in personality—if the test is repeated within a week using the group form. Unfortunately, this problem of practice effect has usually been studied from the standpoint of statistical frequencies of the various scoring categories in the test and retest records rather than from the psychological or interpretative significance of the two sets of records. Needless to say, whether or not there are statistically significant similarities or differences in aggregates of scores is less important than if the psychological interpretations of the test and retest are substantially the same or different. Yet even more important is the determination of what factors are likely to remain constant from test to retest over a relatively brief period and which are likely to vary as a result of practice effect and slight personality fluctuations. Seemingly, without this information investigators will be unable to achieve consistently high validity coefficients in predicting future behavior and clinical progress.

Supposedly much practice effect would be eliminated by the use of a parallel set of blots. However, the studies using the parallel sets are few and somewhat inconclusive. However, current research indicates that some determinants occur with greater or less frequency in the Behn-Rorschach than
in the original test. These differences must be taken into consideration in interpreting the test results. At present then the Behn-Rorschach must be regarded as a highly similar but not a parallel set of blots.

In general the test apparently has a somewhat satisfactory reliability and actually measures some permanent factors of personality even though these are not demonstrated with satisfactory statistical techniques. Were this not the case, it is doubtful if any high correlations would be secured in comparing data and criteria.

The same record scored by two examiners, matching of interpretations made by two different examiners, and the matching of scoring and interpretation of the same records have been demonstrated to have very high reliability.

Numerous studies have been conducted on the validity of the Rorschach. When diagnostic categories or general estimates of adjustment are made from test data and compared with psychiatric diagnoses or general behavior ratings, the validity is usually rather high. However, specific types of behavior related to individual scores are not found to have very high validity according to most studies.

Munroe developed the Inspection Technique as a method for rapid, objective evaluation of the Rorschach protocol. The reliability of the technique is rather high if the examiner closely follows the instructions. In like manner the validity of the method is also high when the adjustment ratings are compared with objective evaluations of behavior.

A group form of the Rorschach Test has been developed in which the blots are projected on a screen. Many workers think that this modification
is basically the same as the individual test with the exception of the possible differences between the slides and blots, and the perceptual differences arising from the nature of the projection medium. Of course, there may be also group facilitation or defacilitation, but this will be discussed below. Different exposure times have been tried ranging from one and one-half to three minutes. In some experiments the slides were left in the upright position; in others, they were rotated. Substantially similar results were obtained by all methods.

Three different types of inquiry were developed. They are referred to as the Minimum Prodding, the Tutorial, and the Specific Factor Inquiry. The Minimum Prodding Inquiry is preferred by some workers because it elicits the least misleading information. Yet none of these methods elicit information equivalent to the material obtained by the individual inquiry.

Studies comparing the group with the individual form of the test reveal certain differences in the two techniques. However, many of the differences reported as to frequency of the various determinants are likely to be a function of the groups tested rather than differences arising from the methods used. The only trend consistently reported by most workers is the occurrence of a larger number of W in the group form of the test. In one study of the group and individual method matched groups were used. However, it is not known how much similarity or difference may be expected in the Rorschach records of subjects matched in even several traits and characteristics. Unless this is determined, matching of groups for comparison of these two methods is still as likely to reflect the differences of the groups
as the differences of the methods.

The results of the test as a function of the group situation are dependent on the personality of the subject. Some individuals of varying levels of adjustment prefer the group form to the individual test. These subjects are more responsive in the group setting.

Various studies have been conducted on occupational groups. While individuals cannot be differentiated occupationally on the basis of their Rorschach records, there are some group tendencies present. The several studies on artists-painters reveals a certain consistency of patterns. For other groups the data is too meager to formulate any conclusions. Also the more successful members of a group can be differentiated from the less successful on the basis of their Rorschach reactions. However, the only two studies that repeated the experiment on another group failed to confirm the original findings. Consequently, the other studies that found differentiating Rorschach signs are of questionable validity.

The Munroe Inspection Technique gives various groups different average adjustment scores: Biologists, 7.7; Artists, 10.3; Officer Candidates: achievers, 12.1; underachievers, 11.4. Apparently Munroe's suggestion is rather severe; namely, that ten or more checks is indicative of rather severe maladjustment.

Apparently, a more promising application of the test consists in using the vocational norms of Piotrowski to predict the workers attitudes and behavior in the job situation and subsequently validating these predictions by comparison with the ratings of the supervisor. Without reference to
these norms another worker reports that global Rorschach ratings of an individual for a specific job correlates high with the data from a patterned interview of previously determined validity. She asserts that looking for Rorschach occupational patterns holds little promise of having any real value. Rather should the examiner with a full knowledge of the requirements of a specific job and the policies of the company select the individual to fit into this specific position whether or not he possesses the supposed average personality characteristics of the group.

Comparing Rorschach results with academic success, the same observations apply as were made in relation to the studies on occupational groups. While the correlations between grades and Rorschach data range from .17 to .73 (the latter figure representing a multiple correlation combining the Rorschach with an aptitude test), the only study that was repeated gave rather discouraging results. In the original study the correlation between grades and Rorschach adjustment ratings using the Munroe Inspection Technique was .49 (C corrected), while the follow up study yielded an r of .17. However, the groups of students are not comparable and the more significant results are supposedly obtained from a population representing a more widespread range of talent. Apparently, in a high talented group, adjustment as measured by the Inspection Technique is a less significant factor in academic achievement than it is in a group representing a wider range of academic aptitude.

Before concluding these remarks, Hertz's evaluation of the studies using the Group Rorschach must be considered. As her comments would imply, (1) she assumes that there is a significant difference between the Group and
Individual Rorschach Tests, (2) she maintains that norms for the Group Rorschach should be established independently, (3) she cautions other investigators that we do not know whether the same interpretative norms applicable to the individual test are also applicable to the group form, and (4) she finds that the studies comparing the group test results against criteria are inconclusive.

On the surface these criticisms of the Group Rorschach would seem to be well founded, and they should send any investigator back to the accumulation of normative data for different groups rather than comparing any group to a criterion for prediction of performance.

However, at least some of these criticisms can be applied to the individual test as well. There is a conspicuous absence of systematic studies of the reliability and validity of the individual test on different age groups, levels of intelligence, and levels of adjustment.

The results of the Group Rorschach may be said to be inconclusive because the follow up studies failed to confirm the original findings. However, these events are not peculiar to the Group Rorschach. The present writer would be more inclined to regard the poor results in the follow up studies as symptomatic of the Rorschach and not peculiar to the group form.

While it is not known whether the same interpretative norms applied to the individual test may also be applied to the group form, this doubt actually represents a modification of opinion for Hertz. In an earlier article summarized above, she maintained that highly similar personality pictures were drawn from the test using both methods. Yet, this is not a pointless caution. There are indications that somewhat different response frequencies
occur in the group than in the individual form of the test. Yet, in any comparative study, as were many of the studies quoted above, the intention was to establish comparative levels of adjustment for the individuals within the group, and not necessarily to assess an individual's level of adjustment in terms the level of adjustment of the general population. If the individual norms are applied uncritically to Group Rorschach data, his apparent level of adjustment may be somewhat different than it would appear had he been tested with the individual form. However, this danger does not necessarily preclude from the possibility of distinguishing the latter from the more poorly adjusted members of a group, if the elements of the test have any interpretative validity.

The studies comparing the group with the individual form of the test demonstrated to the workers who conducted them high similarity between the two methods. These findings were seemingly also accepted by other Rorschach workers who subsequently performed criterion studies using the group form.

Admittedly, the group form should be standardized as Hertz indicates, and the questions on the relation between the group and the individual test be explored more thoroughly. However, in view of the problems involved in the reliability and validity standardization of the group or the individual form, the absence of fundamental studies in the group method cannot be criticized too severely, since there is no fully satisfactory solution to this problem as yet apparent. Since a significant difference between the tests has not been indicated, since relative levels of adjustment may be evaluated, since some workers have obtained significant results, the present follow up study with the group should not be out of order.
CHAPTER III

PLAN OF THE PRESENT STUDY

According to the plan of the present study, the Group Rorschach and ACE were administered to the first year nursing students, and the results compared with their grades in (a) academic work and (b) nursing practice. The Rorschach data were evaluated with the Munroe Inspection Technique. The Rorschach and ACE data were combined to determine if this procedure improves predictibility of academic achievement. To elaborate on this outline, the following topics will be treated: the subjects, their grades, administration of the ACE, the administration of the pilot study on the Group Rorschach, and administration of the Group Rorschach used in this study, scoring procedures to be used, application of the Inspection Technique, and statistical treatment of the data.

The subjects were fifty-three students in the first year of training (pre-clinical) at St. Francis School of Nursing. The age range extended from seventeen years and six months to twenty years and seven months. The mean age was eighteen years and six months with a standard deviation of 7.56 months. The number of years of education extends from twelve to fourteen years with a mean of 12.1 years.

The grades received at the end of the first year were used in this study. Grades were given in numbers. However, there are equivalent letter
grades. The grade of A ranges from 93-100; B, from 85-92; C, from 78-84; D, from 70-77; F, below 70. The curriculum included the following ten subjects: Anatomy and Physiology, Microbiology, Nursing Arts, First Aid, Pharmacology II, Surgical Nursing, Diet and Disease, English, Pathology, Medical Nursing.

The arithmetical grades for the ten academic subjects were averaged. The students were then ranked according to grade average. The students at the median and above constituted the Above Average group; those below the median, the Below Average group.

The grades in nursing practice could not be handled in the same way. Some instructors used letters; others used numbers. Some graded consistently higher than others. One or two instructors gave all of their students practically the same mark. In view of the difficulties involved in ranking the students on the basis of this information, one of the instructors who was familiar with the work of all the student nurses was requested to assign each student to one of four categories: Superior, Above Average, Average, or Below Average. No effort was made to restrict the number of students assigned to each category.

Preparatory to the administration of the Group Rorschach to the student nurses, a pilot study was conducted with this test to enable the examiner to familiarize himself with the group form and to discover some of the unforeseen problems that may arise in administration.

The group form of the Rorschach was administered to a class of eighteen college students taking an elementary course in psychology. The instructions for the Performance of the test were read to the subjects. These
instructions were formulated by Harrower-Erickson\textsuperscript{1}. However, the writer considered the instructions for the Minimum Prodding Inquiry as formulated by the above author\textsuperscript{2} as insufficiently explicit to elicit the desired inquiry information from the subjects. On the other hand, the numerous examples for various determinants used in the Tutorial Inquiry, at that time, were regarded by the writer as offering too many suggestions to the subjects. Consequently, the writer formulated his own instructions, which gave more structuring than the Minimum Prodding yet fewer clues than the Tutorial Inquiry\textsuperscript{3}.

On the basis of the information secured from this trial test session, a plan for the administration of the Group Rorschach was formulated. In general, the procedure developed by Harrower-Erickson and Steiner\textsuperscript{4} was again followed. The subjects were divided in two approximately equal groups. Each group was given the test in a separate session. However, the absence of

\begin{enumerate}
\item Harrower-Erickson and Steiner, \textit{Large Scale Rorschach Techniques}, 18-21.
\item \textit{Ibid.}, 27-31.
\item These instructions were formulated by the author and based on those of Harrower-Erickson as cited above:
    In this part of the test we want you to elaborate on your responses. We want you to indicate on the location chart just where you saw each response that you gave.
    At this point Card I is flashed on the screen; the instructions continue:
    You might have seen a bat here. Perhaps these parts suggested wings. (Pointing out the side D). Perhaps the outline and the blackness also suggest a bat. In any case you are to write out a description of your experiences as fully as possible for each response.
    After answering questions the slides were again exposed for about two minutes each to enable the subjects to locate their responses and elaborate on them.
\item Harrower-Erickson and Steiner, \textit{Large Scale Rorschach Techniques}, 27-31.
\end{enumerate}
three members necessitated a third session.

In setting up a classroom for the test, the arrangement closely followed the instructions of Harrower-Erickson. No subject was seated closer to the screen than ten feet, not farther away than twenty feet. The lantern slide reproductions of the original blots were projected on the screen so as to form an image about four feet by six feet. Sufficient illumination for writing was supplied by a dim light on the side of the room and the light reflected by the screen.

The subjects were supplied with test booklets that consisted of three pages on which to record their responses. A page of the booklet is reproduced in Appendix III. The three columns on the page were used for recording the Performance (Column A), the Tutorial Inquiry (Column B), and the Specific Factor Inquiry (Column C). A location chart containing acromatic miniature reproductions of the blots was also supplied.

For the Performance the subjects were given the instructions formulated by Harrower-Erickson and Steiner with slight modifications introduced by the writer to inform the subjects how to record their responses in the test booklets. The instructions are repeated in Appendix II. Each of the ten slides was exposed for two minutes and the subjects were instructed to record their responses in Column A.

After the last slide had been exposed, the subjects were told they


6 Harrower-Erickson and Steiner, Large Scale Rorschach Techniques, 27-31.
would see the slides again. The instructions of Harrower-Erickson for the Tutorial Inquiry were read to the subjects. Their attention was called to the location chart. In brief, they were instructed to record their responses on this chart and to explain what features of the blot made them think of the responses they gave. The Popular and Common responses to Cards I and VIII were used as examples for location and elaboration. Approximately two minutes were allowed per slide for the subjects to locate and elaborate their responses.

After this, a Specific Factor Inquiry was conducted. The writer formulated his own instructions for this inquiry. They may be found in Appendix II. In this set of instructions the determinants of Form, Shading, Color, and Movement were briefly described for the subjects. On the blackboard, the symbols for the determinants were written followed by a two or three word description of each. Additional information on the determinants was given verbally. After questions were answered, the subjects were instructed to record in Column C of the test booklets, the symbols that best describe their experiences in formulating the concepts. Approximately one minute per slide was allowed to record this information. This concluded the test.

By using the double inquiry the writer thought it would be possible to secure practically as much essential information as can be obtained from an individual inquiry. It was assumed that were a comparison to be made, the scoring based on the double inquiry would very closely resemble the scoring based on the individual inquiry.

In scoring the records the writer followed this procedure. The
response was first scored on the basis of the information recorded in the Performance. Then the elaborations in the Tutorial Inquiry were studied. If this material indicated that the score based on the Performance alone should be modified, this was done. Finally, the information in the Specific Factor Inquiry was examined to see if the determinants listed there made additional modifications and corrections of the scoring necessary. The intention was to include the determinants listed here in the score unless they were obviously incorrect.

A preliminary inspection of the data indicated that the Tutorial Inquiry failed to elicit the information desired while the Specific Factor Inquiry often gave somewhat misleading or at least questionable information. Consequently, the plans were altered, and the subjects were given an individual inquiry and this latter information was used in evaluating the records with the Inspection Technique.

In scoring the records the general system of Klopfer and Kelley was used. The frequency tables of Hertz described above were used to score $F'$ and $F-$, $O'$ and $O$-. In the event a response was not listed in the tables of Hertz, the tables of Beck were consulted for $F'$ and $F-$ scoring. However, the scoring samples of Beck were used only if they did not obviously conflict with the principles of Klopfer, as happens in some instances. For example, Beck occasionally scores a response $F-$ which Klopfer would consider simply

9 Hertz, Frequency Tables.
10 Beck, Rorschach's Test, I., Basic Processes, 155-190.
as vague form. However, the responses not found in the tables and scored by
the writer on the basis of Klopfer's principles were checked by a more ex-
perienced Rorschach examiner.11

With the scoring completed, the records were next evaluated with
the Munroe Inspection Technique. The number of adjustment checks for each
student was recorded. The subjects were ranked on the basis of the absolute
number of checks received. No qualitative aspects of the records were used
in ranking the students. This approach departs slightly from the procedure
used by Munroe12. In her study the number of checks plus the qualitative
aspects of the records were taken into account to assign the student to one
of four adjustment categories.

In the statistical treatment of the data, the variables were rank-
ed and grouped to permit computations of chi-square, coefficients of contin-
gency, and Pearson product moment correlations. The subjects were first
ranked according to the several different variables: grades, ACE scores, and
Rorschach adjustment checks. While ranking was sufficient to compute corre-
lations, in order to compute chi-square, a dichotomous distribution was
necessary for these variables. Consequently, the students at the median and
above were compared with those below the median.

To establish a twofold distribution of the ratings in nursing
practice for treatment with chi-square, the students rated Superior and

11 Rev. Louis B. Snider, S. J., Psychologist, Loyola Psychological
Center.

12 Munroe, Prediction of the Adjustment and Academic Performance
of College Students.
Above Average were grouped together as were the students rated Average and Below Average.

After the variables had been arranged in the tables, chi-square, level of confidence (P), and the coefficient of contingency (C) were computed. In addition, Pearson product moment correlations (r) were computed to determine the relationship between academic grades, ACE, and Rorschach scores.

An additional check on the relation between academic success and Rorschach ratings was made. The students were divided into four approximately equal quartiles on the basis of their grades in academic work. The adjustment scores on the Rorschach were recorded in the quartile where the student was placed on the basis of his grade. An analysis of variance was made to determine whether the number of adjustment checks differentiate the various quartiles from one another.

These results were then compared with those of Munroe and Cronbach to determine how the results of this investigation compare with their findings.

The characteristics of the group were described on the basis of the average number of adjustment check entries in each of the categories of the Munroe Inspection Technique list.

A summary of the study is then presented followed by conclusions derived from the investigation.
CHAPTER IV

PRESENTATION AND DISCUSSION OF RESULTS

In this chapter the grades of the students, their scores on the ACE, and their adjustment ratings on the Group Rorschach will be presented and compared statistically. The results will be analyzed and discussed.

In computing the grades of the students in academic work, the marks given at the close of the first year in each of the ten subjects were summed and an arithmetical mean computed. The students were ranked according to these means. The numerical range of the grade averages extended from 78.11 to 92.90 with a median at 85.09. The mean was 85.05 with a standard deviation of 3.25.

As mentioned above, an evaluation of proficiency in nursing practice was made by one of the instructors who rated each of the students categorically. Seven of the students were rated Superior; ten, Above Average; twenty-nine, Average; and seven, Below Average.

The range of ACE scores is rather wide, extending from the 9.5 to the 96th percentile, according to women's college norms. The median falls at the 63rd percentile. The mean of the raw scores is 107.92 with a standard deviation of 3.17.

The number of checks received by the subjects in applying the Munroe Inspection Technique to the Group Rorschach protocols ranged from two to eighteen. The mean was 9.08 with a standard deviation of 3.75. A few
checks, or a low score, indicates good adjustment, while a large number of checks indicates poor adjustment.

In treating the results statistically, the chi-square technique was employed. A contingency coefficient ($C$) was also computed, and the level of confidence stated. All scores and ratings were grouped in four cell tables.

Prior to computation of the statistics relative to the comparison of the test results and grades, the degree of relationship between the two tests was examined. Table I presents a four cell contingency table comparing the percentile rankings on the ACE with the adjustment scores on the Group Rorschach for the fifty-three subjects. Computations yield a chi-square of 4.23, significant at the .05 per cent level. Also a $C$ of .27 was derived.

1 The writer originally planned to use the same statistical techniques as those employed by Munroe in *Prediction of the Adjustment and Academic Performance of College Students*. In several instances she used eight and sixteen cell tables to group her data to compute chi-square. However, if the data in the present study were so grouped for chi-square computations, the theoretical frequencies in some cells would be less than five. While J. P. Guilford in *Fundamental Statistics in Psychology and Education*, New York 1950, 279, remarks that some authors consider theoretical frequencies as low as two satisfactory, he holds, as does Q. McNemar in *Psychological Statistics*, New York, 1949, 198, that five is a more realistic limit. Consequently, only four cell contingency tables are used in the present study.

2 Formula (85) in Q. McNemar's *Psychological Statistics*, 200, which eliminates the necessity of computing expected frequencies, was used here.

3 Formulas (149b) and (150) for correction of $C$ presented by Guilford in *Psychometric Methods*, 357, and used by Munroe in *Prediction of the Adjustment and Academic Performance of College Students*, was not applied in this study. Guilford offered these criteria that the data must meet for the $C$ correction to be properly applied: "If the categorized data represent continuous, normal distribution, if $N$ is large, and if the class intervals are of approximately equal size, the correction procedure...may be applied to the $C$ coefficient." (*Fundamental Statistics*, 344). As the small $N$ in the present study is sufficient basis for rejecting the applicability of this procedure, the other criteria need not be discussed.
These results indicate that possibly a common element or elements are measured by these tests. However, if a common element is actually measured, it is substantially less than the independent elements measured by each test since C is only .27. In any case, P is not quite high enough to reject the null hypothesis without qualification. Perhaps a more acceptable conclusion would read as follows: While in this sample some common elements are probably measured by both tests, it is uncertain whether this phenomenon would occur if the tests were administered to another group.

**TABLE I**

**SCORES OF THE ACE COMPARED WITH RORSCHACH ADJUSTMENT RATINGS**

<table>
<thead>
<tr>
<th>Rorschach adjustment checks</th>
<th>ACE percentile scores</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>63rd percentile and above</td>
<td>62nd percentile and below</td>
<td>Totals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>8 or less</td>
<td>18</td>
<td>66.7</td>
<td>10</td>
<td>38.5</td>
</tr>
<tr>
<td>9 or more</td>
<td>9</td>
<td>33.3</td>
<td>16</td>
<td>61.5</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>100.0</td>
<td>26</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Chi-square: 4.23  P: .05  C: .27  df: 1

Table II presents a four cell contingency table comparing the percentile rankings on the ACE with grades in academic work at the end of the
first year. The median was again used as the dividing point to establish the dichotomous distributions for both ACE scores and Grade averages. Computation based on the data yielded a chi-square of 8.31. This figure is significant at the .01 per cent level. From chi-square, a C of .37 was computed. These results indicate that a moderately strong relationship has been demonstrated between these variables that is not readily attributable to chance factors. However, C is too low to predict with much confidence a student's academic performance on the basis of her ACE score.

TABLE II

ACE SCORES COMPARED WITH ACADEMIC STANDING FOR THE FIRST YEAR

<table>
<thead>
<tr>
<th>Academic standing</th>
<th>63rd percentile and above</th>
<th>62nd percentile and below</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Above average</td>
<td>19</td>
<td>70.3</td>
<td>8</td>
</tr>
<tr>
<td>Below average</td>
<td>8</td>
<td>29.7</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>100.0</td>
<td>26</td>
</tr>
</tbody>
</table>

Ch-square: 8.31  P: .01  C: .37  df: 1

Table III presents a four cell contingency table comparing the grades in academic work for the first year with the number of adjustment
checks received by applying the Munroe Inspection Technique to the Group
Rorschach protocols. The median was again used to establish the dichotomous
distribution for both variables. Computations based on the data yielded a chi-
square of 2.27, which is significant at the .20 per cent level, and a C of .21.
These results fail to demonstrate that a significant relationship exists be-
tween these variables that may not be explained on the basis of chance. The ad-
justment score from the Rorschach is not a valid index of academic performance.

TABLE III

RORSCHACH ADJUSTMENT RATINGS COMPARED WITH
ACADEMIC STANDING FOR THE FIRST YEAR

<table>
<thead>
<tr>
<th>Academic standing</th>
<th>8 or less</th>
<th>9 or more</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Above average</td>
<td>17</td>
<td>60.7</td>
<td>10</td>
</tr>
<tr>
<td>Below average</td>
<td>11</td>
<td>39.3</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>100.0</td>
<td>25</td>
</tr>
</tbody>
</table>

Chi-square: 2.27  P: .20  C: .21  df: 1

Table IV presents a four cell contingency table comparing the ACE
percentile scores with ratings in nursing practice. The median was used as the
dividing point for the distribution of ACE scores. As mentioned above, the
students with Superior and Above Average ratings were grouped in the Above
Average category, while the students with Average and Below Average ratings were grouped in the Below Average category. Computations based on the data yielded a chi-square of 1.72, which is significant at the .30 per cent level, and a C of .15. These figures fail to demonstrate that a relationship exists between these variables that may not be explained on the basis of chance. Apparently, the ACE scores are not a valid index as to the ratings a student is likely to receive in nursing practice.

TABLE IV

SCORES OF THE ACE COMPARED WITH RATINGS IN NURSING PRACTICE

<table>
<thead>
<tr>
<th>Nursing practice ratings</th>
<th>ACE percentile scores</th>
<th>63rd percentile and above</th>
<th>62nd percentile and below</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Above average</td>
<td>11</td>
<td>40.7</td>
<td>6</td>
<td>23.0</td>
</tr>
<tr>
<td>Below average</td>
<td>16</td>
<td>59.3</td>
<td>20</td>
<td>77.0</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>100.0</td>
<td>26</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Chi-square: 1.72*  P: .30  C: .15  df: 1

*Correction for continuity is incorporated in formula used in these computations and found in Q. McNemar, Psychological Statistics, 207, (85a).

Table V presents a four cell contingency table comparing the Rors-
Rorschach adjustment scores with ratings in nursing practice. The subjects were grouped as they were above, both on the basis of Rorschach adjustment scores and on the basis of ratings in nursing practice. Computations based on the data yielded a chi-square of .80, which is significant at the .50 per cent level, and a C of .12. Evidently, there is little evidence to indicate that a positive relation exists between these variables. Consequently, the student's adjustment as measured by the Group Rorschach is not a valid index as to the rating in nursing practice the student is likely to receive.

**TABLE V**

**RORSCHACH ADJUSTMENT SCORES COMPARED WITH NURSING PRACTICE RATINGS**

<table>
<thead>
<tr>
<th>Nursing practice ratings</th>
<th>Rorschach adjustment checks</th>
<th>8 or less</th>
<th>9 or more</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N.</td>
<td>%</td>
</tr>
<tr>
<td>Above average</td>
<td>11</td>
<td>39.3</td>
<td>6</td>
<td>24.0</td>
</tr>
<tr>
<td>Below average</td>
<td>17</td>
<td>60.7</td>
<td>19</td>
<td>76.0</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>100.0</td>
<td>25</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Chi-square: .90*      P: .50    C: .12      df: 1

*Correction for continuity is incorporated in formula used in these computations and found in Q. McNemar, *Psychological Statistics*, 207, (85a).

Pearson product moment correlations (r) were computed to permit a
a direct comparison with other studies. Therefore, the correlations were computed between the ACE and the Rorschach, the ACE and grades, and the Rorschach and grades.

A comparison between the Rorschach and ACE yielded an r of .18. This correlation is not significant at even the .05 level. These figures are inconclusive as are the results of the chi-square tests. Consequently, while the results suggest that the tests measure a common element, the level of confidence is not sufficiently high to positively confirm this tendency.

Comparing the Rorschach adjustment scores and grades an r of .19 was derived. This figure also is not significant at even the .05 level. These figures confirm the results when the chi-square test was applied to these variables. The conclusion is the same. The Rorschach adjustment score is not a valid index of academic performance.

Comparing ACE scores with grades an r of .47 was computed. This correlation is significant at the .01 level. This figure confirms the results of the chi-square test applied to these variables. For most subjects the score on the ACE will serve as a fairly valid index of the expected level of academic achievement. This was the only significant relationship found between these variables.

ANALYSIS OF THE RORSCHACH INSPECTION TECHNIQUE SCORES

The presentation and analysis just concluded was concerned with a quantitative study of the predictive value of the tests. Since the results from a comparison of grades and the Rorschach as well as nursing practice
ratings and the Rorschach were inconclusive, a different analytical approach was used. However, only the relationship between the Rorschach and grades was studied further. The ratings in nursing practice compared with test results were not investigated further for the following reasons: (1) The ratings reflect the opinion of a single instructor. (2) The ratings were given after only six months of training in a task with which the students previously had little or no acquaintance. (3) The correlations found above approached zero and indicated a low validity between test data and ratings. In view of these facts, little would be gained by further analysis of the data.

Table VI presents a summary of the adjustment scores received by applying the Munroe Inspection Technique to the Group Rorschach protocols. The subjects were grouped into approximately equal quartiles on the basis of their performance in academic work. In the group doing Superior work, the number of adjustment checks ranged from four to fourteen with a median of 7.0 and a mean of 8.6. The students doing Above Average work ranged from two to sixteen checks with a median of 7.0 and a mean of 7.6. The students doing Average work ranged from two to sixteen checks with a median of 10.0 and a mean of 10.8. The students doing Below Average work ranged from five to fourteen checks with a median of 8.0 and a mean of 9.3.

Obviously, there is considerable overlap in range of scores for the four groups. While there seems to be only the slightest possibility that there is a significant difference between these groups, a simple analysis of variance was performed to test this observation. Table VII presents a summary of the variance estimates and their level of significance when this statistical
### TABLE VI

<table>
<thead>
<tr>
<th>Academic standing</th>
<th>N</th>
<th>Total checks</th>
<th>Range</th>
<th>Median</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior</td>
<td>13</td>
<td>112</td>
<td>4-14</td>
<td>7.0</td>
<td>8.6</td>
</tr>
<tr>
<td>Above average</td>
<td>14</td>
<td>107</td>
<td>2-16</td>
<td>7.0</td>
<td>7.6</td>
</tr>
<tr>
<td>Average</td>
<td>13</td>
<td>141</td>
<td>5-17</td>
<td>10.0</td>
<td>10.8</td>
</tr>
<tr>
<td>Below average</td>
<td>13</td>
<td>121</td>
<td>5-14</td>
<td>8.0</td>
<td>9.3</td>
</tr>
</tbody>
</table>

The variance between the groups is greater than the variance within the groups, the difference is not great enough to be considered significant. This fact is indicated by the F of 1.77 which does not even reach the .05 level of confidence. Consequently, we must conclude that when the subjects are arranged in four approximately equal groups on the basis of academic performance, these same groups cannot be differentiated from one another on the basis of the number of adjustment checks received by the individual members of each group.

Although the number of checks fail to differentiate the students on the basis of academic achievement, the checks are helpful in formulating personality descriptions. Just as the excess or absence of checks in the different areas may be used to describe the personality characteristics of the individual, so also may they be used to describe the subjects as a group.
### TABLE VII

SUMMARY OF RESULTS OF ANALYSIS OF VARIANCE ON RORSCHACH ADJUSTMENT SCORES OF FOUR GROUPS OF STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of squares</th>
<th>df</th>
<th>Variance estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>73</td>
<td>3</td>
<td>24.33</td>
</tr>
<tr>
<td>Within groups</td>
<td>673</td>
<td>49</td>
<td>13.73</td>
</tr>
<tr>
<td>Totals</td>
<td>746</td>
<td>52</td>
<td></td>
</tr>
</tbody>
</table>

\[ F \text{ is } 1.77 \text{ but must be at least } 2.34 \text{ for } F \text{ to reach } .05. \]

To permit a meaningful comparison for the reader of the raw data with the description of the group, a summary for the fifty-three subjects of the number of entries for each of the categories of the Munroe Inspection Technique is presented in Table VIII. Only twenty-six of the twenty-eight adjustment checks on the list were used since checks cannot be given in the group form of the test for items one and two. Since the Inspection Technique has been formulated on the basis that a perfectly balanced Rorschach record would receive no checks and since there is no basis for expecting either an excess or absence of checks in any given area or category among randomly selected subjects, it would seem permissible to use excesses and absences of adjustment checks in the various scoring categories to describe not only an

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4 Table VIII, pages 66 and 67.
5 Number one is the number of responses; number two, reaction time.
individual but a group as well.

For the fifty-three subjects, the sum of all the adjustment scores, obtained by summing the totals for the separate scoring categories, comes to 396 entries. The average number of entries comes to 15.11 with a standard deviation of 2.57. These figures indicate that, on the average, about fifteen checks are listed in any one scoring category. By comparing the average and standard deviation with the frequencies in the various scoring categories, it is possible to determine in what areas the group deviates from "normal" and whether the deviations are characteristic of many or few members of the group.

The tendencies of the group will be examined from the standpoint of the adjustment checks for each of the twenty-six adjustment categories used. The group trends will be analyzed in the order in which they appear in the check list of Munroe.

ANALYSIS OF THE SEPARATE ADJUSTMENT CHECKS

None of the subjects received checks for rejection of a card or cards. The absence of checks in this category has little interpretative significance other than to serve as a counterindication against a severe neurotic or psychotic condition.

Concerning the manner of approach, about the expected number of checks are tabulated for the group (fourteen). There is little consistency in the direction of the W entries. There are checks for excessive W (five),

6 This number is not the same as the total number of checks, 481, which includes double and triple check entries. Actually, the above figure represents the number of subjects receiving checks in each category.
TABLE VIII

SUMMARY OF THE TOTAL NUMBER OF INSPECTION TECHNIQUE
SCORES IN EACH AREA TOGETHER WITH A QUANTITATIVE
BREAKDOWN OF THE DIFFERENT KINDS OF CHECKS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Symbol</th>
<th>B</th>
<th>BB</th>
<th>V</th>
<th>VB</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Reject</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 W</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td></td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>5 Dd</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Soc</td>
<td>7(1)</td>
<td>1(r)</td>
<td>1(11)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>10 At, Sex</td>
<td>7</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>12 F%</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>13 F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>14 SS</td>
<td>25</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>15 Fc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>16 c</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 C</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 K,k</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 M</td>
<td>6</td>
<td>14</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>20 FM</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>21 m</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE VIII (Cont.)

SUMMARY OF THE TOTAL NUMBER OF INSPECTION TECHNIQUE
SCORES IN EACH AREA TOGETHER WITH A QUANTITATIVE
BREAKDOWN OF THE DIFFERENT KINDS OF CHECKS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Tot. Mvt.16</td>
<td>2</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>23</td>
<td>CS</td>
<td>42</td>
<td>6</td>
<td>48</td>
</tr>
<tr>
<td>24</td>
<td>FC</td>
<td>18</td>
<td>4</td>
<td>30</td>
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<tr>
<td>25</td>
<td>CF</td>
<td>8</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>26</td>
<td>C</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>27</td>
<td>Tot. C</td>
<td>9</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>28</td>
<td>C:M</td>
<td>1</td>
<td>2</td>
<td>12</td>
</tr>
</tbody>
</table>

Total 396

Key to Checks Used in This Table

Checks evaluating the quantitative aspects of the record:

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Emphasis in this area</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>Break with healthy norms</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Pathological excess</td>
<td></td>
</tr>
</tbody>
</table>

Checks evaluating the qualitative aspects of the record:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Bad Form, F-</td>
<td>l</td>
</tr>
<tr>
<td>BB</td>
<td>Very poor Form, F--</td>
<td>l l</td>
</tr>
<tr>
<td>V</td>
<td>Vague Form, clouds, etc.</td>
<td>r</td>
</tr>
<tr>
<td>VB</td>
<td>Excessive vague and bad form in same record</td>
<td></td>
</tr>
</tbody>
</table>
reduction of W (two), Vague or Bad W (seven). The divergencies in the Dd area are less than may be expected for the group as only ten entries appear in this category. Most characteristic of the entire group is the absence of any entries in the S area. Not only are there no entries but in reviewing the records it may be noted that this location is very rarely used as a main and only occasionally as an additional response.

Again, the entries for irregularities of Succession are below the expected as only nine checks appear. However, this entry is of questionable value because succession cannot be scored in brief records with only one or two responses per card. Of the entries made, only one is for rigid succession, while the other eight are for loose succession.

Only a few checks are given for an insufficient number of Popular responses. Only six entries are made in this area indicating that the group is capable of perceiving the expected number of Popular responses. On the other hand, a slightly larger number of entries is made for Original responses. However, the seventeen entries are all for poor original responses. Yet, this number tends to fall within the expected range.

Again, the expected number of entries is found in the restricted range category. While there are no more checks in this area than might be expected, this restriction of range is characteristic of most of the records. Yet, a few records are very rich in the range of concepts.

Approximately the expected number of checks are found in the control area for irregularities in quantity and quality of pure form responses. Most of the entries (eleven) are in the direction of constriction while only
six tend toward a lack of control. While the check list does not contain an entry for the overall evaluation of the form level of the record, a review of the individual protocols reveals that the form level of many of the records is rather low. The tendency perhaps is slightly more pronounced than would be indicated by the twenty-seven entries for form irregularities. Most of these deviations are not extreme since a single check of "B", Bad Form, is given in the majority of cases (thirteen). The remaining entries are approximately equally divided between very bad form and a combination of vague and bad form.

For the most part rigidity of control is well balanced by tact, as is indicated by the relatively few entries for a deficiency of Pc. Similarly, there are few excesses of C (five) found in the records.

The presence of C' is slight. These responses are given in excess by only six subjects. However, the excess is rather strong in all instances as is indicated by the double check.

Another striking tendency is the absence of marked signs of "free floating" anxiety. The entries for excessive K and K are among the lowest totals of checks received.

Concerning the inner resources of these students, the group tends to be rather deviant in the quality and quantity of M responses. The majority of the entries in the check list is for underproductivity of M (fifteen). Of this number only one is severely lacking in this determinant. On the other hand, there are six entries for more M than is consistent with a well balanced protocol. The remaining two entries are made for poorly visualized form in M responses.

In the FM area a contrary tendency may be observed. Here eleven
entries are made for excessive FM while only four are made for a lack of FM. There is a slightly greater tendency for the group to be overproductive in Animal Movement responses, than in the Human Movement category.

A slight excess of m is noted in some of the records. The eight entries are below the expected frequency and do not represent a strong positive characteristic of the group.

In the color area, the predominant tendency is toward a reduction in the number of responses. In the FC category eighteen students show some reduction, while four show a marked reduction of this determinant. In addition, eight display a marked tendency to visualize the FC concept with rather poor form quality.

In the CF area the discrepancies are again marked. However, in this instance the irregularities are approximately equally divided between an overproduction and underproduction of CF. While there is no severe reduction of CF in any of the records, there is a strong overproduction of CF in one and a very strong exaggeration of the response in four records. Only two subjects gave pure C responses. This is not to be regarded as a definite characteristic of the group. Although the tendency to use color is strong, this determinant is invariably merged with some element of form.

As was indicated above, the general tendency is away from the color responses. Nine of the entries are for some reduction in the total number of color responses and three of the entries are for marked reduction of color determinants. When total color is compared with total movement, this tendency is again present. Comparing the balance between color and movement we find four entries for overproduction of movement responses, while there are
thirty-five entries for a lack of adequate color responses. In this instance twelve of the entries indicate some reduction, seven indicate marked reduction, and fourteen represent a severe reduction of color in relation to movement responses.

On the basis of these observations the writer will attempt to compose a composite portrait of the group, utilizing the above information as well as some of the qualitative aspects of the records.

DESCRIPTION OF THE PERSONALITY
CHARACTERISTICS OF THE GROUP

In Rorschach interpretation the degree and quality of control used by the subject in handling his impulses and affective tendencies is usually given primary consideration. There should be a proper balance between conscious direction and spontaneous expression. While the control function is fairly well balanced in most of the subjects, there are divergencies in the direction of both over and under control, with a slight emphasis on the former. With regard to the quality of control, considerable rigidity appears at one extreme, with occasional severe breaks under emotional stress. At the other extreme there are very adequate control systems relatively free from constriction and further modified by tact in interpersonal relations.

Characteristically, however, the group is inclined to act on impulses and emotions and has not yet achieved a well integrated fusion of rational direction and affective expression.

Now let us turn to an analysis of their modes of thinking. To be considered balanced in his thinking, the average person is expected to direct
his attention predominately to the practical affairs of life, yet not to the complete exclusion of making generalizations from these observations and experiences as well as maintaining facility in singling out some of the more unusual elements in his environment according to his needs and interests. In this respect most of the subjects present a balanced mode of approach in their thinking. The divergencies that appear in these records rarely reveal an emphasis on abstract thinking or excessive generalization. Rather emphasis is placed on singling out the unusual elements in the environment. While in some subjects this represents constructive originality, in most cases a certain arbitrariness of thinking is reflected.

This brings up the topic of originality versus stereotopy in thinking. Fundamentally, much homogeneity is indicated in their responses. Furthermore, they tend to think along the lines of most people and accept commonly held points of view. Basically, they are conformists in their thinking as the records are conspicuously free from marked oppositional tendencies. Yet their thinking is not essentially stereotyped even though the majority of the records do not represent a wide range of ideas. Nevertheless, a few of the records strongly suggest a broad range of concepts and experiences.

But their departures in original thinking most frequently take the form of adolescent flights of imagination, occasionally losing close contact with reality. Among the Superior group in academic achievement efforts in individualistic thinking represent a more constructive force than among the Below Average group, in which a somewhat undisciplined break with reality is indicated.
Before assessing the signs of overall adjustment, it may be well to examine the inner resources of the subjects, the amount of spontaneity expressed as well as the reaction of the subjects to the same. Perhaps the greatest divergencies in the protocols are found in this area. The subjects range from strong repression of inner experiences to a very free expression of the same. Only about half the subjects appear to have a well developed, well balanced inner life. Many display what is assumed to be a characteristically adolescent utilization of spontaneity. Impulses and instincts find expression in their crude form rather than in a constructive integration in the personality structure. However, many subjects are in a transitional state from adolescence to maturity as may be expected in this age group. Consequently, while many are lacking in stability according to adult standards they cannot be considered as reacting inappropriately for their age.

Although they demonstrate a somewhat irregular and unstable inner life, they are still predominately introtensive rather than extrotensive, showing greater responsiveness to their inner states than to people they contact. Perhaps at least half of the subjects experience some inadequacy in interpersonal relations. In many cases this springs from a rather fundamental deep-seated disturbance. They tend to shy away from genuine emotional involvements, preferring instead to use an impersonal, intellectual, "social formula" technique in their relations with others. While some demonstrate marked emotional responsiveness, they usually tend to react in an impulsive, egocentric manner. In a few cases genuine empathy for the feelings and experiences of other people is indicated, but this ability is rather rare. Of course, these comparisons are made according to adult standards, and
consequently the characteristics appear more as limitations than as descriptive traits of the group.

To summarize the general level of adjustment of the entire group we might say that the range is very wide, all the way from very satisfactory handling of problems to manifestation of marked neurotic tendencies. In respect to the average adjustment score of this group using the Inspection Technique scores, the subjects appear slightly better adjusted (9.0) than the officer candidates studied by McCandless (12.1 and 11.4), the artists investigated by Prados (10.3), but less well adjusted than the biologists (7.7) studied by Roe. Whether these aggregates represent actual differences in the subjects or are largely the results of differences in experimental design or in criteria used in applying the Inspection Technique, is not readily determinable. Seemingly, no single factor is responsible for these particular differences in means. While a consensus of opinion from various sources would probably affirm that artists are less well adjusted than officer candidates, we must remember that the officer candidates, as well as the nurses, are under considerable stress in their training programs. Then the artists along with the biologists represent a higher occupational level than the other groups studied. Consequently, presuming that the differences in mean scores are significant, a multitude of factors are very likely responsible for the differences.

More specifically, in manner of adjustment the records reflect a somewhat expressive, frequently uninhibited group in a transitional state between adolescence and adulthood endeavoring to adjust to the demands of
adult life. At present the efforts they are making represent a predominately intellectual, conscious direction and control of impulse and emotion. In many instances an integration of reason, emotion, and impulse has not been achieved on a satisfactory level. Most conspicuously, their problems may be found in a lack of confidence in interpersonal relations. Frequently, this problem stems from a rather deep seated emotional disturbance which forces them to be cautious in emotional involvements. In some of the subjects the disturbances are sufficiently severe to indicate that they would be well advised to seek help. On the other extreme, many of the subjects are handling their problems in a very satisfactory manner.

To summarize briefly, although homogeneous in many aspects the records reflect a somewhat wide divergency in potentialities in both personality resources and intellectual capacities as well as in manner and level of adjustment from the very satisfactory to the manifestation of marked neurotic trends.

COMPARISON WITH OTHER STUDIES

Table IX presents a summary of the results of the studies by Munroe, Cronbach, and the present investigator. In comparing the relationship between the ACE and grades, the statistics of the present study (C: .37) compare favorably with those of Munroe (.39, C corr.). However, as the original data of Munroe stand, a direct comparison with her results is not permissible.
### TABLE IX

**SUMMARY OF THE STATISTICAL DATA FROM THE PRESENT AND PREVIOUS INVESTIGATIONS**

<table>
<thead>
<tr>
<th>Study</th>
<th>Variables</th>
<th>$X^2$</th>
<th>P</th>
<th>C</th>
<th>C corr.</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>B and C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.17</td>
</tr>
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<td>II</td>
<td>A and C</td>
<td>52.20</td>
<td>.01</td>
<td>.36</td>
<td>.39</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B and C</td>
<td>81.98</td>
<td>.01</td>
<td>.43</td>
<td>.49</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AB and C</td>
<td>108.00</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>A and C</td>
<td>14.27</td>
<td>.001</td>
<td>.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B and C</td>
<td>65.20</td>
<td>.001</td>
<td>.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>A and B</td>
<td>4.23</td>
<td>.05</td>
<td>.27</td>
<td></td>
<td>.18</td>
</tr>
<tr>
<td></td>
<td>A and C</td>
<td>8.31</td>
<td>.01</td>
<td>.37</td>
<td></td>
<td>.47</td>
</tr>
<tr>
<td></td>
<td>B and C</td>
<td>2.27</td>
<td>.20</td>
<td>.21</td>
<td></td>
<td>.19</td>
</tr>
<tr>
<td></td>
<td>A and D</td>
<td>1.72</td>
<td>.20</td>
<td>.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B and D</td>
<td>.80</td>
<td>.50</td>
<td>.12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key to Studies**
- I  Cronbach
- II Munroe original
- III Munroe recomputed*
- IV Present investigation

**Key to Variables**
- A  ACE
- B  Rorschach
- C  Grades
- D  Ratings in nursing

*The sixteen cell tables were reduced to four cells.
because C was not computed from the same size contingency tables. Consequently, the data of Munroe were arranged in four cell tables and recomputed. As indicated in Table IX, this operation reduced both figures, yielding a chi-square of 14.27 and a C of .20. Nevertheless, chi-square is still significant at the .01 level of confidence.

Comparing the Rorschach adjustment ratings with grades the computations yield a C of .21 and an r of .19, neither of which is significant at even the .05 level. These results tend to confirm the findings of Cronbach (r: .17) rather than those of Munroe (.49, C corr.). In commenting on the low correlation he found in his study, Cronbach remarked that probably personality adjustment was less important in influencing academic performance in a highly talented group of students than in one representing a wide range of levels of scholastic aptitude, as were the subjects in Munroe's study.

However, this explanation will not account for the present results. In ACE score distribution, the nurses compare favorably with Munroe's subjects. However, the system of grading used at Sarah Lawrence College is different from the one employed either at the nursing school or the University of Chicago. At Sarah Lawrence the grading is probably more subjective and represents a more comprehensive evaluation of the student than is to be found in the numbers and letters given at the other institutions. Consequently, personality factors may enter more directly into evaluation of the students of Sarah Lawrence than they do in the grading of students at the University of Chicago and St. Francis School of Nursing.

Furthermore, additional variables are influential in the outcome of these various studies. There are differences in the examiners and their
methods of using the Inspection Technique. While Cronbach made no mention of departing from Munroe's procedure in applying the Inspection Technique, the writer used a more objective approach in evaluating the records. Seemingly, in view of these variables, the more effective follow-up study on the Group Rorschach would be one conducted by the same investigator using an identical procedure on groups taken from the same population.

The ratings in nursing practice compared with ACE scores yielded a C of .15; with Rorschach adjustment scores, a C of .12. These correlations are significant at only the .30 and .50 levels of confidence respectively and clearly fail to demonstrate more than a chance relationship between these variables.

In addition to the qualifications mentioned above to account for the low correlations between the Rorschach adjustment scores and grades, other factors may be involved in the low correlations found between test scores and ratings in nursing practice. These ratings represent the evaluation of a single instructor. She was not equally familiar with the proficiency of each student. Consequently, a more logically valid criterion, such as the pooled ratings of several instructors, should be used before the tests are dismissed as showing little relationship with ratings.

Now that the overall relations between the criteria and test results have been presented and discussed, some of the more specific findings and implications of the present study will be mentioned and compared with those of Munroe. However, the prospect of comparing Munroe's data with the correlations obtained in this study between test performance and ratings in nursing practice is not very rewarding. The correlations are too close to chance to
justifies a detailed analysis.

In comparing the findings of the present study with those of Munroe, the results will be analyzed in this order. First the ACE, then the Rorschach, and finally, the two tests in combination will be examined.

In the present study the following observations may be made on the basis of the comparison of ACE and grades:

1. No student with a high ACE (in percentile range 81-100) did below average work, that is, received grades that placed her in the lowest quartile. This relation was not found by Munroe.

2. A very low ACE is more likely to indicate inferior performance than is a high ACE likely to indicate superior performance. In general, this relation is found in Munroe's results but not to such a marked degree as in the present study.

Regarding the Group Rorschach results, the following observations may be made:

1. While in general the students with high adjustment ratings did better work than the students with low adjustment ratings, four students with a high adjustment rating (first quartile) did below average work (lowest quartile). Of the group doing unsatisfactory work, Munroe found only two with high adjustment ratings.

2. A trend is indicated that very low adjustment scores are more likely to indicate inferior performance than are high adjustment scores likely to indicate superior performance. The results of Munroe indicate that neither extreme of the adjustment scale is more likely to indicate the expected corresponding performance.
Combining the results from both tests, the following observations may be made:

1. Both studies indicate that no student in the upper quartile in both the Rorschach and ACE did below average work.

2. Only two students with a low Rorschach and low ACE (fourth quartile) did superior work. In Munroe's study only one student in this category did superior work.

3. The present study indicates that the ACE is a better predictor of academic performance in all respects than the Rorschach. Munroe finds the Rorschach a better predictor of academic performance in general than the ACE although the ACE is more likely to indicate superior performance than is the Rorschach.

4. Munroe suggests that a cut-off score may be used in determining which students are unlikely to succeed in college. The students in the lower quartiles, approximately, on both the ACE and the Rorschach would fall in this category.

The present study indicates that little would be gained by this procedure. Were the students rejected who were in the lowest quartile of both the ACE and the Rorschach, only three students would be included. While none of these students are doing superior or above average work, the three lowest students are not included. The students in this category rank second, sixth, and fourteenth from the bottom. This cut-off score does not include either the student with the lowest average or the student asked to leave because of three failures. The only stipulation that may be offered is that
no student above the 80 percentile on the ACE should cause concern, regardless of her adjustment score.

A brief comment may be offered on a qualitative analysis of the studies. While Munroe has not offered an extensive qualitative analysis of her records of the Rorschach, she has remarked that the Inspection Technique approach at times seems rather severe on talented students with high versatility and favors the more simple personalities, so to speak, who have far fewer divergent tendencies to integrate. The writer tends to agree with this observation. Some students appear to get by with a few checks because they have contained rather than expressed their conflicts in a manner that would lower their adjustment score.

In general, the present study confirms the findings of Munroe on the ACE and those of Cronbach on the Rorschach in predicting academic performance. Contrary to the findings of Munroe, the ACE is a superior device for prediction of grades. Neither Rorschach nor ACE scores compare favorably with nursing ratings. In the opinion of the writer, the inclusion of the Group Rorschach in the test battery to improve selection of applicants cannot be recommended on the basis of this study.
CHAPTER V

CONCLUSIONS

This chapter will be subdivided into three sections: (1) a summary of the present study, (2) conclusions (a) based on previous investigations to serve as a basis for (b) conclusions from the present study.

SUMMARY OF THE PRESENT STUDY

In general, this investigation constituted an attempt to make a follow-up study on the one by Munroe. More specifically, the writer wanted to determine if the Group Rorschach results would be likely to improve the selection procedure in a school of nursing.

The literature on the American Council on Education Test (ACE), the Rorschach Ink Blot Test, the Group Rorschach Test, and on the studies using these tests with occupational groups and students, was summarized and discussed.

In accumulating the data, the ACE was administered prior to admission to nursing school while the Group Rorschach was administered to the fifty-three student nurses during their first year of training. While standard instructions were used for the Performance of the test, the subjects were given a double inquiry, that is, a Tutorial followed by a Specific Factor Inquiry. Since this information was still inadequate for the correct scoring of many responses, an Individual Inquiry was conducted at a later date.
The records were scored and the Inspection Technique of Munroe applied. Rorschach adjustment scores and scores on the ACE were compared with grades in academic work and ratings in nursing practice at the end of their first year.

Chi-square, contingency coefficients, and Pearson product moment correlations were computed to evaluate statistically the relation between the Rorschach and ACE, and ACE and grades, and the Rorschach and grades. Chi-square was also computed to determine the relation between the ACE and nursing practice and between the Rorschach and nursing practice. Levels of significance were determined for all findings.

Comparison of the ACE and Rorschach with grades yields a C of .37 and .19 respectively. These ratios are significant at the .01 and .20 level of confidence respectively. Comparing the ACE and Rorschach with ratings in nursing practice yields a C of .15 and .12 respectively. These ratios are significant at the .30 and .50 level of confidence.

These results tend to confirm the findings of Munroe in relation to the ACE and grades (.39, C corr.) but confirm the rather negative results of Cronbach comparing the Rorschach and grades (r: .17) rather than those of Munroe (.49, C corr.).

CONCLUSIONS

First let us draw some conclusions from previous studies:

1. In numerous studies a high reliability and validity have been found for the American Council on Education Test.
2. Comparison of ACE scores with grades in academic work in schools of nursing have yielded consistently, moderately high positive correlations.

3. While several studies have been made on the reliability of the Rorschach test, the topic has neither been consistently nor extensively explored. The results are by no means conclusive.

Yet a rather high reliability has been demonstrated for scoring the record and for the essential facts of interpretation.

4. A qualitative, intuitive analysis of the Rorschach record invariably yields higher validity coefficients than when the record is subjected to quantitative statistical analysis.

The highest validity is demonstrated when the record is interpreted qualitatively and compared to a gross adjustment category. However, the test lacks demonstrated validity between specific test elements and specific behavioral entities.

5. There are some admitted differences between the group and individual forms of the Rorschach. However, only a few of these differences have been isolated. For the most part these differences have been interpreted as a function of the perceptual differences in the two tests rather than as a function of the group situation. However, there is a known difference in productivity between the group and individual situation depending on the personality of the subject.

7. The Munroe Inspection Technique is an approach to objective evaluation of the Rorschach record. The reliability of this Rorschach evaluation based on the use of this technique is rather high when employed by
examiners of approximately the same breadth of Rorschach experience. In a study on the validity of the Rorschach evaluations using the Inspection Technique, Munroe found a significant correlation between adjustment ratings on students and objective behavior in a college setting.

8. Most of the studies on occupational groups have used the group form of the Rorschach. Several studies indicated a relation between quality of performance on the test and quality of work performed by the artists-painters and scientists studied. While items have been isolated which distinguish more successful from less successful workers, these items fail to predict performance when used in a follow up study.

9. The Group Rorschach studies applied to students give varying results. Signs have been isolated to differentiate achievers from nonachievers. However, the only study that was repeated (the follow up by Cronbach on Munroe) yielded rather disappointingly inconclusive results. While he attributed this to differences in the groups, this explanation does not seem fully satisfactory.

These conclusions seem to follow from the present study:

1. Students with high scores on the ACE and Group Rorschach are more likely to do superior work than students with low scores on these tests.

2. To use this information in a statistical manner as a selection device for nursing students seems pointless. A cut off score for students in the lower quartiles on both the ACE and Rorschach failed to single out the very lowest students. On the other hand, this technique, or any technique studied, failed to even single out the students who must be studied most
carefully to evaluate their chances of completing the program. All that can be said in this respect is that students above the 80th percentile on the ACE may be admitted without question regardless of their level of adjustment, according to the present data.

3. The level of adjustment reflected in the Rorschach records indicates that perhaps some of the students could profit from counseling or psychotherapy.

4. Little is to be gained from a study of ratings in nursing practice compared to test results when the ratings are made by a single instructor or after a short period of acquaintance with new students.

5. Perhaps a more profitable area and manner of approach to the problem of adjustment in nursing practice would be to compare specific aspects of on-the-job behavior with the tentative norms of Piotrowski for vocational guidance. However, the writer asks if such research may not be premature until the basis issues of the reliability and validity of the Rorschach have been more adequately and extensively explored.
APPENDIX I

SCORING SYMBOLS USED IN THE RORSCHACH TEST

LOCATION

W  Whole Blot
D  Large usual detail
d  Small usual detail
Dd  Unusual detail
S  White space

DETERMINANTS

M  Figures in human-like activity
M-  Poorly perceived figures in human-like activity
(M)  Activity seen in statues, marionettes, or passive people
Md  Movement of human parts in isolation

FM  Animals in animal-like action
m  Abstract or inanimate movement
n  Facial expressions only

k  Shading as three dimensional expanse projected on a two dimensional plane
K  Shading as diffusion
FK  Shading as three dimensional expanse in vista or perspective

F  Form only, not enlivened, on popular level or better
F-  Form less accurate than popular
F--  Very poor or bizarre form
B  Bad form, F-
V  Vague form

Fc  Shading as surface appearance or texture, differentiated
c  Shading as surface appearance or texture, undifferentiated
C'  Achromatic surface color

FC  Definite form with bright color
CF  Bright color with indefinite form
C  Color only
CONTENT

H  Human figure
Hd Parts of human figures, not Anatomical
A  Animal figures
Ad Parts of living animals

A obj Fur skins, skulls and the like
At Human anatomy
Obj All kinds of man made objects

N  Nature
Geo Topographical and outline maps

Other symbols like Arch (Architecture) and Pl (Plant) are self explanatory

POPULARITY AND ORIGINALITY

P  Popular responses, found once in six records

O  Original responses found not more than once in one hundred records

Miscellaneous

R  Total number of responses

Sum C \(\frac{FC + 2CF + 3C}{2}\)
APPENDIX II

INSTRUCTIONS FOR THE GROUP RORSCHACH TEST

The test which you are about to take is a rather interesting one and I think you will enjoy it. All you have to do is to look at some slides which will be projected on the screen and write down what you see. Now the point about these slides is that they are nothing more or less than reproductions of ink blots. Probably all of you at one time or another have shaken your pen on a piece of paper, caused a blot of ink, and on folding the paper produced a weird splotch which may or may not have resembled something that you recognized. Now these slides are nothing more than reproductions of ink blots formed in this way. Your task is simply to write down what these splotches remind you of, resemble, or might be. [Any answer is acceptable.] You will see each of these slides or blots for... [two] minutes and you may write your answers at your own time. [In case you do not finish, continue writing after the blot has been removed. When finished, put your pencil down so I will know you are through.] Is that understood? It may help you later in the test if you make a point of numbering your answers to each slide as you write them down. [Write in Column A only on the forms you received. But first put Roman Numeral I at the top of the column. Then number each of your responses. Any questions?]

The slides were then projected on the screen in the manner indicated above. Approximately one minute was allowed between slides for the subjects to complete their responses. Then the instructions for Inquiry I were read to the subjects:

Well, this is the first part of the experiment. Now we shall go on to the second. I'm sure you have seen a lot of amusing and different things in the various ink blots, but one of the important aspects of this test is the fact that I must know as accurately as possible just what you have seen and where it is you have seen it. In order that you can do this,

1 The modifications introduced by the writer are included in brackets.
you will find on...[one of the following pages of the materials you re-
ceived] a little diagram representing the slide. (At this point Card I
with various areas marked off on it was projected on the screen.)

Now perhaps some of you on this particular slide saw a butterfly,
and then perhaps you also saw the legs of some person in the center here,
and perhaps a boxing glove in this little protuberance here or a dog's
head here on this side. (While speaking of these objects the examiner
points to the areas referred to which are encircled by a dark line on the
side.) Your next task, therefore, is to number your own answers, if you
forgot to do so before, and then with your pencil to draw a line around
the area where you saw this particular object and attach to that area the
number of the answer you are describing. For example, let us suppose you
have seen just those four things which I mentioned. You would put a
number 1 by "a butterfly". Draw a line all the way around the miniature
ink blot and put a number 1 beside this line. If "somebody's legs" was
your second answer, you would number that 2, draw a careful pencil line
around the area on the diagram and attach a number 2 to it. In other
words you will do for all your answers what has been done for these hypo-
thetical answers on the screen.

Instructions for Obtaining Added Information

After the instructions concerning the recording of the location of
responses have been given, Slide VIII may be thrown on the screen and the
added information concerning the responses may be asked for. Our in-
structions at this point were something of this sort:

"Before you begin to mark off your answers, there is something else
you have to do for me. You have to reconstruct as accurately as possible
the kind of experience you have been having or some of the characteris-
tics of the things you saw. You might have seen, for instance, two bears
or two animals here on the sides. You might have seen two flags here in
the center, or you might have called these same parts two cushions. This
part here (pink and orange) might have reminded you of some kind of
flower.

"Some of you may have said, for example, that the bears looked as if
they were climbing up, but it is also very possible that you did not put
in that last bit of information. Now is your chance to do so if you want
to. If you want to explain to me that the animals you saw looked as if
they were stepping from one rock to another, you may add that information
now. But perhaps you did not see them as if they were stepping. Fine!
That is just as important. Perhaps they looked to you as if they were
some kind of animal on a heraldic design and you may have already said so.
In that case you will not need to give any more information.

"Let us suppose that you not only saw two cushions here but you saw
blue satin cushions. In this case you would again amplify your answer
because it is important for me to know whether you got the impression of
the satiny or silky feel of the cushion, and whether you were impressed by its blueness. Again this area might have reminded you of a flower because it was the color of the sweet peas in your back yard. If it was the color that attracted your attention and made you think of those sweet peas, then add this information..." [Write this information in Column B.]

After the instructions have been given and after any pertinent questions have been answered, the slides may be projected again in the usual order, each being shown for approximately two minutes...it is easy for the examiner standing in the front of the group to see when the subjects have finished this phase of their task. On some slides it was not necessary to wait a full two minutes to elapse before going on to the next. During this period the lights in the room were on, allowing for accurate delineation of the areas, although the slides themselves were still clearly visible though perhaps not quite as brilliant as before.

Instructions for Inquiry II

The following set of instructions were formulated by the writer. The essential scoring symbols and brief explanations of each were written on a blackboard and the following explanation was displayed:

- F  Form or shape of the object
- M  Object seen in motion
- C  Color gave impression
- CF Color and Form gave impression
- FC Form and Color gave impression
- S  Shading gave impression
- SF Shading and Form gave impression
- FS Form and Shading gave impression

The following instructions were then read to the subjects:

In the concluding part of the test we would like you to summarize the information you gave in Column B. You have elaborated on your responses. Now we would like you to indicate exactly what determinants of the blots made you think of the responses that you gave. On the board are listed the determinants and a brief explanation of each. In Column C of

2 Harrower-Erickson, M. R., "Large Scale Rorschach Techniques," 21-27
your record blank we want you to write the symbol or symbols as listed on
the board that best describe the features of the blots that helped you
formulate your impressions. For example, if the shape of the blot suggest-
ed the response, write F in Column C. If the animal, person, or object
was seen in motion, record M. If the color of the blot gave the impression
list C. If the color was important but the shape of the blot was also
influential, record CF. If the form was the main determinant but the
color also helped, record FC. In the same way, list your responses for
shading. List the symbols for each response in your record.
APPENDIX III

SAMPLE DATA SHEET USED BY THE SUBJECTS
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II. SECONDARY SOURCES


APPROVAL SHEET

The thesis submitted by Henry Joseph Lambin, Jr. has been read and approved by three members of the Department of Psychology.

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content, form, and mechanical accuracy.

The thesis is therefore accepted in partial fulfillment of the requirements for the Degree of Master of Arts.

Date: April 15, 1953

Signature of Adviser: [signature]