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# Some behavioral correlates of the Rorschach experience - balance

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## BOSTON UNIVERSITY GRADUATE SCHOOL

## Dissertation

#### SOME BEHAVIORAL CORRELATES OF THE

#### RORSCHACH EXPERIENCE-BALANCE

by

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Submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

1954

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#### CHAPTER I

#### INTRODUCTION AND STATEMENT OF THE PROBLEM

The Rorschach test is widely used in the assessment of personality. It consists of a standard series of ten ink-blot designs devised by Hermann Rorschach ( 37 ). There are five achromatic plates and five chromatic plates, of which three are completely in color and two contain some color.

The administration of the test, though varying somewhat with the examiner ( 4, 26, 34 ), consists of obtaining the subject's perceptions of the ink-blots. The subject's percepts and behavior during the administration of the test serve as the basis for sets of scores from which, implicitly or explicitly, interpretations about the personality are made. These scores, most commonly derived from the location, determinant, and content of the percept, serve as the basis for a structural or formal analysis of the test performance.

This type of analysis is based on the assumption that there is a relationship between perceptual activity as structured in the Rorschach test responses and the individual personality structure. It further assumes that specific Rorschach test factors are related to specific personality components and functions. It follows, therefore, that the Rorschach test, with respect to the latter assumption, is valid to the extent that it can be verified that various personality components and functions are systematically related to Rorschach test performance.

The purpose of this study is to further experimental investigation of some of the more specific assumptions upon which the Rorschach method is founded. The general plan of the experiment will be to compare variation in performance in an independent, standardized situation as a function of variation in a specific Rorschach factor, the experience-balance. This concept expresses the relationship between the absolute number of human movement responses and the sum of the weighted color responses, the ratio, M: SC. The components of this ratio are known as determinant categories of scoring. The score represents how the subject sees rather than where or what he sees. There are four determinant. scoring categories: Movement, Color, Form, and Shading. The human movement response, M, is scored if the subject includes human or human like action in the perception. Thus, if a subject responds. "It looks like two people dancing," the determinant score would be M. Similarly, "Color is scored as a determinant only when the color actually present in the blot plays a recognizable role in the concept formation." ( 26 ). For example, the color determinant is scored if a subject's responses is. "A red bow-tie."2

Statements of the importance of the experience-balance are numerous in the literature. According to Rorschach, the relative proportion of movement to color is even more significant than the absolute number of each of these factors; since, the experience-balance

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<sup>1.</sup> Henceforth the symbol M:C will be used to express the ratio unless otherwise stated.

<sup>2.</sup> Discussion of complexities of scoring are beyond the intent of this study. For comprehensive statements of the procedures and principles of scoring the reader is referred to Beck  $(l_1)$ , Klopfer and Kelley (26), and Rapaport, Shafer, and Gill  $(3l_1)$ .

expresses the way an individual experiences life - the balance between his inner and outer expression. Klopfer and Kelley view the experience-balance as representing one of the basic personality dimensions (26). Beck considers the experience-balance as a basic factor in Rorschach test interpretation (5). As recently as 1952 Beck commented:

"I had long been hoping the laboratory would be testing all the Rorschach test variables. The ones which are having the longest wait are M and C, these elusive indices to the unconscious wish-living and to the emotions. Their day will come too." (6, p. 772).

The Rorschach test has achieved outstanding prestige. Most clinicians regard it as at least one of the two or three most important test procedures. Some consider the Rorschach test to be the most important. The scope and extensive application of the Rorschach technique testifies to its widespread acceptance in many fields - child development and guidance; vocational guidance and personnel evaluation; psychopathology; physical illness; delinquency and rehabilitation; sociology and anthropology; and therapy.

Despite the clinical acceptance and utility of the Rorschach test, there has developed, in recent years, widespread concern with the present status of the validation of the test. Those who use the test support the position that it is in need of experimentally controlled validation (1, 2, 21, 2h, 36, 38,  $h^2$ ). There is general agreement that the successful application of the test has been highly dependent upon the skill of the interpreter rather than the inherent validity of the test (21).

There are conflicting viewpoints related to the problem of experimental validation of the Rorschach test. The present study

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deals with certain aspects of a single Rorschach index. This is a problem of some concern for those who fear that such treatment of Rorschach data may result in the test becoming a "personality trait valuator rather than the dynamic mirror of interacting personality processes it is reputed to be." (54, p. 753). There is little to fear, with respect to this question, as Beck pointed out years ago.

"Insofar as the individual test factors are judged in accordance with stable frames of reference, quantitatively established, it is or can be a quantitative method. As these factors organize into the whole personality, we are dealing with another phenomenon, in another plane, one having its own laws and forming a new level of operations. The individual Rorschach test factors do make possible an analysis on the basis of quantitative identification, without destroying the personality. They are the separate color elements which blend into the light ray as a whole. The ray still remains qualitatively itself after it has passed through the prism; as does the personality, even if we have its psychogram. Every component color that has been analyzed out can be quantitatively measured. So can each Rorschach factor."

#### Furthermore,

"These factors, to recapitulate, can and must be isolated and subjected to experimentally controlled observation. This task is carried on independently of that relating to the whole personality." (2, p. 91).

The general plan of this experiment will be to measure variation in performance in an independent, standardized behavioral situation as a function of variation in the experience-balance. Such comparison should make possible a more crucial validation study of the experience-balance than has yet been attempted.

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#### CHAPTER II

#### HISTORY AND RELATED LITERATURE

I. THEORETICAL CONSIDERATIONS GOVERNING THE RORSCHACH METHOD

In experimenting with the ink-blots Rorschach related test performance with information about the subject drawn from other sources. Theoretical considerations governing the test were secondary. In the Psychodiagnostics he states:

"The conclusions drawns, therefore, are to be regarded more as observations than as theoretical deductions. The theoretical foundation for the experiment is, for the most part, still quite incomplete." ( 37, p. 13 )

It seems important, therefore, to distinguish between the basic assumption underlying the Rorschach method, and the specific assumptions governing the interpretations of the test material. Benton is especially clear in discriminating between these two fundamental components of the Rorschach method. The basic hypothesis, as he aptly points out, may be stated as follows:

"Rorschach responses are perceptions. These perceptions are determined not only by the objective stimulous-situation, but also by the individual's basic personality trends." (8, p. 757).

What the individual sees on the Rorschach cards and how he sees them is assumed to reflect his basic personality structure, and based on this hypothesis, an examiner feels free to describe personality components. The specific assumptions of Rorschach and later workers, which are numerous, deal with the individual's intellectual functions, his drives, his anxieties, control functions and needs.

As Benton points out it is wise to consider these two aspects of the Rorschach method separately, for obviously, the basic assumption may be correct even if all the specific assumptions should be found to be incorrect. It is equally obvious that certain specific assumptions may be correct while others are not. Thus Williams's findings (53) suggest a positive relationship between the formcolor integration ratio and maintenance of behavioral efficiency under stress, while studies by Young and Higginbotham (56) and a more recent study by Holtzman do not verify that pure color (C) responses appear to be valid indicators of impulsive behavior.

Experimentation concerned with the relationships between perception and personality has provided a great deal of evidence in support of the basic hypothesis. There is, in the field of psychology, widespread acceptance of the notion that perceptual activity is lawfully related to personality (9, 10).

While there does seem to be considerable support for the basic hypothesis, widespread acceptance of the specific assumptions is not to be found. This lack of agreement between clinical and experimental findings has led many reviewers to the conclusion that there is a need for explicit statement of the specific assumptions and crucial, experimental testing of them (21, 24, 36, 28, 42, 54). A review of Rorschach literature and research pertaining to the experimencebalance will, therefore, be made to determine common, consensual interpretations and assertions attributed to this Rorschach variable.

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## II. REVIEW OF THE LITERATURE ON THE EXPERIENCE-BALANCE

The experience-balance was said by Rorschach to represent the most essential components of the apparatus for experiencing. Based on his observations, Rorschach related the experience-balance to mode of living, components of intelligence, mood, affectivity, imagination, imagery, talent, art, philosophy, and psychopathology.

Rorschach presented fairly specific indicators of the behavioral significance of each of the two modes of response as well as the overt behavior occurring in persons with a clear preponderance of one component of the ratio. He described the relationship of the components in terms of the introvert-extrovert dichotomy. Those individuals in whom movement (kinaesthesias) predominate he considered introversive. The individuals in whom color predominate were considered extratensive. This typology of experience direction, although stemming from Jung, took on a different meaning for Rorschach; and, therefore, should not be considered as equivalents to Jung's concept. Introversive and extratensive traits Rorschach viewed not as fixed attributes, but as general human characteristics. The distinction seems to be that, "Rorschach's conception is more of constantly operating tendencies, and Jung's of accomplished conditions." (17). It is important also to point out that Rorschach assumed the experience-balance of an individual to be basic and for the most part stable throughout life. It cannot be changed voluntarily, for it is considered to be outside conscious control. The exercise of conscious control over the experience-balance leads to accentuation or diminution of the absolute number of human movement and color determined responses, but does not result in a change or shift in the relative emphasis of one component to the other.

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The general characteristics of the color perceiver Rorschach described as: "the urge to live in the world outside oneself, restless motility, and unstable affective reaction." ( 37 ). In contrast the individual who gave more human movement responses was characterized by "more inner life, measured, stable motility and stable affective reactions." Table I presents a more exhaustive summmary of the attributes Rorschach associated with movement-orientation and color-orientation. The statements are abstracted from his discussions relative to the experience-balance and its implications for the behavior of individuals showing a preponderance of introversion or extratension.

Rorschach considered the implications of the experience-balance to be constant regardless of the person's mental status. He states:

"To the same extent that the number of M's preponderates over the number of C's, is it certain that the affective tonus of the subject is stable be he normal, neurotic, or psychotic. The less the number of M's, that is, the greater preponderance of C's over M's, the more affective lability is in evidence." ( 37, p. 35 ).

Rapaport, in evaluating the relationship between the number of human movement responses to the number of color responses, prefers to use the concept of "qualitative wealth" rather than Rorschach's original dichotomy of introversive-extratensive personality types. In his own words.

"... the amount of movement and color responses are important components of the 'qualitative wealth' of the record, and therefore refer to the qualitative wealth of the subject's psychological experiencing...

"... the direction of the qualitative wealth is indicated by the relative prevalence of movements over colors, or viceversa. This 'direction' reflects the relative emphasis placed by an individual upon thinking and the delay of action it implies, or upon free affective expression and upon the corresponding modes of control of action." ( $3l_1$ , p. 265-266).

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## TABLE I

# CHARACTERISTICS OF THE INTROVERSIVE - EXTRATENSIVE EXPERIENCE TYPES AS STATED IN THE <u>PSYCHODIAGNOSTICS</u>

Kinaesthesias Predominant	Color Predominant				
1. More individualized intelligence	Stereotyped intelligence				
2. Greater creative ability	More reproductive ability				
3. More "inner" life	More "outer" life				
4. Stable affective reactions	Labile affective reactions				
5. Less adaptable to reality	More adaptable to reality				
6. More intensive than extensive rapport	More extensive than inten- sive rapport				
7. Measured, stable motility	Restless, labile motility				
8. Less physical activity	More physical activity				
<ol> <li>Characterized by precise, calm, phlegmatic or awkward motility, motility stabilized in some manner</li> </ol>	Show motor excitement, also the skillful, the quick, vivacious, agile subject				

In discussing the relationship of human movement responses to behavior, i.e., the behavioral implications of the M response, Rapaport states:

"From a description of the persons in whom M responses are found to prevail, it would appear that they excel in this ability for delay ... Thus the process which is presumed to lead to the M response parallels the process which actually leads to that type of behavior in everyday life to which the response apparently refers." ( 34, p. 214 ).

Rapaport discusses color responsivity and its implications for behavior within the context of delay such that the FC response denotes the greatest delay capacity over impulse expression and the C response the least.

"The <u>pure color response</u> ... appears to come about when there is a 'short-circuiting' of the associative process so that it does not reach any definitive content, and instead produces as a response - possibility a content which shows only a very slight conceptual distance from the concrete color impression ... Thus, the pure color responses represent an absence of the delay which would have allowed for a further development of associations and their integration with other qualities of the blot." ( 34, p. 235 ).

Support for Rapaport's contentions that M and C may be conceptualized along an hypothetical continuum of delay with M representing the longest delay, may be found in the results of a study by Siipola and Taylor ( 45 ). Administering the Rorschach cards under free (unlimited) and pressure (limited) time conditions, they report a significant decrease in the total number of M responses produced under the pressure conditions. They interpret this finding in the following manner:

"The evidence indicates that the kind of attitude with which M is associated is an attitude directed toward full exploitation of the freedom to delay and select. The person who chooses to delay his report for a long time while he carefully selects his response is the one who gives many <u>M</u> responses. This conclusion is in line with Rapaport's contention that the person giving many <u>M</u> responses excels in the ability to delay..."

"The inference follows that <u>M</u> is associated with behavior which is deliberative, self-reflecting, ego-controlled, and ego-acceptable. Although Rorschach's interpretation of <u>M</u> could include most of these behavioral characteristics, emphasis has usually been placed upon the self-reflecting, introversive quality which characterizes persons who perceive the world subjectively in terms of their own needs and fantasies." ( <u>45</u>, pp. <u>36-37</u> ).

Silpola and Taylor's findings with respect to the color response are equally revealing, in that they report an increase in the absolute frequency for the color response under pressure conditions as contrasted to free time conditions. Furthermore, they conclude that:

"It is notable that colored blots produced more of the formless responses under free conditions than did achromatic blots under pressure. The presence of color evidently does have special effectiveness in inducing the primitive, formless type of response." ( $\mu$ 5, p.  $\mu$ 2).

Klopfer views the "Erlebnistyp" as the aspect of personality structure refering to the extent to which a subject is responsive to promptings from within or from without and the corresponding degrees of control over inner and outer promptings. Those individuals with a preponderance of movement responses are to be considered more responsive to prompting from within, whereas individuals with a preponderance of color responses are said to be more responsive to outer promptings.

"... M seems to be the indicator of the richness of one's inner life, the creative powers, and the acceptance of one's inner promptings - i.e., how much one is at home with oneself." ( 26, p. 277 ).

With respect to color responsivity Klopfer states:

"Our hypothesis is that the subject's reaction to the color ... of the blot reflects closely his general emotional reaction to outer reality." ( 26, p. 281 ).

These conceptions seem to be in keeping with Rorschach's assertions that movement-orientation is associated with more "inner " life, whereas color-orientation is associated with more "outer" life.

Beck conceives of the experience-balance as the psychological balance of fantasy living against outward expression of feelings. He views it as, "the net direction of personality trend, giving character to all other trends." ( 5, p. 60 ).

"Even though it does not state how the individual lives in actuality, it influences that living." (5, p. 61).

Although recognizing that for Rorschach the experience-balance is in effect a concept of the whole personality, he feels that as an hypothesis it is quite elusive, in that it does not represent "psychologic activity" for which there is a great deal of knowledge, and that it leaves much to the imagination in the effort to handle it.

"It remains a vague concept, not yet concrete enough to use as an interpretive test factor." (5, p. 61).

Since he prefers to deal with and interpret the components of the experience-balance separately, let us review briefly the "meanings" he attaches to them.

M is regarded as fantasy activity or wish-fulfilling activity in the sense that these responses indicate mental activities which people should like to carry out in actuality but can not or dare not.

The importance of the color response for Beck is discussed in the context of its relationship to the individual's feeling experience. His treatment of the color responses remains essentially unchanged from Rorschach's. Schachtel's theoretical discussions further help to clarify the postulated relationships between movement, color, and behavior. In focusing on the attitudinal factors giving rise to human movement and color responses, Schachtel establishes a plausible linkage between the production of movement and color responses and certain clusters of behavioral qualities. This line of reasoning is quite similar to that used by Rapaport and Siipola and Taylor. It is of considerable import since it allows for the analyzing out of the varied meanings attributed to the experience-balance, implications for everyday behavior which are meaningfully related to it.

Because Schachtel discusses color in relation to form, and movement responses in a separate article, implications for M:C must be made primarily by inference. Schachtel helps clarify the relationships between the perception of form and color by his comments in the article on color perception ( 40 ).

In distinguishing between form and color perception Schachtel points out that, "All kinds of form perception require greater mental activity than does color perception." Form perception is characterized by a "controlled reaction," whereas color perception is characterized by an "impelled reaction." Thus, if we conceive of the human movement response as a highly articulated, integrative, and complex form perception, Schachtel's comments regarding form perception may be considered equally pertinent to human movement responses.

Furthermore, with regard to color perception, he states:

"The affect reaction is characterized ..., by the directness and immediacy of the relation between the outer and inner cause - stimulus - of the affect and the

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person affected by this stimulus. When the affect is strong, there is no time for thought, detachment, objectivity, deliberation. All these may counteract or reenforce the affect reaction, but the affect is there at first, the thought is usually as 'after'-thought." ( 40, p. 398 ).

"The examination of the color - and affect - experiences thus reveals that they have two important characteristics in common, the passivity of the subject and the immediacy of the relation object - subject. Both are referred to in what may be called the striking character of color. These basic common factors in man's experience of color and affect may be viewed as a particular attitude, a readiness to respond affectively, or - as Rorschach terms it - as the excitability of the affect. Since this excitability of the affect implies the readiness to be passively and immediately effected by something and since in the perception of color, in the susceptibility to color impressions, this readiness to be affected passively and directly is equally essential, it becomes understandable why Rorschach found a definite correlation between the extent of emotional excitement excitability - and the number of responses influenced by color perceptions, ... " ( 40, p. 399 ).

Relating color and affect to the experience type Schachtel concludes that:

"... the extratensive type is characterized by the urge to live in the world outside oneself and by a labile affectivity. All these qualities commonly emphasize responsiveness, the reactive readiness to respond and adapt to the environment..." ( 40, p. 408 ).

Schachtel's line of thinking with regard to the M response is mainly a theoretical justification and elaboration of Rorschach's original conceptions. In his theoretical exposition he is concerned primarily with the psychological processes which give rise to the M response. It is his contention that the M response results from a special kind of projection. He carefully differentiates between "distorting" projection and "non-distorting" projection. The M response, he feels, results from "non-distorting" projection, which represents those qualities with which one can identify; the ego-syntonic qualities as contrasted to the ego-alien aspects of the personality. M, then, represents:

"The capacity to project one's own life on the object perceived and thus to have empathic experience of the object perceived represents that side of man's relation to the world which contributes something of his individual personality to the complex act of experience." ( 41, p. 95 ).

Thus, if one conceives of the relation between the individual and his world schematically, one may conclude, as does Schachtel:

"The relation with the trend object to subject is primarily a receptive one, in which the subject receives impressions and is affected by them..."

"The relation with the trend subject to object is primarily a productive one, in which the subject is spontaneous and creates his world." ( 40, p. 407 ).

III. SUBSEQUENT WORK WITH THE EXPERIENCE-BALANCE

Research which has dealt with the experience-balance will be reviewed in terms of three categories: (1) Typological studies, which attempt to relate Rorschach's experience types to other typological systems; (2) Clinical studies, which comprise the bulk of past validation work, and use clinical entities and diagnostic groups as criteria; and (3) Experimental studies, which compared Rorschach variables with independent and experimentally controlled behavioral criteria.

A. Typological Studies

The earliest attempts at validation consist, for the most part, of comparisons of the Rorschach experience types with other typological systems.<sup>1</sup> Rorschach (37), as was pointed out in the previous section,

<sup>1.</sup> For a comprehensive bibliography of studies utilizing the Rorschach test, the recent work by Bell (7), which lists 798 references, is recommended.

cautioned by inference against this approach, and his position has since been supported by Vernon ( 51 ), Hertz ( 20 ), and Guirdham ( 17 ).

Hertz summarizes the essential difficulties and pitfalls inherent in such studies when she states:

"Despite Rorschach's own explanation of the essential differences between Jung's types and the Erlebnistypen, many studies have tried to compare them and validate the one in terms of the other. Questionnaires based upon the concepts of Jung have been employed with little success. It should be repeated that Rorschach's types are more inclusive than those of Jung. They do not imply opposing traits nor do they presuppose normality of adjustment for the extrovert and maladjustment for the introvert, as are implied in Jung's concepts. Rorschach's extratension, for example, includes both egocentricity and instability of emotional adaptation. The Erlebnistypen cannot be validated by questionnaires based on different meanings of introversion and extroversion." (20, p. 234).

Guilford's review and survey of research attempting to relate the experience types with other typologies concludes that such approaches are inconclusive, elusive and lack definity (16).

A number of studies have attempted to show correspondence between Rorschach's experience types and the constitutional types of Kretschmer. Enke (13), Scholl (43), and Munz (32) found that the pyknic type corresponded to the extratensive and the "schizaffin" to the introversive. The relation found by Munz and Enke between Rorschach's and Kretschmer's types is presented in Table II reproduced from Vernon (50). Kretschmer (27) reported that many movement responses show the subjectivity of the schizothymic, and many color responses the objectivity and realism of the cyclothymic. A study by Skalweit (48) reveals opposite trends.

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#### TABLE II

## THE RELATION FOUND BY MUNZ AND ENKE BETWEEN RORSCHACH'S AND KRETSCHMER'S TYPES\*

	Extratensive		Introversive	Total
Pyknic	104		16	120
Schizaffin**	57		104	161
Total	161	ж 	120	281

\* Reproduced from Vernon ( 52, p. 191). Figures for the ambiequal and coartative types have been excluded, and the totals readjusted accordingly.

\*\* Includes the non-pyknic types: leptosome, athletic, and dyplastic bodily types. Vernon (50) could find no relationship between " $\%(\underline{M} : \underline{\leq C})$ " and the Neymann-Kohlstedt questionnaire results for introversionextroversion. The questionnaire was originally validated by means of two groups, manic-depressives and schizophrenics representing, respectively, extreme introversion and extroversion. In another correlational study Thornton and Guilford (49) failed to find any relationship between M, %M, C, %C, and log M/C scores with the five scores from the Nebraska Personality Inventory, a self-rating questionnaire containing "typical introvert-extrovert items." The authors conclude, therefore:

"... that the Rorschach Erlebnistypus scores, as measured in the present experiment, are not a measure of and apparently bear little or no relationship to, those factors of introversion-extroversion measured by the Nebraska Inventory." (49, p. 329).

It must be pointed out that the authors strayed from Rorschach's original contentions in scoring as M all responses involving a primary empathic feeling of movement, whether human or non-human. Furthermore, the studies by Thornton and Guilford and the one by Vernon employ measures other than those recommended by Rorschach. Vernon's use of the " $\%(\underline{M} : \underline{\le} \underline{C})$ ", for example, raises the serious question as to the comparability of his sampling criteria and Rorschach's, and limits the applicability of his findings to clinical situations and other similar studies which employ the more conventional scoring criteria for M.

Hertz (18) reports s tetrachoric correlation of .86 between the "M:≦C formula" and the Brush Modification of the Allport

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Ascendance-Submission test. Of 164 adolescent subjects, it was found that fifty-nine were ascendant and extratensive and seventy submissive and introversive. In twenty-six cases there was disagreement. She concludes that a preponderance of movement over color is suggestive of submission, lack of aggressiveness, inability to control or persuade others, introversion. Color over movement reflects ascendance, extraversion, aggressiveness, ability to convince, control and presuade others.

For a more complete review of other studies comparing the experience types to other typological systems, Hertz (18) and Vernon (50) are recommended. Briefly, other studies have utilized as criteria form-color, manic-depressive subjects, graphological and eidetic types, and have in the main yielded few positive results. As Hertz (18) points out, "Since most investigations using typologies fail to include statistical procedures and scientific controls, conclusions in respect to the Rorschach types must be looked upon with caution." A further word of caution may be added. Since, in the majority of these studies unwarranted assumptions of validity have been made with respect to either the Rorschach test or the outside, criterion measure; any conclusions which are reached must be highly suspect.

#### B. Clinical Validation Studies

This section will include those studies that have compared Rorschach findings with clinical data.

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Many studies in this area have utilized diagnostic groups as criteria. One of the earliest of such studies is reported by Levy and Beck ( 28 ), and "compares" the Rorschach records of manicdepressive patients during various phases of the illness.

The authors report that "about forty odd patients were studied" in two separate institutions, and only fifteen subjects remained when "we excluded all cases in which any doubt existed as to the diagnosis based on report of staff conferences, or the anemnesis." The general plan of the study consisted of comparing "cases examined during or near the height of the attack and cases examined during the acute (hypomanic) phases." Levy and Beck present their findings in reference to four subjects tested in the acute manic phases and ten subjects tested in the hypomanic phase of the illness. Data are also presented comparing the records of single patients tested during two different states. Table III presents their findings on the four subjects tested in the acute manic phase of illness.

The authors conclude that these findings generally agree with Rorschach's published data except for the number of kinaesthetic replies (Levy and Beck's subjects gave considerably less movement responses); and interpret their findings in light of the assertions advanced concerning the relationship of affect to color and the associative processes, namely, that an increase in affectivity leads to more primitive and uncontrolled color responsivity, and diminution of associative-process activity.

Such findings tend to support the validity of the experiencebalance; however, the lack of fundamental experimental controls tends

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# TABLE III

M, COLOR, AND EXPERIENCE-BALANCE SCORES OF FOUR MANIC SUBJECTS TESTED IN THE ACUTE STAGE\*

Case	Number of Responses with M	FC	CF	<u>c</u>	<u>M:C</u>	
1	1	2	1	3	1:6.5	
2	l	l	5	5	1 :13	
3	1	3	l	4	1:8.5	
4	3	3	2	1	3:5	
Total	** 6	9	9	13		

\* Presented from Levy and Beck ( 28 ).

\*\* These totals were calculated by the present writer.

to reduce their acceptability. Among the more obvious sources of variation which were uncontrolled, perhaps the most important is the lack of control for examiner bias. That is, to what extent was the Rorschach examiner influenced in his interpretations by knowledge of the patient gained in diagnostic conferences and through general everyday participation in the environs of the mental institution? Such lack of control may not only influence the obtained Rorschach data, but may lead also to interpretations exclusive of the obtained test data. Furthermore, no control was exercised over such important variables as age, length of hospitalization, and intelligence.

Recently Phillips and Smith ( 33 ) have presented data with respect to the experience-balance gathered from approximately 250 normal adult males, approximately 250 adults seen at psychosomatic clinics, and approximately 800 state hospital patients "of varied diagnostic groups." Table IV reproduced in part from their text, summarizes the M and C scores by diagnostic groups and for intelligence.

The data presented on intelligence, and diagnostic groups which manifest a rather clear preponderance of thought, affective and motor disturbances, are most pertinent to the present study. Support for the contention that research dealing with M and C must take into account the intellectual levels of the subjects is to be found in their data -- C and M are found to increase with increasing intelligence, with a slightly heavier weighting on the M factor.

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# TABLE IV

	С.	М	Remarks
Average adult, normal	2-3	2-4	C and M increase with
Superior adult, normal	>3	>4	increasing intelligence
<u>Neuroses</u> Conversion hysteria Anxiety hysteria Obsessive - compulsive Obsessive (over-ideational) Compulsive symptoms Psychosomatic Neurotic depression	1-2 0-1 3-4 M dominant C dominant 3-5 .5-1	0-1 0-1 3-4 over C over M 0-1 0-1	
Psychoses Mania Depression Schizophrenia, simple Schizophrenia, catatonic Schizophrenia, hebephrenic Schizophrenia, paranoid	>4 0 0-1 1-2 1-3 0-2	3-4 0 2-4 0-1 2-3	Virtually always extratensive Generally introversive

# M AND C SCORES BY DIAGNOSTIC GROUPS\*

\* Reproduced in part from Phillips and Smith ( 33 ).

Their data tend to support and confirm the expectancies of Rorschach and other workers ( 26, 37 ). Patients with a clear preponderance of ideational symptoms and thought disturbances are found to be M dominant. Thus, the obsessive-compulsive (overideational type) group are seen to have M dominant over C, as do the paranoid schizophrenic patients. Turning to the groups in which C is dominant over M, we find the obsessive-compulsives with compulsive symptoms, the psychosomatic disorders, the manic psychosis, and the hebephrenic schizophrenics. To the extent that these findings are reliable and valid it may be concluded that the evidence supports Rorschach's contentions that the experience-balance is a basic personality configuration irrespective of the mental state, healthy or abnormal, of the subject.

Klopfer and Kelley (26), reviewing Beck (3), Rorschach (37), and Rickers-Ovsiankina (35), state:

"In the schizophrenic picture the <u>M</u> to <u>C</u> ratio is of considerable importance and according to all workers, shows a domination of the color over the movement." (26, p. 357).

#### However,

"The paranoid types tend to show the greatest number of M responses and the hebephrenic and the catatonic types the greatest number of color responses." (26, p. 357).

The increase in M responses in the paranoid record "corresponds to his overdeveloped intellectualized fantastic delusions," while, "the impulsive reactions of the catatonics and hebephrenics are shown in their crude color responses," and "the illogic of these types is manifested in their confused color reactions."

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Klopfer and Kelley are in agreement with Phillips and Smith with respect to the obsessive-compulsive neuroses. In general, they find these patients to have ambiequal experience-balances. However, when obsessive symptoms predominate, they are on the introversive side, and on the extratensive side when compulsive "habits" predominate.

The findings of Vernon ( 50 ) are essentially in agreement with the foregoing data of Klopfer and Kelley, and Phillips and Smith. Pertinent aspects of Vernon's data are presented in Table V.

The findings of the above studies lend further support to the notion that people who give a preponderance of human movement responses manifest behavior indicative of a predominance or disturbance of mental activity taking the form of ideational and obsessive malfunction and symptomatology. On the other hand, color perceivers tend to manifest heightened motor activity or motor disturbances.

A number of validation studies have utilized estimates of intelligence as criteria. Davidson and Klopfer (25) present data collected from the results of sixteen previous studies, and conclude that the results confirm Rorschach's contentions and further indicate the value of the method in the determination of the intellectual level. Their data indicate that there is a consistent rise in the absolute number of M and C responses with an increase in intelligence as one moves from the average to the very superior intellectual populations.

Although these findings tend to support the notions concerning the relationship of intellectual level as determined by use of the Rorschach test and other sources of intellectual evaluation, and may be

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Number of Responses:	3 or more B,** 2B, 1 Fb O Fb ***	1B, 2 Fb OB, 3 or more Fb			
Name of Type	Introversive	Extratensive			
Intelligence	'Inwardly differentiated', theoretical, productive	'Outwardly differentiated', practical, reproductive			
Affect	Stable, cautious, balanced, non-suggestible	Suggestible, lively, im- pulsive, versatile			
Psychopathological	Psychogenic depression, Neurasthenia, Psychasthenia Paranoid	Imbecile, Hysteria, Hebrephrenia			
Motility and expressive movements	Quiet, phlegmatic, awkward Individual	Quick, impulsive Dexterous Conventional			

CHARACTERISTICS OF RORSCHACH'S ERLEBNISTYPEN\*

\* Reproduced from Vernon ( 50, p. 187 ).

\*\* B = Bewegungsantwort, a movement or kinaesthetic response, the equivalent of M. \*\*\* Fb = Farbe, color. It is used here as the equivalent of C.

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useful as normative data in clinical practice; they contribute little to the psychological understanding of intelligence on the one hand, and Rorschach validation on the other hand. This difficulty stems primarily from the fact that estimates of intelligence do not appear to have been made independent of one another, operational definitions of intellectual functioning are lacking, and Rorschach scoring criteria vary considerably from investigation to investigation.

#### C. Experimental Studies

Recent experimental approaches to the validation of the Rorschach response dimensions appear to have taken three directions. These may be characterized as:

- A comparison of Rorschach responses with independent behavioral criteria.
- (2) Variation of conditions during administration correlated to changes in Rorschach responses.
- (3) Relation of Rorschach response to intervening or prior experimentally controlled experiences.<sup>1</sup>

Beginning with Werner ( 52 ) a number of studies have investigated the M response and its relationship with motor activity ( 31, 46, 52 ). Rorschach's contentions that "Kinaesthetic engrams ... act as inhibitors of physical activity; motor activity inhibits kinaesthetic engrams" ( 34, p. 80 ) have served as the basis for these studies.

The results of these studies have generally verified Rorschach's empirical association of the perception of humans in motion on the ink-blots and tendencies toward inhibited or controlled motor response.

<sup>1.</sup> Comprehensive reviews of such studies are found in Williams ( 54) and Benton ( 8 ).

Directly related to the present investigation is the study by Singer and Spohn ( 47 ), which is a logical outgrowth of these previous researches. This study was designed to include a fairly specific "motor-inhibition task" and a situation "designed to elicit evidence of spontaneous motor activity and environmental responsiveness," as measures of the behavioral correlates of the experiencebalance.

The motor-inhibition task consisted of a procedure adapted from the Downey Will-Temperament Scale and called for the subject to write a short phrase as "slowly as possible without lifting the pencil-point from the page or stopping the motion of the pencil." The "Waiting-Room Observation" was a modification of a procedure used by Rickers-Ovsiankina (35) in which the subject's behavior during a fifteen minute waiting period was observed and recorded. Inhibition times taken in seconds served as the data for the motor inhibition task, and the behavior observations were rated on a sixpoint scale for the degree of motor activity with a rating of zero indicating a minimum of motor activity.

The experimental population consisted of thirty-five male veteran patients diagnosed as schizophrenics. Two "groups of subjects chosen as the extremes of the <u>M: $\leq$ C</u>" were established with nineteen Introversive subjects and sixteen Extratensives. These groups were "equated" on all pertinent variables except M and C. The authors report differences between M, FC, CF, C, and  $\leq$ C as statistically significant. No significant differences are reported for age, intelligence, R, FM, m, C', c, F, and F- $\leq$ .

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The results for the motor inhibition task and the waiting-room observation for the introversive and extratensive experience-type groups, as reported by Singer and Spohn, are presented in Table VI, and are interpreted as confirming their hypothesis that

"Schizophrenic groups chosen as extremes of Introversive or Extratensive Experience-types will differ significantly in two behavioral situations. Introversives (M > C) will show longer inhibition times in a motor inhibition task and less motor activity during a waiting period than Extratensives (C > M)" (  $l_17$  )

The authors report similar findings (Table VII) when only the number of M was used in separating the groups. They interpret the coincidence of these findings as follows:

"Since these results, obtained with groups differing in both M and C, are quite similar to those obtained when only the number of M was used in separating the groups, they suggest that it is the M response alone rather than the M : Sum C ratio which is crucial in relation to motor activity. It should be kept in mind that several Ss in the High M group were technically Extratensive: they showed even more Color responses than Human Movement responses. This dominant role, played by the M response alone, while in accord with the sensory-tonic theory, casts some doubt upon Rorschach's emphasis on the Experiencetype per se ...

"Closer scrutiny of the results, however, does indicate the possibility that the color responses in the ratio do have some influence, particularly in the Waiting-Room situation which may evoke spontaneous motor response. Thus, inspection of Table [VII] indicates that when M alone is the basis for group division the difference in watting-room scores for the contrasting groups is somewhat below that which obtains when both M and C are considered." ( 17)

#### They conclude:

"The data of the experiment throw comparatively little light on the knotty problem of the Experience-type ratio... Most of the data suggest that the quantity of M rather than the Experience-type as given in M C vs. C M is most potent in determining motor responsiveness. The results presented in Table [VII] suggest, however, that

## TABLE VI

# INHIBITION TIMES AND WAITING-ROOM ACTIVITY RATINGS FOR INTROVERSIVE AND EXTRATENSIVE GROUPS\*

Group	Experimental Situation				
	Inhibition Time (in seconds)	Activity Ratings			
	Mean	Mean			
Introversives (M > Sum C)	266.16**	1.66**			
Extratensives (Sum C>M)	139.63	3.28			

\* Reproduced from Singer and Spohn ( 70 ).

\*\* Difference between group means significant at P=.01.

## TABLE VII

# INHIBITION TIMES AND WAITING-ROOM ACTIVITY SCORES FOR HIGH AND LOW-M GROUPS\*

Groups	Experimental Situation				
	Inhibition Time (in seconds)	Activity Ratings			
	Mean	Mean			
High-M	277.56**	1.84**			
Low-M	138.40	3.09			

\* Reproduced from Singer and Spohn ( 70 ).

\*\* Difference between groups is significant at P=.01.

# TABLE VIII

# INHIBITION TIMES AND WAITING-ROOM ACTIVITY RATINGS FOR HIGH AND LOW-M SUBJECTS SUBDIVIDED BY SUM C SCORES

Group	Rorscha	ch Means	h Means Experimental		
	M	<u>Sum C</u>	Inhibition Time (in seconds) Mean	Activity Ratings Mean	
High M : Low C (N = 17)	3:1	0.8	247.3	1.66	
High M : High C (N = 8)	5.1	6.3	298.0	2.23	
Low M : Low C (N = 13)	•4	1.4	139.4	2.88	
Low M : High C (N = 12)	•8	5.0	127.0	3.34	

the role of Color cannot be ignored. The amount of spontaneous motor activity in the waiting-room situation varied with a quantitative relationship between M and C somewhat different from that implied by the Introversive-Extratensive ratios. The observed relationship suggests that while M is the primary factor related to motor inhibition, Color, reflecting the individual responsiveness to the environment, to some extent counterbalances this tendency. Since the influence of Color emerged only in the waiting-room situation (which might be considered evocative of more spontaneous performance) the interpretation of the Color factor as reflecting environmental responsiveness or outgoing tendencies ... would appear consistent with the data." ( 47 ).

Considerations concerning the methodology of this study appear to shed some light on the difficulties apparently encountered by the authors in interpreting their findings. It will be recalled that the predictions made with respect to the groups in terms of introversion-extratension and High M versus Low M are similar in all respects: namely that, the introversive group and the High M group will show longer inhibition times and less waiting room activity than will the extratensive group and the Low M group. Since there does not appear to be any logical basis for the derivation of similar hypotheses for two sets of Rorschach dimensions, which in effect equates them, it would appear that there are two, not one experiments involved; each with its own hypothesis and behavioral criterion. The first might be termed an investigation of the relationship between motor inhibition and the Rorschach dimension M, and the second, a comparison of the experience-types to waiting room activity levels.

Further comment relative to the specific tasks and their relationships to the hypotheses helps to clarify this point. It has been assumed in the treatment of the data and subsequent interpretations of the results that each task contributed equally to both predictions. A question arises as to the tenability of such a procedure. While it appears that the waiting-room observation offers a free-choice situation, the same degree of assurance cannot be maintained for the motor inhibition task, which, by instruction, develops a set for inhibition. That a crucial test of overt behavior related to the M:C ratio hinges upon the use of free-choice situations has been pointed out by Schumer ( 44 ). This latter point illustrates the necessity for clearly defining the behavioral observations, which must have correlative variables in the Rorschach test.

It would appear, therefore, that the results with respect to the experience-balance and its hypothesized relationship to overt behavior have been verified, as have the results for M and its purported relationship to inhibition of activity. The difficulty appears to have arisen in that data from two independent tasks have been interpreted as being equally pertinent to two Rorschach response dimensions.

### IV. SUMMARY

In summary, a review of the Rorschach literature and research has been made to determine whether any consensus of opinion exists regarding the experience-balance. This review reveals that, although there are many interpretations of the experience-balance, some have common features. From these a broadly stated assumption may be constructed.

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Human movement responses reflect a tendency to emphasize behaviorally mental activity, whereas color responses reflect a tendency to emphasize behaviorally motor activity.

If the above assumption is tenable, it follows that variation in the experience-balance should be related to variation in behavior as measured in an independent situation. People who reveal a preponderance of one component of the ratio may be expected to manifest differential behavior, consistent with interpretations of that component. A mode of approach characterized by mental activity and its implications should, therefore, occur in those individuals who give a preponderance of human movement responses to the Rorschach test and a mode of approach characterized by motor activity and its implications should occur in those individuals who give a preponderance of color responses to the Rorschach test.

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### CHAPTER III

#### METHOD AND PROCEDURE

### I. METHOD

A. Plan of the Study

This study is designed to test the validity of some common, consensual interpretations and assertions made about the Rorschach experience-balance. The general plan of the experiment is to measure variation in performance in an independent, standardized behavioral situation as a function of variation in the experience-balance by comparing the subject's scores on relevant behavioral measures to quantitative measures of the experience-balance.

From a survey of the Rorschach literature on M:C and its interpretations one broadly stated assumption concerning the experiencebalance was constructed. The assumption, which is essentially a summary statement of some of the implicit and explicit beliefs held by many Rorschach authorities, is as follows:

Human movement responses reflect a tendency to emphasize behaviorally mental activity, whereas color responses reflect a tendency to emphasize behaviorally motor activity.

It should be noted that this assumption is not comprehensive since it does not represent all the interpretations made about the experience-balance. It does, however, represent a consensus of opinion concerning certain aspects of the experience-balance that suggest there are various modes of approach to novel situations which can be predicted from a preponderance of one component of the ratio. It may be expected, then, that variation in performance will be related to variation in the experience-balance.

If the above assumption is tenable, it should follow that:

- (1) People who give a preponderance of human movement determined responses to the Rorschach test delay motor activity longer in approaching a novel situation than do people who give a preponderance of color determined responses.
- (2) People who give a preponderance of human movement determined responses to the Rorschach test are motorically less active in a novel situation than are people who give a preponderance of color determined responses.

In order to test these propositions its components will be translated to operations which would permit the derivation of operational hypotheses. The remainder of this section will deal with the determination of the experience-balance, and the selection of subjects based upon variation in the experience-balance. Following this the selection of appropriate independent tasks and the operational measures to be obtained from these tasks will be considered. These will constitute the determination of the mode of approach, how the subject behaves with respect to the second set of tasks. The operational hypotheses will then be presented and a description of the subjects will follow.

The procedure will be presented in terms of the two behavioral situations, the Rorschach test and the independent standardized be-

# B. Determination of the Experience-Balance

Operational predictions based on the above assertions are derived by the selection of procedures designed to meet certain critical conditions. The primary criterion for the selection of subjects was variation in the experience-balance. A total of ninety-eight group Rorschach tests were obtained from four psychology classes. Twelve Rorschach tests were discarded for the following reasons: (1) The subject had a previous Rorschach examination, (2) The subject had received some form of treatment for a psychiatric disorder, and (3) The inquiry was inadequate and/or the record was unscorable.

Median cutting points were determined for both M and C using eighty-six protocols. The following median values were obtained: M = 3 and C = 2. The M group consisted of the subjects in whom M was above three and C was at or below two. The C group consisted of those subjects in whom C was above two and M at or below three. Wherever possible a subject was excluded from either group if one score, either M or C, occurred in the cell of the median value. From Table IX it can be seen that for fifteen subjects neither the M nor C score is at the median value. Four subjects in the M group had C scores of two, while only one subject in the C group had an M score of three.

## C. Determination of the Mode of Approach

The crucial condition demanded of the behavioral situation is that the individual be given equal opportunity to behave in a manner compatible with both aspects of the assumption and its implications for

# TABLE IX

# AGE, SEX, WONDERLIC SCORE, R, AND EXPERIENCE-BALANCE FOR THE M AND C GROUPS

Subject	Age	Sex	Wonderlic Score	Total R	M:C
			M Group		
1 2 3 4 5 6 7 8 9 10	19 22 21 19 22 21 25 20 23 40	F M F F M M M M	26 29 28 25 25 33 32 32 30 26	15 28 16 35 13 11 19 10 26 49	4:2 7:1 4:2 6:2 6:1.5 4: •5 6:2 7:0 10:1.5 4: •5
			C Group		
1234567890	19 38 37 25 32 21 21 35 22 21	M F M M F M F M F F F	28 30 26 23 33 24 28 28 28 28 32	34 16 24 46 37 19 28 25 26	3:6.5 2:6 0:4.5 2:3.5 2:4.5 2:4.5 1:5.5 1:5 2:3.5 1:4

behavior. It will be recalled that the behavioral consequences concern delay and the quantity of physical activity. The selected task must be, as much as is possible, minimal in its demands for one type of activity to the exclusion of other forms whether this demand be for delay or the amount of physical activity. For example, a subject presented with the arithmetic tasks of the Wechsler-Bellevue Adult Intelligence Scale, especially the last two problems in that series, could not be expected to display overt physical activity to any great extent.

The selected task, the Match Stick Tasks<sup>1</sup> makes it possible to construct a problem-solving situation which offers the subjects an opportunity for immediate activity or delay and for considerable or minimal motor activity. These tasks were applied extensively by Katona (23) in his experiments on learning. Katona's primary interest centered on the number of correct solutions achieved by subjects trained to solve the tasks in various manners. The primary focus in this study will be in recording the behavioral manifestations exhibited in attempting to solve the problems. This series of tasks make variation and extensive application of the material possible; they can be considered as presenting a novel situation to the subject; and they proved difficult enough in a pilot study to allow for extended behavior observations.

Seven of Katona's designs were selected for use in this study plus two designed by the writer.<sup>2</sup> A pilot study was conducted to ascertain

1. The designation Stick tasks will be used henceforth.

2. The designs are reproduced in Appendix A, Figure 3.

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the order of difficulty for the nine tasks. A nine by nine orthogonal latin square design randomly selected from those published by Fisher and Yates ( 14 ) was used. The use of the latin square design permitted the administration of the nine tasks to nine subjects so that no subject received the tasks in the same order as any of the other subjects, i.e., no task was repeated in either a row or a column.<sup>1</sup> Each subject was allowed a maximum of fifteen minutes to complete each of the nine problems. Any subject who failed two successive designs, who manifested little interest in the tasks, or had any previous experience with them was excluded from the pilot study. Mean time to solution of each task was obtained using all nine subjects, and the final order of difficulty was determined.<sup>2</sup>

For the experiment, reaction time, defined as the time elapsing between the last word of the instructions to the time the first move is made, served as the measure of delay. A move is defined as the change of position of a stick from its present placement whether it be from the presented design or a design constructed by the subject in working with the task. The number of moves constitutes the measure of motor activity.

### D. Operational Hypotheses

The behavioral implications, deduced from the assumption were translated into operational hypotheses.

The latin square design is presented in Appendix A, Table XIII.
Pilot study data are presented in Appendix A, Table XIV.

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- (1) The reaction time for the M group will be significantly longer than the reaction time for the C group.
- (2) The M group will make significantly fewer moves than will the C group.

#### E. Description of Subjects

Two groups of ten subjects each were obtained for use in this study. Both groups consisted, with one exception, of white, Americanborn students from psychology classes conducted at a local university. One subject was obtained from a group of student nurses in training at a local Veterans Administration Hospital.

No subject with a previous history of, or treatment for, psychiatric or neurological difficulties, as determined by available records and interview, was used. Any subject with a record of previous Rorschach examination was eliminated from the experimental population.

On the basis of the eighty-six Rorschach tests nineteen subjects were obtained: ten for the M group and nine for the C group. To obtain the additional subject group Rorschach tests were administered to a group of twenty-six student nurses. One subject from this group fulfilled all the selection criteria and was incorporated into the C group. Table IX (page 39) presents the data for age, sex, total number of Rorschach responses, experience-balance, and Wonderlic<sup>1</sup> scores.

An effort was directed toward making the groups comparable in terms of age, sex, intelligence, and total number of responses to the Rorschach test since these variables are known to bear an important

1. See Wonderlic Personnel Inventory, p. 45 below.

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relationship to the production of human movement and color responses in the Rorschach test (ll). The hypothesis that the two samples were drawn from a common population with respect to these variables is tenable. Fisher's t test (l5) was applied to the data on intelligence yielding  $t = .h_3$  and P = .66. The Mann-Whitney U test (29) was applied to the data on age and total number of Rorschach responses and revealed the following critical ratios and respective values of P: age, CR = l.02, P = .31; total number of Rorschach responses, CR = l.32, P = .19. To rule out the possible influence of sex difference an attempt was made to include an equal number of males and females in each group. The M group was composed of six male subjects and four female subjects. An equal number of male and female subjects was included in the C group.

## II. PROCEDURE

The experiment was carried out in two sessions: (1) a group session in which pertinent personal data were obtained and the Rorschach test was administered, and (2) an individual session during which the Wonderlic test and Stick tasks were administered.

Prior to the administration of the Rorschach test the subjects were given 3" x 5" coded index cards. On the card each subject recorded personal and identifying information. Following this the subjects were provided with special self-recording booklets, which contained the directions for the free association and inquiry portions of the Rorschach test. Each subject recorded the number printed on the coded index card on the face sheet of the self-recording booklet.

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By following such a procedure the experimenter was unaware, during the Stick task administration, whether the subject belonged to the M or C group.

## A. The Rorschach Test

The Rorschach test is utilized in this study as a means of selecting extreme groups of subjects on the basis of the experience-balance in contrast to its more customary application as a projective test. In the administration of the group Rorschach test the experimenter was guided by the single purpose of obtaining records that would approximate as nearly as possible those obtained by individual administration. The technique which best fulfills this requirement and is used in this study was devised by Hire (22). The use of this method of administration maintains the essentials of individually administered techniques and minimizes tendencies to define or limit the responses.

The conditions governing the Rorschach test administration were kept constant for all groups. The same equipment was used during each administration. The standard series of ten ink-blots was projected onto a screen by means of a reflector-projector. These were arranged to permit a  $2\frac{1}{2} \ge 2\frac{1}{2}$  foot image. The subjects were seated close to the center of the room to reduce possible extreme visual angles. The glow from the projector and extraneous light in the rear of the room provided the subjects with sufficient illumination for recording responses. The instructions were read by the examiner, and questioning was encouraged to insure maximum understanding of the instructions. All questions were answered so as not to bias the nature of the responses. Each plate was exposed in an upright position for three minutes during which time the subjects recorded their responses. Each ink-blot was then exposed for an additional three minutes for marking locations and writing the inquiry. The time limits were found to be quite liberal, and in a few instances additional time was allowed when a subject indicated an inclination to give more responses or elaborate the inquiry.

The Rorschach tests were scored in essentially the manner described by Klopfer and Kelley (26) for number of responses, human movement determined responses, and color determined responses. Blends were scored according to Beck (4).

An estimate of the reliability of scoring was made by deriving the per cent of agreement between the examiner's scoring and the scoring of a Ph.D. candidate in a clinical psychology training program. The following per cents of agreement were obtained: M = 99%, C = 93%, and Total R = 100\%, using twenty of the original eighty-six protocols.

The individual session consisted of the administration of two tasks: The Wonderlic Personnel Test, Form A, and the Stick tasks in counter-balanced order. The Wonderlic Personnel Test was used to derive an estimate of intelligence, because its testing time is brief (twelve minutes); it is easy to administer and score; it presents a wide variety of items; and it has been well standardized.

The author reports odd-even coefficients of correlation ranging from .88 to .94, thereby indicating high reliability. Equally high validity is indicated by coefficients of correlation ranging from .81 to .87 for the Personnel test and the Otis S-A Test of Mental Ability, Higher Examination, Thirty Minutes.

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The Personnel test was administered in the manner described by Wonderlic using the twelve minute time limit ( 55 ). The subject's score was the number of items attempted minus the number of items answered incorrectly or omitted.

### B. The Stick Tasks

The Stick Tasks consisted of a series of ten similar tasks. One task was used for a practice trial, and the nine tasks employed in the pilot study were used for the experimental trials. The sticks employed consisted of  $\frac{1}{4}$ " square x 2" pieces of natural birch. A solid tan, 19" x 24" blotter, mounted on corrugated cardboard, served as a background. Subject and experimenter sat facing each other. A tape recorder, used to record number of moves, was placed to the right of the experimenter, in such a manner that a microphone could be concealed from the subject.

After the experimenter had arranged the sticks in the form of the practice design, the following instructions were given to the subject:

"Here are some sticks arranged to form seven equal squares. You are to change these seven squares into six similar squares. In doing so you may move as many of the sticks as you desire, but when you are finished, only two sticks should have been changed from their original positions."

The experimenter now demonstrated the solution of the practice task and when it was certain that the subject understood the requirements of the problem, the first experimental stick task was constructed and presented to the subject with the following instructions:

"Now I want you to do some problems similar to the one you just finished. This time, however, you will not be shown the solution. Are there any questions? (After a short pause) Here the sticks are arranged to form equal squares. You are to change these squares into similar squares.

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You may again move as many sticks as you desire, but when you are finished, only <u>3</u> sticks should have been changed from their original positions. Let me know when you are finished."

For all nine experimental tasks a correct solution required the ultimate change of position of three sticks, and a decrease in the number of similar squares from the presented to the correct arrangement. However, the number of squares in the original presentation varied from a maximum of eight to a minimum of four. In each instance the problem required a reduction of one square, the solution of which could be accomplished by moving only three sticks.

In both the practice and experimental trials a printed replica of each task was exposed before the subject during the total time he or she worked on the problem. These printed replicas served to maintain, before the subject, the arrangement of the sticks in their original form. If the subject destroyed the presented arrangement in attempting solution, he was referred to the replica of the task and told to reconstruct the original design. This procedure was followed only when the subject inquired about the original design, and it allowed the experimenter to remain aloof from active manipulation of the sticks during the experimental trials. Moves made in reconstructing the original design were not tabulated.

For the remaining eight trials the instructions were:

"Here the sticks are arranged to form equal squares. You are to change these squares into similar squares."

Immediately after each trial the subject's construction was completely destroyed before the arrangement for the next trial was begun.

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A maximum of five minutes was allowed for each of the nine trials. This limit was arrived at from experience gained in the pilot study and with a view toward minimizing fatigue effects. Thus, for a subject who achieved no Stick task solutions, i.e., spent a full five minutes on each task, the total time spent in the individual session was approximately one hour.

The following behavioral measures were obtained using the Stick tasks:

- (1) <u>Reaction time</u> -- The time elapsing between the last word of the instructions to the time the first move is made.
- (2) Move -- The change of position of a stick from its present placement whether it be from the presented design or a design constructed by the subject in working with the task.

The number of correct solutions and the total time spent on each task was also recorded.

Reaction time and total time were recorded using a stop watch which was started with the last word of the instructions. Each move made by the subject was recorded on a continuous tape by tapping the concealed microphone. The tapping sound although inaudible to the subject, was clearly audible when the tape was replayed.

After each subject was tested, the experimenter replayed the recording and tabulated the number of moves made by each subject for each trial. This was done by starting the stop watch when the last word of the instructions was heard on the recording. On a sheet of paper ruled so that  $\frac{1}{4}$ " was equal to fifteen seconds, the experimenter

tabulated each tap, move, heard on the tape recording. Thus, by synchronizing the stop watch to the tape recording, the experimenter was able to obtain a continuous tabulation of moves made by the subject for the total time spent on each task.

## CHAPTER IV

## RESULTS AND DISCUSSION OF RESULTS

#### I. RESULTS

### A. Statistics

This study was designed so that both operational hypotheses could be tested by analysis of variance for repeated measurements of the same subjects (12). The analysis of variance was performed, in each instance, using two groups of subjects tested under nine conditions (trials). The results will be presented in relation to the two major hypotheses.

## B. Hypothesis I

The reaction time for the M group will be significantly longer than the reaction time for the C group.

Table X presents the results of the analysis of variance with respect to Hypothesis I. It will be recalled that the operational measure of delay is the reaction time of each subject for each task. In order to make tenable the assumption of normality and homogeneity of variance the reaction times were transformed to natural logarithms.

In eight instances members of the  $\mathbb{M}$  group moved no sticks in attempting to solve a task, and hence no reaction time was elicited. The same phenomenon occurred in two instances for the C group. The binomial probability of getting eight and two out of ten under the expectation of five and five is .02. To maintain the assumption

## TABLE X

# ANALYSIS OF VARIANCE OF LOG REACTION TIME FOR TWO GROUPS OF SUBJECTS TESTED ON NINE TRIALS

Source of Variation	Sum of Squares	df	Mean Square	<u>F</u>	P
Between groups: M, C	10.42	1	10.240	11.616*	<.01
Between subjects in same group	16.14	18	•897		
Total between subjects	26.56	19	2		
Between trials: I-IX	2.59	8	•324	1.800**	NS***
Interaction: trials x groups	2.26	8	.283	1.572**	NS***
Interaction: pooled subjects x trials	24.14	134	.180		
Total within subjects	28.99	150			5
Total	55.55	169	2		

\* The error term, denominator, for the between groups F test is the between subjects in the same group mean square, .897.

\*\* The error term, denominator, for the between trials and interaction: trials x groups F tests is the interaction: pooled subjects x trials mean square, .180.

\*\*\* NS indicates non-significance.

that log reaction time is normally distributed all ten observations were excluded, reducing the total number of observations in the analysis of variance from 180 to 170.

The statistical hypothesis to be tested is:

Ia. The M and C groups are drawn from populations having equal mean log reaction times.

This hypothesis is tested against that class of alternatives which states that the mean log reaction time for the M group is larger than the mean log reaction time for the C group.

This hypothesis is tested by the between groups F test. The value of F is given by 10.420/.897 = 11.616. This value meets the requirements for significance at <.01 level for one and eighteen degrees of freedom. The test of significance indicates that the variation in group means is greater than can reasonably be attributed to random sampling from a common population. Consequently, hypothesis Ia, the null hypothesis, is rejected in favor of the stated alternatives. It is apparent from an examination of the data that the group means,  $\bar{X}_{\rm M} = 11.89$  and  $\bar{X}_{\rm C} = 8.38$  do differ in the direction predicted.

A test of homogeneity of variance was performed to ascertain whether the highly significant value of the between groups F could be attributed to mean differences. The null hypothesis was tested with respect to the sources of variation for the pooled error term, between subjects in the same group; since, the sum of squares for the error term is contributed to by both groups. The obtained value of F is given by 10.62/5.51 or 1.93, and does not meet the requirements for significance for nine and nine degrees of freedom. The F test applied to the variances of the two samples gives support to the belief that these samples are homogeneous in variance. Since the obtained value of F is not significant, there is every reason to believe that the highly significant value of the between groups F is the result of differences in the means.

The results, thus, indicate acceptance of the hypothesis that movement-predominant people delay longer than color-predominant people when they are given a free choice situation which allows them to proceed in whatever manner they wish.

In addition to the test of the hypothesis it is worthwhile to examine the data for any further information the analysis may yield. Consideration of the trials raises the question as to whether there are any differential effects with respect to reaction time which might be due to the tasks. The F for trials is given by .324/.180 = 1.80, and this value does not meet the usual requirements for significance for eight and 134 degrees of freedom. It may be inferred, therefore, that the nine trials are homogeneous with respect to reaction time, since, the difference between them can be accounted for in terms of random sampling from a common population.

The final question to be raised with respect to reaction time asks whether there is any differential effect for the groups with respect to tasks. The F for trials x groups interaction is equal to .283/.180 or 1.572. This value does not meet the usual requirements of significance for eight and 134 degrees of freedom.

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It may be inferred, therefore, that there is no interaction between the two groups and the nine trials; since, the difference can be accounted for in terms of random sampling from a common population.

Figure 1 presents the data on the trial means for the M group plotted against the trial means for the C group and the grand means.

# C. Hypothesis II

The M group will make significantly fewer moves than will the C group.

Table XI presents the results of the analysis of variance with respect to Hypothesis II. The operational measure of physical activity is the number of moves made by the subject. Here, as in dealing with reaction time, no moves were elicited in ten instances. These ten observations were excluded from the analysis in order to maintain the assumption of normality of distribution. This left a total of 170 observations.

A further complication exists in that all the subjects did not use an equal amount of time in working on the tasks. The maximum amount of time that could be spent was forty-five minutes. However, the solution of a task reduced the total working time that a subject used. Because of this some measure other than absolute number of moves was needed. Consideration of the most appropriate measure was dictated by the principle that the measure be most representative of motor activity as defined in this study. Such a measure would be one that considered the time factor, and the score decided upon was one that yielded a ratio, Rate of Moves. This ratio

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Figure 1. Mean Log Reaction Time and Grand Means for the M and C Groups

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## TABLE XI

## ANALYSIS OF VARIANCE OF RATE OF MOVES FOR TWO GROUPS OF SUBJECTS TESTED ON NINE TRIALS

Source of Variation	Sum of Squares	df	<u>Mean</u> Square	F	P
Between groups: M, C	162.890	1	162.890	29.982*	.001
Between subjects in same group	97.760	18	5.433		
Total between subjects .		260.650	19		
Between trials: I-IX	23.84	8	2.98	2.274**	<.05
Interaction: trials x groups	26.64	8	3.33	2.550**	<05
Interaction: pooled subjects x trials	175.08	134	1.306		
Total within subjects		225.56 1	.50		
Total		486.21 1	.69		

\* The error term, denominator, for the between groups F test is the between subjects in the same group mean square, 5.433.

\*\* The error term, denominator, for the between trials and interaction: trials x groups F tests is the interaction: pooled subjects x trials mean square, 1.306. is given by the formula, Moves/Time units (15 seconds). The subject's score for a single trial was determined by dividing the total number of moves on that trial by the number of fifteen second units which were used in attempting to solve the task. Since the maximum time limit for each task was five minutes, it was possible for a subject to use a maximum of twenty time units on a task. Thus, a subject who made eight moves in five time units achieved a ratio of 1.600; 8/5 = 1.6000.

The statistical hypothesis to be tested is:

IIa. The M and C groups are drawn from populations having equal mean rates of moves.

This hypothesis is tested against that class of alternatives which states that the mean rate of moves for the C group is higher than the mean rate of moves for the M group.

Hypothesis IIa is tested by the between groups F test. This value of F is given by 162.890/5.433 = 29.982. This value of F is highly significant at  $\langle .001 \rangle$  level for one and eighteen degrees of freedom. The test of significance indicates that this variation in group means is greater than can be reasonably attributed to random sampling from a common population. Consequently, hypothesis IIa is rejected in favor of the stated alternatives. An examination of the data reveals that the group means do differ in the predicted direction --  $\bar{X}\bar{c} = 31.19$  and  $\bar{X}M = 12.30$ .

The null hypothesis was tested with respect to the variances of the two groups contributing to the error term, between subjects in the same group sum of squares, which is equal to 97.76. Partitioning

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the value reveals the component variance estimates to be equal to 64.97 and 32.79. The obtained  $F_{=}$  1.99, and for nine and nine degrees of dreedom does not meet the usual requirements for significance, and supports the assumption that these samples are homogeneous in variance. Since the obtained value of F is not significant, there is every reason to believe that the highly significant between groups F value is the result of mean differences. Hence, the results indicate that the C group is physically more active than the M group.

In addition to the test of the hypothesis it is worthwhile to examine the data for any further information the analysis may yield. Consideration of the trials raises the question as to whether there are any differential effects with respect to number of moves which might be due to the tasks. The F for trials is given by 2.980/1.306or 2.274; and for eight and 134 degrees of freedom is significant at the <.05 level.

A further question asks whether there is a differential effect for the groups with respect to the tasks. The F for trials x groups interaction is given by 3.330/1.30 = 2.550 and is significant at  $\langle .05 \rangle$  level for eight and  $134 \rangle$  degrees of freedom. Figure 2 presents the data for the trial means for the M group plotted against the trial means for the C group and the grand means.

Since the error term interaction: pooled subjects x trials is obtained under the assumption that the component variances are ' homogeneous, this assumption was tested by the ratio of the component variances. F = 1.329/1.282 = 1.04 (seventy and sixty-four degrees of

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Figure 2. Mean Rate of Moves and Grand Means for the M and C Groups

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freedom) and does not meet the usual requirements for significance, and it is concluded that the significant between trials and interaction: trials x groups F tests are due to differences in means.

These results suggest that the mean difference between the groups does not remain consistent from trial to trial. The trial means presented graphically in Figure 2 (page 59) suggest the general interpretation that as the tasks increase in difficulty the groups tend to accentuate that behavior predicted for them. For the first three tasks the trial means for the C group are noticeably higher than those of the M group, and both curves are in an approximate parallel relationship. The mean difference increases for the fourth task. On the seventh task the difference in means becomes most marked. After a slight decline on the eighth task, the difference is accentuated on the ninth task. Thus, it appears that notonly does a complex relationship exist, but that the M group tends to exhibit less physical activity as the tasks become increasingly difficult while the C group increases its physical activity.

It is important to consider the number of solutions achieved by the groups, and to examine the relationship of this factor with the findings of the major hypotheses. It has been shown that the groups differ significantly in the predicted directions with respect to reaction time and number of moves. It may be argued that the obtained results reflect the insightfullness and appropriateness of these groups in dealing with the problem solving material rather than represent characteristic differences of

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behavior as predicted from the experience-balance. If, say, the groups are found to differ with respect to the number of solutions, it might be argued that such results as were obtained for reaction time and number of moves, are related not necessarily to the experiencebalance but to the subjects' recognition and handling of the problems in a more appropriate manner. Thus, if it be found that the C group achieved significantly more solutions than the M group, the interpretation may be offerred that the lack of delay and increased physical activity exhibited by the C group results in greater efficiency and is the more appropriate behavior in dealing with the tasks. Similarly, if M excelled it might be inferred that the conceptualized ("think before you act") approach is more efficient. On the other hand, if it be found that there are no differences between the groups with regard to the number of solutions, the interpretation that the results be considered a reflection of characteristic modes of approach is substantiated.

Statistical analysis of the data on number of solutions was made. The null hypothesis was tested for each of the nine trials by means of the Chi square test. The null hypothesis states that the M and C groups attain an equal number of solutions. Since the total N is small, and the expected frequencies fall below ten, Yates' correction for continuity is applicable in all nine instances ( 30 ). The results of the Chi square analyses are presented in Table XII, and indicate acceptance of the null hypothesis in all nine instances.

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Τ	A	B	L	E	3	$\overline{C}$		E
-		-	-			-	-	

# CHI - SQUARE TESTS FOR NUMBER OF SOLUTIONS BETWEEN THE M AND C GROUPS

Task	Number of by G	Number of Solutions by Group		P	
18	M	<u>c</u>	<u>.</u>		
I	8	4	1.875	>.10	
II	9	9	•556	>.30	
III	8	7	0	•99	
TV	2	2	•313	>50	
v	6	5	0	•99	
VI	5	24	0	•99	
VII	24	1	1.067	•30	
VIII	3	24	.879	>.30	
XI	5	6	0	•99	

## II. DISCUSSION OF RESULTS

The evidence indicates support for the hypothesis that subjects who respond to the Rorschach test with human movement as a determinant predominating over color as a determinant are more delayed in their behavior and are physically less active than colorpredominant perceivers. In light of the supplemental finding that the groups did not differ in efficiency it seems appropriate to interpret the results as indicating that the experience-balance reveals rather characteristic response tendencies inherent in the mode of approach concept. Further evidence for this interpretation is suggested by the finding that with respect to the amount of physical activity, the mean group difference was inconsistent from trial to trial.

Movement-preponderant people may be characterized as being cautious and deliberate in their approach to novel situations. On the other hand color-preponderant people appear to jump into things with relatively little delay or caution. Once actively involved they tend to be far more active motorically than movement-preponderant individuals in their attempts to resolve the situation.

It does not seem feasible, however, to consider movement and color perception as indicating different kinds of people. It would seem fallacious to conclude, for example, that individuals who give prevailingly more human movement responses on the Rorschach test are incapable of behavior found to be characteristic of people who give

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more color determined percepts. It would seem, rather, that as individuals they have developed a preference for a particular mode of approach. Perhaps it is that as individuals they carry around with them sets to respond in a particular way. Those responses consistent with the set are the responses upon which they have come to rely and express most easily. When confronted with a free choice situation, these response tendencies are manifested to the relative exclusion of others.

The behavior of one subject in the M group was particularly revealing in this respect. After working deliberately on the first three tasks, which he solved with apparent ease, he seemed to encounter considerable difficulty on the following task. He made no moves for the first two minutes at which point he asked, "Is it all right to experiment?" When told he could proceed in any way he desired, he made nineteen moves, in a random, trial and error fashion, during the next minute. During this time his behavior resembled closely the behavior manifested by C group subjects. In the last two minutes of the allotted time, and on the succeeding tasks, he reverted to his more characteristic behavior, apparently disappointed that the change in approach had not yielded a successful completion of the task.

It seems justified, therefore, to conclude that as individuals some prefer one mode of approach to novel experiences rather than another. In this sense individuals who give a preponderance of human movement responses to the Rorschach test may be said to prefer

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a mode of approach characterized by deliberation, caution and little motor activity. Individuals who give a preponderance of color determined responses may be said to prefer a mode of approach characterized by little delay and a high degree of motor activity.

Even if a plausible case for a linkage between M and a certain cluster of behavioral qualities and between C and a certain cluster of behavioral qualities can be established there still remains the question of why these specific linkages should exist. Why should the person who delays and engages in comparatively little physical activity create the M response while the person who delays little and is physically active create the color response?

The M and color responses have been the subject of a great deal of theorizing and speculation. Generally, however, much of the speculation is confined primarily to one component of the experiencebalance. It seems necessary, therefore, to look for factors common to the production of M and color responses and the behavior associated with each, in order to attempt explanation of the behavioral relationships of the experience-balance.

Rapaport ( 34 ) has emphasized the quality of the Rorschach cards, and has offered an explanation in terms of Gestalt concepts and theory, particularly in reference to the closure phenomenon and the organization and integration of associative processes in relation to temporal factors. Movement responses arise, according to his thinking, because certain features of the Rorschach stimuli do not provide closure, and in achieving closure the subject attributes movement qualities to the forms. Thus, stationary, static

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forms are perceived in motion. Considerable delay is assumed to be a prerequisite to the performance of this complex perceptual process. On the other hand, the perception of color to the exclusion of form is felt to be a relatively simple perceptual act requiring little delay. As form becomes more integrated with hue in a given percept, the perceptual process is considered to become more complex and to require more delay for the development of the associations. However, the degree of delay necessary for the formcolor-response is thought to be less than that necessary for the development of the M response. It would seem that this explanation also focuses on the stimulus aspect of the subject-object relationship.

While Rapaport's explanation in terms of stimulus characteristics may serve adequately in accounting for the delay associated with the M response it does not appear as useful in accounting for the observed differences in physical activity associated with the experience-balance. However, an alternate hypothesis suggested by Schachtel ( 39 ) and amplified by Siipola and Taylor ( 45 ), may account for both delay and motor activity. This hypothesis emphasizes the role of the self in relation to the task situations and de-emphasizes the importance of the stimulus material. It is proposed that self-processes are activated at the outset by the manner in which the subject relates to the task, and that it is the attitude of the subject in relations. Furthermore, that since this attitude is basic to the personality functioning, the behavioral

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processes invoked by the subject to deal with the Rorschach test and other situations are similar.

According to this line of reasoning if the subject involves himself freely and personally, self-processes of a certain kind are activated and their influence continues throughout the task to produce the type of process necessary for the production of the M response. The self becomes highly involved in the task and exploits the freedom to delay in order to develop and select those characteristics of the Rorschach cards offering the most personal satisfaction, human beings in activity ( 45 ). On the other hand, the subject who prefers to maintain a certain amount of distance from the task is more likely to develop percepts which exhibit little involvement and identification with the material and which employ the more fundamental aspects of the cards: size, shape, and color.

Certain qualitative features of the subjects' behavior in the Stick tasks situation support these notions. Members of the M group were observed to become highly involved in the tasks. They frequently made inquiry into the nature of the tasks, and insisted on being shown the solutions of those designs which they failed to solve. In many instances they verbalized attempts to apprehend some "theory" which would aid in the solution of all the tasks. They conveyed the impression that if <u>they</u> made the right moves, they could solve the task. They did not appear anxious to leave when all

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the tasks were finished.

Members of the C group engaged in considerable, random trial and error activity. One got the impression that they felt that if enough moves were made the right solution would appear. One subject verbalized this in saying, "I should think the solution would strike you." Members of the C group frequently commented that a particular task could not be done, whereas M group subjects, under similar circumstances, said, "Can't see this one."

The manner in which the sticks were moved revealed variations between the subjects. The subjects in the C group for the most part were very decisive and quick in moving the sticks, whereas a great deal of hesitancy and doubt was manifested by many M group subjects. Not infrequently a movement-preponderant subject would pick up a stick, hold it for some time, while apparently searching for a correct placement, and then complete the move or replace the stick in its original position. The distinction is perhaps more clearly brought out by the verbalizations of two subjects. One, an M group subject, said, "Let's see. Where would I put that one?" The other, a member of the C group, said, "Let's put it here, and see what that does."

The exploitation, in the Rorschach situation, of the freedom to delay, in order to develop and select, necessary for the M response seems also characteristic and consistent with the behavior manifested in the novel situation. This type of hypothesis seems also applicable to the C group and their behavior in the novel situation, and leads to the inference that the subjects develop distinctive

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attitudes toward both situations. The evidence indicates that the kind of attitude with which M is associated is an attitude directed toward full exploitation of the freedom to delay and select, an attitude indicative of active involvement, and an attitude indicative of mental activity. It appears that the attitude with which color responsivity is associated is an attitude indicative of passive involvement and motor activity.

#### CHAPTER V

#### SUMMARY AND CONCLUSIONS

#### I. SUMMARY

Despite the general clinical acceptance and utility of the Rorschach method there has been wide concern with the status of validation of the test. Those who use the test have agreed that it is in need of experimentally controlled validation; since, the successful application of the test has been highly dependent upon the skill of the examiner rather than the validity of the test.

The Rorschach test dimension chosen for experimental investigation was the experience-balance. This concept expresses the relationship between the quantity of human movement responses and the sum of the weighted color responses, the ratio  $M:\leq C$ .

A review of the literature with respect to the experiencebalance indicated some common, consensual interpretations. From these, one broadly stated assumption concerning the experiencebalance was constructed. The assumption, which is essentially a summary statement of some of the implicit and explicit beliefs held by users of the test, has been stated as follows:

Movement responses reflect a tendency to emphasize behaviorally mental activity whereas color responses reflect a tendency to emphasize behaviorally motor activity. Two behavioral predictions were derived from this assumption:

- 1. People who give a preponderance of human movement determined responses to the Rorschach test delay motor activity longer in approaching a novel situation than do people who give a preponderance of color determined responses.
- 2. People who give a preponderance of human movement determined responses to the Rorschach test are motorically less active in a novel situation than are people who give a preponderance of color determined responses.

The general plan of the study was a comparison of subjects' scores in an independent, standardized behavioral situation to quantitative measures of the experience-balance.

Variation in the experience-balance served as the primary criterion for the selection of the subjects. Median cutting points were determined for both M and C using eighty-six Rorschach protocols. The obtained median values were:  $\bar{X}_{M} = 3$ ,  $\bar{X}_{C} = 2$ . The M group consisted of those subjects in whom M was above three and C at or below two. The C group consisted of those subjects in whom C was above two and M at or below three.

A modified version of the Katona (23) Match Stick Tasks was employed as the independent, standardized behavior situation. This test was selected for the following reasons: (a) it offered the subjects an opportunity to behave in a manner compatible with both aspects of the assumption and its implications for behavior; (b) it was possible to vary and apply the material extensively; and (c) these tasks proved difficult enough in a pilot study to allow for extended behavioral observations. Nine tasks were used. They were arranged in an ascending order of difficulty as determined by the pilot study. Reaction time, defined as the time elapsing between the last word of the instructions to the time the first move was made, served as the measure of delay. A move was defined as any change of the position of a stick either from the arrangement placed before the subject, or from an arrangement he had devised in attempting solution. The number of moves served as the measure of motor activity.

The behavioral implications, deduced from the assumption, were translated into operational hypotheses.

- 1. The reaction time for the M group will be significantly longer than the reaction time for the C group.
- 2. The M group will make significantly fewer moves than will the C group.

Two groups of ten subjects each were used in this study. Both groups with one exception, consisted of white, American-born students drawn from psychology classes conducted at a local university. One subject was obtained from a group of student nurses in training at a local hospital. No subject with a previous history of, or treatment for psychiatric or neurological difficulties, as determined by available records and interview, was used. Any subject with a record of previous Rorschach examination was eliminated from the experiment. The hypothesis that the two samples were drawn from a common population with respect to age, intelligence, and total number of Rorschach responses was found tenable. The M group consisted of six male and four female subjects, and the C group contained an equal number of males and females.

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The subjects were seen in two sessions. The first session consisted of the administration of the group Rorschach test. The second session was made up of the individual administration of the Stick tasks and the Wonderlic Personnel Inventory, Form A, which was used to derive an estimate of intellectual level.

The operational hypotheses were translated into the following statistical hypotheses:

- 1a. The M and C groups are drawn from populations having equal mean log reaction times.
- 2a. The M and C groups are drawn from populations having equal mean rates of moves.

These hypotheses were tested against the classes of alternatives which state that la.) the mean log reaction time for the M group is larger than the mean log reaction time for the C group, and 2a.) the mean rate of moves for the M group is lower than the mean rate of moves for the C group.

Analysis of variance for repeated measurements was used to analyze the data. The analysis of variance was performed, in each instance, using two groups of subjects tested on nine trials. Both hypotheses were tested by the between groups F test. The obtained value of F for hypothesis la equalled 11.616, and is significant at <.01 level. The value of F for hypothesis 2a was 29.982, significant at <.001 level of confidence.

The results of the statistical analyses indicated acceptance of both stated alternatives. Support was therefore indicated for the

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behavioral predictions that movement-preponderant people delay longer and are motorically less active than color-preponderant people. In light of the supplemental finding that the groups did not differ with respect to efficiency of solution, the results were interpreted as indicating that the experience-balance reveals rather characteristic response tendencies.

#### II. CONCLUSIONS

This study makes no claim of having contributed new meanings to the Rorschach experience-balance. It would seem rather, that some of the insights of those who use the test have gained experimental support. In this sense the clinician may form interpretations on the basis of the experience-balance with more ease and support and need to rely less on intuition and subjective impressions.

Movement-preponderant people tend to approach novel situations with caution and deliberation. They tend to engage in relatively little motor activity when compared to color-preponderant individuals. On the other hand, color-preponderant people become motorically active much more quickly and engage primarily in motor activity in attempting to resolve and adjust to the novel situation.

## III. IMPLICATIONS FOR FURTHER RESEARCH

In the course of this research questions and issues have arisen which point to the future for possible resolution. It is not the purpose here to supply definitive procedures, but to recognize and structure some of these problems.

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1. The results of the present study demonstrated that validity can be ascertained for Rorschach variables. A need remains to attempt verification of other important Rorschach factors. On the basis of inference as to which personality processes are related to specific indices, research could be structured that would experimentally study the interactions between these indices, attempting to approach the total personality.

2. The results of the present study suggest that the experiencebalance may bear an important relationship to the nature of social and interpersonal activity. Of particular interest would be research designed to measure group activity in groups composed solely of movement preponderant and color-preponderant individuals. The findings of the present study suggest the expectation that these groups would tend to exhibit differential behavior with respect to the type of communication between the members, the type of activity emphasized, and the type of defenses employed. For practical purposes, if such results are obtained, it may be found beneficial to consider the possibility of admixing these individuals in establishing groups. The use of the experience-balance score, in clinical situations, may prove to be extremely valuable and might conceivably lead to a relatively simple, objective criterion for the selection of group members.

3. A final implication drawn from the results of the present study concerns the relationship of efficiency of performance of movement-and color-preponderant individuals in situations which impose

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demands for activity antithetical to their preferred modes of behavior. It should be kept in mind that in the present study both groups were found to be equally proficient in the problem-solving situation. The subjects were offered a free choice situation, and the set for either type of approach was kept at a minimum. However, there are life situations which impose particular demands upon the individual and offer little opportunity for choice. Within this latter framework the question may be raised: What is the proficiency of a movement-preponderant individual in a job or task situation demanding large amounts of motor activity? Similarly, what is the performance efficiency of a color-preponderant individual in a situation demanding deliberation and caution for maximal productivity? Study of occupation adjustment under such circumstances may also prove fruitful.

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# APPENDIX A

## STICK TASK DESIGNS AND PILOT STUDY

DATA

Practice Design

 $\infty$ 



Figure 3. Stick Task Designs

ub ject	Order of Presentation								
	I	II	III	IV	V	VI	VII	VIII	IX
A	1**	2	3	4	5	6	7	8	9
В	2	3	l	5	6	4	8	9	7
С	3	l	2	6	4	5	9	7	8
D	4	5	6	7	8	9	l	2	3
Е	5	6	4	8	9	7	2	3	l
F	6	4	5	9	7	8	3	1	2
G	7	8	9	l	2	3	4	5	6
Н	8	9	7	2	3	l	5	6	4
I	9	7	8	3	l	2	6	4	5
						•			

9 x 9 ORTHOGONAL LATIN SQUARE USED IN PILOT STUDY TO DETERMINE ORDER OF DIFFICULTY\*

 $\ast$  Selected randomly from the latin squares in Fisher, R.A. and Mates, F. ( 14 ).

\*\* The numerical values in the cells represent the task number prior to the arrangement as determined by the pilot study.

# TABLE XIV

PILOT	STUDY	RESULTS
- means - as	the see to the sum	the second second second second second

Task Number*	Mean Time in Seconds
I	32.67"
II	37.33"
III	103.78"
IV	249•44m
γ	265.11"
VI	271.22 <sup>n</sup>
IIV	348 <b>.</b> 78"
VIII	360.44m
IX	383.33"

\* Final order of presentation.

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## SOME BEHAVIORAL CORRELATES OF THE

RORSCHACH EXPERIENCE-BALANCE

## Abstract of a Dissertation

## Submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

### BOSTON UNIVERSITY GRADUATE SCHOOL

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#### ABSTRACT

#### SOME BEHAVIORAL CORRELATES OF THE RORSCHACH

#### EXPERIENCE-BALANCE

Despite the general clinical acceptance and utility of the Rorschach method there has been wide concern with the status of validation of the test. Those who use the test have agreed that it is in need of experimentally controlled validation; since, the successful application of the test has been highly dependent upon the skill of the examiner rather than the validity of the test.

The Rorschach test dimension chosen for experimental investigation was the experience-balance. This concept expresses the relationship between the quantity of human movement responses and the sum of the weighted color responses, the ratio M: **§**C.

A review of the literature with respect to the experiencebalance indicated some common, consensual interpretations. From these, one broadly stated assumption concerning the experiencebalance was constructed. The assumption, which is essentially a summary statement of some of the implicit and explicit beliefs held by users of the test, has been stated as follows:

Movement responses reflect a tendency to emphasize behaviorally mental activity whereas color responses reflect a tendency to emphasize behaviorally motor activity. Two behavioral predictions were derived from this assumption:

- 1. People who give a preponderance of human movement determined responses to the Rorschach test delay motor activity longer in approaching a novel situation than do people who give a preponderance of color determined responses.
- 2. People who give a preponderance of human movement determined responses to the Rorschach test are motorically less active in a novel situation than are people who give a preponderance of color determined responses.

The general plan of the study was a comparison of subjects' scores in an independent, standardized behavioral situation to quantitative measures of the experience-balance.

Variation in the experience-balance served as the primary criterion for the selection of the subjects. Median cutting points were determined for both M and C using eighty-six Rorschach protocols. The obtained median values were:  $\bar{X}_{M} = 3$ ,  $\bar{X}_{C} = 2$ . The M group consisted of those subjects in whom M was above three and C at or below two. The C group consisted of those subjects in whom C was above two and M at or below three.

A modified version of the Katona (23) Match Stick Tasks was employed as the independent, standardized behavior situation. This test was selected for the following reasons: (a) it offered the subjects an opportunity to behave in a manner compatible with both aspects of the assumption and its implications for behavior; (b) it was possible to vary and apply the material extensively; and (c) these tasks proved difficult enough in a pilot study to allow for extended behavioral observations. Nine tasks were used. They were arranged in an ascending order of difficulty as determined by the pilot study. Reaction time, defined as the time elapsing between the last word of the instructions to the time the first move was made, served as the measure of delay. A move was defined as any change of the position of a stick either from the arrangement placed before the subject, or from an arrangement he had devised in attempting solution. The number of moves served as the measure of motor activity.

The behavioral implications, deduced from the assumption, were translated into operational hypotheses.

- The reaction time for the M group will be significantly longer than the reaction time for the C group.
- 2. The M group will make significantly fewer moves than will the C group.

Two groups of ten subjects each were used in this study. Both groups with one exception, consisted of white, American-born students drawn from psychology classes conducted at a local university. One subject was obtained from a group of student nurses in training at a local hospital. No subject with a previous history of, or treatment for psychiatric or neurological difficulties, as determined by available records and interview, was used. Any subject with a record of previous Rorschach examination was eliminated from the experiment. The hypothesis that the two samples were drawn from a common population with respect to age, intelligence, and total number of Rorschach responses was found tenable. The M group consisted of six male and four female subjects, and the C group contained an equal number of males and females.

The subjects were seen in two sessions. The first session consisted of the administration of the group Rorschach test. The second session was made up of the individual administration of the Stick tasks and the Wonderlic Personnel Inventory, Form A, which was used to derive an estimate of intellectual level.

The operational hypotheses were translated into the following statistical hypotheses:

- 1a. The M and C groups are drawn from populations having equal mean log reaction times.
- 2a. The M and C groups are drawn from populations having equal mean rates of moves.

These hypotheses were tested against the classes of alternatives which state that la.) the mean log reaction time for the M group is larger than the mean log reaction time for the C group, and 2a.) the mean rate of moves for the M group is lower than the mean rate of moves for the C group.

Analysis of variance for repeated measurements was used to analyze the data. The analysis of variance was performed, in each instance, using two groups of subjects tested on nine trials. Both hypotheses were tested by the between groups F test. The obtained value of F for hypothesis (la)equalled 11.616, and is significant at  $\langle .01 \rangle$  level. The value of F for hypothesis 2a was 29.982, significant at  $\langle .001 \rangle$  level of confidence.

The results of the statistical analyses indicated acceptance of both stated alternatives. Support was therefore indicated for

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the behavioral predictions that movement-preponderant people delay longer and are motorically less active than color-preponderant people. In light of the supplemental finding that the groups did not differ with respect to efficiency of solution, the results were interpreted as indicating that the experience-balance reveals rather characteristic response tendencies.

This study makes no claim of having contributed new meanings to the Rorschach experience-balance. It would seem rather, that some of the insights of those who use the test have gained experimental support. In this sense the clinician may form interpretations on the basis of the experience-balance with more ease and support and need to rely less on intuition and subjective impressions.

Movement-preponderant people tend to approach novel situations with caution and deliberation. They tend to engage in relatively little motor activity when compared to color-preponderant individuals. On the other hand, color-preponderant people become motorically active much more quickly and engage primarily in motor activity in attempting to resolve and adjust to the novel situation.

In the course of this research questions and issues have arisen which point to the future for possible resolution. It is not the purpose here to supply definitive procedures, but to recognize and structure some of these problems.

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1. The results of the present study demonstrated that validity can be ascertained for Rorschach variables. A need remains to attempt verification of other important Rorschach factors. On the basis of inference as to which personality processes are related to specific indices, research could be structured that would experimentally study the interactions between these indices, attempting to approach the total personality.

2. The results of the present study suggest that the experience-balance may bear an important relationship to the nature of social and interpersonal activity. Of particular interest would be research designed to measure group activity in groups composed solely of movement-preponderant and colorpreponderant individuals. The findings of the present study suggest the expectation that these groups would tend to exhibit differential behavior with respect to the type of communication between the members, the type of activity emphasized, and the type of defenses employed. For practical purposes, if such results are obtained, it may be found beneficial to consider the possibility of admixing these individuals in establishing groups. The use of the experience-balance score, in clinical situations, may prove to be extremely valuable and might conceivably lead to a relatively simple, objective criterion for the selection of group members.

3. A final implication drawn from the results of the present study concerns the relationship of efficiency of performance of

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movement-and color-preponderant individuals in situations which impose demands for activity antithetical to their preferred modes of behavior. It should be kept in mind that in the present study both groups were found to be equally proficient in the problem-solving situation. The subjects were offered a free choice situation, and the set for either type of approach was kept at a minimum. However, there are life situations which impose particular demands upon the individual and offer little opportunity for choice. Within this latter framework the question may be raised: What is the proficiency of a movementpreponderant individual in a job or task situation demanding large amounts of motor activity? Similarly, what is the performance efficiency of a color-preponderant individual in a situation demanding deliberation and caution for maximal productivity? Study of occupation adjustment under such circumstances may al so prove fruitful.

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#### AUTOBIOGRAPHY

I was born on June 23, 1920 in Lynn, Massachusetts, of Tillie and Louis Rosenthal. I have one younger sister.

I attended the public schools of Lynn and graduated high school in June of 1938.

After high school I worked four years in an innersole factory prior to entering the Armed Forces in February 1942.

I was discharged from the service in February, 1946 and entered Boston University College of Liberal Arts in May of the same year. I received my B.A. degree in June 1949 and entered the Graduate School of Boston University at that time. I received my M.A. degree from Boston University in June 1951.

From October 1950 to October 1953 I was employed as a Clinical Psychology Trainee at various Veterans Administration installations.

In February 1952 I married Marilyn Weiss of the Bronx, New York.