IMPULSIVENESS AND THE HOLTZMAN INKBLOT TECHNIQUE

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Fort Collins, Colorado

1969

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
May, 1972

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Thesis Approved:

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ACKNOWLEDGMENTS

I wish to acknowledge and thank Dr. Robert Schlottman and Dr. Kenneth Sandvold for their interest and assistance in carrying out this research. Thanks also are due to Dr. Roy Gladstone who shook the cobwebs off ideas which had long since been filed away as givens.

A special debt of gratitude is due to Mr. David Butler who willingly and enthusiastically served as second scorer in the study.

Finally, I would like to thank my wife, Mary, whose role of very patient sounding board helped a great deal in clarifying many problems, both theoretical and practical.

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CHAPTER I

THE PROBLEM

Since it was first developed, the Rorschach Inkblot Test has been subject to criticism and scepticism. One of the main arguments has made reference to the highly subjective nature of the scoring and interpretation of the test. Attempts to validate the Rorschach have yielded contradictory results. Some of the more specific problems with the technique are summarized by Holtzman in an article prepared for Megargee (1966). In this article he points to the "highly individual nature" of the inquiry period and its resultant "interactive influence of the examiner on the subject and vice versa". He also mentions the reliance of test scores on quantity of output, therefore making normative data almost impossible to compute. Finally he points out the small number and variety of inkblots, which has drastic effects on completeness and reliability of the record.

One would think that some technique which combined the rationale that ambiguous stimuli serve as projective objects for attitudes and feelings, with a methodology and structure that would eliminate the major problems of the Rorschach would be eagerly sought after by clinicians. Since 1958

there has been such a technique, but it has received little acknowledgment. The Holtzman Inkblot Technique (HIT) includes forty-five rather than ten chromatic and achromatic inkblots. It allows only one response per card, rather than any number. A very brief and explicit inquiry period is utilized, minimizing examiner influences on subject responses. Furthermore, it has two equivalent forms which make it extremely well suited for the evaluation of change over time.

Granted that one should not simply take Holtzman's word for all the purported improvements, there has been a surprising dearth of research which puts the test to the test. Holtzman and his colleagues at the University of Texas have done some validation work (Holtzman, Thorpe, Swartz and Herron, 1961; Megargee, 1966; Megargee and Swartz, 1968; Swartz and Swartz, 1968; Moseley, Duffy and Sherman, 1963), but again very little "outside" work has been done.

Hamilton and Robertson (1966) investigated examiner influences on Holtzman test results. They found that of twenty-one variables, eight showed a significant relation to E's attitude (warm, neutral or cold). They concluded that the examiner's attitude could affect performance by varying S's motivation to perform and his resistance to the test situation.

Cleveland and Morton (1962) investigated the implications of Barrier (Br) scores on the HIT. Barrier is

thought to be an indication of body image. High Br scores indicate definite, well deliniated perceptions of ones' body. Cleveland and Morton found that high Br scores are associated with forceful and aggressive personalities and strong goal-oriented attitudes. These individuals are typically seen by peers as organizing, hard working, and full of suggestions. Low Br individuals, on the other hand, are usually passive, quiet, and have little achievement motivation. They are typically seen as detached, having no initiative, and easily swayed.

A third study (Fernald and Linden, 1966) attempted to deliniate the meaning of the human content (H) variable. Their hypotheses were: 1) the number of H responses varies inversly with social isolation, 2) the number of H responses varies directly with the capacity for empathy, 3) the number of H responses varies directly with social interest, and 4) the number of H responses varied inversly with psychopathology. Hypotheses one and two were not supported, but the authors point out that they suffered from certain sampling errors. Hypotheses three and four were supported. The conclusion was that H can be viewed as an indicator of social interest and "other" rather than self-orientation.

Aside from the work cited above there is little in the way of attempts to validate and clarify the HIT. The purpose of this study is to add another bit of data concerning what the HIT measures in the individual. More specifically,

this study will examine certain specified variables of the HIT to determine their potential for indicating the presence or absence of impulsiveness in the person being tested. The variables are Reaction Time (RT), Location (L), Form Definiteness (FD), Form Appropriateness (FA), Color (C) and Animal (A). The rationale for selecting these particular variables follows.

In Megargee (1966), Holtzman states that on the basis of developmental studies, reaction time (RT) may be considered an indicator of impulsiveness. Five-year-olds have an average RT of only six seconds, whereas the average for youngsters from grades two through six jumps up to about seventeen seconds. Supporting evidence also comes from the observation that depressed mental patients had the longest RT of any group studied in the HIT standardization procedure. Young children not yet in school may be thought of as not as highly socialized as older children or adults. They, therefore, react to situations more on the basis of their own impulses rather than first considering the possible consequences of their acts. Depressive persons, on the other hand, are obviously very slow to react to stimuli and can, therefore, be considered to be very nonimpulsive if not deliberate in their actions. Thus, RT may in fact differentiate degrees of impulsiveness in an individual.

The next variable, Color, is probably the most widely known indicator of impulsiveness in projective testing.

Klopfer and Davidson (1962) suggest that the C response is indicative of the degree of emotional control. Color associated with a clearly specified object is associated with well-controlled and appropriate emotional response to the environment. "Pure" C, or color with no accompanying specified form, represents impulsive, uncontrolled emotionality. Similarly, Scott (1959) conceives C as an indicator of emotionality. It represents ". . . elation and impulsiveness, involving a reaching out of emotion or lack of inhibiting influences." Finally, Murray and Jackson (1964) found that Ss given a sorting task with no instructions on how to accomplish it chose either a color or form criterion for the sorting. Further, the color criterion Ss tended to score higher on impulsiveness scales of a personality inventory. It would seem, therefore, that C is indeed related to the degree of impulsiveness present in an individual.

The next variable is the Animal response. Ames, Learned, Metreaux and Walker (1952) indicate that the typical frequency of A response in children on the Rorschach is at the upper extreme of the normal range of adult A response frequency on the same test. It may be that an increased occurance of A responses in an adult's test record reflects a more childlike approach to the test situation. Thurstone's (1950) and Barratt's (1965) factor analytic definition of impulsiveness does suggest a pattern of behavior very similar to that of most children:

carefree, adventureous, acts on the spur of the moment, shifts easily from task to task. Thus a childlike approach to the test situation (high frequency of A) may be interpreted as revealing an impulsive aspect of the personality.

For the variables L, FD, and FA there is no information in the literature which supports a relationship with impulsiveness. However, a consideration of the nature of impulsive behavior suggests that these variables may be influenced by the degree of impulsivity in the person taking the HIT. The impulsive person, who reacts quickly and with little deliberation, may look at the blot and respond quickly with little consideration of the actual physical appearance of the blot. Thus he would be more likely to respond to a large portion of the blot rather than some specific detail of it (L). It follows that due to this lack of careful consideration of the blot, the response is more likely to be rather vague or generalized (FD). It will also probably be less appropriate to the actual shape of the blot (FA).

These, then, are six HIT variables which seem to have the greatest potential for detecting the presence of impulsiveness in the individual. Their advantage over presently utilized Rorschach indicators is brought into clear focus by the following two studies of Holtzman (1950) and Gardner (1951).

Holtzman (1950) reported an attempt to clarify the indicators of lack of impulse control found in the Rorschach technique. He stated, ". . . the way in which an individual reacts to the colored Rorschach cards should prove particularly important in any evaluation of impulsivity or lack of emotional control in social situations." Ss were divided into two groups in such a manner that the members of each group were well acquainted with the others in their group. Group members then ranked each other on a series of traits, including impulsiveness. Ss were administered the Rorschach and their impulsiveness ratings were correlated with ranked CF:FC ratios with resulting coefficients of .42 and .07 for each group respectively. The same was done with the ratio (CF+cF+2C):(FC+Fc). The resulting coefficients were .18 and .03 respectively. Holtzman states, "The above results merely confirm the findings of many Rorschach workers that, in general, consideration of a single aspect of the Rorschach only leads to misinterpretation." In order to overcome this problem Holtzman next viewed a large number of Rorschach response characteristics and determined seven which seemed to be most pertinent in terms of impulsiveness. Weighting each characteristic separately and then summing them gave an impulsiveness score. The correlation for the two groups with this rating technique were both .42 (significant at .02). Holtzman concluded that a number of response characteristics taken together can lead to a valid measure of the individual's level of impulse control.

Gardner (1951) ran a similar study utilizing behavior task ratings as well as pure ratings and correlated these with protocols scored by four eminent Rorschach psychologists (Bech, Rapaport, Klopfer, and Kelley). Significant correlations were found on a number of factors, such as CF+C:FC, and CF+C:R, and others. Gardner concludes,

> Although in this limited study, the Rorschach test seems to contain several factors which have predictive value for the overt behavior of the individual, other factors interpreted with similar confidence do not. It is true that in clinical practice these factors are not interpreted singly but in clusters. Much of the test's usefulness, however, depends ultimately upon the validity of interpretations of individual factors which make up these clusters.

Thus, within these two studies there is evidence of the great problems in the subjective evaluation of personality characteristics. Holtzman stresses the combination of several factors into a single score, whereas Gardner points out that if the individual aspects of the combination don't adequately measure the desired characteristic, the combination itself must be viewed as inadequate. The advantage of single measures, over ratios and combinations of factors objectively and simply obtained can readily be seen.

Having described the variables which seem to have the greatest potential for measuring impulsivity, it is now time to consider what these measures will look like. Since impulsive persons react on the spur of the moment, it is hypothesized that RT will be significantly shorter for high impulsive Ss. (High versus low impulsive Ss will be differentiated on the basis of scores on the Omnibus

Personality Inventory scale of Impulse Expression.) With regard to L, there will be a lower score for hi impulsive Ss indicating an emphasis on whole blot and large detail responses. FD and FA will be lower for the high impulsive groups since these Ss are less likely to make careful deliberation before responding. C and A will be higher for the high impulse groups because these are aspects of inkblot perception which tend to be associated with uncontrolled emotionality and childlike behavior.

Besides the pattern of scoring on the HIT, a second hypothesis concerns sex differences in performance. Since the literature on impulsiveness and the HIT tends to minimize differences in the performance of males and females, it is here hypothesized that the scores of high impulsive males and females on the HIT variables will be the same. This hypothesis also holds for low impulsive males and females.

CHAPTER II

REVIEW OF THE LITERATURE

This literature review is divided into four sections: 1) The Holtzman Inkblot Technique; 2) The Omnibus Personality Inventory; 3) The Concept of Impulsiveness; and 4) The Summary.

The Holtzman Inkblot Technique

The Holtzman Inkblot Technique (HIT) is a projective test utilizing 45 cards in each of two equivalent forms. One response only is given for each card, and each response is scored on 23 variables. Each variable, with the exception of RT, is scored by being assigned one of a set of positive integers specified for that variable. For example, Form Definiteness can receive a score of 0, 1, 2, 3 or 4 on any given response. Form Appropriateness can be scored 0, 1 or 2. The sum of the scores across all responses gives a total score for the variable. The 23 total scores make a performance profile for the person taking the test. This profile may be compared with normative profiles from the various standardization groups. Thus a person's performance may be said to be most similar to that of the

"typical college student" or the "hospitalized depressive patient".

Holtzman et al. (1961) report only one major study of intra-scorer reliability. Three trained examiners independently scored twenty-four protocols and rescored them a month later. In the intervening month they had scored a large number of other protocols, making it very unlikely that they would recall specific responses from the original twenty-four. Nine variables were rescored. The reliability coefficients for one examiner, who was considerably more experienced with the technique, were .95 or better for all the variables. For the other two examiners coefficients ranged from .78 to .95 for one, and from .63 to .94 for the other. The average coefficients for each of the variables across examiners were from .89 to .97.

The same source (Holtzman et al., 1961) gives three reports of inter-scorer reliability. The first involves fifty protocols from Holtzman's "superior college men" standardization sample. Twenty-five protocols scored by one trained examiner were then independently scored bt another and vice versa. The study involved six variables which had been the focus of attention during the early phases of the technique's development. The inter-scorer coefficients ranged from .91 to .99.

The second study also involved trained scorers. The protocols were randomly drawn from the standardization sample of "chronic schizophrenic males". All but four of the

variables in the HIT were examined. Those four were not used because their occurance was so infrequent that the distributions of scores for them were highly skewed. The reliability coefficients of those variables that were examined ranged from .89 to .99. As always the scoring by the two scorers was done independently.

The third inter-scorer study did not involve all highly trained scorers. One had no experience, two others had "lesser degrees" of experience, and one was highly trained. Nine variables were examined. The procedure was to have each scorer score twenty-four protocols twice, and then have each other scorer independently score eight of those twenty-four. The inter-scorer reliability coefficients were computed using the second original scoring and the independent rescores. The resulting coefficients ranged from .70 to .94 for the highly trained scorer, from .79 to .90 and .56 to .94 for each of the less trained scorers, and .57 to .94 for the inexperienced scorer. The overall median was .86. Considering the broader range of scoring experience involved, the somewhat lower coefficients obtained are not at all disturbing.

Holtzman et al. (1961) examined the internal consistency of the HIT by the split-half technique, using the first twenty-two odd numbered cards and the twenty-two even numbered cards. Means and variances were computed on twenty-two of the twenty-three variables to test the assumption of parallel halves which is necessary for a split-half

comparison. The results of this process were favorable, and Holtzman went on to consider the distributions of the variables. Across all standardization samples certain of the variables, have quite normal distributions and are therefore considered to yield the most accurate estimates of internal consistency. The authors report internal consistency coefficients for each variable separately. However, to keep this discussion as close to the context of the present study as possible only those coefficients for RT L, FD, FA, C & A from the three "college" standardization samples are reported here. They are as follows: University of Texas college students -- .95 .6 .94 .82 .64 .80 and .64-- Univ. of Texas superior students -- .97 .87 .87 .72 .81 and .57; Austin college students -- .95, .93 .81 .44 .77 and .70.

Further studies of intra-subject reliability were carried out by the test - retest technique, because it was felt that split-half coefficients tend to be spuriously high due to the lack of differential effects such as subject set, temporary mood, and motivation. In the case of the University of Texas college student group only two variables were significantly different in a test-retest interval of one year. They were Human and Barrier in the case of the Austin college group six variables showed significant change over a similar time period. They were Reaction Time, Location, Space, Human, Anxiety and Penetration.

Having concluded the examination of the HIT's reliability, the next question concerns just what the HIT is

measuring. Holtzman, et al. (1961) have quite an extensive review of work they have done in the area. The first report involves a factor analysis which attempted to uncover the significant intercorrelations among the scales. A number of other similar studies have been carried out by other researchers. The results of these studies have been remarkably consistent. Therefore, only the one by Holtzman and his colleagues is discussed here.

The factor analysis yielded six factors. They are as follows:

> Factor I - Movement, Integration, Humam Barrier and Penetration. This factor is interpreted as evaluating ideational activity, imaginative capacity, ego boundaries, and awareness of conventional concepts.
>
> Factor II - Color, Shading and Form Definiteness (reversed). Holtzman does not report the meaning of this variable.
>
> Factor III - Pathognomic Verbalization. A high score on this factor suggests a disordered thought process with an active but disturbed fantasy life.
>
> Factor IV - Location and Form Appropriateness. The high end on this factor represents "good perceptual differentiation and a critical sense of good form."
>
> Factor V - Reaction Time, Number of Responses and Animal. Like FII, Holtzman does not speculate on the meaning of this variable.
>
> Factor VI - Penetration, Anatomy and Sex. Bodily preoccupation is suggested with a high score on this factor.

Nowhere in the book do Holtzman, et al. indicate how they came up with these interpretation. It is persumed that they based their conclusions on intuitive ideas and past experience.

Besides the factor analytic studies, Holtzman, discusses some work he has done on comparing the technique to various external criteria. Perhaps the most interesting of these comparisons involves the Rorschach. The study involved the standardization sample of eleventh grade children. Three weeks prior to the administration of the Holtzman technique, the children were administered the Rorschach. By configural scoring of the Holtzman variables and correcting for differences in the number of responses, eight response catagories were compared. The catagories included the number of responses, location, color, shading, movement, form appropriateness, human, animal. The correlations ranged from - .36 for number of responses to .79 for animal. All eight variables were significantly correlated beyond the .01 level. Holtzman concludes that ". . . the Rorschach and Holtzman systems have a great deal in common as far as the underlying meaning of their respective variables are concerned." He goes on to say that the most significant differences between the two lie in the psychometric advantages of the Holtzman technique.

Leaving Holtzman for the moment, there is another study comparing the two inkblot techniques. It was carried out by Otten and Van de Castle (1963). The focus of their study was on the meaning of the individual Holtzman cards. Twenty-six men and twenty-six women rated each Holtzman and Rorschach card on fourteen bipolar, seven point continua. Examples of the continua are "pleasant-unpleasant", "rugged-

delicate", and "excitable-calm". A mean rating for each continuum on each card was computed and only those continue with ratings significantly different from the continuum midpoint (4.00) were retained as being characteristic of that card. Most of the cards were found to have more than one significant rating, and in all these cases there was not one instance of associations which could be considered to be "conflicting". 11 HIT cards and two Rorschach cards received no significant ratings. The general results and conclusions of the study follow:

1) The connotations associated with the various cards within each test varied markedly.

2) Proportionately, the two tests elicited equivalent numbers of responses.

3) Proportionately, the two tests have equivalent number of cards with multiple associations.

4) Many of the Holtzman cards tap associations not found in the Rorschach, but the reverse does not hold.

5) There were more sex-typed differences on the Holtzman.

6) In both tests, sex-typed differences were quite consistent.

7) In both tests, color cards were more often given positive associations, while achromatic cards were more often negatively rated.

Returning to Holtzman, et al. (1961), there is a section on the relationship between the HIT and various objective measures of personality. The authors did a correlation study utilizing the "seventh grade students" standardization sample. Besides the HIT, the children were given Cattell's Junior Personality Quiz, McCandless'

Anxiety Scale, and eight personality and attitude scales developed from the Texas Cooperative Youth Study. Of all the variables examined, only one correlation reached statistical significance. That correlation was between the HIT variable of Human and Cattell's Neuroticism factor. Other researchers have reported a similar lack of correlation in such specific HIT variables as Anxiety and Hostility when compared to the Taylor Manifest Anxiety Scale, Sarasan's Text Anxiety Scale for Children, and Siegel's Manifest Hostility Scale. Holtzman points out that Anxiety and Hostility on the HIT represent purely fantasy feelings and may or may not relate to overt behavior.

Aside from the studies cited in Holtzman, et al. (1961), there is a small body of research which has been carried out by other psychologists. There is also some more recent work by Holtzman (Megargee, 1966). In this work he goes further into developmental evidence for HIT interpretation. He reports a "striking developmental correlation" with Factor I. This is interpretated as reinforcing the notion that FI represents a measure of ego development and intellectual organization. A second finding is that abstract responses are found more frequently among college students than younger children or mental retardates, suggesting an indicator of intellectual ability. A second possible indication of intellectual ability is the culster of variables which includes L, FA, and FD. There is a developmental progression in these variables from whole responses

with poor FA and FD in young children to detail responses with good FA and FD and finally back to whole responses with good FA and FD in adults.

Moseley, et al. (1963) investigated the correlations between the various HIT variables and scales of the Inpatient Multidimentional Psychiatric Rating Scale (IMPS). and MMPI. They found significant relationships between 1) HIT variables of Sec, Pathognomic Verbalization and FA (reversed) and IMPS variables of Disoientation and Grandiose Expansiveness. This cluster was interpreted to indicate withdrawal and disorientation. 2) HIT FII and IMPS variables of Paranoid Projection and Perceptual Distortion. A tentative interpretation of uncontrolled responsiveness to the environment was suggested. 3) HIT variables of Anatomy, Pathognomic Verbalization and FA (reversed) and an MMPI measure of guilt. This relation was felt to represent disturbed bodily preoccupation.

In a brief study by Swartz and Swartz (1968), the Test Anxiety Scale for Children (TASC) was given to each S after individual administration of the HIT. Significant relations were found between anxiety rating and four of the eleven variables examined. They were Movement, Anatomy, Penetration and a fourth labeled "affect arousal" (possibly Anxiety). Increased anxiety was associated with higher scores on all of these variables.

Megargee and Swartz (1968) administered the HIT and the Maudsley Personality Inventory (MPI) to a sample of

University of Texas undergraduates. Intercorrelations between each HIT variable and the Extraversion and Neuroticism scales of the MPI were computed. No significant results were found in relation to the Extraversion scale, suggesting this aspect of personality to be independent of the HIT. The Neuroticism scale, on the other hand, correlated significantly with six HIT variables. number of responses (reversed), FA (reversed), Movement, Pathognomic Verb., Anxiety and Hostility. Apparently, in this instance, the fantasy nature of Anxiety and Hostility do relate to overt behavior.

The significance of response length (RL) was examined by Megargee (1966). In earlier work, he had found significant relations between RL and the HIT variables of Movement, Abstract, Anxiety, Hostility, and Barrier. However, there was some doubt as to whether these results were due to actual personality factors or simply to the fact that more words were typically necessary to convey these concepts. Megargee, therefore, carried out a second study in which based on Movement scores the thirty highest and thirty lowest individuals of a group HIT administration were given, individually, the alternate form. The first fifteen Ss from each group were encouraged to give long responses, while the remaining Ss were encouraged to be as brief as possible. The idea was that if personality factors were responsible for the relation between RL and the HIT variables, then the directions to give brief answers would make no difference. The results showed that for both RL conditions the high

Movement Ss tended to give longer responses. However, analysis of varience revealed a strong RL as well as a strong interaction effect, suggesting that both personality and "necessary verbalization" are important determinants of RL.

Endicott (1969) used the HIT to develop an objective measure of suspiciousness. Based on private interviews, all Ss (all psychiatric patients, either hospitalized or in private practice) were rated for degree of suspiciousness using a five point scale. The reliability between two independent raters was .92. The hospitalized Ss were used to develop two HIT "suspiciousness content scoring system" scales (SCSS I, II). The outpatients were a cross-validation group. Two scales were developed because the milder levels of rated suspiciousness were not discriminated by the first scale. The results of the study showed that rated suspiciousness and the two scales correlated .46 and -.43 for the more suspicious and mildly suspicious hospital Ss respectively. For the two levels outpatient Ss the correlations were .52 and -.46.

The Omnibus Personality Inventory

The Omnibus Personality Inventory is a paper and pencil test consisting of 14 separate scales and a total of 385 items. The items which relate to a given scale are interspersed randomly throughout the test. The subject reads each item in the test booklet and then marks true or false

on an answer sheet according to how the item applies to him. A score for a given scale is obtained by totaling the number of scale items answered to indicate the presence in the subject of the personality trait being measured. This score is translated into a percentile and entered on a profile chart along with the percentile scores of all the other scales. Results may be compared with the profile chart of the test's standardization group which consisted entirely of college freshmen. For an accurate interpretation of the personality profile, all of the scores should be considered together as a pattern. For research purposes, however, the authors of the test suggest that single scales or groups of scales may be abstracted. In this case, those scales are Impulse Expression (IE) and Response Bias (RB).

In the manual for the OPI, Heist and Yonge (1962) report three estimates of reliability. The first two involve internal consistancy. The first of these was derived by the Kuder-Richardson 21 formula and revealed correlational values for the individual scales ranging from .67 to .89. The second internal consistency measure utilized the split-half technique. The resulting coefficients ranged from .65 to .91.

The third reliability study involved two groups in a test-retest situation. The first group, all females, yielded reliability coefficients of .79 to .94. The second group, which consisted of both men and women, revealed correlations from .84 to .93.

The correlation coefficients for IE in the four samples were .83, .82, .87, .93.

In terms of test validity, there are a number of reports of correlation of the OPI sclaes with other objective measures. Hesit and Yonge discuss these correlations scale by scale. In the interest of clarity and brevity, only those discussions directly relevent to this study (IE and RB) will be discussed here.

In terms of IE, perhaps the two most important comparison scales are the California Personality Inventory and the MMPI. With the CPI, IE correlates negatively for both sexes on scales relating to socialization, responsibility, and maturity. The values of these coefficients range from -.42 to -.61 for men and -.35 to -.54 for women. All values are significant beyond the .01 level. The authors feel that these findings support an anti-social interpretation of impulsiveness which tends toward rebellion and hostility at the upper level.

Looking at the MMPI, there are significant correlation values between IE and Hypomania (.65) and Schizophrenia (.60). There are also lesser relations, though still significant, with Psychopathic Deviate (.48) and Psychasthenia (.47). Heist and Yonge (1962) look at this evidence as indicating a possible association with emotional disturbance for the higher values of IE.

Examining briefly the results of comparisons of IE with other tests reveals general support for the above

conclusions. On the Guilford-Zimmerman Temperament Survey there are significant negative correlations with the scales of Restraint, Objectivity, and Friendliness. Similar negative results are found on the Achiever Personality and Biological Science Interest scales of the Opinion, Attitude and Interest Survey. On the same test, IE correlates positively with the scale of Social Undesirability. On the Activities Index, IE correlates highest with Aggression and Impulsion with lower, but still significant, relationships with Change, Deference (-), Dominance, Exibitionism, Fantasied Achievement and Harm-avoidance (-). Similar findings are found on the Edwards Personal Preference Schedule.

Turning now to the RB scale, there are significant correlations with EPI Scales of Sense of Well-Being (.45), Responsibility (.40), Self-Control (.36) and Good Impression (.38). Considering the fact that this scale was developed as a measure of "need to make a good impression", the relations cited above would seem to be quite encouraging.

Looking at other tests, one finds a number of significant correlations which also support the ascribed meaning of RB. With the Guilford-Zimmerman scale of Emotional Stability there is a correlation of .52, and it correlates .42 with the Objectivity scale of the same test. Correlations of -.39 or higher are found with the three response bias scales of the OAIS. RB also correlates .51 and .60

with the OAIS scales of Social Adjustment and Emotional Adjustment.

When examined with ratings of students by faculty members, it is shown that RB relates significantly to "individual vigor", "attitudes and reactions toward work" and "overall evaluation".

In a short study designed to examine the RB scale's ability to differentiate "fakers" from "non-fakers", Heist and Yonge (1962) asked some Ss to deliberately fake good and others to fake bad. A third group got no instructions other than those normally given during the pre-administration period. Based on the results of this study, it was decided that the cut-off scores for faking good and bad were, respectively, 21 or above and 6 or below.

Having completed an examination of the reliability and validity work reported by Heist and Yonge, the next step is to consider the general body of experimental literature. Of the few studies published which in some manner have utilized the OPI, not one involved either of the scales relevant to this study. The research is cited, therefore, to give the reader an idea of the uses to which the test as a whole has been put. It will soon become quite evident that virtually all of the work done has been carried out exclusively in an academic setting. Considering the nature of the development of the OPI, it is very likely that that is as it sould be.

Canon (1963), in a doctoral thesis, used the OPI to investigate personality influences on the counseling relationship. Eighteen counselors and 121 clients were given the Antonomy, Social Extroversion and Guardedness scales from the OPI. Following the first counseling interview, both groups were administered Snyder's Client Affect Scale and Therapist Affect Scale. The major findings were that client guardedness and withdrawal were significantly associated with counselor-client affect. On the other hand, there was no relationship between counselor guardedness and withdrawal and counselor-client affect.

Albertson (1966) used the OPI to examine the possibility of changing the personality and attitude characteristics of individuals by the use of a " . . . deliberately applied philosophy of learning . . ." in the college classroom. The philosophy of learning was described as fiduciary or founded in trust. All Ss were initially given the OPI. They were then randomly divided into three groups. Group A was the innovating group, that is they actively applied the program in class. After the program was well established, group B was knowlingly brought into it. Finally, group C was admitted, but without knowledge of what was going on. After an experimental period of about one year, all groups were readministered the OPI. Groups A and B were found to have made significant gains in the areas of autonomy, complexity of outlook, and social maturity. Group C, on the other hand, showed no significant changes on the test. This

group, however, was observed to have increased its level of assertiveness, but with no accompanied gains in such "positive" areas as complexity of outlook, this change was viewed as indicating "a rise in rigidity and resistance to value change".

In a third OPI study, Whittaker (1967) compared the personality traits and values of University of California at Berkeley students with those of Berkeley's "underground culture" of college age non-students. Besides the OPI he used the Allport-Vernon-Lindzey Study of Values and the Adjective Check List. The results generally showed that non-students as compared to students tended to be more esthetically oriented, autonomous, impulsive, and less socially and emotionally adjusted. A limitation to these results is that the non-students in the study were made up of persons who, for one reason or another, were utilizing university-sponsored counseling services.

Warren and Heist (1960) studied the personality attributes of gifted individuals. Using a sample of some 900 National Merit Scholarship students, they administed the OPI just prior to their admission into college. Toward the end of the school year, the Ss were retested on the OPI and were also given the Allport-Vernon-Lindzey Study of Values. The retest results were consistent with the first test in the following areas: high scores on Thinking Introversion, Complexitys, Theoretical, Orientation, Esthetics; low scores on Impulse Expression and Social Extroversion. The "high"

or "low" scores were relative to the normative data from the standardization of the OPI. Analysis of AVL profiles revealed that, compared to a random sample of college freshmen, the Scholarship students showed elevated scores on Theoretical and Aesthetic and lowered score for Economic. The other three scales were equivalent.

Farwell, et al. (1962) ran a study to examine personality differences in various colleges and fields of study. The researchers compared Ivy League schools to Eastern public colleges and Catholic schools to Protestant schools. The fields of study examined were the major academic categories, is Humanities, Natural Sciences, Engineers, etc. As far as the colleges went, Ivy League schools were found to score higher on Thinking Introversion, Complexity and Theoretical Orientation. Catholic schools differed from Protestant schools in that they were lower on Thinking Introversion and Complexity. Among the fields of study the only differences were found in the Engineers. They showed patterns similar to those reported for the Catholic schools. Among the other fields there were no significant differences.

Impulsiveness

Sanford, et al. (1957) made the observation that, "When one interviews large numbers of female college freshmen with a view to their educational needs, one finds it easy . . . to divide them into two groups." The two groups

referred to are characterized as end points on a continuum. The one end is described as compulsive, authoritarian, submissive, ans passive. The other end is impulsive, irrepressible, assertive, and adventurous. Sanford and his colleagues assert that the compulsive end has been very thoroughly studied, as in the extensive work on authoritarianism and the California F Scale. On the other hand, the work with impulsiveness has been almost completely limited to delinquency and various forms of emotional disturbance. For example, Kelly and Veldman (1964) studied juvenile delinquency as a function of lack of impulse control. Seigman (1961) examined the relationship between time perspective and estimation of time in delinquent versus normal boys. Barndt and Johnson (1955) studied time orientation in juvenile delinquents, assuming a much shorter future perspective as compared with non-delinquents. Spivack, et al. (1959) used a sample of emotionally disturbed adolescent boys and girls to study the relationship between time estimation and the ability to delay gratification. Using schizophrenic males, Singer, et al. (1956) related impulse inhibition to time estimation.

This brief examination of impulsiveness is not meant to be exhaustive. It merely samples and illustrates the kind of work which makes up the bulk of the literature on the subject, and it also illustrates the point Sanford, et al. were making. The review which follows is, by contrast, almost exhaustive of the literature which treats

impulsiveness as a dimension of normal personality. The first part of the discussion focuses on attempts to clarify the meaning of the term. After that follows an examination of the research on specific empirical problems.

In the Thurstone Temperament Schedule (Thurstone, 1950,) there is a scale of impulsiveness based on Thurstone's ideas about the most significant features of that trait. They include "happy-go-lucky, daredevil, carefree, acts on the spur of the moment, enjoys competition, and changes easily from one task to another".

Barratt (1965) carried out a factor analysis of some thirty measures of impulsiveness and anxiety, including Thurstone's scale. The results yielded six factors, one of which, labeled "Impulsiveness", was defined as "likes to take a chance, seeks adventure, acts without thinking, avoids work requiring patterning of behavior and carefulness, and displays variable behavior patterns". He also whoed that impulsiveness and anxiety were not related to each other. An interesting side discovery was a nearly complete lack of significant difference on the measures between men and women Ss.

The implication of these two very similar definitions (or at least descriptions) of impulsiveness is that it is a more or less unitary, pervasive trait. Taking an opposing point of view is Twain (1957). He feels that the concept should be regarded as" . . . a multi-faceted phenomenom with several distinct behavior characteristics" and

presumably being manifest in a number of distinct and specific situations. To support his idea, Twain carried out a factor analysis of sixteen tests of behavior control. The resulting factor leading matrix contained six factors; I- erratic or labile motor behavior; II- physical development; III- positive, progressive attitude, happy-go-lucky, action-oriented; IV- extreme lack of conforming self-control; V- forceful, negative orientation with strong desire for change; VI- undefined. Although Twain claims that this factor analysis supports his theory, comparison with Barratt's and Thurstone's definitions reveals little difference. The whole question seems to be strictly academic or at the very least a moot point.

Concluding the theoretical discussion is an article by Lazzaro, et al. (1969). In an attempt to validate a self-report measure of impulse control, these researchers defined the term as ". . . the ability to inhibit or deny characteristic feelings and sensations along with a tendency to not respond quickly or intuitively". The second part of this definition has particular relevance for the present study, since one of the predictive criteria for impulsiveness is RT on the HIT cards. The definition of Lazzaro, et al. therefore is taken as the general theoretical position on impulsiveness and impulse control. Like Barratt (1965), Lazzaro and his colleagues found no significant sex-typed differences in impulsiveness. They do

state, however, that the women's scores were consistently higher than the men's.

Having discussed the theoretical concept of impulsiveness, the following section examines the implications of impulsiveness as a personality variable. Bernstein (1968), in an unpublished Master's thesis, investigated impulsiveity as a function of perceived paternal control. His technique was based on the "abnormal vs normal" literature but with a rationale for its generalization to the college student population. Bernstein's hypothesis was that Ss who perceived their fathers as being highly controlling would show more impulse control than Ss who perceived their fathers as being low controllers. The hypothesis was not supported, but Bernstein points out that the variances within the two groups were not homogenous.

In a study of the interaction effects of impulsivity and anxiety. Barratt (1959) found that Ss rated high on impulsivity and low on anxiety did significantly poorer on a mirror tracing task than all other Ss. When the two high impulsive groups were compared alone, it was found that the high impulsive/low anxiety group performed consistantly worse than the high impulsive/high anxiety group. The interpretation made is that anxiety tends to have an inhibiting effect on impulsive behavior.

Verrill (1958) studied "impulsive" versus "deliberate" college students. Ss were rated independently by four judges on the characteristics of quickness and

inappropriateness of verbal response. The fourteen highest and thirteen lowest rated Ss were selected for further study. Of thirty-one potential predictor variables twenty-three were able to significantly differentiate the two groups. With regard to the present study, the most interesting variables to be successful predictors were mean reaction time of S's first response to the Rorschach cards and Color. In all the literature, this was the only experimental reference to the possible implication of RT on a projective technique. It seems that although the evidence relevant to the present study's main hypothesis is scant, it is, nonetheless, encouraging.

Summary

This review of the literature has attempted to illustrate two major weaknesses within the areas of personality testing and impulsiveness research to which the present study is addressed. First, although the HIT has been shown to be a reliable and valid assessment of personality with definite psychometric advantages over the Rorschach, there is a dearth of research concerning the further elaboration and clarification of HIT test results. Specifically, the ability of the HIT to differentiate between degrees of impulsivity has been hypothesized but not systematically explored. It is the purpose of this research to make that systematic exploration.

The second problem involves the state of the literature on the topic of impulsiveness. There is a fair amount of research in the area, but the bulk of it is oriented toward the antisocial and pathological aspects of impulsive behavior. There has been little interest in impulsiveness as a personality variable in normal individuals. A result of this state of affairs, pointed out by Sanford, et al. (1957), is that the majority of devices designed to measure impulsiveness are not able to differentiate among non-pathological impulsivity.

In answer to both of these problems, the hypothesis of the present study is that there exists a significant relationship between the mean RT of Ss to the inkblots of the HIT and the score achieved on the IE scale of the OPI. It is further hypothesized that the variables of L, FO, FA, C and A show significant variation with impulsiveness level.

CHAPTER III

METHOD

Subjects

The subjects for this study were 40 male and female undergraduate students enrolled in Introductory Psychology and Sociology courses during the summer session at Oklahoma State University. The age range was approximately from 18 to 25 years.

Materials

Two scales from the OPI, Impulse Expression (IE) and Response Bias (RB), were utilized for the first part of the experiment. IE was the criterion measure and RB was an "honesty" check on the responses given. For the predictor measure of impulsiveness, the 22 even numbered cards of Form A of the HIT were administered. Reaction time for the cards was measured by an Aristo Model 10 stopwatch which is accurate to .2 seconds.

Experimental Procedure

The scales of the OPI were administered to prospective subjects (Ss) in a group setting. The instructions, given verbally, were as follows:

> My name is Steve Stewart. I'm interested in the development of a new personality test and would like your help.
>
> What I want you to do is read each statement on the form handed you. I then want you to decide if the statement is applicable to you. If it is, then darken the slot marked "T" by the item number on the answer sheet. If the statement is not applicable to you, then darken the slot marked "F".
>
> Please answer all the items. If there is any doubt as to whether a statement is applicable or not, then mark the answer which seems to be the most accurate.
>
> Be sure to put your name, sex, age and telephone number at the top of the answer sheet. Please also indicate on the back of the answer sheet when you might have free time during the week.
>
> All information gathered from this study will be held in strict confidence by me and will be reported to no other person. I, therefore, urge you to be as accurate as possible in answering the items.

In scoring the OPI, those Ss whose RB score fell within the critical ranges (lower than 7 or higher than 20) were discarded for the second phase of the study. Ss who were selected for the second phase were placed into a High or Low Impulsive group based on their IE scoares. The determining IE scores were 55 or more for the high group and 45 or less for the low group. These groups were further divided into male and female groups, giving a total of four treatment groups.

Ss were contacted by telephone to arrange an appointment for administration of the second phase of the study, the HIT. This phase took place in an office containing a desk and two chairs. The examiner sat behind the desk while

S sat to the side of it. The instructions given were:

> In order to develop a new test I need something to compare it to. I would, therefore, like you to take this second test.
>
> It consists of a series of cards, each of which has an inkblot picture on it. I will show you the cards one at a time. Look at the picture, and tell me what it looks like to you or what it might represent. There are no right answers. It is even possible to see more than one thing in the blot, but I want you to tell me just one thing for each card.
>
> As soon as you have given me your answer. I will ask you some questions about it. This is to make sure I know what area of the blot you are referring to and that I see the thing in the same way that you do.
>
> I remind you that the same conditions of confidentiality apply here as to the first test you took.

During the administration of the cards special care had to be taken in measuring RT. Time began as soon as the card was presented and stopped as soon as the response began. It was at this point that caution became necessary. Sometimes the S would give extraneous verbalizations which could not be considered part of a scorable answer. It was, therefore, necessary to be sure that the person was actually beginning a response before starting timing.

Ss response was recorded verbatim on a record sheet, and an inquiry period followed immediately after each. This period consisted basically of three questions: 1) Where in the blot do you see_____? 2) What about the blot made it seem like _____to you? 3) Is there anything else about your answer that you would like to add?

CHAPTER IV

RESULTS

Table I presents the summary data for the experiment. Rowe are defined by specific variables, and columns are defined by factor levels.

TABLE I

SUMMARY DATA FOR HOLTZMAN INKBLOT SCORES

	HM		LM		HF		LF	
	X	s.d.	X	s.d.	X	s.d.	X	s.d.
RT	23.41	11.69	32.48	25.27	17.13	10.81	18.01	7.55
L	20.70	6.53	20.70	7.57	19.75	6.94	23.05	6.66
FD	38.75	5.21	38.93	4.85	39.63	5.52	38.50	7.55
FA	16.45	2.09	16.63	2.10	18.03	2.21	17.00	2.46
C	8.80	4.23	11.30	2.73	7.50	4.05	8.60	5.34
A	10.00	2.37	10.25	3.36	11.25	3.03	11.55	3.89

After the HIT protocols were scored, product-moment correlation coefficients were calculated using the data From 2 independent scorers. A coefficient for RT was not calculated because getting a second set of scores on that variable would merely have involved copying the RT's recorded by the examiner, since the second scorer was not present at the time of test administration. The coefficients were calculated as estimates of interscorer reliability, and the results are summarized in Table II.

TABLE II

INTERSCORER RELIABILITY COEFFICIENTS

Variable	r_{xy}
RT	-
L	.96
FD	.90
FA	.01
C	.86
A	.84

The data were analyzed within a 2X2 factorial design. A total of six separate analysis were carried out. In all

cases, the error term served as the denominator for the calculation of F-ratios. Also for all cases, the degrees of freedom involved were 1 and 36. Thus the critical value of F for all tests was 4.12 (beyond .05). Using this criterion as the minimally acceptable level, only one relationship was found to be significant. Females tended to be significantly faster than males in RT, regardless of level of impulsiveness. The F ratios calculated in these analysis are presented in Table III.

TABLE III

CALCULATED AND TABULATED F RATIOS

	$F_{Impul.}$	F_{sex}	$F_{inter.}$	$F_{eale.(.os)}$
RT	1.04	4.53*	0.71	4.12
L	0.56	0.10	0.56	4.12
FD	0.06	0.01	0.12	4.12
FA	0.24	2.26	0.56	4.12
C	0.81	1.24	1.31	4.12
A	0.07	1.19	0.39	4.12

*Means significant at the .05 level

CHAPTER V

DISCUSSION

The first analysis to be carried out on this set of data was the examination of interscorer reliability. As revealed in Table II, these coefficients were all quite acceptable, with the exception of FA. The pattern of the coefficients came out generally as expected. The variable L had the highest reliability, FA the lowest, and the other variables approximately of the same value and positioned between L and FA. What was not expected was the drastically low value of the FA coefficient. It suggests that in this study, there was essentially no inter-scorer agreement on the variable of FA and that the interpretation of the analysis of this variable should be considered with extreme caution. As far as the other coefficient values are concerned, the indication is that the two independent scorers were in very good agreement in evaluating the HIT protocols. Since both scorers were essentially without experience in the scoring of the HIT, these coefficients suggest that either both scorers were making the same errors in a consistent fashion or the greater objectivity in scoring compared to the Rorschach claimed by Holtzman is, in fact, a reality. The latter is more likely the case since scoring was done

independently. Thus, the data collected may be interpretated with an acceptable degree of condifence that it reflects the true performance of the subjects.

The major hypothesis to be tested by this research was that RT on the HIT is a significant indicator of impulsiveness in the individual. Holtzman, et al. (1961) briefly discuss RT in this context, but there have been no attempts to verify the hypothesis. Besides Holtzman's discussion of RT, the literature on projective techniques suggests that C and A responses may also be influenced by the degree of impulsiveness. Therefore, these variables were tested. Based on the theoretical nature of the trait of impulsiveness, it was felt by the experimenter that certain other Holtzman variables may reflect its presence in the individ0 ual. These include L, FD and FA. Thus, in all, six HIT variables were tested to determine their potential as predictors of impulsiveness.

The results of the data analysis show that this hypothesis was not supported. None of the six variables were able to differentiate levels of impulsiveness as defined by performance on the OPI scale of IE. With regard to the predicted directionality of the variable scores, it can be seen (Figure 1) that although the differences were not statistically significant, they were in the expected direction on four of the six variables. The two which did not go as predicted were C and A. There are a number of possible explanations for these findings. First, the

original plan for the study was to use one standard deviation on either side of the mean IE score for the standardization group as the cutoff scores for the high and low impulsive broups. It became necessary, however, to reduce the cutoff scores to one half of a standard deviation on either side of the mean. Thus, rather than being separated by two standard deviations, the groups were separated by only one. The change was made in order to collect a sufficient sample size. Had condictions allowed retention of the originalIE criteria, the results may have been more indicative.

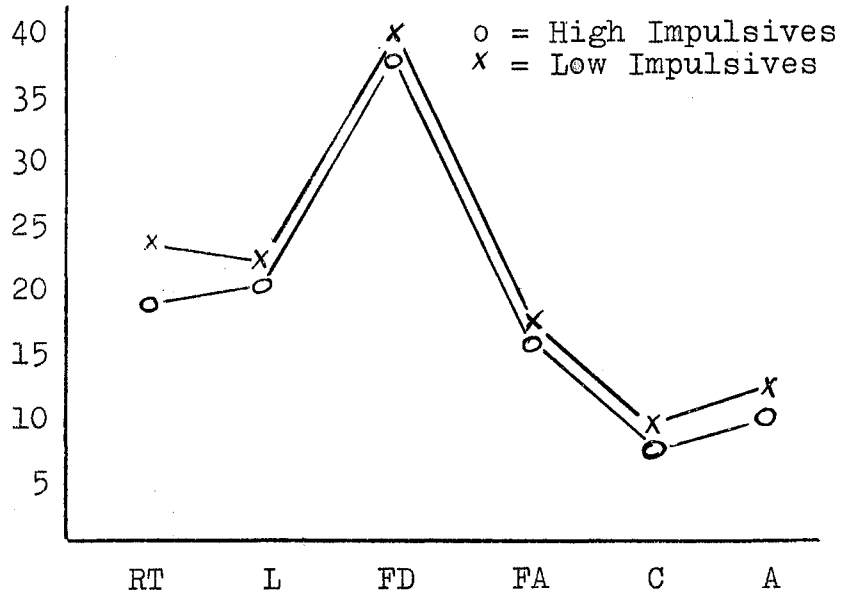

Figure 1. Graphic Representation of Group Means on the Holtzman Inkblot Technique

A second possible explanation for the observed results involves a much more far-reaching topic than the sampling problem discussed above. It is possible that, as suggested by Twain (1957), impulsiveness is not at all a consistent personality trait. It may, instead, be a characteristic of behavior which is determined by the nature of the situation. As a somewhat extreme example of what is meant here, think of a person who, when given ample time to make a decision, carefully considers all aspects of the problem. That same person, when confronted with a highly dangerous situation (say a snarling bear running toward him), takes very little time to consider all possible alternatives. Rather, he takes the first escape route which presents itself to him. As the example shows, one person, in two different situations, acts in essentially opposite manners.

Returning to the present study but utilizing the same argument, S may have responded to some aspect of the HIT phase in an impulsive manner. At the same time, the same S may have responded in no such fashion to the OPI phase of the experiment. One would, therefore, expect no necessary relationship between performances during the two phases. Mischel (1969) observes that a review of work involving the consistancy of personality traits reveals generally low correlations, and those which do reach statistical significance account for very little of the total observed variance. Perhaps the assumption of the trans-situationality of impulsiveness in this study was not a valid one.

A third possible explanation for the lack of significant results on hypothesis one involves the nature of impulsiveness and its measurement by the HIT. As pointed out in the earlier discussion of the variables to be utilized in the study, Color responses seem to represent the degree of emotional control and the appropriateness of the person's emotional reactions in his day-to-day life. In this context, C may be viewed as a measure of a kind of psychodynamic impulsiveness. The same may be said of Animal responses. That is, they represent some characterological aspect of the person's personality makeup. RT, L. FD and FA, on the other hand, are more psychomotor indicators of impulsivity. That is, they tap the perceptual-motor aspects of the person's impulsiveness in the performance of a specified task rather than the characterological aspect. Thus, it may be that the HIT is tapping at least two different and not necessarily related facets of the trait called impulsiveness. It is further suggested that the IE scale used as a criterion measure is either unable to differentiate these aspects of impulsiveness, or it may measure a completely different aspect of the trait, say perceived or imagined impulsivity.

A final possible explanation of the results is simply that the criterion measure of impulsiveness (the OPI) is invalid. That is, it may not measure impulsivity at all. All the validation work reported is of the nature of correlation with other paper and pencil personality measures

such as the Minnesota Multiphasic Personality Inventory, the California Personality Inventory, the Strong Vocational Interest Blank and a number of others. For the most part, the achieved coefficients were quite favorable for the OPI, however, a closer examination of the test reveals that there is considerable item overlap with some of the other tests. It may be, therefore, that the favorable coefficients are spuriously high. Beyond this, validating one paper and pencil test with other paper and pencil tests with no consideration of more direct measures (behavioral indices) is probably the weakest form of validation technique.

With regard to the second hypothesis, that of no sex differences in the performance of the HIT, the data tend to be supportive. All variables, with the exception of RT, show very similar results across sexes. If nothing else, this finding suggests that whatever the HIT is measuring, college students as a whole are a homogenous group.

Turning briefly to the one exception to the sex difference hypothesis, some explanation seems appropriate, since it was the variable of RT which was primarily suspected of being an indicator of impulsiveness. As evidenced by this variable, females tended to be much quicker to respond. Since RT was unable to differentiate between the impulsiveness levels, it cannot be said that females are more impulsive than males. What, then, does it mean? A search of the literature on individual differences reveals

a summary article by Schneidler and Paterson (1942). This article showed that at all age and grade levels, only about 20 percent of male subjects exceeded the median performance of females on a variety of tasts which required the quick perception of details for successful completion. This unquestionable sex difference in speed of perception has also been found on certain subtests of the Wechsler intelligence tests. Gainer (1962) found girls to be significantly faster in performing the coding subtest than boys. The source of this difference in speed of perception is not clear, but that females are generally faster than males seems to be certain. That is certainly the case for this study.

In conclusion, it would seem that based on this research, there is no support for the hypothesis that the HIT measures impulsiveness in the person being tested. However, the validity of the measuring process itself as well as the nature of impulsiveness seems unclear. Further research on these two points may lead to a more accurate and clear understanding of them. Then more reliable work will be able to be done.

CHAPTER VI

SUMMARY

This study investigated the phenomenon of impulse expression and its measurement by the Holtzman Inkblot Technique.

One hundred and eighteen male and female undergraduate students from introductory psychology and sociology courses were administered the Omnibus Personality Inventory scales of Impulse Expression and Response Bias. Subjects for the study were elected based on scres achieved on the two scales. The criteria were as follows: If RB fell outside the range of 7-20 the person was rejected as a potential subject. If the RB score was acceptable the IE score was computed. To be placed in the Low Impulsiveness group required an IE score of 21 or less. For the High Impulsive group, a score of 30 or more was required. Selected subjects were seen individually and administered the HIT. It was predicted that High Impulsive males and females would show lower RT, L, FD, and FA and higher C and A than low impulsive males and females. It was also predicted that there would be no sex differences in performance on any of these variables. The variables were independently scored by two scorers who did not know if subjects were from the

high or low impulsive group, and interscorer reliability coefficients were calculated.

The hypothesis concerning level of impulsiveness was not supported. The sex differences hypothesis was supported. These results were discussed in relation to the nature of impulsivity and possible "types" of impulsivity.

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APPENDIX A

IMPULSE EXPRESSION AND RESPONSE BIAS SCALES OF THE OMNIBUS PERSONALITY INVENTORY

1) I want to be an important person in the community.

2) I have often gone against my parents' wishes.

3) I prefer having a theory or principle explained to me rather than attempting to understand it myself.

4) I would enjoy being a famous person.

5) I enjoy playing cards for money.

6) I pray several times a week.

7) At time I have a strong urge to do something harmful or shocking.

8) During one period when I was a youngster I engaged in petty thievery.

9) I have sometimes wanted to run away from home.

10) I prefer people who are never profane.

11) My home life was always happy.

12) At times I feel like picking a fist fight with someone.

13) I often act on the spur of the moment without stopping to think.

14) I have had periods when I felt so full of pep that sleep did not seem necessary for days at a time.

15) I often forget immediately what people say to me.

16) I have always hated regulations.

17) I would be uncomfortable in anything other than fairly conventional dress.

18) I would disapprove of anyone's drinking to the point of intoxication at a party.

19) I have been disappointed in love.

20) I dominate many of my acquaintances of about my own age.

21) Once a week or more I become very excited.

22) I am curious about people but I don't feel close to them.

23) I am embarrased by dirty stories.

24) I often do whatever makes me feel cheerful here and now, even at the cost of some distant goal.

25) I tend to ignore the feelings of others when accomplishing some end that is very important to me.

26) Although I seldom admit it, my secret ambition is to become a great person.

27) Politically I am probably something of a radical.

28) If I could get into a movie without paying and be sure I was not seen, I would probably do it.

29) I often find myself listening without hearing.

30) Once in a while I feel hatred toward members of my family whom I usually love.

31) At times I feel like swearing.

32) I frequently find myself worrying about something.

33) I would like to hunt lions in Africa.

34) I would rather be a brilliant but unstable worker then a steady and dependable one.

35) I have sometimes felt that difficulties were piling up so high that I could not overcome them.

36) As a youngster I acquired a strong interest in intellectual and esthetic matters.

37) I always see to it that my work is carefully planned and organized.

38) It is alright to get around the law if you don't actually break it.

39) Sometimes I feel like smashing things.

40) The idea of doing research does not appeal to me.

41) I certainly feel useless at times.

42) I become so enthusiastic that my enthusiasm spread to those around me.

43) I enjoy solving problems of the type found in geometry, philosophy, or logic.

44) I don't care much for scientific or mathematical articles.

45) Uncontrolled impulsiveness is not part of my make-up.

46) I would rather not have responsibility for other people.

47) When I work on a committee I like to take charge of things.

48) I enjoy discarding the old and accepting the new.

49) In school I was sometimes sent to the principle for cutting up.

50) I like to read about science.

51) I like to go to parties and other affairs where there is lots of loud fun.

52) I like to have a place for everything and everything in its place.

53) When a man is with a woman he is usually thinking about things related to her sex.

54) I have never done any heavy drinking.

55) I tend to make decisions on the spur of the moment.

56) I have the wanderlust and am happiest when I am roaming or traveling around.

57) Many of my dreams are about sex.

58) Many of my friends would probably be considered unconventional by other people.

59) I crave excitement.

60) I would like to be an actor on the stage or in the movies.

61) I would enjoy writing a paper on the possible long-term effects or outcomes of a significant research discovery.

62) I dislike women who disregard the usual social or moral convictions.

63) I get excited very easily.

64) I do not like to see people carelessly dressed.

65) I think I would like to drive a racing car.

66) At times I have very much wanted to leave home.

67) I much enjoy thinking about some problem which is a challenge to the experts.

68) Disobedience to the government is sometimes justified.

69) I like worldliness in people.

70) It is hard for me to work intently on a scholarly problem for more than one hour or two at a stretch.

71) I never attend a sexy show if I can avoid it.

72) Some of my friends think that my ideas are impractical of not a bit weird.

73) Something exciting will almost always pull me out of it when I am feeling low.

74) When I get bored I like to stir up some excitement.

75) I like to talk about sex.

76) I like to flirt.

77) I have never done anything dangerous for the thrill of it.

78) I have often either broken rules (school, club, etc) or inwardly rebelled against them.

79) I have periods of such great restlessness that I cannot sit for long in a chair.

80) As a youngster in school I used to give the teachers lots of trouble.

81) I dream frequently.

82) I like to work late at night.

APPENDIX B

HOLTZMAN INKBLOT TECHNIQUE SCORES UED IN THE STATISTICAL ANALYSIS

Low Impulsive Males

Subject	RT	L	FD	FA	C	A
1	42.0	22.5	31.8	15.1	9.5	10.
2	23.4	20.0	36.5	18.5	13.0	10.5
3	15.9	20.5	46.0	19.0	13.5	14.5
4	18.5	6.5	36.5	14.0	15.0	5.5
5	11.9	26.0	41.5	19.0	8.0	15.0
6	92.7	33.5	38.0	16.5	6.5	7.0
7	31.6	21.0	36.3	15.9	10.0	14.5
8	54.5	22.5	41.7	18.8	12.5	8.5
9	10.2	10.5	46.5	16.0	11.5	9.0
10	24.1	24.0	34.5	13.5	13.5	8.0

Low Impulsive Males

Subject	RT	L	FD	FA	C	A
1	8.4	10.5	42.0	15.5	18.5	11.0
2	20.2	23.5	37.0	17.2	12.5	8.5
3	28.4	25.5	45.0	15.5	5.5	10.5
4	8.1	23.0	30.5	21.0	9.5	9.5
5	16.0	25.0	41.5	18.5	7.0	15.0
6	15.3	35.0	53.5	12.5	0.0	19.5
7	11.8	27.5	40.0	19.5	9.0	10.5
8	19.8	17.5	28.0	15.4	3.0	7.0
9	15.4	25.5	33.5	18.5	7.5	15.5
10	31.7	17.5	34.0	18.0	13.5	8.5

High Impulsive Males

Subject	RT	L	FD	FA	C	A
1	23.2	44.0	44.0	18.5	11.0	12.5
2	22.6	18.0	34.5	16.0	10.0	12.5
3	26.4	24.5	38.5	19.0	10.0	12.5
4	10.3	23.5	37.0	17.0	3.5	7.0
5	17.3	10.5	38.5	18.5	9.0	8.5
6	30.5	21.5	36.0	13.5	7.0	7.0
7	50.4	23.0	43.5	15.0	3.0	7.5
8	8.7	22.0	44.0	16.5	5.0	11.0
9	25.0	29.0	43.5	17.5	13.5	12.0
10	19.7	8.5	28.0	13.0	16.0	9.5

High Impulsive Males

Subject	RT	L	FD	FA	C	A
1	7.5	11.0	49.0	19.5	9.0	14.5
2	18.0	13.0	42.9	20.9	2.5	8.0
3	27.4	24.0	37.5	18.0	1.5	13.0
4	14.4	18.0	39.5	14.5	9.5	5.5
5	9.7	8.0	41.5	16.0	8.5	12.5
6	17.0	24.5	43.5	16.0	1.5	12.0
7	8.6	21.0	30.8	20.9	9.0	9.5
8	18.3	24.0	42.0	19.5	10.5	15.5
9	42.3	25.5	31.5	16.5	11.0	10.0
10	8.1	28.5	38.0	18.5	12.0	12.0

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