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A COMPARISON OF RORSCHACH'S *ERLEBNISTYPUS* AND JUNG'S *EINSTELLUNGSTYPUS*

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

John Carleton House III

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Dedication

This dissertation is dedicated to my wife Cynthia, whose support and dedication has made it and the realization of so many of my dreams possible, and to my children, Anne-Elizabethe, Seth, and John, who have tolerated "not yet" too often for too long.

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Abstract

This study examined the relationship between Rorschach's constructs of introversive and extratensive and Jung's constructs of introverted and extraverted. Rorschach's Experience Balance was used to determine *Erlebnistypus,* or Experience Type and the Myers-Briggs Type Indicator (MBTI) was used to determine *Einstellungstypus*, or Attitude Type. The *Erlebnistypus* was determined using both a weighted and an unweighted color Experience Balance in all comparisons in order to determine the contribution of color weighting. Types, as determined by the Experience Balance, were compared to types determined by the MBTI Extraversion-Introversion (EI) scale. Component scores and transformed scores of the Experience Balance and the MBTI EI scale were correlated. Finally, use of color and human movement and emotion were used as discriminators in an attempt to determine type as measured by the MBTI EI scale.

Subjects participating in this study were 44 College Scholars and Honors students at the University of Tennessee. Subjects were all high achieving and had been screened for serious psychopathology. The data for this study were collected over a period of three years.

There were no significant relationships between the Rorschach indices and the MBTI indices, regardless of the method of comparison, when all of the subjects were used. Weighting color made no contribution to the ability of the Experience Balance to predict introversion or extraversion as measured by the MBTI.

The Experience Balance and the MBTI EI scale strongly agreed when introverts as determined by the MBTI were examined separately from extraverts. Sensors, as determined by the MBTI, demonstrated the opposite relationship between the Experience Balance and the MBTI EI scale, when examined separately from Intuitives.

Thus, the hypothesized relationship appears to exist for some subject types, but not for others, and appears in a negative form for yet other types, suggesting that accuracy of interpretation of the Experience Balance in Jungian terms may vary depending on individual personality characteristics.

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List of Abbreviations

M	Sum of a subject's human movement (HM) and human emotion (HE) responses on the Rorschach
C	Sum of a subject's color responses on the Rorschach
Cw	Sum of a subject's weighted color responses on the Rorschach
R	The number of responses a subject produces on the Rorschach
MPCT	M divided by R
CPCT	C divided by R
CWPCT	Cw divided by R
CM	C minus M plus 100
CWM	Cw minus M plus 100
MBTI EI	Myers-Briggs Type Indicator (MBTI) Extraversion/Introversion Scale
E	Sum of a subject's responses on the MBTI Extraversion/Introversion scale scored in the extraverted direction
I	Sum of a subject's responses on the MBTI Extraversion/Introversion scale scored in the introverted direction
EICONT	Continuous score reflecting a subject's preference for extraversion or introversion on the MBTI: low scores reflect a preference for extraversion, while high scores reflect preference for introversion

CHAPTER I

INTRODUCTION

This study is part of an ongoing research project headed by Alvin G. Burstein and Sandra Loucks. Burstein and Loucks' reformulation of the scoring of Rorschach's test is based on theory as well as tradition, drawing from each where it is strongest. The project is dedicated to collecting data from a variety of specific populations, including healthy adults, healthy children, college students, paranoid schizophrenics, and other hospitalized psychotics, in order to provide normative data for use with the Burstein-Loucks Scoring System and to further develop the theoretical underpinnings of the system.

The present study focused on only one aspect of that system, and used only one subgroup of the normative sample. The specific aspect of the Burstein-Loucks System investigated was the relationship between color and movement on the Rorschach and the constructs of introversion and extraversion. The subgroup used in this study was a group of high-achieving college students.

The present study is a construct validation study that examined Rorschach's constructs of introversive and extratensive types, and compared those with the similar constructs of introversion and extraversion as defined by Carl Jung. Measures of introversion and extraversion obtained by the Myers-Briggs Type Indicator (MBTI) were compared to subjects' "type" as determined by a modified Experience Balance (using unweighted color), and a traditional Experience Balance

(using weighted color) using data obtained using the Burstein-Loucks Rorschach Scoring System.

In addition to comparison of the two different means of typing subjects, the present study investigated the relationship between human movement and emotion responses on the Rorschach and introversion responses on the MBTI and the relationship between color responses on the Rorschach and extraversion responses on the MBTI.

Finally, the relative contribution of the various factors that comprise the Experience Balance have in identifying introversion and extraversion were examined. Both weighted and non-weighted color were used in each comparison in order to determine the value of weighting color in the Experience Balance.

CHAPTER II

LITERATURE REVIEW

Introversive and Extratensive Types: The Erlebnistypus

Early Development of the Experience Balance and the Erlebnistypus

During the last twelve years of Hermann Rorschach's life, he developed what has become best known as "the Rorschach," the most widely used projective instrument in psychological assessment to date. Rorschach's test is comprised of ten symmetrical inkblots, each on a separate card. Five of the cards are achromatic, two are achromatic and red, and the remaining three are comprised of multicolored pastels. The cards are presented individually to the subject, who is then expected to respond to the ambiguous stimuli on the card. The subject's responses to the cards are recorded and scored by the examiner.

Initially conceived as an investigation into imagination and perception, Rorschach's test soon showed promise as an instrument that could reveal information about personality. Specifically, Rorschach found that different diagnostic categories tended to respond to the stimulus cards in consistent enough fashion that the test was useful in diagnosis of psychopathology. It is important to note, however, that Rorschach (1969) did not see his test

> as a means of delving into the unconscious. At best, it is far inferior to the other more profound psychological methods such as dream interpretation and association experiments. This is not difficult to understand. The test does not induce a "free flow from the subconscious" but requires adaptation to external stimuli (p. 123).

Rorschach published his first manuscript on the test, Psychodiagnostics, in 1921. He died before the publication of his second paper "The Application of the Form Interpretation Test." Though he died before he could develop his test further, it is clear from the paper he was working on at the time of his death that Rorschach (1969) had begun to develop the relationship between his test and psychoanalysis (Oberholtzer, in Rorschach, 1969, pp. 184-5). It is interesting to note that those who took up the development of Rorschach's test have, until recent times, neglected the theoretical concomitants and implications of the instrument and focused exclusively on empirical methodologies.

One of the greatest obstacles to adequate research on Rorschach's test has been the considerable variation in administration, scoring, and interpretation of the results, and the lack of an adequate theoretical underpinning. Burstein and Loucks (1989) have developed an approach to Rorschach's test that offers consolidation of those methods of scoring and interpretation that have been used with the Rorschach, yet goes beyond the common limitations of an atheoretical approach. Their system of scoring and interpretation is tied to psychoanalytic theory; their work continues in the direction in which Rorschach's work was apparently headed, while drawing on the research and theoretical contributions of numerous scholars since Rorschach. The present research is part of an effort to clarify the relationship between certain Rorschach variables, the *Erlebnistypus*, color, and human movement, and the hypothetical constructs they supposedly manifest.

Introversive and extratensive are constructs central to Rorschach's work. Influences on his thinking about introversion and extraversion,

constructs similar to Rorschach's introversive and extratensive, are easily traced to his contemporary, Carl G. Jung. Rorschach was quite familiar with Jung's *Einstellungstypus* (attitudinal types) and referred to them in his own work.

Jung (1971) defined introversion as follows:

> Introversion means an inward turning of libido in the sense of a negative relation of subject to object. Interest does not move toward the object but withdraws from it into the subject. Everyone whose attitude is introverted thinks, feels, and acts in a way that clearly demonstrates that the subject is the prime motivating factor and the object is of secondary importance. Introversion may be intellectual or emotional, just as it can be characterized by sensation or intuition. It is active when a subject voluntarily shuts himself off from the object, passive when he is unable to restore to the object the libido streaming back from it. When introversion is habitual, we speak of an introverted type (pp. 452-3).

Jung elaborated his description of the introverted "type" by pointing out that the introvert orients himself by subjective factors, not by objective data; "whereas the extravert continually appeals to what comes to him from the object, the introvert relies principally on what the sense impression constellates in the subject" (p. 374). Unlike some later writers (e.g. Gray, 1967) who refer to the introvert in critical terms, Jung defended the inner focus of the introvert, pointing out that the extravert often forgets "that perception and cognition are not purely objective, but are also subjectively conditioned" (p. 374). By implication, the introvert could be said to forget that perception and cognition are not purely subjective.

It is in discussing the unconscious attitude of the introvert that he pointed out the extreme that constitutes the pathological introvert:

> The object assumes terrifying proportions in spite of the conscious attempt to degrade it. In consequence, the ego's efforts to detach itself from the object and get it under control become all the more

> violent. ...The introvert's alienation from the object is now complete; he wears himself out with defensive measures on the one hand, while on the other, he makes fruitless attempts to impose his will on the object and assert himself. ...The typical form his neurosis takes is psychasthenia, a malady characterized on the one hand by extreme sensitivity and on the other by great proneness to exhaustion and chronic fatigue. ...His fear of objects develops into a peculiar kind of cowardliness; he shrinks from making himself or his opinions felt, fearing that this will only increase the object's power (p. 379).

In contrast, Jung described extraversion as:

> an outward turning of libido. I use this concept to denote a manifest relation of subject to object, a positive movement of subjective interest towards the object. Everyone in the extraverted state thinks, feels, and acts in relation to the object, and moreover in a direct and clearly observable fashion, so that no doubt can remain about his positive dependence on the object. If it is an extraversion of thinking, the subject thinks himself into the object; if an extraversion of feeling, he feels himself into it. In extraversion there is a strong, if not exclusive, determination by the object. Extraversion is active when it is intentional, and passive when the object compels it, i.e., when the object attracts the subject's interest of its own accord, even against his will. When extraversion is habitual, we speak of the extraverted type (p. 427).

It is the predominant orientation by the object, Jung said , that is the criteria for extraversion. The extravert's "whole consciousness looks outward, because the essential and decisive determination always comes from outside. ...His interest and attention are directed to objective happenings" (p. 334). Jung spoke of how the extravert easily adjusts to the demands of the environment, but can be so outer-directed that "even the most obvious of facts, the condition of his own body, receives scant attention" (p. 335).

In discussing the pathological extreme of extraversion, he claimed that it is hysteria that is the most common neurosis, citing the classic impression that the hysteric makes of an "exaggerated rapport with persons in the immediate environment" and "a constant tendency to make

himself interesting and to produce an impression" (p. 336). He went on to say that "the more complete the conscious attitude of extraversion is, the more infantile and archaic the unconscious attitude will be" (p.338). In describing his use of the word archaic, Jung says that "all psychological traits that exhibit the qualities of the primitive mentality" are archaic (p. 413), apparently referring to the overly dependent posture the pathological extravert assumes.

Jung also commented on the maintenance of psychic equilibrium, and points out that all individuals have both extraverted and introverted characteristics, even though the construct is seen to be a bi-polar one. It is when the predominant response is introverted or extraverted that the individual is referred to as an introvert or an extravert.

Rorschach addressed the processes of introversion and extraversion in relation to the individual's approach to the ambiguous stimuli his inkblots present. He pointed out that human movement (M) responses are different from color (C) responses, if only because there actually is color on the blots, while the blots themselves actually do not move. M responses are those that "are determined by *form perceptions plus kinaesthetic factors*. The subject imagines the object interpreted to be in motion" (Rorschach, 1969, p. 25, italics in original). He goes on to caution that the sensation of motion must be present, and that it is only human movement that is scored M. An animal engaged in human activity would be scored M, since the subject can experience that. C responses are those "where the interpretation is determined by color," (p. 30). Rorschach thought that there was a difference between those color responses that did and those that did not rely on form. He scored those color responses that relied more on form than

color FC. Those that relied primarily on color, but used form as well, were scored CF. Those that relied only on color were scored C.

Rorschach went on to hypothesize that there are differences in the mental processes involved, and he later noticed that there were nosological differences found between those who responded with a greater number of color responses than movement responses, and those who responded with a greater number of movement responses relative to color responses.

Rorschach (1969, p. 82 ff) referred to Jung's notions about introversion and extraversion, though he claims that his use of the concept of introversion "has almost nothing except the name in common with Jung's" concept of introversion. Yet, as Bash (1955) notes, it was the pathological overtones which were replaced in Jung's 1921 work Psychological Types, which appear to have caused Rorschach's concern. Bash pointed out that Jung's conceptualization of attitude types and their psychological functions underwent some fundamental changes between 1917 and 1921, but that Rorschach would not have been able to read Jung's 1921 publication Psychological Types before the publication of his own original work. It is likely, argues Bash, that Rorschach might not have even read Jung's 1921 revision of his ideas before his death in 1922. Bash understands that Rorschach reached his constructs of introversive and extratensive relatively independently from Jung's later (1921) conceptualization of introversion and extraversion. It is for this reason that Rorschach's description of introversive and extratensive so closely resembled Jung's final conceptualization of introversion and extraversion, and for this reason that Rorschach would disavow any similarity of his construct with that of

Jung. Thus, Bash argues, Rorschach's quote above denying that similarity is "misleading."

Mindess (1955) pointed out that Rorschach's conceptualizations of introversive and extratensive "parallel to a great extent ...the qualities of the introverted and extraverted personality" (p. 245). He also pointed out that both Rorschach and Jung "agree that these characteristics are constitutional, both agree that an individual's behavior may belie his real type, and both agree that for optimal development neither aspect may be too rigidly suppressed" (p.245). Singer and Brown (1977) contended that "it seems clear that Rorschach's M:sum C ratio is similar in many ways to the final formulation by Jung" (p.354).

Rorschach clarified what he considered to be the differences between his own constructs and those of Jung, emphasizing that the process of introverting, or "turning in upon oneself" is quite different from the state of introversion, or "being turned in upon oneself." Rorschach saw Jung's concept of introversion as describing the state of introversion, while his own work attempted to describe a subject in the process of introverting while attempting to make sense of the ambiguous stimuli Rorschach's test provides them with. The "turning in upon oneself" to which Rorschach referred is a psychological process that he postulated takes place when a subject produces a movement response. Rorschach saw that those persons who produced material in their responses that clearly did not come from the cards themselves must have drawn upon inner experience, an introverted process. He thus referred to these persons as "introversive," distinguishing them from those who are "introverted," or in a constant state of introversion. Rorschach postulated that those persons who behave

introvertedly to the cards (i.e. M>C) have the *ability* to behave introvertedly in other situations. "Introversive features in the test cannot be said to be introversive tendencies in actual living; nevertheless, a case with introversive experience type would certainly fall in the group with introversive tendencies" (Rorschach, 1969, p. 92). An introversive individual has the capacity for behaving introvertedly, but may or may not manifest introverted behavior. An introvert, however, is seen to be more rigidly stuck in an introverted state, and thus would always fall in the category of individuals capable of acting introvertedly, and thus will "certainly fall into the group with introversive tendencies."

Likewise, those subjects who behave in an extraverted way to the cards (i.e. C > M) have the ability to behave extravertedly in other situations. Rorschach noted that these persons were clearly responding to the color of the blots, a response to the extrapsychic characteristic of the cards, a more extraverted process. He referred to these individuals as "extratensive," distinguishing them from those who are "extraverted," or in a constant state of extraversion. Extratensive individuals are able to respond in an extraverted manner, though unlike the extravert, they do not always do so.

Unlike his conceptualization of M responses, Rorschach saw C responses as varying in the degree to which they relied on color. Thus, he chose to weight those responses that relied exclusively on color 1.5, while those that relied in part on form, but predominantly on color were weighted 1.0 and those that relied in part on color, but predominantly on form were weighted 0.5. There is no record of any research that Rorschach conducted supporting the use of this apparently arbitrary weighting system.

It is the sum of a protocol's weighted C's that provides the right side of the ratio Rorschach used to determine the "*Erlebnistypus*," or "Experience Type," while the sum of movement responses forms the left side. The ratio itself is called the Experience Balance. "M types" produce more M responses than C responses and are thought to be introversive while "C types" produce more C responses than M responses and are thought to be extratensive.

In addition to the difference in extreme, Rorschach saw his "M" and "C" types as different from Jung's "introvert" and "extravert" in that extraverts are described by Jung as bi-polar. Rorschach did not see the processes that result in M responses and the processes that result in C responses as exclusive or opposite, but rather as different processes;

> Introverted individuals are, colloquially contrasted to extraverted. The extraverted corresponds to the C type. There is a disadvantage in this terminology, however, in that it might be concluded that introversion and extroversion are really opposites; let me repeat again that this is not true. The psychological processes producing introversion and extroversion are not opposite, but different. They are as different as thinking and feeling, as motion and color (Rorschach,1969, pp. 82-83).

> M type simply means that a certain group of functions is developed to a marked degree. The opposite of this would be poor development of these functions. This does not mean that it would become the C type, for the C type refers to another group of functions entirely, and these functions may, like the others, be markedly or poorly developed (Rorschach, 1969, p. 79).

Thus, Rorschach pointed out the independence of M functions and C functions. It is interesting to note, as Bash (1955) does, that only three months before his death, in a letter to Georg Roemer, Rorschach wrote that in some areas he "must draw nearer to Jung, who distinguishes an attitude of the conscious and an attitude of the unconscious and says:

'When the attitude of the conscious is extraverted, the the attitude of the unconscious is complimentarily introverted' " (p. 239). It would seem that Rorschach had begun to question the simplicity of types as he initially described them, as well as begun to see a greater similarity between Jung's constructs and his own before his death.

The third possibility in the distribution of M and C responses occurs when the two sides of the ratio are equal, or nearly equal. When neither M nor C responses seem to predominate, Rorschach called the resulting type "ambiequal," though he said "very little about the ambiequal group because it allows no general conclusions" (p. 90). He did say that he saw this group as combining "the introversive pattern with strong extratensive features and tendencies," (p. 92) though predominantly introversive when the subjects are normal, and more extratensive when the subjects are manic or hypomanic.

Rorschach described another dimension of responses to his test, which he labeled "dilated" for those protocols which contained many M and/or C responses, and "coarctated" for those protocols which contained few of either. The dimension of coarctated/dilated was seen to moderate any conclusions drawn from the *Erlebnistypus*. That is to say, Rorschach saw a distinct difference between a coarctated M type and a dilated M type, as well as an equally distinct difference between coarctated and dilated C types.

One difference between the coarctated and dilated types is the affective restriction in the former, whereas "subjects with dilated experience type are never emotionally dull; they are always capable of affective reaction"

(p. 93). Rorschach's graphic distribution of both type and the dimension of dilated-coarctated is reproduced in Figure 1.1 below.

Though Rorschach did not develop his test around the constructs of introversion and extraversion, it is clear that his conceptualization of the Experience Balance was influenced by them, specifically by Jung's conceptualization of introversion and extraversion. In discussing the C type, for example, Rorschach pointed out that "the general characteristics of the C type...are...the urge to live in the world outside oneself...restless motility...and unstable affective reactions" (1969, p. 83).

With regard to the M type, Rorschach pointed out that "M responses are characteristic of subjects who function more in the intellectual sphere, whose interests gravitate more toward their intrapsychic living rather than toward the world outside themselves" (p. 64). He went on to point out that these inner, or self-determined productions, like dreams, function as a substitute for physical activity (p. 72).

Rorschach (1969) summarized his findings about the experience types in a table from which the following was taken:

Kinaesthesias Predominant (M Types):	Color Predominant (C Types):
More individualized intelligence	Stereotyped intelligence
Greater creative ability	More reproductive ability
More "inner" life	More "outward" life
Stable affective reactions	Labile affective reactions
Less adaptable to reality	More adaptable to reality
More intensive than extensive rapport	More extensive than intensive rapport
Measured, stable motility	Restless, labile motility
Awkwardness, clumsiness	Skill and adroitness

		0 M 0 C (Pedants and subjects in «normal» depressive moods)		
1 M 0 C («normal» depressives)		1 M 1 C —		0 M 1 C Unintelligent
2 M 0 C —	2 M 1 C Good average	2 M 2 C —	1 M 2 C Average	0 M 2 C Moron
M 0 C	M 1 C 3 M 2 C	3 M 3 C (Compulsive neurotics)	2 M 3 C 1 M 3 C Practical («Flighty»)	0 M 3 C
x M 0 C Psychogenic depressions	M » C M › C Abstract Theoretical Imaginative Artists	x M x C (Subjects in «normal» manic moods) Very talented subjects	M ‹ C M « C Practical Industrious	0 M x C Imbeciles

Those categories whose place in the scheme is conditioned by affective factors are enclosed in parentheses.
M » C = M's predominate greatly over C's.
M › C = M's predominate little over C's.

Adapted from Rorschach,1969, p. 73

Figure 1.1 Rorchach's Distribution of Types

The work Rorschach completed before his death indicated that the *Erlebnistypus* was a fairly stable and enduring quality of personality. He did report that mood, especially depression and elation, and fatigue could affect the experience type, but the effect he describes has more to do with the coarctation or dilation of the record than any change in the direction of skewedness in the Experience Balance.

Later Development of the Experience Balance and the Erlebnistypus

Even though the Experience Balance is central to Rorschach's conceptualization of his technique, and the *Erlebnistypus* was considered by Rorschach to be among its most useful results, remarkably little research has been dedicated to either. This is especially curious in light of the fact the heavy emphasis Rorschach put on empirical research. Even Rorschach systematizers seldom discuss type, experience or otherwise, though there is frequent reference to the Experience Balance in the history of Rorschach development. Even so, there has been considerablely more emphasis on the constituents of the Experience Balance than on the ratio itself by researchers and systematizers alike.

Beck (1952) restricted the importance of the Experience Balance, instead placing more emphasis on the meaning of the interpretation of M and C, and later on the sum of M and C (Beck, 1961) as an index of an individual's psychological resources. He viewed M as a representation of activities the subject "should like to, but cannot or dare not" engage in the outer world (1961, p.72). He saw M, therefore as a reflection of one's fantasy life, and viewed the content as "identical" with what Freud referred to as the

material of the unconscious and of what the psychoanalyst studies in dreamwork.

Beck believed that there is a direct relationship between color responses and "the individual's outwardly expressed feelings" (1961, p. 98). He asserted that Rorschach was correct in his interpretation of color, and saw no need to elaborate or correct that interpretation.

Klopfer, et al. (1954) spent some time discussing the relationship of M anc C in terms of introversive and extratensive qualities. The features of introversive and extratensive subjects were described in terms very similar to Rorschach's, though there was more of an emphasis on the healthy, adaptive functions of each than in Rorschach's work. They saw the interpretation of this relationship as a central feature in the synthesis of the interpretive hypotheses, and appear to have accepted Rorschach's formulation without serious exception. They argued, however, that another ratio that must be considered is that of animal movement and object movement to sum of achromatic responses (i.e. FM+m:Fc+c+C' in Klopfer's notation). They saw this ratio as augmenting the Experience Balance, suggesting that the balance of human movement and color alone are not as good a means of determining *Erlebnistypus* as examination of additional ratios of perceptions of movement and achromatic color.

M responses were described as "perhaps the most significant and yet, interpretively, the most elusive single determinant" (Klopfer, et al., 1954, p. 254). M was seen as a reflection of ego development, empathy, inner stability and control, and a bridge between inner resources and external demands. The subject is interacting with the blot in relation to his internal life; if that is well developed and healthy, good M responses will follow.

With respect to C, Klopfer, et al. pointed out:

> The way in which the subject handles color gives an indication of his mode of reacting to an emotional challenge from his environment which taxes his skill in integrating an outside influence with his activity-in-progress. In one wording or another this is one of the most basic hypotheses of the Rorschach technique. ...The responses to color are to be interpreted to show how the person reacts to the emotional impact of relationships with other people. (1954, p. 276)

Thus, Klopfer interpreted C in a manner that emphasizes the social aspects of the response, but in no way contradicted what Rorschach hypothesized.

Phillips and Smith (1953) not only minimized the utility of the Experience Balance, but were quite critical of the clinical significance of the construct of the *Erlebnistypus:*

> While it is customary in clinical work with the Rorschach to compute the experience type (M:C ratio), Rorschach's construct *Erlebnistypus* is not in practice ascribed the explanatory significance which he attributed to it. Rather, emphasis is placed on the empirical or clinically significant correlates of movement and color use and on their ratio. The dichotomy introversive-extratensive is not of practical significance clinically, nor is it consistent with any theory of personality or of behavior commonly employed in clinical practice. If used naively, it can be quite misleading. (Phillips and Smith,1953, p. 83)

To support their assertion, Phillips and Smith pointed out that it is possible for one to fail to produce color responses because of "a guarded inhibition against self-expression and a lack of responsivity" or because of a "failure to develop even a primitive regulatory capacity over self-expression" (Phillips and Smith,1953, p. 83). They failed to mention the possibility that a record with relatively high M production might reflect anything positive, least of all Klopfer's "emotional integration" (Klopfer, et

al., 1954, p. 254). They also apparently were unfamiliar with Carl Jung, Analytic Psychology, and Rorschach's understanding of *Erlebnistypus.* This is especially the case when Rorschach made such an effort to point out that "the psychological processes producing introversion and extroversion are not opposite, but different. They are as different as thinking and feeling, as motion and color" (Rorschach,1969, pp. 82-83). It would seem then, that Phillips and Smith have a limited understanding of what Rorschach meant in his description of *Erlebnistypus*, and thus their use of it would indeed be limited as well.

It is worthy of note, however, that Phillips and Smith interpreted the production of M similarly to Klopfer, in the sense that they too saw M as "conducive to the expression of the individual's characteristic attitudes and fashions of behavior. From these, interpersonal relations may be inferred" (Phillips and Smith, 1953, p. 58). The object relations of the individual are observable through the M response.

Color responses were seen as reflective of, and actually synonymous with affective experience, since, as they paraphrased Schachtel "color, like affect, demands action" (p. 40). They also pointed out "that color on the Rorschach cards initiates affective experience appears to be a demonstrated empirical fact," (p. 40) though they failed to point out who demonstrated this or how it was done.

Pure C's, that is, percepts that fail to use form in addition to color, were especially significant for Phillips and Smith. They pointed out that research indicates that young children usually produce an abundance of C, diminishing with age, while production of M responses increases. For this reason, as well as the observed paucity of pure C responses found in adult

records, and clinical observations about the use of color and impulsivity, Phillips and Smith see pure C as an indication of regression or fixation at an early age. Those with a high number of color responses are expected to be impulsive and undercontrolled. The relationship between M and C is not elaborated, except to say that M, like Form, is seen as a sort of moderator variable that minimizes the pathognomic qualities of pure C responses.

Rappaport, Gill, and Schafer (1968), like Phillips and Smith, understood Rorschach's construct of *Erlebnistypus* as a result of dichotomous thinking. Similarly, they found the ratio less than useful. They saw the difference between what Rorschach called M types and C types as having to do with "the fact that certain people are more inclined to think things out, and others more to follow their impulses and act out," (Rappaport, et al., 1968, p. 358) and failed to look at the fuller descriptions of and rich interaction between these tendencies postulated by Rorschach. Instead, they argued that "considering two such categories or tendencies as basic human characteristics leads to dismaying and insoluble contradictions in the course of clinical work" (p. 372).

In an editor's note, Holt (as editor of the revision of Rappaport, Gill, and Schafer's original 1948 work) was very critical of the constructs of introversive and extratensive, citing that the generally popular denial of synonymity between those constructs and the constructs of introversion and extraversion

> may have been motivated by a desire to explain away the failure of attempts to correlate M and C with other measures of Jung's constructs. Surely no useful purpose is served by retaining these variant terms if they do not mean what they seem to and cannot be given operational definitions except to Rorschach scores (Holt, in footnote of Rappaport, Gill, and Schafer, 1968, p. 357)

An extensive search of the literature provides little insight as to exactly who failed, or how they failed, to correlate M and C with Jungian constructs, so it must be assumed that Holt has made some attempt on his own or such attempts were not published. There have been attempts made, such as Guilford's (1936) attempt to correlate *Erlebnistypus* scores with Nebraska Inventory's introversion-extraversion scale, and Tamkin's (1980) attempt to correlate *Erlebnistypus* scores with the Si scale of the MMPI, but neither of these attempts used a Jungian measure of introversion-extraversion.

Rappaport, et al. (1968), while not impressed with the utility of *Erlebnistypus*, did see value to interpreting movement and color. It is also interesting to note that, after virtually throwing out the concept of *Erlebnistypus*, they went on to say "the emphasis...on the relationship between color and movement responses appears to be a valid one, especially for clinical diagnostic work" (1968, p. 363).

They emphasized the dimension of delay, noting that those persons with a preponderance of M tend to be much more able to put a delay between an impulse and its discharge than those who have few M. They also referred to the creativity required for the production of M, and hence attributed that creativity to individuals who produce many of them. Overall, M response were seen to "reflect a considerable flexibility, versatility, and wealth of both associative resources and processes and perceptual organizing abilities" (Rappaport, et al.,1968, p. 363).

They saw C responses as a reflection of the subject's "handling of affects, impulses, and actions," (1968, p. 363) and saw the use of form in

addition to use of color as the major criteria for making such a determination. They saw the pure color response as indicative of poor delay that results from the impact of the color in the stimulus. The greater the use of form, the greater the delay involved, and the more time, and implicitly the reflection of capacity, for ego involvement. The flip side of what the Rorschach communicated about affect, seen when the record shows little or no color, is "the degree to which repressive control of instinctual needs has impoverished the affective and feeling output of the subject" (Rappaport, et al., 1968, p. 378).

McCully (1971) understood Rorschach's *Erlebnistypus* very much in Jungian terms, and attributed to the ratio nothing less than a status similar to kharma. In his summary of his Jungian approach to the Rorschach, he pointed out that "the importance of *Erlebnistypus* has been noted, since the manifestation of internal forces peculiar to an individual takes that individual to his fate" (1971, p. 239). He went on to describe extraversion and introversion as follows:

> Extraversion is that mode of perception in which data for judgements are gathered externally, through experience with others. People are the major means of apperception. Introversion is that mode of perception in which data for judgements are gathered inwardly, and values are determined through subjective, not objective experiences. Inner experiences are the major means of apperception. (1971, p. 102)

Movement is seen as an indication of fantasy, but that does not mean that the extravert does not fantasize. Rather, it means that "fantasy may be an outgrowth of whatever perceptions may be present, but it would not be the means by which it was gathered" (McCully, 1971, p. 104). McCully saw a clear relationship between color and the quality of human feelings, but

pointed out that is not exactly the same thing as an extraverted perceptual mode, which he felt was the distinguishing criteria in the determination of type. For the most part, interpretation of M and C was of minor significance in McCully's approach to the Rorschach.

Exner (1974) introduced a system that was comprised of what he felt were the most empirically defensible scorings and constructs of the five most widely used Rorschach systems. He incorporated ideas from Beck, Hertz, Klopfer, Piotrowski, and Rappaport into what he called the "Comprehensive System." Because Exner managed, through such consolidation, to provide a compromise system, it has become very widely used and taught when previously much factionalism existed. It is unfortunate that this compromise seems to have relied on a "least common denominator" model, so intent on simplistic empirical findings, and so devoid of theoretical foundation. The result has been a somewhat more standardized, though perhaps less rich system. It is because of the current widespread popularity of Exner's system that his interpretation the Experience Balance will be of particular importance to the present study.

Exner saw the dynamic of the Experience Balance as the method of gratifying one's needs: "the extratensive is prone to use the interactions between himself and his world for gratification of his more basic needs" while "the introversive person...is prone to use his inner life for the satisfaction of his important needs" (Exner, 1986, p. 323). Exner seems to have extrapolated from the inner and outer focus of introversive and extratensive to surmise that need gratification must be satisfied in the same direction one's attention is focused. In any event, the inner vs outer

focus of the two types is consistent with Rorschach and other systematizers of Rorschach's test.

Another area that has been a focal point for Exner is that of problem-solving. He reported (Exner, 1978) that introversive subjects solved problems at about the same rate as extratensives, but spent more time between operations, performed fewer computations, and made fewer errors. He described the extratensives as having been more likely to have used a trial and error approach and make more errors, but he noted that they finished in about the same time as the introversive subjects. He also reported a marked deficit in performance among the ambitents, the third group Rorschach described, pointing out that they made more errors, took more time, and made more repeated errors.

Thus, the emphasis of Exner's interpretation of *Erlebnistypus* was primarily on differences in problem solving and where one gratifies personal needs.

Exner interpreted M in light of relevant empirical research, but since that research has often yielded equivocal results, it is only the connections between M and fantasy, impulse delay, and tentatively, motor inhibition, that he attributes to M.

Even though Exner suggested the use of weighted color, he admitted that there is little stability between C and CF responses. He pointed out that test-retest reliabilty coefficients dropped from about .80 to .51-.66 when a distinction is made between C and CF. It is unclear if his studies reflect poor test-retest reliability, or a lack of scoring reliability in the first place. In spite of this potential hazard, Exner continued to advocate making a

distinction among color responses that are mostly determined by form, partly determined by form, and those that do not rely on form at all.

He saw pure C responses as related to a "more intense, less well-controlled form of affective discharge" (Exner, 1986, p. 331). He deferred to others to define color responses. He used Schactel's notion of color as being primarily passive. From Rickers-Ovsiankina came the emphasis on the immediacy of color responses. Rappaport's assertion that color responses represent a short circuit of delay functions was borrowed, as was Shapiro's assertion that color responses result from cognitive relaxation. Those responses that are highly influenced by color were described as indicative that the subject is being overwhelmed by affective states, an idea originally found in Piatrowski's work.

Singer and Brown (1977) contended that "the concept of the experience type emerges from *Psychodiagnostics* as as one of Hermann Rorschach's most important contributions" (p. 325). Based on their understanding of Rorschach and of the research literature, their conception of the Experience Balance was multi-faceted. They postulated that the actual preference, or "type," might be composed of "aspects of a basic temperament relatively built into the constitution and modifiable only within limits by subsequent learning" (1977, p. 362). Introversiveness might be construed as an inherent "capacity for internal experience," while extratension would be construed as capacity for "activity or motility" (p. 363). After reviewing much of the pertinent literature on the Experience Balance though, they had little to say about conclusive interpretive guidelines. Instead, they encouraged the Rorschach worker to view the ratio as "a method for tapping potentialities and capacities for spontaneity

in two great spheres of human variation-- the ideational and the affective" (p. 365). They went on to say "the M:sum C ratio, if it can be perfected, and really rational rather than arbitrary weightings made available, may tell us much of the gross patterns of fantasy, affectivity, and motililty, and of the spontaneity potential in the ideation and affect of the individual" (p. 365).

Burstein and Loucks (1989), like Rorschach, point to the *conceptual* difference between M and C responses as the most important aspect of the Experience Balance. Thus, it not only makes little sense to weight C arbitrarily, but it makes a good deal of sense to examine means by which the subject "justifies" his percept by objective means other than color, and what other characteristics he projects into the percept other than human movement. Thus, they separate what are customarily called "determinants" into "justifications," including form, color, shading, and achromatic color, and "imaginal aspects," including human, animal, and object movement, as well as texture and vista. They also distinguished human emotion from human movement, though the two are both obviously imaginal aspects the subject attributes to the blot.

With respect to the actual contrast made by the use of the Experience Balance, they pointed out that

> the contrast is not between seeking satisfaction in fantasy as opposed to seeking it in action. Rather, it is in self-revelation as an interpersonal mode, in contrast to appealing to external reality. In the former mode, one creates his or her reality and then shares it, in the latter one seeks to discover an external reality. (Burstein and Loucks, 1989, p. 11)

It should be noted that the above definition more closely matches the direction of Rorschach's original work, as well as the ideas of Jung, than other contemporary approaches. It is also obvious that the Rorschach is conducive to object relations inquiry, and likely that the Experience Balance can contribute to such inquiry.

Research relating to the actual determinants of Color and Movement and the psychological processes involved in their production only partially addresses Rorschach's concept of *Erlebnistypus*. Though there is not a direct relationship between these processes and the "type" of the subject, the research tends to confirm much of what Rorschach described in his clinical observations.

One study that does address both the Experience Balance and the *Erlebnistypus* is a recent study by Kimbell (1990). Kimbell compared a traditional Experience Balance's relationship to external validity measures with a modified Experience Balance's relationship to those same external validity measures. His modifications to the Experience Balance included Burstein's measure (Justifications:Imaginal Aspects) described above. He found that Burstein's modified Experience Balance was significantly related to the validity measures, where the traditional Experience Balance was not.

It is clear from the above conceptualizations of the Experience Balance and the meanings of M and C that the constructs of extratensive and introversive as Rorschach used them have remained largely intact throughout the development of Rorschach's test. Those who use it use it similarly to Rorschach. It is also clear that Rorschach's conceptualization of these constructs was strongly influenced by Jung's by conceptualization

of introversion and extraversion. An implication of these relationships is that contemporary Rorschach workers interpret the relationship between M and C responses in a manner similar to Rorschach's, and thus ascribe characteristics similar to Jung's constructs of introversion and extraversion to subjects based on their *Erlebnistypus*.

It is also the case that contemporary Rorschach workers generally continue to weight color responses in a manner similar to that Rorschach proposed 70 years ago. Burstein and Loucks are an exception to this practice. They have taken serious issue with Rorschach's arbitrary weighting of C responses. They have argued that the arbitrary weighting of C does more to confuse the investigation of Rorschach material than to clarify it. A recent study, which in part studied the inter-rater reliability of weighted C scorings, supported their contention. Kimbell (1990) found coefficients ranging from .03 to .52, throwing some doubt on the utility of decisions made on the basis of weighted color

Introversion and Extraversion: the Myers-Briggs Type Indicator

Introduction

Carl Jung's description of the constructs of introversion and extraversion has found empirical expression in the Myers-Briggs Type Indicator (MBTI). The MBTI, or "Myers-Briggs," as the test is often referred to, is a rationally devised self-report instrument developed by Isabel Myers and Katharine Briggs. It is based on their interpretation of Jung's (1921/1971) theory of personality types, and the test and each question were devised in light of that theory (Briggs and McCaulley, 1985).

Extraversion-Introversion Scale

Jung's constructs were understood by Briggs and Myers to be comprised of attitudes and functions. The attitudes are extraversion and introversion. These are basic orientations toward life, and are seen as complimentary of one another. "In the extraverted attitude...there is a desire to act on the environment, to affirm its importance, to increase its effect," while "the main interests of the introvert are in the inner world of concepts and ideas" (Myers and McCaulley, 1985, p. 13). The above description is in concert with Jung's descriptions of introverts having inwardly turned libido, and a well-developed relation with the subject and extraverts having an outwardly turned libido and an well-developed interest in the object. Myers and McCaulley's description is also in concert with Rorschach's descriptions of an introversive individual who is at home in the subjective world of ideas, and the extratensive individual who is more comfortable in the outward world of people and activity. The complementarity of extraversion and introversion as described by Myers and McCaulley also fits with Rorschach's understanding of extratensive and introversive.

The EI scale is probably the strongest scale on the MBTI, and has certainly generated the most research. Consistently, the research conducted on this scale has pointed to this its robust reliability and validity. Given the similar results found on various other measures of extraversion and introversion by Gilliand (1934), Guilford (1934), Guilford and Guilford (1936), Eysenck (1956, 1958, 1970), Eysenck and Eysenck (1976), Williams (1983), and Schuerger (1987), it seems reasonable to attribute some of this robustness to the constructs of extraversion and introversion themselves. It

also seems appropriate, as numerous authors have done (e.g. Levy, et al., 1972; Stricker and Ross, 1964; Wright, unpublished but cited in Carlyn, 1977; Carskadon, 1977; and Steele and Kelly, 1976), to assert that the MBTI is a reasonable measure of the constructs extraversion and introversion.

Carlyn (1977) and Carlson (1985), in their reviews of empirical research done on the EI scale, both agree that studies generally support the reliability and validity of the scale. In a summary of the empirical findings on the EI scale of the MBTI, the scale most central to the current study, Carlyn describes extraverts and introverts as follows:

> Extraverted types appear to like action and getting involved in new situations. Their scores on a number of tests indicate that they tend to be talkative, gregarious, and impulsive, with underlying needs for dominance, exhibition, and affiliation. ...They are generally more competitive than introverted types, and are much more likely to be rated as "active" by faculty members. ...In high school, extraverts report that they like to work on group projects, make reports to the class, and engage in team competitions. ...Vocationally, they prefer active jobs in which they can interact with others, such as salesman, personnel director, social worker, public administrator, or athletic director.
>
> Studies indicate that introverted types would rather reflect before acting and they enjoy working alone. They score high on scales of self-sufficiency and are rated by faculty as more solitary and less carefree than extraverts. ...On tests of aptitude, abstract reasoning, reading ability, and aesthetic values, they usually score significantly higher than average. ...Introverts as a group are attracted to technical-scientific professions which allow them to work alone, such as mathematician, engineer, dentist, artist, writer, printer, farmer, or carpenter. (Carlyn, 1977, p. 469)

As is easily noticed, Carlyn's composite empirical description above closely matches both Jung's descriptions of extraverts and introverts and Rorschach's descriptions of C types and M types. The validity of the MBTI as a measure of Jungian theoretical constructs, combined with the relative lack of scale relatedness and reasonable reliability make it an appropriate

instrument with which to investigate the hypothesized relationship between Jung's constructs and those of Rorschach.

Additional MBTI Scales

In addition to the "attitudes" of extraversion and introversion, there are four "functions": sensing, intuition, thinking, and feeling. Jung (1971) says the functions are "a particular form of psychic activity that remains the same in principle under varying conditions," and he goes on to distinguish among them on the basis of their "rationality" (p. 436). He clarifies irrational as "not denoting something *contrary* to reason, but something *beyond* reason" (p. 454, original italics). Thinking and Feeling are what Jung called the rational functions, while Sensing and Intuition are called irrational functions.

Myers and McCaulley (1985) distinguished the functions similarly, but defined the functions of sensing and intuition as kinds of perception, and thinking and feeling as kinds of judgment. "Sensing (S) refers to perceptions observable by way of the senses. Sensing establishes what exists," while "intuition (N) refers to perception of possibilities, meanings, and relationships by way of insight" (p. 12).

They go on to point out that "thinking (T) is the function that links ideas together by making logical connections. Thinking relies on principles of cause and effect and tends to be impersonal. ...Feeling (F) is the function by which one comes to decisions be weighting relative values and merits of the issues. Feeling relies on an understanding of personal values and group values; thus it is more subjective than thinking" (Myers and McCaulley,1985, p.12).

Myers and McCaulley (1985) summarize the intent of the functions as follows:

> "The four functions direct conscious mental activity toward different goals:
>
> Sensation (S) seeks the fullest possible experience of what is immediate and real.
>
> Intuition (N) seeks the furthest reaches of the possible and imaginative.
>
> Thinking (T) seeks rational order and plan according to impersonal logic.
>
> Feeling (F) seeks rational order according to harmony among subjective values."

They also point out that a central feature to Jung's theory, and to an understanding of the MBTI, is that these functions all pull in different directions. There is a tension between sensing and intuition, between thinking and feeling, since all persons perceive using both and make decisions using both. However, in both perception and judgment, one of the two functions will predominate. This preference contributes to the individual's type. However, one of the two preferred functions is thought to predominate. This is called the dominant or first function.

A final dimension of the MBTI, one not explicit in Jung's work, is used, along with the EI scale, to help determine the first function. It also serves to identify attitudes and behaviors toward the outside world. This dimension is called an attitude, and is comprised of the Judgment (J) and Perception (P) scales. Those who are predominantly in the judging attitude are "concerned with making decisions, seeking closure, planning operations, or organizing activities" (Myers and McCaulley, 1985, p. 14), while those predominantly in the perceptive attitude are more interested in

incoming information, and less interested in acting on it. At their worst, those preferring judgment will make decisions without adequate attention to data collection, while those preferring perception will attend only to the acquisition of information, and yet fail to process it.

The four areas that the MBTI investigates are actually bi-polar dimensions, thus it is possible to view the instrument as measuring eight dimensions. These dimensions are set up as four scales, each of which taps a dimension of Jung's thinking. The scales discriminate among:

Extraverts	Introverts
Sensors	Intuitives
Thinkers	Feelers
Judgers	Perceivers

It is the dynamic interaction of these attitudes and functions that produces the "type" as measured by the MBTI. The difference scales, even though they were not developed statistically, have been shown to have considerable independence, reliability, and validity. The exceptions to this, as should be expected, involve the J-P scales. For example, Stricker and Ross (1963) and Webb (1964) both found no overlap among the different type categories of the MBTI, except for a moderate relationship found between the J-P scale with the S-N scale. Carlyn (1977), in her extensive review of intercorrelation, reliability, and validity studies, found very little overlap among the scales' continuous scores, except for the J-P scale. Additional support for Carlyn's conclusion was provided by Cohen et al.'s 1981 study which found significant construct validity for all of the MBTI scales except

for the J-P scales when the MBTI scales were compared to ratings obtained from spouses.

Carlyn (1977) also reports that the reliability of type category scores and continuous scores appears to be acceptable, and that typing has, in general, proven to be reliable. Though Carlyn reports only moderate predictive validity for the MBTI, she does indicate that there has been quite a bit of evidence to suggest good construct validity for the instrument. "The numerous studies of construct validity summarized above suggest that the individual scales of the Myers-Briggs Type Indicator measure important dimensions of personality quite similar to those postulated by Jung" (Carlyn, 1977, p. 471). This appraisal is in part influenced by Bradway's (1964) study of Jungian analysts. These analysts' classifications of themselves in the EI, S-N, and T-F categories agreed with their classifications as provided by the MBTI 100% of the time in the dimension of EI, 68% of the time in S-N, and 61% of the time in T-F.

Carlson (1985), in a more recent and similarly extensive review of studies conducted after Carlyn's 1977 review, similarly concludes that studies of the MBTI have provided evidence of satisfactory internal reliability and test-retest reliability "with r values of individual scales often exceeding .80" (p. 363). Though he reports a limited number of validity studies, and the majority of these have investigated only the EI scale, he holds that results of these studies have "generally supported theoretical overlap" between the criterion measure and the constructs test is supposed to be measuring. (p. 364). Two different factor analytical studies by Thompson and Borrello (1986a, 1986b) provide strong evidence of the MBTI's internal scale integrity as well as its construct validity, and support

Carlyn's and Carlson's conclusions. Similarly, Tzeng, et al (1984) report that each one of the MBTI scales is unidimensional; "factor analysis on intercorrelations among all 95 items yielded clear simple structures with the resultant empirical factors matched almost perfectly with the theoretical scales of the MBTI" (p. 255).

Thus, there appears to be strong evidence that the MBTI is a reliable and valid measure of Jungian personality types. This evidence appears the strongest regarding the EI scale. However, one consideration that must be acknowledged at the onset of the present research has to do with the stability of the test and the construct under different circumstances.

Westman and Canter (1984) found that subjects' MBTI measures on the EI scale changed depending on the time of day those measures were taken. After interviewing and taking other measures into consideration, Westman and Canter concluded that the changes actually took place in the individual and were not testing error on the part of the MBTI, but more research is clearly necessary.

In a similar vein, Shapiro and Alexander (1969), reexamining Schacter's (1959) work with desire for affiliation resulting from increased anxiety, found that introverts did not seek the company of others when anxious like extraverts did. however, introverts did not differ from extraverts when neither group was anxious; introversion and extraversion were predictive of desire for affiliation only when the subjects were anxious. Thus, Schacter's findings that individuals experiencing anxiety seek affiliation must be modified to point out that this only occurs if they are extraverted.

It is clear then, that individuals might both score and behave more introvertedly or extravertedly depending on the circumstances under which they are tested.

Summary and Statement of the Problem

The Experience Balance was been a central feature of Rorschach's test for Rorschach; it has remained so for many Rorschach workers throughout the history of the use of the instrument. Rorschach's thinking about the Experience Balance and *Erlebnistypus* was clearly influenced by Jung's constructs of introversion and extraversion. The similarities between Rorschach's constructs of introversive and extratensive and Jung's constructs of introversion and extraversion are numerous and well documented.

However, Rorschach died before he was able to empirically investigate the similarities between his own thinking and that of Jung. So, while the language of the two theorists is similar, it is unclear whether the phenomena they describe is, in fact, the same. His untimely death also left the concept of the Experience Balance in an early stage of development. Not only did the constructs it manifested need clarification, but the ratio itself was constructed using a weighting system that Rorschach himself referred to as "arbitrary." Furthermore, little research has examined the Experience Balance, and there have been fewer studies of *Erlebnistypus*. Theorists discuss the Experience Balance and *Erlebnistypus* in terms similar to Rorschach's, and Rorschach workers often interpret the test likewise, expressing findings in terms that resemble Jung's formulations. Research, however, has done little to examine the relationship. However, it

is an important question if, as Bash (1955) contends, "nearly all testers today unhesitantly take a predominance of movement responses as indicative of introversive tendencies in Jung's sense, just as they regard a predominance of color as pointing to extraversion" (p. 238).

The Myers-Briggs Type Indicator is a rationally devised instrument developed to further examine Jung's theory of type. The test appears to do a good job of measuring Jungian constructs. It appears to possess reasonably separate, reliable, and valid scales. The introversion and extraversion scales are the most solidly researched, and appear to have very adequate reliability and validity. There has been little attention paid to any relationship between Jung and Rorschach in the history of that instrument.

This study will empirically investigate the relationship between Rorschach's constructs of introversive and extratensive as measured by Rorschach's Experience Balance and Jung's constructs of introversion and extraversion as measured by the MBTI. It will also examine the contribution of weighted color (i.e. color responses weighted to reflect the degree to which form is thought to be used) in determining type. Given the arbitrary nature of color weighting, weighting color may not make a significant contribution to determination of type, or in clarifying the constructs of introversive or extratensive experience types.

Hypotheses

The basis for the present study is the hypothesized relationship between the constructs of introversive and extratensive as measured by the Rorschach's Experience Balance and the constructs of introversion and extraversion as measured by the Myers-Briggs Type Indicator's EI scale. Therefore:

1) *Type classification*: Those persons who are classified as "M" types (i.e. introversive) by the Rorschach Experience Balance are expected to also be classified as introverted by the MBTI Extraversion-Introversion scale. Similarly, those classified as "C" types (i.e. extratensive) by the Rorschach Experience Balance are expected to also be classified as extraverted by the MBTI Extraversion-Introversion scale.

2) *Frequencies*: Those persons who have the greatest number of color (C) responses on the Rorschach are also expected to have the greatest number of extraversion (E) responses on the MBTI Extraversion-Introversion scale. Those persons who have the greatest number of human movement and emotion (M) responses on the Rorschach are also expected to have the greatest number of introversion (I) responses on the MBTI Extraversion-Introversion scale.

3) *Discriminant function*: Color and Movement responses together can significantly and sensitively discriminate between Extraverted and Introverted groups.

4) *Color weighting*: Weighting color responses for the degree to which they rely on form is based on an arbitrary system, and is expected to make little contribution to the utility of the Experience Balance. Each hypothesis above will be tested using both weighted and unweighted color. No difference is expected in the performance of the Experience Balance.

CHAPTER III

METHOD

Subjects

As a part of a larger, on-going personality research project, subjects were University of Tennessee college students participating in the College Scholars program, the Honors Physics program, or the Honors Chemistry program. To be included in these programs, and thus in the sample, students must excel academically. They usually have high school grade point averages of 3.70 or higher, ACT scores of 30 or higher, and both letters of recommendation and successful interviews with a review committee. The College Scholars students develop their own hybrid degree programs while the Honors Students usually work within their respective departments. All subjects display a high level of motivation and investment in their education. Complete data were collected from forty-four subjects; twenty-five were male and nineteen were female.

Nine subjects failed to return for the second half of the data collection, which included the administration of the Rorschach; they were excluded from the present study.

Instruments

As part of the larger research project, all subjects were administered Tellegen's Developmental Personality Questionnaire (DPQ), Jackson's Personality Research Form (PRF), Van Lennep's Four-Picture-Test, the Cornell Index, the Myers-Briggs Type Indicator (MBTI), and the Rorschach Inkblot Technique. The instruments used for this study were the Rorschach, the MBTI, and the Cornell Index.

Rorschach Inkblot Technique

The Rorschach is a projective test that requires subjects to give responses to ambiguous inkblots. Both the content and the processes used in the creation of the subject's response are examined as evidence of cognitive and personality characteristics of the individual. The Burstein-Loucks system of scoring the Rorschach examines each response for over 100 characteristics. The characteristics of importance to this study are the use of color, production of human movement and emotion responses, and the number of responses an individual produces.

Though the Burstein-Loucks system does not weight color responses according to how much the form of the percept is thought to have influenced the response, in order to examine the traditional Experience Balance, such weighting was used for this study. Rorschach variables important to the present study include color (C), weighted color (Cw), human movement (HM), and human emotion (HE). Two indices, a traditional and a modified Experience Balance, were also used.

The Myers-Briggs Type Indicator

The MBTI is currently available in three different forms, all of which consist of forced-choice questions inquiring about subject preferences in four areas of functioning. The forms differ primarily in length, with Form F containing 166 questions, Form G containing 126 items, and Form AV containing 50 items. Earlier forms of the test (i. e. Forms A, B, C, D, and E) are no longer in print. Both Forms F and G contain research items as well as those items necessary to determine type. Form G, the instrument used in the present study, uses only the first 95 items in type determination. Each question is weighted according to how well it predicts total type. Those items with a prediction ratio of 72% or better are weighted 2, while those that predict between 63% and 71% are weighted 1, and those below 63% do not contribute to type determination.

The number of questions on each scale varies, and not every choice on all questions provides weight for a scale. It is the weighted sum of each scale that is compared with the scale with which it is paired, (i.e EI; S-N; T-F; J-P) the larger determining the code on each dimension. The smaller of the two sums is then subtracted from the larger, and the difference converted by means of a formula to obtain a preference score. The preference score is a measure of how strongly in which direction on each dimension the subject prefers that attitude or function. The preference scores are then converted to continuous scores by subtracting the preference score from 100 in the case of preferences in the directions of E, S, T, and J and adding the preference score to 100 in the case of preferences in the directions of I, N, F, and P. A continuous score allows for correlational

research to be conducted. The Extroversion-Introversion (EI) scale of the MBTI will be used as a criterion variable.

The Cornell Index

The Cornell Index is used as a screening measure to prevent persons with signs of psychopathology from being included in this "healthy" sample. The Cornell is a self-report, paper and pencil instrument consisting of 101 yes or no questions. If an individual's Cornell score was 23 or higher, or if they endorsed any of the three "stop questions," they were excluded from the general data base, and thus from the present study. The stop questions used were:

> Have you ever been arrested more than three times?
> Did you ever have a nervous breakdown?
> Were you ever a patient in a *mental* hospital?

Procedures

Students in the College Scholars and Honors programs were identified from lists generated by the Chemistry and Physics Departments and the College Scholars Program. They were contacted individually to explain the ongoing efforts of the Burstein-Loucks Personality Assessment Laboratory at the University of Tennessee to collect psychometric data from high-achieving, psychologically healthy individuals. They were also informed that all information gathered would be kept confidential, and that they could receive feedback from the examiners regarding the testing they were

being asked to undertake. All procedures were explained to the subjects before any testing was conducted, and each were made aware that they could withdraw from the study at any time.

Those who were interested in participating were scheduled for the initial testing. At that time, they were administered the DPQ, the PRF, the Cornell Index, and the MBTI. The Four-Picture-Test was administered by the proctor of the group testing at that time as well. The Rorschachs were then scheduled for a later time; they were individually administered by the Burstein-Loucks Research Team according to Burstein and Loucks' method, scored twice independently by graduate students according to their scoring criteria, and finally reconciled by an independent senior scorer. All graduate students had at least one year's training in the Burstein and Loucks' method of Rorschach scoring, in addition to at least that much training in alternative systems, before they scored any Rorschach material independently. Senior scorers had at least three years experience with both Burstein and Loucks' and other Rorschach scoring methods before reconciling any protocols.

The reconcilers brought any questions or changes independent from either of the first two scorings to the attention of the entire laboratory body, which included the developers of the Burstein-Loucks System. Resolution was then accomplished in open forum. The MBTI data were scored by undergraduate psychology majors and checked by the laboratory manager.

Data Analysis

Data analyses were conducted using SAS and SPSS PC. All data were first subjected to SAS Proc Univariate, a procedure that examines normality of distribution. All relevant Rorschach and MBTI variables were found to be normally distributed, and thus appropriate for parametric statistical analyses. The Rorschach variables were then plotted against the MBTI variables to evaluate the data for bivariate normality. None of the plots suggested the existence of a curvilinear relationship, and thus the data were found appropriate for Pearson Product-Moment correlation coefficients.

Rorschach's weighted SumC (Cw)

Since it is the weighted sum of color that is traditionally used in the Experience Balance with M (human movement and emotion), all responses in the data set that included use of color were rescored for the degree to which they relied on form. The rescoring was done according to the Exner method of color weighting by the author, who has formal training and several years experience using that method. Reliability of that rescoring was investigated using two independent sets of ratings completed by graduate students with similar training and experience. Inter-rater reliability was evaluated three different ways. The first examined inter-item reliability between the three sets of ratings. The two graduate ratings were also compared with the author's ratings at the same time, to create a single reliability coefficient. Finally, the Cw ratings for each protocol were

summed for each set of ratings, thus providing SumCw measures for each record.

Using weighted SumC (Cw) in the place of SumC (C) in each of the analyses below, those analyses were run a second time in order to ascertain any contribution color weighting would make in providing evidence of a relationship between Rorschach's constructs of introversive and extratensive and Jung's constructs of introversion and extraversion.

Examination of types

Comparisons between Rorschach Experience Types and MBTI extraversion (E) and introversion (I) types were made two different ways, each using an unweighted color, modified Experience Balance and a weighted color, traditional Experience Balance once each.

The first method used a 3 X 3 comparison, creating an introversive group, an extraversive group, and an ambiequal group using Rorschach Experience Balance scores. The modified Experience Balance used the M:C (Sum M:SumC) ratio. Those individuals who had at least 2 greater M than C in that ratio were labeled introversive (RI). Those individuals who had at least 2 greater C than M in that ratio were labeled extratensive (RE). Those whose ratio did not reflect a difference of 2 in either direction were labeled ambiequal (RA).

The traditional Experience Balance used the M:Cw (Sum M:SumCw) ratio. Those individuals who had at least 2 greater M than Cw in that ratio were labeled introversive (RWI). Those individuals who had at least 2 greater Cw than M in that ratio were labeled extratensive (RWE). Those

whose ratio did not reflect a difference of 2 in either direction were labeled ambiequal (RWA).

Each of these ratios were compared to the MBTI EI scale. In order to accomplish a 3 X 3 comparison, the MBTI categories had to be expanded from 2 to 3. First, continuous scores were computed for each subject. Continuous scores were created by adding the preference score to 100 for those who prefer introversion and subtracting the preference score from 100 for those who prefer extraversion. This created a single-score continuum that reflects the strength of the subject's preference for extraversion or introversion. Those who score the highest in the introverted direction will have continuous scores around 150, while those who score the highest in the extraverted direction will have continuous scores around 50. Then those individuals whose continuous scores were 110 or above were labeled Introverted (MI). Those with scores 90 or below were labeled extraverted (ME). The remainder, who showed less preference for either introversion or extraversion, were labeled ambiequal (MA).

A Chi-square analysis was conducted on these data to determine whether the Rorschach and the MBTI would type the same subjects similarly (i.e. 1st RI and MI; RE and ME; RA and MA, and 2nd RWI and MI; RWE and ME; RWA and MA).

Secondly, analyses were conducted in order to evaluate if using the MBTI in a modified manner might have helped or hurt it's ability to type similarly to the Rorschach. The second method used a 2 X 2 comparison, creating an introversive, and an extraversive, but ignoring what would be the ambiequal group. The modified Experience Balance used the M:C (Sum M:SumC) ratio. Those individuals who had at least 2 greater M than

C in that ratio were labeled introversive (RI). Those individuals who had at least 2 greater C than M in that ratio were labeled extratensive (RE). Those whose ratio did not reflect a difference of 2 in either direction were not considered in this analysis.

A similar typing was done using the traditional Experience Balance (Sum M:SumCw) ratio. Those individuals who had at least 2 greater M than Cw in that ratio were labeled introversive (RWI). Those individuals who had at least 2 greater Cw than M in that ratio were labeled extratensive (RWE). Those whose ratio did not reflect a difference of 2 in either direction were not considered in this analysis.

Each of these ratios were compared to the MBTI EI scale. For these analyses, the MBTI was scored traditionally, typing subjects either extraverted (ME) or introverted (MI). A Chi-square analysis was conducted on these data to determine whether the Rorschach and the MBTI would type the same subjects similarly (i.e. 1st RI and MI; RE and ME, and 2nd RWI and MI; RWE and ME).

In summary, four analyses were conducted in order to determine if the Rorschach and the MBTI were able to type subjects similarly:

Unweighted C 3-group Experience Balance ..... 3-group MBTI.
Weighted C 3-group Experience Balance ..... 3-group MBTI.
Unweighted C 2-group Experience Balance ..... 2-group MBTI.
Weighted C 2-group Experience Balance ..... 2-group MBTI.

Relation of M and C to E and I

The expected relationships between the scores of the Rorschach and the MBTI were examined three different ways. The first simply correlated the raw number of human movement and human emotion responses (M) with the raw number of MBTI responses that score in the direction of introversion (I). It also correlated the raw number of color responses (C) with the raw number of MBTI responses that score in the direction of extraversion (E).

The second correlated the percentage of M responses (MPCT=M/number of responses in the protocol) with the continuous score for the MBTI Extraversion-Introversion scale. It also correlated the percentage of C responses (CPCT=C/number of responses in the protocol) with the continuous score for the MBTI Extraversion-Introversion scale.

The third correlated a measure of the relationship between C and M (CM=C-M+100) with the continuous score for the MBTI Extraversion-Introversion scale.

In addition, raw weighted color (Cw) was correlated with the raw score E. The percentage of Cw was computed (CWPCT=Cw/number of responses in the protocol) and correlated with the continuous score for the MBTI Extraversion-Introversion scale. Finally, a measure of the relationship between Cw and M (CWM=Cw-M+100) was computed and correlated with the continuous score for the MBTI Extraversion-Introversion scale.

Production of M and C by Introverts and Extraverts

A discriminant analysis was conducted using MPCT (M/number of responses in the protocol) and CPCT (C/number of responses in the

protocol) to discriminate between those classified as introverts and extraverts by the MBTI. A similar analysis was conducted using MPCT and CWPCT (Cw/number of responses in the protocol).

CHAPTER IV

RESULTS

Initial Investigations

Introduction

Descriptive statistics are provided in Table 4.1 below. N is lower for those factors that utilize weighted color, since one of the protocols was not available. Thus, only summary data were used for that case, and C could not be weighted.

Examination of Types

The first hypothesis stated that those subjects who were classified as "M" types (i.e. introversive) by the Rorschach Experience Balance would also be classified as introverted by the MBTI Extraversion-Introversion scale. That hypothesis was not supported by the analyses conducted. Similarly, those classified as "C" types (i.e. extratensive) by the Rorschach Experience Balance were expected to also be classified as extraverted by the MBTI Extraversion-Introversion scale. That hypothesis received no support from the analyses conducted. The classification of type was calculated four ways.

Unweighted C 3-group Experience Balance- 3-group MBTI. When subjects were typed according to Rorschach criteria using unweighted color

Table 4.1
Descriptive Statistics

Variable	N	Mean	SD	Range
Rorschach Variables				
Sum of Human Movement and Human Emotion scores (M)	44	7.00	4.88	26.00
Sum of Color scores (C)	44	5.95	3.99	20.00
Sum of Weighted Color scores (Cw)	43	4.49	3.22	16.50
Human Movement and Human Emotion percent (MPCT)	44	0.25	0.13	0.59
Color percent (CPCT)	44	0.21	0.10	0.47
Weighted Color percent (CWPCT)	43	0.16	0.08	0.39
Relationship variable C:M {(C-M)+100} =(CM)	44	98.95	4.80	26.00
Relationship variable Cw:M {(Cw-M)+100}= (CWM)	43	97.60	4.79	26.00
MBTI Variables				
Sum of Extraversion scores (E)	44	11.22	7.29	23.00
Sum of Introversion scores (I)	44	15.93	7.68	25.00
EI scale continuous scores (EICONT)	44	110.09	29.57	96.00

in the Experience Balance, and also typed according to modified MBTI criteria (i.e. classifying subjects into three groups rather than two), only 27% of the subjects were classified as having similar types. This resulted in an insignificant Chi-square of 3.48 (df=4, p=0.481). Thus, no relationship appeared between typing using an unweighted C, 3-group Experience Balance and a 3-group MBTI.

Weighted C 3-group Experience Balance- 3-group MBTI. When subjects were typed according to Rorschach criteria using weighted color in the Experience Balance, and also typed according to modified MBTI criteria (i.e. classifying subjects into three groups rather than two), 43% of the

subjects were classified as having similar types. This resulted in an insignificant Chi-square of 5.99 (df=4, p=0.199). No relationship appeared between types resulting from weighted C, 3-group Experience Balance and a 3-group MBTI.

Unweighted C 2-group Experience Balance- 2-group MBTI. Subjects were typed according to Rorschach criteria using unweighted color in the Experience Balance. Those who were clearly introversive or extratensive (difference of 2) were compared to their type as determined by traditional MBTI criteria (i.e. classifying subjects into three groups rather than two). Only 36% of the subjects were classified as having similar types. This resulted in a significant Chi-square of 3.71 (df=1, p=0.054). However, the significance was not in the hypothesized direction; rather, it is unlikely that so few subjects would be matched for these two classifications. Chance alone would do a significantly better job. Thus, no support for the hypothesized relationship between Rorschach and Jungian types was found through this analysis.

Weighted C 2-group Experience Balance- 2-group MBTI. Subjects were typed according to Rorschach criteria using weighted color in the Experience Balance. Those who were clearly introversive or extratensive (difference of 2) were compared to their type as determined by traditional MBTI criteria (i.e. classifying subjects into introverted and extraverted). Here 50% of the subjects were classified as having similar types. This resulted in an insignificant Chi-square of 1.49 (df=1, p=0.222). Thus no

relationship appeared between types resulting from a weighted C, 2-group Experience Balance and a 2-group MBTI.

The percentage of concurrence using these four combinations of Rorschach and MBTI typing can be seen in Figure 4.1 below.

Unweighted C 3-group Experience Balance- 3-group MBTI.	
M:C Difference of 2	27%
Weighted C 3-group Experience Balance- 3-group MBTI.	
M:Cw Difference of 2	43%
Unweighted C 2-group Experience Balance- 2-group MBTI.	
M:C Difference of 2	36%*
Weighted C 2-group Experience Balance- 2-group MBTI.	
M:Cw Difference of 2	50%

**significant at p=0.05 (not in hypothesized direction)*

Figure 4.1 Percentage of Concurrence Using Rorschach and MBTI Typing for Initial Type Hypotheses

Relation of M and C to E and I

The second hypothesis predicted that those subjects who had greatest number of color (C) responses on the Rorschach would also have the greatest number of extraversion (E) responses on the MBTI Extraversion-Introversion scale, and those who had the greatest number of human movement and emotion (M) responses on the Rorschach would also have the greatest number of introversion (I) responses on the MBTI Extraversion-Introversion scale. There were three different methods of investigating this relationship performed. None of them yielded a significant relationship between C and E, nor between M and I, and thus no

support for the hypothesized relationship between the constructs introversive and extratensive and the constructs introverted and extraverted was provided by any of these correlations.

Relationships among raw scores. When the Rorschach scores M and C were correlated with MBTI introversion and extraversion scores, the results proved to be insignificant in all cases. Cw was also correlated with MBTI introversion and extraversion scores; those relationships also proved insignificant in all cases. Results are found in Table 4.2 below.

Relationships among transformed scores. When Rorschach scores M and C were transformed into percentage scores (MPCT and CPCT) and correlated with MBTI Extraversion-Introversion scale continuous scores, no significant relationships were found. When Rorschach scores Cw were transformed into percentage scores (CWPCT) and correlated with MBTI Extraversion-Introversion scale continuous scores, no significant relationships were found either. Results are found in Table 4.3 below.

When correlations were run between MBTI Extraversion-Introversion scale continuous scores and a transformation that reflects the relationship between C and M, CM (C-M+100), there was again no significant relationship found. Nor was there when CWM (Cw-M+100) was correlated with MBTI Extraversion-Introversion scale continuous scores. Results are found in Table 4.4 below.

Table 4.2
Correlation Matrix of Rorschach and MBTI Variables

	E (Extraversion)	I (Introversion)	M (Human Movement) (+Human Emotion)	C (Color)	Cw (Weighted Color)
E	1.00000	-0.96396	-0.09195	-0.04182	-0.05436
	0.0	0.0001	0.5527	0.7875	0.7292
	44	44	44	44	44
I	-0.96396	1.00000	0.10394	0.11926	0.13906
	0.0001	0.0	0.5019	0.4407	0.3738
	44	44	44	44	43
M	-0.09195	0.10394	1.00000	0.42759	0.35524
	0.5527	0.5019	0.0	0.0038	0.0194
	44	44	44	44	43
C	-0.04182	0.11926	0.42759	1.00000	0.96249
	0.7875	0.4407	0.0038	0.0	0.0001
	44	44	44	44	43
Cw	-0.05436	0.13906	0.35524	0.96249	1.00000
	0.7292	0.3738	0.0194	0.0001	0.0
	43	43	43	43	43

Pearson Product Moment Correlation/ p value/ number of cases

Table 4.3
Correlation Matrix of Transformed Rorschach and MBTI Variables

	EICONT (EI-Continuous Scores)	MPCT (Percent M)	CPCT (Percent C)	CWPCT (Percent Cw)
EICONT	1.00000	-0.03429	0.03752	0.00047
	0.0	0.8251	0.8089	0.9976
	44	44	44	43
MPCT	-0.03429	1.00000	0.18925	0.04753
	0.8251	0.0	0.2186	0.7621
	44	44	44	43
CPCT	0.03752	0.18925	1.00000	0.92060
	0.8089	0.2186	0.0	0.0001
	44	44	44	43
CWPCT	0.00047	0.04753	0.92060	1.00000
	0.9976	0.7621	0.0001	0.0
	43	43	43	43

Pearson Product Moment Correlation/ p value/ number of cases

Table 4.4
Correlation Matrix of Transformed Rorschach and MBTI Variables

	EICONT (EI Continuous Scores)	CM {(C-M)+100}	CWM {(Cw-M)+100}
EICONT	1.00	0.02	0.01
	0.00	0.88	0.93
	44	44	43

Pearson Product Moment Correlation/ p value/ number of cases

Production of M and C by Introverts and Extraverts

The third hypothesis predicted that those persons who produced a high number of color (C) responses on the Rorschach would be classified as extraverts by the MBTI Extraversion-Introversion scale, and those persons who produced a high number of human movement and emotion (M) responses on the Rorschach would be classified as introverts by the MBTI Extraversion-Introversion scale. This hypothesis was not supported.

Discriminant analyses were conducted to test this hypothesis using the percentage of M (MPCT) in a subject's record and the percentage of C (CPCT) in that subject's record to predict whether that person would be typed Extraverted or Introverted by the MBTI. Those with high MPCT were expected to be typed Introverted by the MBTI and those with high CPCT were expected to be typed Extraverted. MPCT and CPCT were chosen because of their ability to control for possible influence of number of responses(R).

First, Box's M was run to test for the equality of group covariance for the groups MPCT and CPCT. This resulted in a Box's M of 0.719 (df=3, p=0.879), which suggests that these groups have similar covariance. Consequently, a pooled discriminant analysis was utilized.

The variables MPCT and CPCT correctly classified only 63.64% of the cases. The Chi-square test on Wilk's Lambda was 3.74 (df=2, p=0.154), indicating that the percent correctly classified was likely to happen as a result of chance alone about 15% of the time. Results are found in Figure 4.2 below.

The same procedure was used to determine if weighting color enhanced the ability of the percent of color and movement to discriminate between

Actual Group	No. of Cases	Predicted Group Membership	
		0	1
Group 0	15	9 60.0%	6 40.0%
Group 1	29	10 34.5%	19 65.5%
63.64% of "grouped" cases correctly classified			

Figure 4.2 Classification Results: Percent M and Percent C to Discriminate I and E Types

extraversion and introversion as measured by the MBTI. Again, Box's M was run to test for the equality of group covariance, this time for the groups MPCT and CWPCT. This resulted in a Box's M of 1.234 (df=3, p=0.764), which suggests that these groups also have similar covariance. Again, a pooled discriminant analysis was utilized.

The variables MPCT and CWPCT correctly classified only 60.47% of the cases. The Chi-square test on Wilk's Lambda was 2.78 (df=2, p=0.248). Weighting color appears to detract from the ability of movement and color to predict extraversion and introversion to the point that chance alone will do this well about 25% of the time. Results are found in Figure 4.3 below. Therefore, neither MPCT and CPCT nor MPCT and CWPCT were able to adequately distinguish between Extraverts and Introverts as typed by the MBTI.

Actual Group	No. of Cases	Predicted Group Membership	
		0	1
Group 0	14	8 67.1%	6 42.9%
Group 1	29	11 37.9%	18 62.1%
60.47% of "grouped" cases correctly classified			

Figure 4.3 Classification Results: Percent M and Percent Cw to Discriminate I and E Types

Rorschach's weighted SumC (Cw)

The inter-rater reliability of color weighting was assessed using three different methods. The first method correlated the author's ratings of the influence of form in each color response with similar ratings by two groups of graduate students. The author's ratings correlated with group 1 ratings, r=0.57 (67% agreement) and with group 2 ratings, r=0.53 (60% agreement). Group 1 ratings and group 2 ratings correlated, r=0.43 (57% agreement). All of these correlations were significant at $p<0.001$. These results are found in Table 4.5 below.

The second method compared the combined ratings of group 1 and group 2 with the ratings with the author's ratings. This was done by placing the group 1 ratings before the group 2 ratings, thus creating one data set, and duplicating the author's ratings to match, in order to provide one reliability coefficient. That coefficient was .55, and it was significant at $p<0.001$. These results are found in Table 4.6 below.

Table 4.5
Inter-rater Reliability of Response Color Weighting
Group 1 & Group 2 with Author

	Author's Rating	Graduate Group 1 Rating	Graduate Group 2 Rating
Author's Rating	1.00	0.57**	0.53**
Group 1 Rating	0.57**	1.00	0.43**
Group 2 Rating	0.53**	0.43**	1.00

***1 tailed significance p<.001*
Pearson Product Moment Correlation

Table 4.6
Inter-rater Reliability of Response Color Weighting
Combined Groups 1 & 2 with Author

	Author's Rating	Combined Rating
Author's Rating	1.00	0.55**
Combined Rating	0.55**	1.00

***1 tailed significance p<.001*
Pearson Product Moment Correlation

The third method of examining inter-rater reliability correlated the ratings of the author, group 1, and group 2, summed over each protocol. This allowed the reliability of SumCw ratings, the actual value used in the Experience Balance, to be examined. As can be seen in Table 4.7 below, the author's ratings correlated with group 1 ratings, r=0.97, and with group 2 ratings, r=0.95. Group 1 ratings correlated with group 2 ratings, r=0.94. All of these correlations were significant at p<0.001.

Each of the above hypotheses was tested using both an unweighted and a weighted measure of color. The last hypothesis expected weighting color to make little contribution to the utility of the Experience Balance. None of the

Table 4.7
Inter-rater Reliability of Total Protocol Color Weighting
Group 1 & Group 2 with Author

	Author's Total Color Rating	Graduate Group 1 Total Color Rating	Graduate Group 2 Total Color Rating
Author's Total Color Rating	1.00	0.97**	0.95**
Group 1 Total Color Rating	0.97**	1.00	0.94**
Group 2. Total Color Rating	0.95**	0.94**	1.00

***1 tailed significance p< .001*
Pearson Product Moment Correlation

analyses conducted using weighted color (Cw) provided evidence of significantly better performance by Experience Balance compared to those conducted using unweighted color. Thus, support was found for the fourth hypothesis.

Post Hoc Investigations

Because of the striking lack of a relationship where one is frequently assumed to be, numerous post hoc analyses were conducted. One purpose of these analyses was to examine alternative formulations of the Experience Balance and typing resulting from the Experience Balance. Pilot investigations of preliminary data also suggested that relationships between extraversion and introversion as measured by the MBTI EI scale and extratensiveness and introversiveness as measured by the Experience Balance might vary for different MBTI types. Differences between introverts and extraverts, and between sensors and intuitives were especially interesting. Therefore, additional exploratory correlations were run examining differences within these two groups.

Examination of Types

Unweighted C 3-group Experience Balance- 3-group MBTI. When the difference required for subjects to be typed according to Rorschach criteria using unweighted color in the Experience Balance was lowered to 1, and each subject was typed according to modified MBTI criteria (i.e. classifying subjects into three groups rather than two), only 39% of the subjects were classified as having similar types. This resulted in an insignificant Chi-

square of 3.98 (df=4, p=0.408). When the difference was changed to 3, the percentage of concurrence went down to 27%, with an insignificant Chi-square of 1.87 (df=4, p=0.759).

Weighted C 3-group Experience Balance- 3-group MBTI. When the difference required for subjects to be typed according to Rorschach criteria using weighted color was lowered to 1, and each subject was typed according to modified MBTI criteria, 41% of the subjects were classified as having similar types. This resulted in an insignificant Chi-square of 4.53 (df=4, p=0.339). When the difference was changed to 3, the percentage of concurrence changed to 34%, with an insignificant Chi-square of 3.785 (df=4, p=0.436).

Unweighted C 2-group Experience Balance- 2-group MBTI. Next, the difference required for subjects to be typed according to Rorschach criteria using unweighted color in the Experience Balance was again lowered to 1, but only those subjects who were typed C or M were considered in the analysis. Any subjects whose Experience Balance indicated they were ambiequal were not evaluated for match. Each subject was then typed according to traditional MBTI criteria (i.e. either E or I). The percentage of subjects classified as having similar types rose to 44%, producing an insignificant Chi-square of 1.95 (df=1, p=0.163). When the difference was changed to 3, the percentage of concurrence went down to 40%, and resulted in an insignificant Chi-square of 1.94 (df=1, p=0.163).

Weighted C 2-group Experience Balance- 2-group MBTI. Finally, the difference required for subjects to be typed according to Rorschach criteria using weighted color in the Experience Balance was lowered to 1, and again only those subjects who were typed C or M were considered in the analysis. Each subject was typed according to traditional MBTI criteria. The percentage of subjects classified as having similar types rose to 48%, producing an insignificant Chi-square of 2.06 (df=1, p=0.151). When the difference was changed to 3, the percentage of concurrence changed to 50%, and resulted in an insignificant Chi-square of 2.28 (df=1, p=0.131).

The percentage of concurrence using Rorschach and MBTI typing for all type comparisons is found in Figure 4.4 below.

Unweighted C 3-group Experience Balance- 3-group MBTI.	
M:C Difference of 1	39%
M:C Difference of 2	27%
M:C Difference of 3	27%
Weighted C 3-group Experience Balance- 3-group MBTI.	
M:Cw Difference of 1	41%
M:Cw Difference of 2	43%
M:Cw Difference of 3	34%
Unweighted C 2-group Experience Balance- 2-group MBTI.	
M:C Difference of 1	44%
M:C Difference of 2	36%*
M:C Difference of 3	40%
Weighted C 2-group Experience Balance- 2-group MBTI.	
M:Cw Difference of 1	48%
M:Cw Difference of 2	50%
M:Cw Difference of 3	50%

**significant at p=0.05 (not in hypothesized direction)*

Figure 4.4 Percentage of Concurrence Using Rorschach and MBTI Typing for All Type Comparisons

Groups divided for introversion and extraversion. Because of the differences apparent between introverts and extraverts when the data were plotted, one additional analysis was run on the two types separately. For this analysis, both unweighted and weighted C Experience Balance ratios were computed and the subject types were determined according to traditional methods (i.e. including an ambiequal group). A difference of 2 between M and C was used to type subjects introversive or extratensive. Subjects were also typed according to modified MBTI criteria so as to create an ambiequal group. This arrangement resulted in only two MBTI groups for each analysis, since only introverts were used in one (thus eliminating the MBTI category E) and only extraverts were used in the other (thus eliminating the MBTI category I). The Rorschach produced 3 groups.

When this analysis was conducted with introverts using unweighted color, it resulted in a 38% percentage of concurrence and an insignificant Chi-square of 2.33 (df=2, p=0.312). When weighted color was used, the percentage of concurrence went up to 62 %, and the resulting Chi-square was 7.59, significant at the .02 level (df=2, p=0.023). Similar analyses among extraverts produced no significant results.

When comparisons were made among introverts and extraverts separately using only two Rorschach and two MBTI groups, no statistics were run, since there was only one category for the MBTI. However, the percentage of concurrence for unweighted color with introverts was 47%, while the percentage of concurrence for weighted color went up to 70%. Extraverts, on the other hand, were *misclassified* 88% of the time using unweighted color, and 90% of the time using weighted color.

Relation of M and C to E and I

Extraverts and Introverts. When all subjects' scores were examined, the relationships between color and movement and introversion and extraversion appeared non-existent (Table 4.2 above). When these relationships are examined for introverts and extraverts separately, however, a different relationship becomes apparent. Extraverts, as defined by the MBTI Extraversion-Introversion scale, show no significant relationship between Rorschach variables color and movement with MBTI variables E and I scores (Table 4.8 below). Nor is there any relationship between Rorschach percentage scores (MPCT, CPCT, and CWPCT) and MBTI EI scale continuous scores (Table 4.9 below).

Introverts (n=29), on the other hand, demonstrate a significant positive relationship (r= 0.59, p=0.0008) between C production and E raw scores and a significant negative relationship (r=-0.46, p=0.011) between C production and introversion. A slightly stronger positive relationship exists between Cw (weighted color) and E (r=0.64, p=.0002). Similarly, Cw significantly correlates with MBTI I scores (r=-0.50, p=0.005) in the same direction. Again, no relationship appears to exist between M production and E or I scores (Table 4.10 below).

The relationship between color production and extraversion and introversion is also significant when the percentage of color used (CPCT and CWPCT) is correlated with MBTI EI scale continuous scores. Since the continuous scores for this scale produce high numbers for more introverted and lower for more extraverted subjects, percent of color should negatively correlate with the continuous scores. No such relationship exists for

Table 4.8
Correlation Matrix of Rorschach and MBTI Variables
for Extraverted Subjects

	E (Extraversion)	I (Introversion)	M (Human Movement) (+Human Emotion)	C (Color)	Cw (Weighted Color)
E	1.00000 0.0 15	-0.68419 0.0049 15	-0.14996 0.5937 15	0.20214 0.4700 15	0.22779 0.4335 14
I	-0.68419 0.0049 15	.00000 0.0 15	0.19934 0.4763 15	-0.19700 0.4816 15	-0.27814 0.3356 14
M	-0.14996 0.5937 15	0.19934 0.4763 15	1.00000 0.0 15	0.49142 0.0628 15	0.44041 0.1150 14
C	0.20214 0.4700 15	-0.19700 0.4816 15	0.49142 0.0628 15	1.00000 0.0 15	0.94057 0.0001 14
Cw	0.22779 0.4335 14	-0.27814 0.3356 14	0.44041 0.1150 14	0.94057 0.0001 14	1.00000 0.0 14

Pearson Product Moment Correlation/ p value/ number of cases

Table 4.9
Correlation Matrix of Transformed Rorschach and MBTI Variables for Extraverted Subjects

	EICONT (EI-Continuous Scores)	MPCT (Percent M)	CPCT (Percent C)	CWPCT (Percent Cw)
EICONT	1.00000 0.0 15	0.13541 0.6304 15	-0.24727 0.3743 15	-0.12326 0.6746 14
MPCT	0.13541 0.6304 15	1.00000 0.0 15	0.36469 0.1814 15	0.32131 0.2626 14
CPCT	-0.24727 0.3743 15	0.36469 0.1814 15	1.00000 0.0 15	0.91118 0.0001 14
CWPCT	-0.12326 0.6746 14	0.32131 0.2626 14	0.91118 0.0001 14	1.00000 0.0 14

Pearson Product Moment Correlation/ p value/ number of cases

Table 4.10
Correlation Matrix of Rorschach and MBTI Variables
for Introverted Subjects

	E (Extraversion)	I (Introversion)	M (Human Movement) (+Human Emotion)	C (Color)	Cw (Weighted Color)
E	1.00000 0.0	-0.90630 0.0001	0.09447 0.6259	0.58540 0.0008	0.64392 0.0002
I	-0.90630 0.0001	1.00000 0.0	-0.06725 0.7289	-0.46320 0.0114	-0.50474 0.0052
M	0.09447 0.6259	-0.06725 0.7289	1.00000 0.0	0.43770 0.0176	0.35311 0.0603
C	0.58540 0.0008	-0.46320 0.0114	0.43770 0.0176	1.00000 0.0	0.96745 0.0001
Cw	0.64392 0.0002	-0.50474 0.0052	0.35311 0.0603	0.96745 0.0001	1.00000 0.0

Pearson Product Moment Correlation/ p value

extraverts, but it does exist for introverts. When CPCT is used, r=-0.46, p=0.013, and when CWPCT is used, r=-0.57, p=0.001 (Table 4.11 below). No relationship was found correlating MPCT to MBTI EI scale continuous scores.

A significant relationship was also found when CM, a measure of the relationship between C and M (C-M+100) was correlated with MBTI EI scale continuous scores, (r=-0.38, p=0.043). This relationship did not prove significant when percentage of weighted color (CWPCT) was used.

Table 4.11
Correlation Matrix of Transformed Rorschach and MBTI Variables for Introverted Subjects

	EICONT (EI-Continuous Scores)	MPCT (Percent M)	CPCT (Percent C)	CWPCT (Percent Cw)
EICONT	1.00000 0.0	0.13416 0.4878	-0.45569 0.0130	-0.57345 0.0011
MPCT	0.13416 0.4878	1.00000 0.0	0.16312 0.3979	-0.03508 0.8566
CPCT	-0.45569 0.0130	0.16312 0.3979	1.00000 0.0	0.91820 0.0001
CWPCT	-0.57345 0.0011	-0.03508 0.8566	0.91820 0.0001	1.00000 0.0

Pearson Product Moment Correlation/ p value

Intuitives and Sensors. When only intuitives are studied, there appears to be no relationship between color and movement and introversion and extraversion (Tables 4.12 and 4.13 below). When only sensors are examined, however, a significant relationship does exist. This relationship is significant in a direction *opposite* to that found when introverts alone were examined.

For those who prefer sensing (n=9), there is a *negative* relationship between use of color and number of E responses, and a *positive* relationship between use of color and number of I responses. Though the correlations between C and M raw scores with E and I raw scores only approach significance (Table 4.14 below), the relationship does reach significance when CPCT is correlated with EI scale continuous scores (r=0.66, p=0.05).

Table 4.12
Correlation Matrix of Rorschach and MBTI Variables
for Intuitive Subjects

	E (Extraversion)	I (Introversion)	M (Human Movement) (+Human Emotion)	C (Color)	Cw (Weighted Color)
E	1.00000 0.0 35	-0.96386 0.0001 35	0.13520 0.4387 35	0.21205 0.2214 35	0.23916 0.1731 34
I	-0.96386 0.0001 35	1.00000 0.0 35	-0.08558 0.6250 35	-0.14041 0.4211 35	-0.16367 0.3550 34
M	0.13520 0.4387 35	-0.08558 0.6250 35	1.00000 0.0 35	0.51921 0.0014 35	0.45955 0.0063 34
C	0.21205 0.2214 35	-0.14041 0.4211 35	0.51921 0.0014 35	1.00000 0.0 35	0.96445 0.0001 34
Cw	0.23916 0.1731 34	-0.16367 0.3550 34	0.45955 0.0063 34	0.96445 0.0001 34	1.00000 0.0 34

Pearson Product Moment Correlation/ p value/ number of cases

Table 4.13
Correlation Matrix of Transformed Rorschach and MBTI Variables for Intuitive Subjects

	EICONT (EI-Continuous Scores)	MPCT (Percent M)	CPCT (Percent C)	CWPCT (Percent Cw)
EICONT	1.00000 0.0 35	0.00890 0.9595 35	-0.07787 0.6566 35	-0.13794 0.4366 34
MPCT	0.00890 0.9595 35	1.00000 0.0 35	0.25535 0.1387 35	0.09528 0.5920 34
CPCT	-0.07787 0.6566 35	0.25535 0.1387 35	1.00000 0.0 35	0.91271 0.0001 34
CWPCT	-0.13794 0.4366 34	0.09528 0.5920 34	0.91271 0.0001 34	1.00000 0.0 34

Pearson Product Moment Correlation/ p value/ number of cases

Table 4.14
Correlation Matrix of Rorschach and MBTI Variables
for Sensing Subjects

	E (Extraversion)	I (Introversion)	M (Human Movement) (+Human Emotion)	C (Color)	Cw (Weighted Color)
E	1.00000 0.0	-0.97766 0.0001	0.07573 0.8465	-0.59129 0.0936	-0.55615 0.1199
I	-0.97766 0.0001	1.00000 0.0	-0.12158 0.7553	0.59837 0.0887	0.59648 0.0900
M	0.07573 0.8465	-0.12158 0.7553	1.00000 0.0	0.42905 0.2492	0.26761 0.4863
C	-0.59129 0.0936	0.59837 0.0887	0.42905 0.2492	1.0000 0.0	0.95568 0.0001
Cw	-0.55615 0.1199	0.59648 0.0900	0.26761 0.4863	0.95568 0.0001	1.00000 0.0

Pearson Product Moment Correlation/ p value

It is also significant when CWPCT is correlated with EI scale continuous scores (r=0.69, p=0.04). These results are found in Table 4.15 below.

Comparing EI types with SN types. In light of the above findings, one final correlational analysis was made to examine the relationship between Introversion, Extraversion, Intuition, and Sensing. Those subjects who were typed as both introverted and intuitive were expected to show a significant negative relationship between their CPCT scores and their EI scale continuous scores (indicating that as their use of color increased, they tended to be less introverted), while introverted sensors, extraverted intuitives, and extraverted sensors were expected to show no significant relationships between these variables.

Table 4.15
Correlation Matrix of Transformed Rorschach and MBTI Variables for Sensing Subjects

	EICONT (EI-Continuous Scores)	MPCT (Percent M)	CPCT (Percent C)	CWPCT (Percent Cw)
EICONT	1.00000 0.0	-0.16771 0.6662	0.65931 0.0534	0.68689 0.0410
MPCT	-0.16771 0.6662	1.00000 0.0	-0.05582 0.8866	-0.13742 0.7244
CPCT	0.65931 0.0534	-0.05582 0.8866	1.00000 0.0	0.96292 0.0001
CWPCT	0.68689 0.0410	-0.13742 0.7244	0.96292 0.0001	1.00000 0.0

Pearson Product Moment Correlation/ p value

Introverted intuitives (n=23) did produce the expected relationship with both unweighted color percent (CPCT) (r=-0.54, p=0.008), and weighted color percent (CWPCT) (r=-0.63, p=0.001), while no other groups produced coefficients that even approached significance. Results are found in Table 4.16 below.

Table 4.16
Correlations of Transformed Rorschach and MBTI Variables
for Introverted Intuitives, Introverted Sensors,
Extraverted Intuitives, and Extraverted Sensors

EICONT	C (Color)	Cw (Weighted Color)	M (Human Movement) (+Human Emotion)
Introverted Intuitives	-0.5423 0.0075 23	-0.6296 0.0013 23	-0.0034 0.9878 23
Introverted Sensors	0.1019 0.8478 6	0.2857 0.5831 6	-0.2367 0.6515 6
Extraverted Intuitives	-0.2311 0.4699 12	-0.3193 0.3385 11	0.4059 0.1904 12
Extraverted Sensors	-0.1429 0.9087 3	-0.1429 0.9087 3	-0.7169 0.4911 3

Pearson Product Moment Correlation/ p value/ number of cases

CHAPTER V

DISCUSSION

Initial Investigations

Rorschach's Erlebnistypus and Jung's Einstellungstypus

All three initial hypotheses were tested in order to provide evidence of a relationship between Rorschach's construct of *Erlebnistypus* (experience type) and Jung's construct of *Einstellungstypus* (attitudinal type). None of the initial hypotheses were supported by the analyses to which they were subjected.

1) Subjects who are typed introversive by the Rorschach are just as likely to be typed extraverted as they are to be typed introverted by the MBTI, and those typed extratensive by the Rorschach are just as likely to be typed introverted as they are to be typed extraverted by the MBTI.

2) There is no significant relationship between raw scores of both measures. Nor is there a relationship between transformed scores of both measures.

3) Increased color usage on the Rorschach does not identify extraverts as determined by the MBTI, and increased production of human movement and emotion responses on the Rorschach does not identify introverts as determined by the MBTI.

The lack of support for these hypotheses is surprizing in light of the similarity in description between Rorschach's and Jung's constructs and

the, implicit assumption among some Rorschachers that such a relationship exists (Bash, 1955).

There are several conceptual explanations for the general lack of support for the initial hypotheses. It is very possible that Rorschach was correct, and what he was describing was really something very different from what Jung had described. Rorschach said that his concept was closer to the colloquial definition of the term introvert, whom he said "in general... is understood to be one who is turned in upon himself, who lives more within himself than in the outer world, and who has difficulty in his approach to the world outside himself" (Rorschach, 1969, p.82). The changes in Jung's understanding of introversion and extraversion, while coming closer to the colloquial meaning of the word, may have none the less failed to arrive where Rorschach's understanding did. It might be that no relationship between Rorschach's and Jung's thinking in this area exists.

Rorschach emphasized that the psychological processes leading to introversion and extraversion, M and C types, are not opposite, but different and that these processes or functions are developed to a different degree in the types, in the introversive and extratensive. They, thus, reflect psychological capacities and tendencies, but are mitigated by other factors. These mitigating factors are probably both situational and characterological. The MBTI, however, does not address these internal capacities except as they are manifested in social behavior. Many of the MBTI EI scale items address social behavioral tendencies such as gregariousness, activity, and self-disclosure, whereas few attempt to measure internal states. The Rorschach does not investigate social behavior, but rather psychological tendencies that might manifest

themselves in social behavior, whereas the MBTI EI scale investigates social behavior almost exclusively.

It is also possible that Rorschach's concept of the *Erlebnistypus* does not regularly manifest itself in overt behavior. Rorschach said "The experience type demonstrates the limits of the apparatus which the individual could call into the service of living. It cannot reveal, however- except under very favorable circumstances- what parts of the apparatus the patient actually puts to use in active living" (1969, p. 88). If he was correct here, only limited observable results could be expected as a result of the determination of the *Erlebnistypus*. The degree to which a subject might call his resources "into the service of living" would vary in conjunction with the demand a particular subject experienced at the time as well as with that subject's willingness to bring that "apparatus" to bear upon the situation. Research on the validity of the MBTI's measure of introversion and extraversion on the other hand (e.g. Carlyn, 1977; Carlson,1985), like the items themselves, has examined only behavior, and does not examine potential.

It is also quite possible that Jung's thinking did move closer to the colloquial understanding of the word, and closer to Rorschach's, and yet his understanding is not accurately reflected in the measure of introversion and extraversion provided by the MBTI. Though Carlyn (1977) reports that research has suggested that the MBTI scales "measure important dimensions of personality quite similar to those postulated by Jung" (p. 471), the test, and the research done on it, reflect Briggs' and Myers' interpretation of Jung's ideas, not the ideas themselves. It is possible that there is a relationship between Rorschach's and Jung's thinking in this area that failed to show up because the MBTI did not reflect what Jung

meant by introversion and extraversion, and that a different measure of introversion and extraversion might produce a better match with Rorschach's constructs. Questions that inquire about being a "good mixer" versus being quiet and reserved (MBTI question #3), and the frequency with which one introduces others or is introduced by others in large groups (MBTI question #10) may not adequately tap the constructs of introversion and extraversion as Jung conceptualized them. The questions of this scale, as Stricker and Ross (1964) pointed out, appear to investigate predominantly extraverted behavior such as sociability and gregariousness. Only by assuming a bi-polar relationship between these traits, something that neither Rorschach nor Jung advocated, can introversion be inferred from the lack of extraverted tendencies.

It is also important to consider what possible effect conscious awareness of the test subject matter might have on the results of such a comparison as this. It could be that the difference between what an "objective" pencil and paper, self-report questionnaire measures and what a projective test measures has contributed to the fact that these two different instruments reach different conclusions about the subjects' introversive and extraversive qualities. Though Rorschach did not see his technique as a measure of the unconscious, there is considerable evidence to suggest that subjects respond to the blots in a manner that reveals much more than they are conscious of. Such a claim is much harder to support for an objective measure. It is possible that the MBTI and the Rorschach are measuring different levels of introversion and extraversion, the former at a more conscious level, and the latter at a more unconscious, characterological level.

Related to possible differences between projective and objective measures is the possibility that the tests themselves may be in part reflecting differences between testing settings. It is important to consider the influence of state as well as trait. Recalling Shapiro and Alexander's (1969) finding that introverts behaved in a more introverted fashion and extraverts in a more extraverted fashion when they were anxious, it seems possible that one testing situation could be more anxiety provoking than the other, and might influence the subject's affective state. The ambiguity of the Rorschach task often, though not always, makes subjects somewhat anxious. It is possible that the Rorschach creates some of the anxiety that helps the more introverted subjects exhibit their introvertedness, while a task that is very much like tests these students are familiar with such as the MBTI, does not trigger or pick up on this. As Westman and Canter (1984) pointed out, the MBTI is sensitive to changes in subjects over the course of the day. It may be that if the subjects were as anxious when they took the MBTI as they were when they took the Rorschach, the degree to which they would be found to be introverted or extraverted on those two instruments might better match.

For example, fantasy is a common defense among introverts. That could possibly manifest itself in human movement or emotion on the Rorschach, while non-threatened introverts (i.e. those taking a pencil and paper instrument that is relatively non-threatening) might be more apt to express how they "normally" are, how they would like to be, or how they would be under ideal circumstances, and not how they are when they are anxious.

Finally, Rorschach may have been wrong. What he observed in the population samples he studied may have been more artifactual than actual. It also might be that had he had more time to develop his ideas, he would have described "M" and "C" types in a manner that did not resemble introverted or extraverted types, but rather along some other lines.

There are also several methodological explanations for the lack of support for the initial hypotheses. To begin with, differences in sample characteristics from those Rorschach used may obscure expected results that might have shown up using a sample that was more like that on which Rorschach based his initial observations. Those differences also limit the generalization of results to contemporary populations.

The present sample (n=44) is fairly small, a factor which could more easily obscure real effects and more easily provide spurious ones. In addition, the present study's sample is different from many contemporary populations as well. The above characteristics of age, intelligence and so on distinguish them from the "normal" population as well as from Rorschach's samples. In addition, all of these students have been screened for serious psychopathology, another characteristic that would distinguish them from both Rorschach's sample and a "normal" contemporary sample.

Another example of how this sample differs from other populations can be found examining MBTI normative data. The sample for the present study was 66% introverted and 34% extraverted. Though these are not broken down by sex for the present study, the data clearly differ from the 51% introverted and 49% extraverted (males) and 45% introverted and 55% extraverted (females) found in the (Form G) MBTI data banks (Myers and

McCaulley, 1985). Even more striking is the difference found on the Sensing-Intuitive (SN) scale. The MBTI data banks suggest that 44% of both males and females are intuitive, while 56% are sensors. The present sample includes 80% intuitives and 20% sensors.

It is interesting to note that a sample of 100 National Merit Finalists favored introversion over extraversion, 58% I to 42% E, and favored intuitive over sensing 83% N to 17% S (Myers and McCaulley, 1985, p. 111). Other "gifted" and "creative" subject samples from the same source also had very low percentages of S and high percentages of N. University of Illinois "independent scholars," a group similar to the present one, were 57% introverted and 86% intuitive (Myers and McCaulley, 1985, p. 129), similar to the sample used in this study (i.e. 66% introverted and 80% intuitive). Thus, while the present sample is not unlike other gifted, motivated scholars, it is different from the population at large. These differences pose the possibility that the questions themselves might pull for a response set with a scholarly sample such as the present one, leading to a bias toward introversion.

Rorschach may have adequately described the human personality characteristics of introversiveness and extratensiveness, and yet may have inadequately determined the best way to measure these. Burstein (1974, 1989), for example, has postulated the use of a comprehensive Experience Balance utilizing form, achromatic color, and shading as well as color compared to animal movement, object movement, texture, and vista as well as human movement and emotion. It is possible that such a formulation would provide a better picture of the relationship between Rorschach's *Erlebnistypus* and Jung's *Einstellungstypus*.

In a recent study designed to investigate the utility of such a comprehensive Experience Balance, Kimbell (1990) found that an extended Experience Balance was better related to the validity measures he used than the traditional Experience Balance. The failure of the present study to provide convincing evidence of a universal relationship between Rorschach's and Jung's constructs may be a result of not using an extended Experience Balance.

With regard to the first hypothesis, it can also be argued that a Chi-square is inadequate to properly analyze the type comparisons, since the expected cell size was fewer than 5 subjects in several analyses. It is especially inadequate for those analyses where the ambiequal group was not considered (where the MBTI was used in a traditional manner, and the Rorschach ambiequal category could not be matched with an MBTI category), since a percentage of the cases were not included in the analyses. The test was still used in spite of these limitations. The first consideration is the real lack of alternatives; no other extant programs can handle low-N, non-parametric data like these any better than the Chi-square. The concurrence percentages of 27% to 50% are not useful. If the Rorschach and MBTI can only similarly categorize subjects as introverted or extraverted with an accuracy that is not much better than chance at best, then statistical significance is a moot point. Thus, even though it may be possible to write a program to analyze these data in a manner possibly superior to the Chi-square (Philpot, personal communication, 1990), such an effort was seen to be superfluous.

Post Hoc Investigations

Because there are no clear criteria in Rorschach's work for what constitutes a significant enough difference between M and C production in subjects' protocols to warrant typing them introversive or extratensive, the original analyses chose a difference of 2. Since that choice was not informed by theory or previous research, post hoc analyses using differences of 1 and 3 (between C and M) were conducted to determine if a better percentage of concurrence could be obtained using different criteria.

Changing the difference cutoff to either 1 or 3 on the Rorschach made little difference in the ability of the two instruments to similarly categorize subjects. The best rate attained was 50%, only about what might be expected by chance. Thus, the Experience Balance, regardless of how construed, does not appear to identify types similar to those identified by Jung, at least as measured by the MBTI.

The positive relationship between color use and extraversion and the negative relationship between color use and introversion for introverts but not for extraverts would suggest that those Rorschachers who attribute qualities of extraversion to those subjects whose Experience Balance has a high number of C responses might be correct in doing so when the subject is what the MBTI calls introverted, but not when that subject is what the MBTI calls extraverted.

If that is true, the percentage of the time a Rorschach worker will correctly attribute introverted or extraverted characteristics will vary depending on the percentage of introverts in the population being tested. Though that percentage varies among different population samples, Myers

(1962) estimated that roughly 25% of the general population was introverted. However, percentages found in the MBTI data bank indicate that 51% of males are introverted, and 45% of females are introverted (Myers and McCaulley, 1985). Thus, the Rorschacher making inferences about Jungian-like introversion and extraversion from a subject's Experience Balance is likely to be correct about half of the time for males, and just under that for females.

The above findings are complicated by a second post hoc analysis involving preference for intuition and sensing. Though there does not appear to be a relationship between use of color and introversion and extraversion for intuitives, one does appear for the sensors. Here, the relationships between color use and introversion and extraversion are significant, but reversed. There is still no relationship between M production and introversion or extraversion, but those sensors who use the most color on the Rorschach are most introverted, while those that use the least color on the Rorschach are the most extraverted. This is significant in the opposite direction from that which was hypothesized and is traditionally expected.

Again, how often this will affect the accuracy of a Rorschach worker's inferences will depend on how prevalent sensors and intuitives are. Myers (1962) estimated that 75% of the general population were sensors, though the MBTI data bank reveals that only 56% of males are sensors, and 56% of females are sensors (Myers and McCaulley, 1985). Thus, a Rorschacher who infers that a subject who uses a great deal of color in response to the Rorschach is somehow extraverted in a Jungian sense, has about a 44%

chance of being correct, depending on whether the subject is a sensor or not.

Though the relationship between color usage and introversion and extraversion is strong enough to tolerate the addition of the sensors (i.e. those subjects who have both introverted and sensing preferences), when those subjects who are introverted sensors are examined separately, the relationship between color usage and introversion and extraversion drops out. It is only those subjects who are both introverted and intuitive who maintain the relationship between color usage and introversion and extraversion. The data in the MBTI data bank suggest that 22% of males have both I (introvert) and N (intuitive) codes in their full MBTI type. Only 18% of females have both I (introvert) and N (intuitive) codes in their full MBTI type (Myers and McCaulley, 1985).

The chances of a Rorschach worker correctly attributing the qualities of introverted and extraverted as defined by the MBTI to subjects based on their use of color and movement are possibly below the 50% estimated above. It is clear from the results of the present study that the relationship between color and movement and extraversion and introversion is not as simple as it might appear from Rorschach's descriptions. Nor, given the similarity between Rorschach's descriptions and those of most contemporary Rorschach workers, does it appear that more recent theorizing is accurate any more often.

Thus, the present study indicates that some subjects with an introversive Experience Balance are much like the MBTI's interpretation of Jung's introverted types. Similarly, some subjects with an extratensive Experience Balance are much like the MBTI's interpretation of Jung's

extraverted types. And yet, it is also true that for some subjects, the relationship is exactly the opposite.

The real difficulty in explaining the general failure of the present study to provide evidence of a relationship between Rorschach's and Jung's constructs results from its success at providing such evidence in certain areas. That success helps to clarify some of the conjecture about possible conceptual and methodological shortcomings of the present study and the constructs it examined discussed earlier.

Conceptually, it is clear that *some* relationship does exist between Rorschach's and Jung's constructs, at least for some subjects. Methodologically, it is clear that this relationship can be examined using the MBTI and the Rorschach together. It remains to be determined whether this relationship reflects differences between introverts, extraverts, intuitives and sensors, or is instead an artifact due to the present study's small sample size. Although the sample used in the present study differed from those which Rorschach used, it appears that there is at least some similarity, given that the hypothesized relationship was demonstrated within a subset of the present sample. Thus, the present findings may not be specific to the sample used, but might instead afford some generalization, though such generalization should follow elaboration and replication of the present study of Rorschach's and Jung's constructs.

Given that there are significant, though limited, results in the present study, the possibility that there is simply no similarity between Rorschach's *Erlebnistypus* and Jung's *Einstellungstypus* is unlikely. It is remains possible, however, that there is a better way of configuring the Experience Balance. Weighting color, for example, clearly has limited utility, except in

the typing of introverted introversives. It may be that there is a better configuration, related to the Experience Balance, that would allow the clinician to utilize Jung's and Rorschach's theorizing when using the Rorschach, while at the same time providing construct clarification and validation.

The final hypothesis predicted that there would be no significant differences in the predicted relationships when color was weighted compared to when it was not. This is the only hypothesis tested that provides simple results. The present study found color weighting a potentially reliable, and yet fairly meaningless method of treating color responses on the Rorschach. Though the inter-rater reliability of individual scores, and especially scores summed across records, provided very respectable correlations, there were no relationships examined during either the hypothesis testing or the post hoc analyses in which weighted color revealed a significant relationship where unweighted color did not. There were areas where a significant relationship was enhanced slightly by weighting color, but nothing was revealed that makes a case for weighting color.

The only exception occurs when matching Rorschach and MBTI types among persons who have been determined to be introverted by the MBTI. There alone does weighting color seem to improve the performance of the Experience Balance as it attempts to type individuals according to characteristics of introversion and extraversion. The difficulties involved in statistically evaluating this phenomenon make the "significance" of this finding questionable. The ability for weighted color to better label only known introverts as introverted clearly has limited utility.

Overall, these findings cast doubt on the value of the arbitrary weighting system Rorschach developed some 70 years ago. While there may possibly be clinical reasons to examine the use of form in the interpretation of color, weighting color appears to add little to the concept of the Experience Balance.

Implications for Future Research

This study's small N and the ways in which its sample differs from the population (e.g. range of intelligence, level of motivation, age range, lack of serious psychopathology, socioeconomic status, interests and fields of study in which they are involved, and type composition), provide limitations to the confidence in and generalizability of its results. The most significant result of this study is its identification of the differences in the relationship seen between the Experience Balance and introversion and extraversion for different types. If these findings are not spurious, the nature of the Experience Balance and its relationship to the constructs of introversion and extraversion are more complex than was previously thought. Studies that have been unable to identify a relationship between Rorschach's and Jung's constructs (e.g. Guilford,1936; Tamkin, 1980) might better identify such a relationship if type differences (e.g. MBTI sensor vs intuitive, or introvert vs extravert) were accounted for. The present study invites future research informed by these type differences in order to substantiate and expand on its findings.

There is a clear need to replicate the present study using the MBTI and a larger, more diverse sample. It would also be helpful to use another

instrument designed to measure Jungian constructs, such as the Gray Wheelwright Questionnaire (Wheelwright and Buehler, 1964), in order to examine which results are specific to the MBTI, which are specific to the other instrument, and which are similar between them, and thus more likely to reflect actual Jungian constructs.

Additional insight might also be gained if another projective instrument, like the TAT, was scored for Jungian constructs (e.g. Spiegelman, 1955), and used in conjunction with the Rorschach Experience Balance.

The present study suggests that a reexamination of the Experience Balance using criterion variables unrelated to Jungian theory might prove more fruitful if different subsets of the sample (e.g. introverts and sensors as measured by the MBTI) were examined separately. It also appears that reexamination of the construction of the Experience Balance itself would be appropriate. While the Experience Balance clearly provides some useful information in its present form, it seems quite possible that constructing it differently might add to its utility (e.g. Burstein, 1974).

Finally, the present study suggests that weighting color adds little to the utility of the Experience Balance. Additional research using both weighted and unweighted color will be necessary to replicate these findings and to determine if and how weighting color responses contributes to the overall clinical understanding of the subject's personality characteristics.

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Vita

John Carleton House III was born in Pittsburgh, Pennsylvania, on April 18, 1954. He attended elementary school in Pittsburgh and Seattle, Washington, and high school in Seattle and Orono, Maine. He left public high school in his junior year to attend Skitikuk, a progressive school fashioned after Summerhill, in England. He left Skitikuk after one year, and joined the Navy in 1971. He was honorably discharged in 1973. He received his GED at that time as well.

Following his military service, John spent nine years in varied occupations including mechanic, welder, electronics technician, and metalsmith in Virginia and Missouri. In 1982, he entered Southwest Missouri State University in Springfield, Missouri. While completing his undergraduate work, he worked part-time as a psychological technician at the St. John's Regional Health Center in Springfield. He graduated Summa Cum Laude in 1986 with a major in Psychology and minors in Sociology and Religious Studies.

In 1986, John entered the Clinical Psychology Doctoral program at the University of Tennessee. During 1989–90, he completed his clinical internship at Cumberland Psychology Consortium in Nashville, Tennessee, and in December 1990, received his Doctor of Philosophy degree with a major in Clinical Psychology.

John is married to Cynthia Williams House and they have three children, John Steven, Seth, and Anne-Elizabethe.