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THE INHIBITION PROCESS AND THE HANDLING OF

HUMANS AND HUMANS IN MOVEMENT

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THE INHIBITION PROCESS AND THE HANDLING OF *HUMANS AND HUMANS IN MOVEMENT*

CHAPTER I

INTRODUCTION

The ability to handle impulses and to inhibit one's feelings and reactions often plays an important role in establishing effective interpersonal relationships. It was the intent of this study to deal with the inhibition process in relation to the handling of humans and humans in movement. Specifically, the inhibition process was studied in relation to the production of humans (H) and humans in movement (M) on the Rorschach, the drawing of human figures and human figures in activity on the Kinget, and thresholds of selection of humans and human activity in a picture series.

The way in which a person handles human figures and human activity has been used diagnostically for many years and is thought by psychologists to be extremely revealing and important. Consequently, many of the most extensively used tests provide an opportunity for subjects to deal with the human figure and human activity. The Thematic Apperception Test (TAT) presents situations where the subject deals with

human behavior through interpretations of pictures. The Machover test involves the drawing of both male and female figures. The Kinget test allows the subject a choice of whether to draw humans, animals, objects, scenes, or symbols. The Rorschach test provides an opportunity for the subject to see humans and human activity in ink blots. Diagnosticians consider H and M on the Rorschach and other measures of the individual's handling of humans and human activity to be revealing of his interpersonal relationships and of the controls that are exercised in relation to interactions with others.

Rorschach treated the human movement response as his most important and most original contribution to the experimental study of personality. No other component received so much attention or so much space in his Psychodiagnostics (Rorschach, 1942) and he supplied a much more complete beginning for a theory of M than he did for the other components. Piotrowski states, "The unusual care which the M received from Rorschach was justified by the significance which human movement responses have for the understanding of the subject's motivations and his unconsciously as well as consciously preferred mode of handling interpersonal relations" (Piotrowski, 1957, p. 126).

People who have difficulties in interpersonal relationships not only seem to produce relatively fewer H and M on the Rorschach but apparently have a great deal of trouble

in drawing people. Clinicians agree that the emotionally disturbed person will frequently refuse to draw a person or may evade and make such compromises as drawing a back view of a person, depicting a person in caricature, drawing just the head of a person, or making a "stick figure." Kinget states about her test, "When the human figure predominates among the Nature content, a capacity for direct contact and an eagerness for dealing with people may be assumed" (Kinget, 1952, p. 50). On the other hand, she points out that ". . . deliberate limitation of the human figure to a specific part of it is always revealing" (Kinget, 1952, p. 53). She also states, "Schematism (exemplified as the "stickman") is a frankly unfavorable symptom, and even if it appears in only one drawing of a set it is suspect" (Kinget, 1952, p. 61). She continues, "The failure to represent the characteristic roundness and organicity of living objects, which essentially constitutes Schematism, points almost with certainty to some vital-emotional disturbance. The authors of such drawings are generally people who have difficulty establishing smooth relationships, or whose attitude toward others is somehow lacking in genuineness, depth, and warmth" (Kinget, 1952, p. 61).

Inhibition and H and M

Rorschach (1942, pp. 79-80) referred to a relationship between inhibition of overt motor activity and the tendency to project human movement onto ink blots. Observations

by others (Biere & Blacker, 1956; Korchin, Meltzoff, & Singer, 1951; Levine, Glass, & Meltzoff, 1957; Meltzoff, Singer, & Korchin, 1953; Shipola & Taylor, 1953; Singer, Meltzoff, & Goldman, 1952; Werner, 1945; Werner & Thuma, 1942; Werner & Wapner, 1949) as well as by Rorschach support the view that the restraining or inhibiting of external movements tends to result in the production of more M than when motor activity is spontaneous. Rapaport, Gill, and Schafer (1946, p. 213) contend that the person giving many M responses excels in the ability to delay responses. Rapaport's psychoanalytic theory of human behavior (Rapaport, 1951) specifies the inhibition of action directed toward immediate need satisfaction as a basic condition for the development of M. In a recent study by Levine, Glass, and Meltzoff (1957) a relationship was found between measures of inhibition and M productivity.

It has frequently been suggested that M represents a richness of inner living which is dependent upon maturity and ego integration (Klopfer, 1956; Rorschach, 1942). It has been further suggested that the ability to inhibit is dependent upon maturity and ego integration (Beck, 1952; Klopfer, 1956; Levine, Glass & Meltzoff, 1957). It may be that there are some common relationships between ego integration, maturity, ability to inhibit, ability to adjust adequately in interpersonal relationships, and ability to handle humans and human activity in the test situation. The concern here is

with the relationship between the handling of human content in three different test situations and the ability to inhibit.

Meanings of M

There are divergent opinions concerning ways in which the Rorschach may be used and the meanings of projection in personality, and great differences in the roles that clinicians assign to the Rorschach in diagnosis. There is agreement, however, that interpretations must rest upon the total protocol and not on particular Rorschach signs. M, sometimes separately, but more frequently and more appropriately as a part of the total protocol, has a fairly wide variety of meanings or differences in emphasis for clinicians, both specifically in making a diagnosis and from the standpoint of the personality theory which the clinician is employing.

Among the wide variety of uses and meanings of M are included such concepts as fantasy living, imagination, richness of inner life, mental plasticity, level of ego integration, maturity, empathic participation, inner creativity, introversion, and delay of drive impulses. Definitions of M also usually involve the implication that there is a relationship between level of intelligence and M.

There appears to be little doubt that M and intelligence are somehow related. Levine, Spivack, and Wight (1959) made a survey of literature and concluded that the predominance of studies have shown positive relationships between M

and intelligence level. The primary exceptions were studies dealing with adult schizophrenics. Although a study by Levine, Spivack, and Wight (1959) which was reported along with the survey showed high correlations between M and intelligence level for adult schizophrenics, some doubt remains concerning the stability of relationships between M and intelligence level for adult schizophrenics.

Piotrowski (1957) sees M as an expression of deeply embedded psychological tendencies to follow a "prototypal" role rather than as representing a role of fantasy. Psychoanalytic theorists emphasize M as an indirect expression of repressed impulses. Beck (1952) stresses M as representing a defense of the ego through withdrawal, sublimation, or through absorbing anxiety into imaginative activity. For Klopfer (1956), M is important as an indication of acceptance of one's inner promptings. Rorschach (1942), in observing increased M with the restraining of motor activities, emphasized his belief that the psychological mechanisms indicated by M restrain or inhibit motor behavior in real-life situations.

The Use of M in This Study

This study is an attempt to consider M in relation to the ability to inhibit and to add information to theories pertaining to M responses which may then be applied to total protocol interpretive procedures.

In general, investigators have had little success in studying Rorschach components apart from a total protocol. There is no intent herein to study M separately as a validation of personality interpretation.

This study is not designed to enter into controversy over the interpretation of M in diagnosis, but is designed to shed light on one of the theoretical aspects of M.

The theory underlying this study, relating M to the ability to inhibit, can be consistent with all or most of the accepted definitions of M, since in the definitions there is always implied a relationship between M productivity and the handling of impulses. M productivity and the ability to inhibit, a relationship which has been considered since the time of Rorschach is the aspect of M being studied here.

M Related to Response Delay

Many authorities (Klopfer, 1956; Levine, Glass, & Meltzoff, 1957; Levine & Meltzoff, 1956; Piotrowski, 1957; Rapaport, 1951; Rapaport, Gill, & Schafer, 1946; Rorschach, 1942; Werner & Wapner, 1949) have recognized relationships between M productivity and response delay. In particular, relationships between M productivity and response delay have been discussed in relation to personality development and adjustment. Klopfer's extensive studies (Klopfer, 1956, p. 158) point out the strikingly regular increase in number of M responses with increase in chronological age and mental

age. Meili-Dworetzki states, "M is, in virtually all investigations, shown as distinctly increasing with chronological and mental age" (Klopfer, 1956, p. 158). She also states, "From the genetic point of view we understand why children and poorly-integrated adults use more FM and less M" (Klopfer, 1956, p. 171). It has frequently been observed that the first occurrences of M in children's records and the increase in number of M parallel the development of ability to delay responses. Klopfer points out that there is a ". . . relative scarcity of M in the records of the overwhelming majority of all cases of psychiatric disorder" (Klopfer, 1956, p. 171). Although statements by such Rorschach experts as Klopfer and Beck do not agree as to which of the psychiatric disorders show evidence of shorter reaction times to the blots, there seems to be agreement that a large number of psychiatric disorders show short reaction times. Klopfer indicates that poor ego integration and lack of maturity is evident in the psychiatric subjects who produce few M. Both Klopfer and Beck agree that M occurs among psychiatric patients who are still striving to maintain an integrated ego. Since maturity, ego integration, and response delay have been related by theorists and since short reaction times and lack of M have been related to lack of maturity and poor ego integration in psychiatric patients, it appears that a body of evidence is growing which relates response delay and M in psychiatric subjects.

Some studies (Biere & Blacker, 1956; Levine, Glass, & Meltzoff, 1957; Meltzoff, Singer, & Korchin, 1953; Shipola & Taylor, 1953; Singer, Meltzoff, & Goldman, 1952; Werner, 1945; Werner & Thuma, 1942) have shown indications of longer reaction times for M responses than for responses involving other components and have found more M responses among individuals who respond slowly than among individuals who respond quickly.

A study by Shipola and Taylor (1953) pointed out the apparent relationship between response time and M. Reactions to ink blots were studied under "free" and "pressure" situations. The free condition closely resembled standard Rorschach administration. The subjects were allowed to work at their own speed. In the pressure situation each subject was urged continuously to report his first response as quickly as possible. Only one response was required for each of 20 blots. The forced immediate responses showed strong indications of lack of control or excessive control. There was a highly significant relationship between greater productivity of M and freedom from pressure. The results indicated that M responses in either situation were related to delayed reaction times. Reaction times for M were longer than for other types of responses given. It was concluded that M responses are delayed responses, that they reflect control of immediate impulsive reactions, and that the slow deliberate person will give more M responses than the fast impulsive person. This conclusion was derived not only by comparing free and pressure

situations, but also by comparing M responses to reaction times in both situations, and by comparing response times of the subjects when each of the groups was split in half and the 20 slowest individuals were compared with the 20 quickest individuals in terms of number of M responses.

Biere and Blacker (1956) found that subjects in the M-greater-than-Sum-C group generally had significantly longer reaction times to the Rorschach blots than did the subjects in the Sum-C-greater-than-M group. Their results showed a difference which was general in relation to the performance of subjects and was not specifically in relation to longer reaction times for movement responses or shorter reaction times to color responses. These authors consider M to be ". . . an internal modification of the stimulus," "a subjective intermediate process" which necessitates a longer reaction time.

It appears that some amount of delay is necessary for the production of M responses, and that when an interval of time does not occur, other kinds of responses are produced. These responses may tend to be perceived more readily and may be less complex, more impulsive, and more emotionally toned than if a delay had preceded them.

Optimum Response Times on the Rorschach

While there has been research in response times and the Rorschach (Matarazzo & Mensh, 1952), there are no

definitive studies. Rorschach authorities (Beck, 1949; Klopfer, 1956) have pointed out that there are wide variations in reaction times among groups of individuals and among an individual's first responses to each of the ten Rorschach cards. Because of the variations, definitive normal ranges of reaction times with fixed minimum and maximum time limits have not been established. Beck (1949, p. 52) says that the central time for the first response to the blots for the normal population is around 20 seconds and he designates that the fastest responses to the cards are regularly given by children, instantly or within five seconds, and by hypomaniacs. He states, "Lack of inhibition would thus seem to be the critical factor" (Beck, 1949, p. 52).

Inhibition as Related to Time

There is considerable evidence to indicate that the quickly given responses and those which involve an extreme length of delay are predominantly poorly integrated responses and usually reveal a great degree of emotionality. There is also evidence to indicate that people who do not inhibit well are likely to respond quickly or to respond very slowly (Levine, Glass, & Meltzoff, 1957). Apparently it takes some time to inhibit responses, but those who inhibit effectively will inhibit relatively more quickly than will those who inhibit less effectively. Too long or too short reaction times apparently indicate inadequate handling of impulses.

As an individual responds to stimuli, impulses are aroused. Apparently an individual needs some time to mobilize in order to control these impulses. We think of the responses of children as being impulsive and less controlled than the responses of adults. The responses of children tend to be immediate. We can find considerable evidence in theories of personality to indicate that the ability to inhibit increases with maturity and degree of ego development. The Freudian concept of a predominance of impulsive id responses in early infancy and a decrease of these responses with the development of the ego and superego closely parallels the hypothesized relationship between maturity, ego integration, and ability to inhibit. According to Lewin (1936) the inner-personal region and the motoric region of the very young child are highly permeable so that tensions produced in the inner-personal region will appear to discharge almost immediately into the first response with little selection or evaluation.

Children, immature adults, and deteriorated adults tend to respond quickly, impulsively, and less effectively than do mature adults (Klopfer, 1956). The length of time needed by the individual apparently would depend upon the threat of the impulses aroused by a particular stimulus or stimulating situation. Inhibition is not something that takes place instantly since complex ego controls are involved.

Previous Studies of M and Inhibition

The ability to inhibit impulses has been related to the perception of M responses on the Rorschach test. Rorschach's ideas concerning relationships between M and inhibition were developed primarily from the influence of Vold and Freud. John Mourly Vold (Piotrowski, 1957) worked for more than 25 years to prove that the more inhibited is the muscular activity, the more active becomes the kinesthetic imagery. He was interested primarily in the relationship between interference with free movement during sleep and the amount of movement in the dreams of the sleeper. He found that when movements of the sleeper were artificially inhibited, the kinesthetic movements appeared to be translated into dreams. Freud (1955) felt that these studies were in agreement with his theories, and explained that the increased movement present in dreams was necessitated by the repression of action tendencies. Rorschach (1942) concluded that the psychological value of his M responses was essentially the same as that of the movement content of dreams and that the productivity of M increases with the inhibition of overt motor behavior.

A recent series of studies by Singer and co-workers (Levine, Glass, & Meltzoff, 1957; Levine & Meltzoff, 1956; Levine, Spivack, & Wight, 1959; Meltzoff & Litwin, 1956; Meltzoff & Singer, 1953; Singer & Herman, 1954; Singer, Meltzoff, & Goldman, 1952; Singer & Spohn, 1954) has been directed toward investigating relationships between the

inhibition process and the Rorschach human movement response. These studies were based primarily on the sensory-tonic field theory of perception as posed by Werner and Wapner (1949). Werner maintains that tonic energy is the dynamic property common to both sensory and motor activity and postulates a relationship between the two. According to the sensory-tonic field theory, a person's available tonic energy may be released through body movement or may increase tonicity in a sensory area, the increased tonicity bringing about spatial displacement and illusory motion. Werner has pointed to M as an exemplification of the underlying unity of sensory and motor processes. Werner (1945), and Werner and Thuma (1942), in studying the perception of children with brain injury, concluded that motorically hyperactive brain-injured mental defectives produce fewer Rorschach movement responses than do the more phlegmatic, indigenous feebleminded of comparable mental ages. They obtained similar results in comparing perceptual thresholds for illusory and apparent motion of these motor types by means of critical flicker frequency.

Meltzoff, Singer, and Korchin (1953) required college students to write a phrase as slowly as possible without lifting the pencil from the paper while a control group copied an innocuous article at ordinary speed. Half of the subjects were administered Rorschach card III prior to the writing task and the other half were given card VII. After the task each group was administered the other card. The subjects

who were given the inhibition task (writing slowly) almost doubled the number of M responses in reaction to the card administered after the inhibition task. There was a significant increase in number of M responses for the card following the inhibition task, while no significant differences were found in relation to other kinds of responses. The total number of responses increased some for both the control and experimental groups with presentation of the second card. Those subjects who took longer times in the inhibition task (who might be considered the better inhibitors) were found also to have larger numbers of M responses on the card given before the slow writing task. When the more extreme inhibition times were studied in relation to M productivity, the results were even more striking. The authors concluded that the voluntary inhibition of motor activity resulted in increased productivity of M responses, and that there is a direct relationship between the length of inhibition time of motor activity and the productivity of M.

Singer, Meltzoff, and Goldman (1952) attempted to investigate the effect of a more generalized condition of motor inhibition on the subsequent perception of movement on the Rorschach and to include hyperactivity as another variable. The subjects were 24 male college students. One group was required to "freeze" for five minutes between administration of blots and another group was required to do vigorous calisthenics. The results showed a decided increase in number of

M responses following inhibition as compared with number of M responses following hyperactivity, and as compared with number of M responses for a control group whose interim activities were undirected. The differences were significant at the five per cent level of confidence for the controls versus the inhibitors and for the hyperactivity group versus the inhibitors. The control and hyperactivity groups did not differ significantly in number of M responses. It seems probable that requiring subjects to freeze in place for five minutes would have produced a greater change in muscular and emotional tension than would calisthenics.

Other studies by this group of experimenters have indicated that the more active patients in a waiting room gave less M on the Rorschach than did the less active patients (Singer & Herman, 1954), that college students who could inhibit laughter in a laughter-provoking situation produced more M than subjects who could not inhibit laughter (Meltzoff & Litwin, 1956), and that college students with greater ability to inhibit motor activity voluntarily were able to inhibit learned word associations and produce new words more quickly than those who were less adept at inhibiting motor activity (Meltzoff & Levine, 1954).

Using the word association task as a measure of cognitive inhibition, Levine and Meltzoff (1956) administered the word association task and Rorschach cards to 93 university students. Their results indicated that individuals who are

more responsive to kinesthetic stimuli, or M, on the Rorschach are better able to inhibit associations than subjects who are not productive of M responses. They concluded that the study provided, ". . . further support to the triadic hypothesis interrelating motor behavior, motor perception, and cognitive processes" (Levine and Meltzoff, 1956).

In a more recent study Levine, Glass, and Meltzoff (1957) administered the Digit Symbol subtest of the Wechsler Scale, the previously mentioned word association task, and Rorschach cards to psychiatric outpatients. They reasoned that the writing of the familiar N instead of the correct reverse N on the Digit Symbol subtest is a function of insufficient delay or control of a response tendency. The authors suggested three possibilities concerning the origin of the reverse N error: 1. correct perception of the stimulus but poor inhibition at the motor level; 2. closure taking place too rapidly at a perceptual level, so that the normal N is actually perceived; 3. response at a cognitive level as if there was no difference between the stimulus as given and the normal N.

Approximately 200 subjects who had been administered the Rorschach and the Digit Symbol subtest were selected by choosing from the files the first case who had made one or more reversals of the reverse N and choosing the next case, in alphabetical order, who reproduced the reverse N correctly. To the group above were added 27 more subjects who reversed

the reverse N (reversers) and 49 subjects who wrote the reverse N correctly (non-reversers). These additional subjects were administered the word association test of cognitive inhibition.

The procedure for the word association task was as follows: A list of ten easy paired associates (Rapaport, Gill, & Schafer, 1946) was read to the subject. After the associates were learned to a criterion of one perfect recitation, the subject was asked to respond, upon presentation of the stimulus word, with any word other than the learned associate. Cognitive inhibition time (CIT) was taken as the average time interval between presentation of the stimulus and the response for the ten pairs.

The authors reasoned that subjects who made the reverse N error should produce fewer M responses than controls who did not make the error. In addition, they hypothesized that subjects who made the error should be less able than controls to inhibit an old association and rapidly produce a new one for it in the word association task.

It was found that a significantly greater proportion of reversers than controls produced less than two M on the Rorschach. Subjects who reversed the reverse N had a significantly longer mean CIT than did controls. A mean CIT of 5.8 seconds was obtained by the reversers, while the controls (or non-reversers) had a mean CIT of 4.46 seconds. The authors concluded, "There is a growing body of evidence to suggest

inhibition ability involves a stable process in the person extending beyond the immediate stimulus situation" (Levine, Glass, & Meltzoff, 1957, p. 43). A question arose from the results of the study when it was found that, although the subjects were selected by alternation from the files, a difference of 9 points in mean IQ was found. Those who reversed the reverse N scored lower than subjects who copied the reverse N as it was.

Levine, Glass, and Meltzoff (1957) found that non-reversers produced more M on the Rorschach than did reversers. However, since the non-reversers had higher IQ scores than did the reversers, and since higher IQ is related to increased M productivity, the greater M production of the non-reverser group may have been largely, or in part, a function of an intelligence difference. If the random selection of subjects produced a normal distribution for intelligence, with the reverser group being comparable in intelligence to the non-reverser group, then it may be that reversers tend to score less well than do non-reversers on IQ tests.

A confounding factor in the study by Levine, Glass, and Meltzoff (1957) was that the same test was used in selecting the reversers and the non-reversers as was used for the measure of intelligence level. This procedure in itself might cause lower test scores in the reverser group, in that reversing the reverse N would mean failing a subtest item that contributed to the total test score. In addition, in

terms of statistical probability, individuals who miss one item have a greater probability of missing additional items than do individuals who pass it.

In the most recent study of the series, Levine, Spivack, and Wight (1959) reconfirmed the results of Levine, Glass, and Meltzoff (1957) by finding significant relationships between reversing and M production for psychiatric adults. The relationships did not hold for disturbed adolescents. A repetition of the analysis of reversing and IQ level again showed a difference in IQ level between the adult psychiatric reversers and non-reversers, with the non-reversers obtaining a mean IQ score of 101.3 and the reversers obtaining a mean IQ score of 93.5. The relationship was not significant for adolescents. They concluded that, ". . . it would seem that adequate functioning of a delay mechanism is an important element in earning a good score on the intelligence test as a whole" (Levine, Spivack, & Wight, 1959, p. 310). They also stated, "It is suggested that a theoretical position relating measures of intelligence to the psychology of ego functions may eventually provide a framework to understand concepts of intelligence and personality in the same terms" (Levine, Spivack, & Wight, 1959, p. 311). However, they, too, used the Wechsler test, both as a measure of intelligence and in the selection of reversers. Therefore, the reversers would have tended to achieve lower scores

because they missed one subtest item which contributed to the score. Thus, they have also confounded their results.

Spivack, Levine, and Sprigle (1959), in a study of disturbed adolescents, also made an error and clouded their results by using tests of inhibition, or ego delay, in which success was already correlated with intelligence level. They found a difference of 17.2 IQ points between the means of good and poor inhibitors, with good inhibitors having the highest scores. They used M as one measure of ego delay, and found positive relationships between M production and intelligence. They stated, "The significant correlations between all three measures and IQ support the hypothesis that measures of ego delay are related to general intelligence" (Spivack, Levine, & Sprigle, 1959, p. 429). However, by finding correlations between intelligence and measures of ego delay that have already been established as related to intelligence, they introduced a factor that caused their study to be inconclusive.

Fager (1960) has presented a study which does not show differences in IQ level for reverser and non-reverser, psychiatric and non-psychiatric hospitalized subjects combined. He also used the Wechsler as both the measure of intelligence and as the criterion for selecting reversers and non-reversers. In his total population he found a high correlation between M and intelligence. However, when he split his groups into high IQ reversers (mean 117.7) and low IQ non-reversers (mean

80.0), including psychiatric and non-psychiatric subjects mixed, he found no differences in M production. He concluded that relationships between Rorschach human movement responses and the type of cognitive inhibition employed by Levine, Glass, and Meltzoff (1957) remain unclear. These results are somewhat interesting in that a correlation between M and IQ together with no difference in M production between high IQ reversers and low IQ non-reversers, means that the high correlation must have been caused by high M production in the high IQ non-reversers and low M production in the low IQ reversers. However, this was not the case, since no differences were reported between the reversers and the non-reversers, as would have been found if this were true. It should also be noted that no difference in M production was found between two groups with a 40 point IQ difference, while at the same time the study confirms the relationship between M production and IQ. These discrepancies leave the results of Fager's work in a questionable position.

Relationships Between H and M in This Study

M has been studied in relation to inhibition on the basis of a sensory-tonic theory (Levine, Glass, & Meltzoff, 1957; Levine & Meltzoff, 1956; Levine, Spivack, & Wight, 1959; Meltzoff & Litwin, 1956; Meltzoff, Singer & Korchin, 1953; Singer & Herman, 1954; Singer, Meltzoff, & Goldman, 1952; Singer & Spohn, 1954). H has not been studied in relation to

inhibition because the sensory-tonic theory underlying the earlier studies has involved displacement of movement, which is more directly related to M than to H. Therefore, M has been considered to be a proper area of investigation, and H would seem to have been less pertinent.

However, because of the many various ways in which H and M are considered by Rorschach theorists to be related, the possible relationships which may exist between H and inhibition are open to speculation. H, as well as M, may be considered pertinent to the earlier sensory-tonic studies of movement and movement tendencies. Dealing with the human percept would then simply be regarded as a situation provided to measure movement tendencies or the handling of impulses. In addition, both H and M may be related to inhibition on the basis of a theory which involves H, M, and inhibition as related measures of emotional adjustment, if one reasons in the following manner.

Psychologists agree that difficulties in the handling of H and M on the Rorschach often appear to be related to a poor emotional adjustment and a consequent poor handling of interpersonal relationships. Since difficulties in the handling of M on the Rorschach appear to be related to poor ability to handle impulses and to inhibit (Biere & Blacker, 1956; Levine, Glass, & Meltzoff, 1957; Levine & Meltzoff, 1956; Levine, Spivack, & Wight, 1959; Meltzoff & Litwin, 1956; Meltzoff, Singer, & Korchin, 1953; Shipola & Taylor,

1953; Singer & Herman, 1954; Singer, Meltzoff, & Goldman, 1952; Singer & Spohn, 1954), and since a poor handling of impulses is often considered to be related to a poor handling of interpersonal relationships (Klopfer, 1956), it may well be that the handling of H on the Rorschach, as well as of M, is related to ability to inhibit. That is, a poor handling of impulses may be considered related to a poor emotional adjustment, to a poor handling of interpersonal relationships, and to a poor handling of human percepts and human movement percepts in test situations. It would follow that poor inhibitors, who handle impulses less well than do good inhibitors, would have more difficulty in dealing with interpersonal relationships and in handling human content (whether active or passive) on the Rorschach.

Rorschach authorities consider human movement percepts to be more threatening than more passive human content in relation to the ink blots. Therefore, it would seem that M should show stronger relationships to inhibition than should H.

If both H and M on the Rorschach are measures which discriminate between good and poor inhibitors, then the handling of humans and human activity could also be discriminating measures for good and poor inhibitors in other test situations.

Structure versus Less Structure

The Rorschach is used in diagnosis because of the belief that the relatively unstructured situation arouses impulses and that the responses of the individual reveal something about his impulses and the manner in which he controls them. The relatively unstructured Rorschach arouses impulses but provides few clues for the handling of the impulses that are aroused so the handling will have to come from the individual. Presumably in a completely structured situation the impulses would be aroused but more complete clues would be present in the stimulus for the control of the impulses. For example, in response to the TAT cards, a situation considered more structured than the Rorschach (Klopfer, 1956), the individual may be able to verbalize feelings freely since the impulses, feelings, and actions he is describing are presumably those of the people on the card rather than his own.

Theories and studies have indicated that there is greater difficulty in the handling of impulses aroused in the less structured situation (Klopfer, 1956, p. 603; Lawton, 1956; Piotrowski, 1957). Psychologists tend to agree that the less structured the stimulus, the more an individual's responses will be colored by personal thoughts and feelings. Apparently the less structured the situation, the greater the demand upon the individual to organize the impulses aroused by the stimulus. The less structured the situation, the more the responses will be related to the effectiveness with which

the individual can inhibit impulses. It may be that when subjects are exposed to relatively more structured situations, less demand is made on the ability to inhibit.

CHAPTER II

PROBLEM

This study is an investigation of relationships between inhibition and the handling of human figures and human figures in activity. Inhibition was defined in terms of performance on the Digit Symbol subtest of the Wechsler-Bellevue Intelligence Scale and performance on the word association test of cognitive inhibition. Handling of human content was approached through H and M production in response to Rorschach cards, through the frequency and order of drawing of humans and humans in activity on the Kinget test, and through order of dealing with or verbalizing human content on the Picture Selection Test. Comparisons were made between performance on the two inhibition tasks in order to determine the comparability of the two tasks as measures of inhibition. Both measures of inhibition were analyzed in relation to the handling of human content so that comparisons might be made between handling of human content and possible different levels or aspects of inhibition. Subjects were compared in relation to reaction times to the Rorschach cards and the Picture Selection Test, and performance on the two primary inhibition

tasks because the reaction times were also considered possible measures of handling of impulses.

Although the sensory-tonic theory has originally been the basis for studying M and inhibition (Levine, Glass, & Meltzoff, 1957; Levine & Meltzoff, 1956; Levine, Spivack, & Wight, 1959; Meltzoff & Litwin, 1956; Meltzoff, Singer & Korchin, 1953; Singer & Herman, 1954; Singer, Meltzoff, & Goldman, 1952; Singer & Spohn, 1954), it appears that the person who does not handle impulses well, the poor inhibitor, is likely to have difficulty in interpersonal relationships, and therefore would be likely to have difficulty in dealing with all forms of human content in relation to such tests as the Rorschach, Kinget, or the Picture Selection Test. Therefore, this study involves the handling of humans as well as the handling of humans in activity in relation to inhibition.

Levine, Glass, and Meltzoff (1957) found a mean IQ score that was 9 points higher for the non-reversers than for the reversers. Levine, Spivack, and Wight (1959) found non-reversers to have a mean score that was 8 IQ points higher than the mean score of the reversers. It appears possible that the lower mean IQ scores found for the reversers in both of these studies could be accounted for in part because the same test was used both in selecting reversers and non-reversers and as a measure of intelligence, and also because poor inhibitors (reversers) might respond less appropriately on intelligence tests.

Since the subjects in both studies were selected on the basis of correct and incorrect performance on the Digit Symbol subtest of the Wechsler-Bellevue Intelligence Scale, and since the IQ scores that were used in comparing the two groups of subjects were derived from total performance on the Wechsler Scale, performance on the Digit Symbol subtest contributed to the total IQ scores for each subject. Therefore, the subjects who wrote the reverse N incorrectly (the reversers) automatically obtained lower IQ scores because of their incorrect performance on the Digit Symbol subtest.

Another factor involved in using the same test both in the selection of reversers and non-reversers and as a measure of intelligence is that the lower mean IQ score of the reversers might have been in part a function of statistical probability. In terms of probability, the subjects who performed incorrectly on a particular subtest of a series would be more likely to perform incorrectly on other subtests of the series, than would subjects who performed correctly on the particular subtest. This probability assumption is commonly utilized when prorating is done on intelligence tests and is an assumption that is based on extensive empirical findings by Terman and Merrill (1937). For example, in prorating for items that were not administered on an intelligence test, higher scores are given when more of the administered items were passed and less credit is given in prorating when fewer of the administered items were passed. On the

Stanford-Binet Scale we can assume that the subject who passed four of the six subtests at an age level would be more likely to pass the other two subtests, had they been administered, than would the subject who passed one of the four administered items.

An additional consideration that may have contributed to the lower IQ scores of the reversers in the earlier studies is that poor inhibitors (reversers) might respond less appropriately than do good inhibitors in intelligence test situations. If poor inhibitors tend to respond less appropriately than do good inhibitors in everyday situations, they would also be likely to respond less appropriately in testing situations. Therefore, poor inhibitors, because they do inhibit less well, might obtain lower IQ scores through giving less appropriate responses, even though the potential intelligence level of the poor and good inhibitors might be equal. The IQ score difference would show up in random selection of subjects because the two groups of subjects would actually be of comparable intelligence levels but one group would be responding less effectively to the intelligence test.

Since M and intelligence have been shown to be related (Levine, Spivack, & Wight, 1959), the unexplained differences in mean IQs form a variable which prevents the findings of Levine, Glass, and Meltzoff (1957) and Levine, Spivack, and Wight (1959) from being definitive.

An attempt was made in this study to deal with the problem of differences in intelligence scores between the reversers and the non-reversers by using a different test in selecting reversers and non-reversers than in measuring intelligence. In addition, differences in IQ scores between the reversers and the non-reversers were controlled by selecting subjects in such a manner that the two groups were equated in regard to IQ scores.

The Ohio State Psychological Examination (OSPE) was used as the measure of intelligence. Since performance on the Digit Symbol subtest did not contribute to the intelligence measure being used in this study, the manner in which the subjects were selected did not automatically lower the IQ scores of the subjects who wrote the reverse N incorrectly.

It is not possible to completely control the complicating variables that may exist for subjects who reverse the reverse N, and also may cause them to obtain lower test scores. However, by equating the two groups with an instrument not involving the reverse N factor, a weakness of the previous research has been eliminated.

In addition, equating the reversers and the non-reversers for IQ scores in this study may be viewed as an improvement in design over the random selection utilized in the previous studies. Even though the two groups might not have been made comparable in actual intelligence level because of being equated for IQ score, the influence of having the two

groups unequal in actual intelligence level would be in the direction of making the results of this study less strong, rather than in the direction of supporting the hypotheses concerning M and inhibition. To the extent that factors involved in reversing the reverse N also lower test scores, the reverser group would tend to be more intelligent, even though the test scores would be equal. The reverser group then, to the extent that M and IQ are related, would be likely to produce more M than would the non-reversers. Since it was hypothesized that the reverser group would produce less M, the fact that the reversers might be brighter than the non-reversers would tend to reduce the differences in M production between the reversers and the non-reversers because differences would be in the opposite direction from that hypothesized. The influence of the intelligence differences would tend to cause a rejection of hypotheses concerning relationships between M production and inhibition, rather than unwarranted acceptance.

The subjects in prior research have been drawn from disturbed populations. University students were selected as subjects in this study because it is possible that differences in performance on projective, inhibition, and other tests by groups drawn from a disturbed population may be substantially influenced by factors that are not present in the normal population. Differences in M production on the Rorschach, for example, for groups drawn from a psychiatric population, may not have the same meanings as the same differences

found for groups drawn from the normal population due to the multitude of influences on M production. Differences in the meaning of the test situation, alone, could be quite substantial, and could cause M to have different meanings. Also, university students were selected due to the importance of intelligence in this study, particularly in relation to M production. Too many intelligence test scores of a psychiatric group would be markedly impaired and thus be less stable and accurate than those of a normal population.

Earlier studies have indicated that measures of the handling of human content and of ability to inhibit may be expected to discriminate among subjects of a normal college group (Biere & Blacker, 1956; Meltzoff & Levine, 1954; Meltzoff & Litwin, 1956; Meltzoff, Singer, & Korchin, 1953; Shipola & Taylor, 1953; Singer, Meltzoff, & Goldman, 1952). Although ordinarily we think of M production in terms of discriminating between normality and maladjustment, there are sufficiently wide discriminating differences in M production within the normal population. Klopfer explains the discrimination M seems to make between individuals of a normal group by stating, "The development of constructive ego functions has to reach a maturity level that lies beyond the reach of eighty or ninety per cent of the general population in order to enter the process of self realization for which the production of M is most indicative" (Klopfer, 1956, p. 305). Kinget found wide variations in the handling of human figures among

normal subjects. She found a large number of normal subjects who produced no human figures in their drawings (1952). The measures of inhibition used in this study have also been found to be discriminating for normal college students (Levine & Meltzoff, 1956; Meltzoff & Levine, 1954).

In this study three different types of response were involved in the tasks relating to human content. The handling of human content is involved in the production of H and M on the Rorschach, in the drawing of humans and humans in activity on the Kinget test, and in the ordering of responses concerning humans and humans in activity on the Picture Selection Test. The three test situations represent three different ways of dealing with human content.

It is logical to assume that relationships between inhibition and the handling of human content would exist in the Rorschach situation and in the other test situations. It appears that the common element of inhibition might always be involved in dealing with any form of human figures. However, it is entirely possible that relationships would exist between inhibition and M on the Rorschach and would not extend into the other test situations where human content is involved.

On the Kinget, where there are possibly more clues to indicate direction of response than on the Rorschach, some people produce many human figures while other people produce none, or practically none. Some of the human figures drawn

are portraits and others involve people doing things. If the common element of inhibition is always present in dealing with any form of human figure, we might expect that people who demonstrate an ability to inhibit would draw more human figures and more human figures in activity, and would draw human figures earlier in sequence, than would people who are less able to inhibit.

In a structured situation, such as a set of pictures of objects, plants, landscapes, animals, people, and people doing things, it would seem logical to anticipate a relationship between ability to inhibit responses and the order of selection of pictures of people and people doing things.

The object in setting up the Picture Selection Test was to measure order of selection of pictures dealing with humans and humans in activity. The picture series is an attempt to find an objective way of measuring the handling of human content by determining whether a person would see people or people doing things or would apparently attempt to avoid seeing them. It was also possible that in a situation as apparently structured as these sets of pictures, the threat would be so greatly reduced that there would be no difference in order of selection of humans and humans in activity between good and poor inhibitors.

Statement of Problem

This is a study of the inhibition process as measured in two ways in relation to the production of H and M on the Rorschach, the drawing of human figures and human figures in activity on the Kinget, and thresholds of selection of human figures and human figures in activity in pictures. This was not an attempt to assess whatever differing degrees of structuring there may be in the Rorschach, Kinget, and the Picture Selection Test. Human content is involved in all of these tests and the subject was given an opportunity to handle humans and humans in action. This study was an attempt to analyze the inhibition process in three different situations where human content is involved.

Hypotheses

It was hypothesized that:

1. The reversers have fewer H and M responses in reaction to the Rorschach cards than do the non-reversers, the standard deviation of their reaction times is larger than that obtained by the non-reversers, and they have longer CITs than are obtained by the non-reversers.

2. The subjects with longer CITs have fewer H and M responses in reaction to the Rorschach cards than do the subjects with shorter CITs, and the standard deviation of their reaction times is smaller than that obtained by the subjects with shorter CITs.

3. The reversers draw fewer human figures and human figures in activity, draw more stick figures, and draw human figures and human figures in activity later in the sequence of drawings on the Kinget test than do the non-reversers.

4. The subjects with longer CITs draw fewer human figures and human figures in activity, draw more stick figures, and draw human figures and human figures in activity later in the sequence of drawings on the Kinget test than do the subjects with shorter CITs.

5. The reversers have a different threshold for human figures and human figures in activity than do the non-reversers, and the standard deviation of their reaction times is larger on the Picture Selection Test than that obtained by the non-reversers.

6. The subjects with longer CITs have a different threshold for human figures and human figures in activity than do the subjects with shorter CITs, and the standard deviation of their reaction times is larger on the Picture Selection Test than that obtained by the subjects with shorter CITs.

CHAPTER III

METHOD

Subjects

The subjects in this study consisted of 80 sophomore and junior male university students between the ages of 18 and 25 at the University of Oklahoma. The 80 subjects were selected from 261 male students meeting the above specifications who were administered the Digit Symbol subtest of the Wechsler-Bellevue Intelligence Scale, Form II. The Digit Symbol subtest was administered in 26 different classes at the University which were representative of widely diverse areas of study.

Reversers and non-reversers. The first 40 subjects who reversed the reverse N on the Digit Symbol subtest (reversers) and the first 40 subjects who wrote the reverse N correctly (non-reversers) were selected as subjects for the study, with the limitation that the two groups of subjects be homogeneous in variance and normally distributed for Ohio State Psychological Examination (OSPE) scores. The latter limitation involved discarding some of the subjects of the original 40 of each group and selecting other subjects in

order to obtain the required controls for OSPE scores, which were used in this study as a measure of intelligence. OSPE scores were available for some of the subjects, and the OSPE was administered to those subjects for whom scores were not available.

Long CIT and short CIT subjects. Since cognitive inhibition time (CIT) has been considered another related measure of inhibition along with the reverse N measure (Levine, Glass, & Meltzoff, 1957), the 80 subjects were later divided into two groups of 40 each on the basis of performance on the word association test of cognitive inhibition, which will be described later. One group of subjects had the shortest CITs and the other group of subjects had the longest CITs. The long CIT subjects were considered comparable to the reversers as poor inhibitors, and the short CIT subjects and the non-reversers were considered good inhibitors.

Experimental Procedure

The 80 subjects were administered the word association test of cognitive inhibition, four Rorschach cards, the Kinget test, and the Picture Selection Test.

The word association test of cognitive inhibition. The word association test of cognitive inhibition consisted of words from the same word list as that used by Levine, Glass, and Meltzoff (1957), and was administered in the same manner. That is, a list of ten paired associated words was

read to the subject. On each successive reading of the stimulus words, the subject was asked to supply the correct associated word. When the subject did not know the associated word, the correct word was supplied to him. The associated words were learned by the subject to a criterion of one perfect recitation of the associated words in response to each of the stimulus words. Then the subject was presented with the stimulus words in the same order with instructions to produce any other word than the learned associate. The time required for the subject to produce another word than the learned associate was recorded. CIT is the median score for a subject for the 10 reaction times.

The Rorschach cards. The four Rorschach cards, numbers I, II, III, and VII, were selected as the cards which would be most likely to elicit M responses (Meltzoff, Singer, & Korchin, 1953; Ranzoni, Grant, & Ives, 1950). The four cards were administered and scored according to Rorschach procedure as outlined by Beck (1950). Reaction times for the first response to each card were recorded.

The Kinget test. The Kinget test was administered in the manner prescribed by Kinget (1952). Standards for scoring humans, humans in movement, and stick figures were consistent with the procedures outlined by Kinget (1952). The subjects were scored for number of drawings of humans and humans in activity, for order of the first drawing of a human and of a human in activity, and for presence of stick figures.

The Picture Selection Test. The Picture Selection Test consists of 10 cards, with 10 pictures on each card: one picture of a person in active movement, one picture of a person in what may be considered a relatively passive posture, two pictures of animals, two pictures of animate objects, two pictures of inanimate objects, and two pictures of landscapes. The pictures were arranged so that no picture was adjacent to another picture of the same category. Each set of pictures on each card had a different, irregular over-all shape so the subject's order of response would tend to be the result of responding to the pictures themselves, rather than to the order in which the pictures were arranged. All of the pictures within a set were of the same size. The picture sets were achromatic photographs, and the pictures were of comparable shading.

The picture sets were placed face-down and therefore out of the subject's sight. As each card was turned over and placed before the subject, the examiner said, "Tell me what you see as you see it." If further explanation was necessary the examiner altered the explanatory words slightly by saying ". . . as it catches your eye." The particular choice of explanatory words was developed through preliminary testing. It was found that with these instructions subjects tended to respond most freely, and tended to respond to the content of the pictures rather than in terms of their location in relation to other pictures in the set.

The subjects were scored for dealing with human content and for verbalizations of humans and humans in activity. Responses involving dealing with human content were defined as any responses to either of the two pictures of people in each picture set regardless of whether or not the responses involved any mention of the human content. Responses involving verbalizations of humans (H) were those responses to either of the two pictures of people which involved verbal depiction of the people without designating the people as being in movement. Responses involving verbalizations of humans in activity (M) were those responses to either of the two pictures of people in each picture set which contained a description of people in movement. The subjects' responses and the reaction times for the first response to each card were recorded.

Order of administration of tests. The above four tests were administered to the subjects in the following order: the word association test of cognitive inhibition, the Rorschach test, the Picture Selection Test, and the Kinget test. All of the tests were administered in one session when time allowed. When the tests were administered in two sessions the Picture Selection Test and the Kinget test were administered in the second session. The second session always occurred within no more than a week from the first session. All of the subjects were tested with all of the

tests, including the preliminary Digit Symbol subtest, within a period of six weeks.

CHAPTER IV

RESULTS

Table 58 in the Appendix shows the distributions of the OSPE scores of the reverser and the non-reverser groups. The OSPE scores of the reversers and the non-reversers were tested for normality of distribution and homogeneity of variance. The results of the tests for normality of distribution are presented in Table 1. The reverser group obtained a Chi-square of .530 which, for one degree of freedom, is at the .48 level of confidence. The non-reverser group obtained a Chi-square of .086 which, for one degree of freedom, is at the .77 level of confidence. It was therefore concluded that the OSPE scores for each of the two groups did not differ significantly from normal distributions with the same n, means, and standard deviations. Table 2 shows the results of the test for homogeneity of variance of the OSPE scores of the reversers and the non-reversers. The obtained F of 1.005, at 39 degrees of freedom for each set of scores, was well below the .10 confidence level. In regard to variance the two samples could well have come from the same population. Since the OSPE scores of the reverser and the non-reverser groups

were apparently normally distributed and homogeneous in variance it appears that, to the extent that the IQ scores truly represented intelligence levels, the further comparisons made of the two groups were not unduly influenced by differences in intelligence.

Table 1

Normality of Distribution of OSPE Scores of the Reversers and the Non-reversers

Group	Mean	SD	df	χ^2	p
Reverser	5.95	2.410	1	.530	.48
Non-reverser	5.88	2.414	1	.086	.77

Note.--Includes 40 subjects in each group.

Table 2

Homogeneity of Variance of OSPE Scores of the Reversers and the Non-reversers

Group	Mean Square	df	F	p
Reverser	233.00	39	1.005	>.10
Non-reverser	234.38	39		

Note.--Includes 40 subjects in each group.

In Hypothesis 1 it is stated that the reversers would produce fewer H responses to the Rorschach cards than would the non-reversers. Table 59 in the Appendix shows the number of H responses produced by the reversers and the non-reversers in reaction to the Rorschach cards. An analysis of this data revealed that, no matter what cutting point was used, there were significant differences between the reversers and the non-reversers in the production of H responses, with the reversers producing fewer H responses. Table 3, where the cutting point is 1 compared to 2 or more, shows a Chi-square value which was significant at the .001 level. Table 4 shows a Chi-square analysis with cutting points between 0, 1, and 2 or more which was significant, for two degrees of freedom, at the .005 level. Table 5 shows a Chi-square analysis with the cutting point of 0 and 1 versus 2 or more which was significant at the .01 level of confidence. All analyses consistently showed that significantly more of the reversers than the non-reversers produced fewer H responses. Therefore, the hypothesis that the reversers would produce fewer H responses to the Rorschach cards than would the non-reversers was accepted.

Combined human and human movement scores were used in addition to separate human and human movement scores throughout the analyses of results which involved human and human movement responses. Following Rorschach scoring procedures, human movement responses were not scored as human responses.

Table 3

Chi-square Test of the Reversers and the Non-reversers for Number of H Responses to the Rorschach Cards

Number of H	Number of Subjects Reverser	Non-Reverser	Total
1	13	3	16
2 or more	5	15	20
Total	18	18	36

Note.--df = 1, χ^2 = 11.25, $p < .001$.

Table 4

Chi-square Test of the Reversers and the Non-reversers for Number of H Responses to the Rorschach Cards

Number of H	Number of Subjects Reverser	Non-Reverser	Total
0	22	22	44
1	13	3	16
2 or more	5	15	20
Total	40	40	80

Note.--df = 2, χ^2 = 11.24, $p < .005$.

Table 5

Chi-square Test of the Reversers and the Non-reversers for Number of H Responses to the Rorschach Cards

Number of H	Number of Subjects Reverser	Non-Reverser	Total
0 - 1	35	25	60
2 or more	5	15	20
Total	40	40	80

Note.--df = 1, $X^2 = 6.66$, $p < .01$.

A human movement response may be considered to be also a human response. A subject who predominantly produced human movement responses and consequently produced few human responses might be considered to have been inadequately rated when scored as producing a small amount of human content. Therefore, the combined number of human and human movement responses were totaled for each subject and were analyzed throughout the study as another possible measure of response to human content.

As an additional test of the hypothesis that the reversers would produce fewer H responses than would the non-reversers in reaction to the Rorschach cards, an analysis was made for the combined number of H and M responses produced by the reversers and the non-reversers. Table 60 in the Appendix

shows the combined number of H and M responses produced by the reversers and the non-reversers in reaction to the Rorschach cards. Table 6 shows that the cutting point of less than 2 compared to 2 or more for the combined H and M responses yielded a non-significant Chi-square. This cutting point was used by Levine, Glass, and Meltzoff (1957) and others (Levine, Spivack, & Wight, 1959; Fager, 1960) in analyzing M production of the reversers and the non-reversers. The cutting point of 3 or less compared to 4 or more, shown in Table 7, yielded a Chi-square value significant at the .005 level, with the reversers having fewer of the combined H and M responses. Table 8, with a cutting point of 2 or less compared to 3 or more, shows the reversers had fewer of the combined H and M responses. The resultant Chi-square was significant at the .02 level of confidence. The reversers had significantly fewer of the combined H and M responses than did the non-reversers in reaction to the Rorschach cards when the cutting points were higher than the less than 2 compared to 2 or more cutting point. The hypothesis that the reversers would produce fewer H responses than would the non-reversers in reaction to the Rorschach cards was considered sustained when the combined H and M responses were utilized as another measure of H. However, the hypothesis did not appear to be as strongly supported with the combined H and M scores as with the separate H measure.

Table 6

Chi-square Test of the Reversers and the Non-reversers for Combined Number of H and M Responses to the Rorschach Cards

Number of H plus M	Number of Subjects		Total
	Reverser	Non-Reverser	
0 - 1	12	11	23
2 or more	28	29	57
Total	40	40	80

Note.--df = 1, X^2 = .066, $p > .05$.

Table 7

Chi-square Test of the Reversers and the Non-reversers for Combined Number of H and M Responses to the Rorschach Cards

Number of H plus M	Number of Subjects		Total
	Reverser	Non-Reverser	
0 - 3	34	22	56
4 or more	6	18	24
Total	40	40	80

Note.--df = 1, X^2 = 8.57, $p < .005$.

Table 8

Chi-square Test of the Reversers and the Non-reversers for Combined Number of H and M Responses to the Rorschach Cards

Number of H plus M	Number of Subjects Reverser	Non-Reverser	Total
0 - 2	27	16	43
3 or more	13	24	37
Total	40	40	80

Note.--df = 1, $X^2 = 6.08$, $p < .02$.

In Hypothesis 1 it is also stated that the reversers would produce fewer M responses in reaction to the Rorschach cards than would the non-reversers. The number of M responses to the Rorschach cards produced by the reversers and the non-reversers may be seen in Table 61 in the Appendix. Table 9 shows the cutting point of less than 2 and 2 or more. This breakdown, when used by Levine, Glass, and Meltzoff (1957) with outpatient veterans as subjects, and by others (Levine, Spivack, & Wight, 1959; Fager, 1960) with psychiatric subjects, showed reversers had significantly fewer M than did non-reversers. However, the Chi-square value in Table 9 was not significant. The cutting point of 0 compared to 3 or more, shown in Table 10, yielded a Chi-square which was significant at the .05 level, with the reversers having fewer M.

Table 9

Chi-square Test of the Reversers and the Non-reversers for Number of M Responses to the Rorschach Cards

Number of M	Number of Subjects		Total
	Reverser	Non-reverser	
0 - 1	20	15	35
2 or more	20	25	45
Total	40	40	80

Note.--df = 1, $\chi^2 = 1.27$, $p > .05$.

Table 10

Chi-square Test of the Reversers and the Non-reversers for Number of M Responses to the Rorschach Cards

Number of M	Number of Subjects		Total
	Reverser	Non-reverser	
0	10	5	15
3 - 10	9	17	26
Total	19	22	41

Note.--df = 1, $\chi^2 = 3.93$, $p < .05$.

Table 11, with a cutting point of less than 3 and 3 or more, and Table 12, with a cutting point of less than 2 compared to 3 or more, show Chi-squares which approached significance. The cutting point which was found by Levine, Glass, and Meltzoff (1957) and others (Levine, Spivack, & Wight, 1959; Fager, 1960) to be productive in showing significant differences between reversers and non-reversers, with reversers producing fewer M, did not produce significant results in this study. All other cutting points approached significance except for the cutting point of 0 compared to 3 or more, which was significant, with the reversers having fewer M responses. The results obtained here are not in agreement with those of the previous studies although there is some evidence to support the hypothesis that the reversers would produce fewer M responses. The hypothesis that the reversers would produce fewer M responses in reaction to the Rorschach cards than would the non-reversers was supported but not to the degree that the hypothesis could be considered sustained.

In hypothesis 1 it is further stated that the standard deviation of the reaction times of the reversers to the Rorschach cards would be larger than the standard deviation of the reaction times of the non-reversers. Frequency distributions of the median reaction times of the reversers and the non-reversers to the Rorschach cards may be seen in Table 62 in the Appendix. Table 13 shows the means and standard deviations of the median reaction times of the reversers and the

Table 11

Chi-square Test of the Reversers and the Non-reversers for Number of M Responses to the Rorschach Cards

Number of M	Number of Subjects		Total
	Reverser	Non-reverser	
0 - 2	31	23	54
3 or more	9	17	26
Total	40	40	80

Note.--df = 1, X^2 = 3.65, $p > .05$.

Table 12

Chi-square Test of the Reversers and the Non-reversers for Number of M Responses to the Rorschach Cards

Number of M	Number of Subjects		Total
	Reverser	Non-reverser	
0 - 1	20	15	35
3 or more	9	17	26
Total	29	32	61

Note.--df = 1, X^2 = 3.04, $p > .05$.

Table 13

Means and Standard Deviations of Median Reaction Times to the Rorschach Cards of the Reversers and the Non-reversers

Group	Mean	SD
Reverser	23.03	14.93
Non-reverser	15.92	13.67

Note.--Includes 40 subjects in each group.

non-reversers. The standard deviation of the reversers was 14.93 and the standard deviation of the non-reversers was 13.67. Table 14 shows the results of tests for normality of distribution of the median reaction times of the reversers and the non-reversers. Since the reaction times of the non-reversers were not normally distributed, the standard deviations of the two groups could not be analyzed by an F test. However, the two standard deviations were obviously extremely similar. Table 15 shows a Chi-square analysis of the reversers and the non-reversers for median reaction times to the Rorschach cards. A two by three table with cutting points of 3 to 13 seconds, 14 to 27 seconds, and 28 or more was significant, for two degrees of freedom, at the .001 level, with the reversers having the longest reaction times. The standard deviations of the median reaction times of the reversers and the non-reversers were almost identical and it would appear

Table 14

Normality of Distribution of Median Reaction Times to the Rorschach Cards of the Reversers and the Non-reversers

Group	Mean[a]	SD[a]	df	X^2	p
Reverser	23.0	14.89	1	.643	.44
Non-reverser	15.5	14.03	1	10.51	.001

Note.--Includes 40 subjects in each group.

[a]Derived from grouped scores.

Table 15

Chi-square Test of the Reversers and the Non-reversers for Median Reaction Times to the Rorschach Cards

Reaction Time	Number of Subjects		Total
	Reverser	Non-reverser	
3 - 13	9	27	36
14 - 27	19	7	26
28 or more	12	6	18
Total	40	40	80

Note.--df = 1, $X^2 = 16.54$, $p < .001$.

that the reversers did not have more variability in reaction time than did the non-reversers. The hypothesis that the reversers would have a larger standard deviation for reaction times to the Rorschach cards than would the non-reversers was not sustained. However, the additional Chi-square analyses indicated that the reversers did have significantly longer reaction times to the Rorschach cards than did the non-reversers.

In Hypothesis 1 it is further stated that the reversers would have longer CITs than would the non-reversers. Table 63 in the Appendix shows the distributions of the median CIT scores for the reversers and the non-reversers. In order to test the hypothesis that the reversers would have longer CITs, the CIT scores of the reverser and the non-reverser groups were tested for normality of distribution and homogeneity of variance. Table 16 shows that the Chi-square for normality of distribution for the reversers was 1.22 which, for one degree of freedom, is at the .27 level, and the Chi-square for the non-reversers was 1.06 which, for one degree of freedom, is at the .30 level of confidence. Table 17 shows the results of the test for homogeneity of variance. The obtained F of 1.144, at 39 degrees of freedom for each set of scores, was well below the .10 confidence level. Since the two groups of scores were not significantly different from a normal curve distribution and were homogeneous in variance, the assumptions underlying use of the t test were met. Fisher's t

Table 16

Normality of Distribution of CIT Scores of the Reversers and the Non-reversers

Group	Mean	SD	df	χ^2	p
Reverser	2.40	.707	1	1.22	.27
Non-reverser	2.51	.757	1	1.06	.30

Note.--Includes 40 subjects in each group.

Table 17

Homogeneity of Variance of CIT Scores of the Reversers and the Non-reversers

Group	Mean Square	df	F	p
Reverser	20.02	39	1.144	> .10
Non-reverser	22.95	39		

Note.--Includes 40 subjects in each group.

formula for samples of equal size when means are uncorrelated (Guilford, 1950, p. 228) was applied in comparing the means of the CIT scores of the reverser and the non-reverser groups. Table 18 shows the obtained t of .6568 which, with 78 degrees of freedom, was not significant. Table 19 shows a Chi-square analysis of the CIT scores of the reversers and the

Table 18

t Test of CIT Scores of the Reversers and the Non-reversers

Group	df	t	p
Reverser Non-reverser	78	.6568	> .05

Table 19

Chi-square Test of the Reversers and the Non-reversers for CIT Scores

CIT Score	Number of Subjects Reverser	 Non-reverser	Total
1.0 - 1.8	12	8	20
1.9 - 2.4	12	13	25
2.5 - 3.0	9	13	22
3.1 - 4.7	7	6	13
Total	40	40	80

Note.--df = 3, X^2 = 1.64, p > .05.

non-reversers which was not significant. Since the results of a t test and of Chi-square analyses yielded non-significant results, the hypothesis that the reversers would have longer CITs than would the non-reversers was not sustained.

The subjects were split into two groups of 40 each, with one group having the longest CITs and the other group having the shortest CITs, in order that statistical analyses could be made between long and short CIT subjects. Table 64 in the Appendix shows the distributions of the CIT scores of the long and short CIT groups. Table 65 in the Appendix reveals that however the CIT subjects might have been split there would have been almost no difference in the number of the reverser and the non-reverser subjects in either CIT group. The OSPE scores of the long and short CIT groups were tested for normality of distribution and homogeneity of variance to determine if there were any significant differences in IQ scores between the long and short CIT groups. The reverser and the non-reverser groups were selected so the OSPE scores would be normally distributed and homogeneous in variance, while the manner in which the long and short CIT groups were obtained provided no controls for OSPE scores. Table 66 in the Appendix shows the distributions of OSPE scores for the long and short CIT groups. Table 20 shows the results of the tests for normality of distribution of the OSPE scores of the long and short CIT subjects. The long CIT group obtained a Chi-square of .628 which, for one degree of freedom, is at

Table 20

Normality of Distribution of OSPE Scores of the Long and Short CIT Subjects

Group	Mean	SD	df	X^2	p
Long CIT	5.58	2.51	1	.628	.44
Short CIT	6.20	2.46	1	.490	.49

Note.--Includes 40 subjects in each group.

the .44 level. The short CIT group obtained a Chi-square of .490 which, for one degree of freedom, is at the .49 level of confidence. The test for homogeneity of variance, shown in Table 21, resulted in an F of 1.036 which, at 39 degrees of freedom for each set of scores, was well below the .10 confidence level. Since the OSPE scores of the long and short CIT groups were normally distributed and homogeneous in variance, it appears that, to the extent that the IQ scores truly represented intelligence levels, the comparisons made of the long and short CIT groups were not unduly influenced by differences in intelligence.

In Hypothesis 2 it is stated that the subjects with longer CITs would produce fewer H responses to the Rorschach cards than would the subjects with shorter CITs. Table 67 in the Appendix shows the number of H responses produced by the long and short CIT subjects in reaction to the Rorschach

Table 21

Homogeneity of Variance of OSPE Scores of the Long and Short CIT Subjects

Group	Mean Square	df	F	p
Long CIT	251.72	39	1.036	> .10
Short CIT	242.40	39		

Note.--Includes 40 subjects in each group.

cards. Table 22 shows a Chi-square analysis of the long and short CIT subjects for number of H responses which, for two degrees of freedom, was not significant. There were no significant differences between the long and short CIT subjects in number of H responses to the Rorschach cards. The hypothesis that the subjects with longer CITs would produce fewer H responses in reaction to the Rorschach cards than would the subjects with shorter CITs was not sustained.

As an additional test of the hypothesis that the subjects with longer CITs would produce fewer H responses to the Rorschach cards than would the subjects with shorter CITs, an analysis was made for the combined number of H and M responses produced by the long and short CIT subjects. Table 68 in the Appendix shows the combined number of H and M responses produced by the long and short CIT subjects. A Chi-square analysis of the long and short CIT subjects for combined H and M is

Table 22

Chi-square Test of the Long and Short CIT Subjects for Number of H Responses to the Rorschach Cards

Number of H	Number of Subjects		Total
	Long CIT	Short CIT	
0	21	23	44
1	8	8	16
2 or more	11	9	20
Total	40	40	80

Note.--df = 2, X^2 = .282, $p > .05$.

presented in Table 23. The obtained Chi-square, for two degrees of freedom, was not significant. However, when the two by three breakdown of Table 23 was reduced to the two by two analysis shown in Table 24, the resultant Chi-square was significant at the .05 level, with the short CIT subjects having fewer of the combined H and M responses to the Rorschach cards. The latter result was in the opposite direction from that which was hypothesized. None of the Chi-square analyses were significant, except one which was in the opposite direction from that hypothesized. The hypothesis that the subjects with longer CITs would produce fewer H responses to the Rorschach cards than would the subjects with shorter CITs was not sustained when the combined number of H and M responses was utilized as another measure of H.

Table 23

Chi-square Test of the Long and Short CIT Subjects for Combined Number of H and M Responses to the Rorschach Cards

Number of H plus M	Number of Subjects Long CIT	Short CIT	Total
0 - 1	8	15	23
2	14	6	20
3 or more	18	19	37
Total	40	40	80

Note.--df = 2, $X^2 = 5.58$, $p > .05$.

Table 24

Chi-square Test of the Long and Short CIT Subjects for Combined Number of H and M Responses to the Rorschach Cards

Number of H plus M	Number of Subjects Long CIT	Short CIT	Total
0 - 1	8	15	23
2	14	6	20
Total	22	21	43

Note.--df = 1, $X^2 = 5.31$, $p < .05$.

In Hypothesis 2 it is also stated that the subjects with longer CITs would produce fewer M responses to the Rorschach cards than would the subjects with shorter CITs. Table 69 in the Appendix shows the number of M responses produced by the long and short CIT subjects in reaction to the Rorschach cards. Table 25 shows a Chi-square analysis of the long and short CIT subjects for number of M responses which, for two degrees of freedom, was not significant. Other Chi-square analyses with different cutting points also revealed no differences. Since none of the Chi-square analyses were significant, the hypothesis that the subjects with longer CITs would produce fewer M responses to the Rorschach cards than would the subjects with shorter CITs was not sustained.

Table 25

Chi-square Test of the Long and Short CIT Subjects for Number of M Responses to the Rorschach Cards

Number of M	Number of Subjects		Total
	Long CIT	Short CIT	
0 - 1	14	21	35
2	14	5	19
3 or more	12	14	26
Total	40	40	80

Note.--df = 2, $X^2 = 5.82$, $p > .05$.

In Hypothesis 2 it is further stated that the standard deviation of the reaction times to the Rorschach cards of the subjects with longer CITs would be larger than the standard deviation of the subjects with shorter CITs. Frequency distributions of the median reaction times of the long and short CIT subjects to the Rorschach cards are presented in Table 70 in the Appendix. Table 26 shows the means and standard deviations of the median reaction times of the long and short CIT subjects. The standard deviation of the long CIT subjects was 13.82 and the standard deviation of the short CIT subjects was 15.69. Table 27 shows the results of tests for normality of distribution of the median reaction times of the long and short CIT subjects. Since the reaction times of the short CIT subjects were not normally distributed the standard deviations of the two groups could not be analyzed by an F test. However, the two standard deviations were obviously extremely similar. Table 28 shows a Chi-square analysis of the long and short CIT subjects for median reaction times to the Rorschach cards. The resultant Chi-square was not significant. The standard deviations of the median reaction times of the long and short CIT subjects were almost identical and it would appear that the long CIT subjects did not have more variability in reaction time than did the short CIT subjects. The hypothesis that the subjects with longer CITs would have a larger standard deviation for reaction times to the Rorschach cards than would the subjects with

shorter CITs was not sustained. Additional Chi-square analyses showed no significant differences between the long and short CIT subjects in reaction times to the Rorschach cards.

Table 26

Means and Standard Deviations of Median Reaction Times to the Rorschach Cards of the Long and Short CIT Subjects

Group	Mean	SD
Long CIT	20.00	13.82
Short CIT	18.84	15.69

Note.--Includes 40 subjects in each group.

Table 27

Normality of Distribution of Median Reaction Times to the Rorschach Cards of the Long and Short CIT Subjects

Group	Mean[a]	SD[a]	df	X^2	p
Long CIT	20.0	13.9	1	3.86	.05
Short CIT	18.5	15.9	1	6.45	.01

Note.--Includes 40 subjects in each group.

[a]Derived from grouped scores.

Table 28

Chi-square Test of the Long and Short CIT Subjects for Median Reaction Times to the Rorschach Cards

Reaction Time	Number of Subjects		Total
	Long CIT	Short CIT	
3 - 10	10	17	27
11 or more	30	23	53
Total	40	40	80

Note.--df = 1, $X^2 = 2.74$, $p > .05$.

In Hypothesis 3 it is stated that the reversers would draw fewer human figures on the Kinget test than would the non-reversers. Table 71 in the Appendix shows the number of human figures drawn by the reversers and the non-reversers on the Kinget test. Table 72 in the Appendix shows the combined number of human figures and human figures in activity drawn by the reversers and the non-reversers on the Kinget test. The distributions of the number of human figures and the distributions of the combined number of human figures and human figures in activity were almost identical because only three of the reversers and three of the non-reversers drew human figures in activity. Chi-square analyses of the number of human figures and of the combined number of human figures and human figures in activity drawn by the reversers and the non-reversers were almost identical, with essentially the same

results at the same confidence levels. Table 29 shows a two by three Chi-square analysis for the combined number of human figures and human figures in activity which, for two degrees of freedom, was significant at the .02 level in the opposite direction from that which was hypothesized. That is, more of the reversers produced more drawings of human figures and human figures in activity combined than did the non-reversers. The hypothesis that the reversers would draw fewer human figures on the Kinget test than would the non-reversers was not sustained for either a measure of human figures or for a combined measure of human figures and human figures in activity.

In Hypothesis 3 it is also stated that the reversers would draw fewer human figures in activity on the Kinget test than would the non-reversers. Table 73 in the Appendix shows the number of human figures in activity drawn by the reversers and the non-reversers on the Kinget test. Since only three of the reversers and three of the non-reversers drew human figures in activity on the Kinget test no statistical analysis is presented. Obviously there was no significant difference in the number of human figures in activity produced by the two groups since so few human figures in activity were drawn. The hypothesis that the reversers would draw fewer human figures in activity on the Kinget test than would the non-reversers was rejected.

In Hypothesis 3 it is further stated that the reversers would draw more stick figures on the Kinget test than

Table 29

Chi-square Test of the Reversers and the Non-reversers for Combined Number of Human Figures and Human Figures in Activity on the Kinget Test

Number of Human Figures Plus Human Figures in Activity	Number of Subjects		Total
	Reverser	Non-reverser	
0	15	14	29
1	7	17	24
2 or more	18	9	27
Total	40	40	80

Note.--df = 2, $X^2 = 8.20$, $p < .02$.

would the non-reversers. Table 74 in the Appendix shows the number of stick figures drawn by the reversers and the non-reversers on the Kinget test. Only three of the reversers and none of the non-reversers drew stick figures on the Kinget test. Obviously there was no significant difference in the number of stick figures produced by the reversers and the non-reversers since so few stick figures were obtained. The hypothesis that the reversers would draw more stick figures on the Kinget test than would the non-reversers was rejected.

In Hypothesis 3 it is further stated that the reversers would draw human figures later in the sequence of drawings on the Kinget test than would the non-reversers. Table 75 in the Appendix shows the order of drawing human figures

for the reversers and the non-reversers. Table 76 in the Appendix shows the order of drawing human figures combined with the order of drawing human figures in activity for the reversers and the non-reversers. Since the two sets of distributions and the resultant Chi-squares were almost identical, a Chi-square analysis is presented only for the combined measure of order of drawing human figures and human figures in activity. The two by four Chi-square analysis shown in Table 30, with three degrees of freedom, was not significant. There were no significant differences between the reversers and the non-reversers in order of drawing humans or in the combined measure of order of drawing humans and humans in activity on the Kinget test. The hypothesis that the reversers would draw human figures later in the sequence of drawings on the Kinget test than would the non-reversers was not sustained for either a measure of human figures or for a combined measure of human figures and human figures in activity.

In Hypothesis 3 it is further stated that the reversers would draw human figures in activity later in the sequence of drawings on the Kinget test than would the non-reversers. Table 77 in the Appendix shows the order of drawing human figures in activity for the reversers and the non-reversers. Only three of the reversers and three of the non-reversers drew human figures in activity on the Kinget test. The data could not be meaningfully analyzed because of the small number of responses. The hypothesis that the reversers would

Table 30

Chi-square Test of the Reversers and the Non-reversers for Combined Order of Human Figures and Human Figures in Activity on the Kinget Test

Order of Human Figures Plus Human Figures in Activity	Number of Subjects		Total
	Reverser	Non-reverser	
1	7	8	15
2 - 3	8	10	18
4 - 8	10	8	18
never	15	14	29
Total	40	40	80

Note.--df = 3, X^2 = .306, $p > .05$.

draw human figures in activity later in the sequence of drawings on the Kinget test could not be tested.

In Hypothesis 4 it is stated that the subjects with longer CITs would draw fewer human figures on the Kinget test than would the subjects with shorter CITs. Table 78 in the Appendix shows the number of human figures drawn by the long and short CIT subjects on the Kinget test. Table 79 in the Appendix shows the combined number of human figures and human figures in activity drawn by the long and short CIT subjects on the Kinget test. The two sets of distributions were almost identical because only three of the long CIT subjects and three of the short CIT subjects drew human figures in activity.

Chi-square analyses of the two sets of distributions showed essentially the same results at the same confidence levels. Table 31 shows a two by three Chi-square analysis for the combined number of human figures and human figures in activity which, for two degrees of freedom, was not significant. The hypothesis that the subjects with longer CITs would draw fewer human figures on the Kinget test than would the subjects with shorter CITs was not sustained for either a measure of human figures or for a combined measure of human figures and human figures in activity.

Table 31

Chi-square Test of the Long and Short CIT Subjects for Combined Number of Human Figures and Human Figures in Activity on the Kinget Test

Number of Human Figures Plus Human Figures in Activity	Number of Subjects		Total
	Long CIT	Short CIT	
0	13	16	29
1	10	14	24
2 - 6	17	10	27
Total	40	40	80

Note.--df = 2, $X^2 = 2.79$, $p > .05$.

In Hypothesis 4 it is also stated that the subjects with longer CITs would draw fewer human figures in activity

on the Kinget test than would the subjects with shorter CITs. Table 80 in the Appendix shows the number of human figures in activity drawn by the long and short CIT subjects on the Kinget test. Since only three of the long CIT subjects and three of the short CIT subjects drew human figures in activity on the Kinget test no statistical analysis is presented. Obviously there was no significant difference in the number of human figures in activity produced by the two groups since so few human figures in activity were drawn. The hypothesis that the subjects with longer CITs would draw fewer human figures in activity on the Kinget test than would the subjects with shorter CITs was rejected.

In Hypothesis 4 it is further stated that the subjects with longer CITs would draw more stick figures on the Kinget test than would the subjects with shorter CITs. Table 81 in the Appendix shows the number of stick figures drawn by the long and short CIT subjects on the Kinget test. None of the long CIT subjects and only three of the short CIT subjects drew stick figures on the Kinget test. Obviously there was no significant difference in the number of stick figures produced by the two groups since so few stick figures were obtained. The hypothesis that the subjects with longer CITs would draw more stick figures on the Kinget test than would the subjects with shorter CITs was rejected.

In Hypothesis 4 it is further stated that the subjects with longer CITs would draw human figures later in the

sequence of drawings on the Kinget test than would the subjects with shorter CITs. Table 82 in the Appendix shows the order of drawing human figures for the long and short CIT subjects. Table 83 in the Appendix shows the combined measure of order of drawing human figures and human figures in activity for the long and short CIT subjects. Since the two sets of distributions were almost identical and the resultant Chi-squares were at the same levels of significance, a Chi-square analysis is presented only for the combined measure of order of drawing human figures and human figures in activity. Table 32 shows a two by three Chi-square analysis which, for two degrees of freedom, was not significant. There were no significant differences between the subjects with longer CITs and the subjects with shorter CITs in order of drawing human figures or in the combined measure of order of drawing humans and humans in activity on the Kinget test. The hypothesis that the subjects with longer CITs would draw human figures later in the sequence of drawings on the Kinget test than would the subjects with shorter CITs was not sustained for either a measure of human figures or for a combined measure of human figures and human figures in activity.

In Hypothesis 4 it is further stated that the subjects with longer CITs would draw human figures in activity later in the sequence of drawings on the Kinget test than would the subjects with shorter CITs. Table 84 in the Appendix

Table 32

Chi-square Test of the Long and Short CIT Subjects for Combined Order of Human Figures and Human Figures in Activity on the Kinget Test

Order of Human Figures Plus Human Figures in Activity	Number of Subjects		Total
	Long CIT	Short CIT	
1 - 2	17	12	29
3 - 8	10	12	22
never	13	16	29
Total	40	40	80

Note.--df = 2, $X^2 = 1.35$, $p > .05$.

shows the order of drawing human figures in activity for the long and short CIT subjects. Only three of the long CIT subjects and three of the short CIT subjects drew human figures in activity on the Kinget test. The data could not be meaningfully analyzed because of the small number of responses. The hypothesis that the subjects with longer CITs would draw human figures in activity later in the sequence of drawings on the Kinget test than would the subjects with shorter CITs could not be tested.

In Hypothesis 5 it is stated that the reversers would have a different threshold for human figures on the Picture Selection Test than would the non-reversers. The hypotheses involving the Picture Selection Test were analyzed in terms

of "dealing with" and "verbalizations" in comparing the reversers with the non-reversers and the long CIT subjects with the short CIT subjects. The "dealing with" criterion was first tested for the reversers and the non-reversers in the manner outlined in the procedure section, with any response to either of the two pictures of people in each picture set being scored as a response involving dealing with a human figure. The subjects were scored according to the order in which the first response was given to a picture of a person. Each subject's score for each set of pictures ranged from 1 to 9. A median score was obtained for each subject for the ten sets of pictures. Chi-square tests were used to determine if the reversers' median scores fell earlier or later than the scores of the non-reversers. Table 85 in the Appendix shows the median scores of the reversers and the non-reversers for order of dealing with either of the two pictures of people in each picture set of the Picture Selection Test. Table 33 shows a Chi-square analysis of the reversers and the non-reversers for the median scores. The resultant Chi-square was significant at the .05 level, with more of the reversers than the non-reversers dealing with either of the two pictures of people earlier. The reversers dealt with the human figures earlier than did the non-reversers, and thus had a lower perceptual threshold for human figures. The hypothesis that the reversers would have a different threshold for human figures on the Picture Selection Test than would the non-reversers

Table 33

Chi-square Test of the Reversers and the Non-reversers for Median Scores of Order of Dealing With Either of the Two Pictures of People in Each Picture Set of the Picture Selection Test

Median Score	Number of Subjects		Total
	Reverser	Non-reverser	
1.0 - 2.5	29	20	49
3.0 - 6.5	11	20	31
Total	40	40	80

Note.--df = 1, $X^2 = 4.06$, $p < .05$.

was sustained for the "dealing with" analyses of median scores outlined in the procedure, with more of the reversers having a lower threshold for dealing with pictures of people.

Additional comparisons were made, for both the "dealing with" and "verbalization" criteria, by tabulating the frequency of each subject's responses in each response position. That is, the number of first, second, third, fourth, etc., responses to the ten cards was tabulated. This technique was used in addition to the median technique because the median tends to obscure extremes in order of response, or response position, which may have occurred more frequently with subjects in one group or in the other.

The hypothesis that the reversers would have a different threshold for human figures on the Picture Selection Test

than would the non-reversers was tested with the response position method of analysis, for order of dealing with "H" pictures (the picture in each picture set which was considered as most closely representing an inactive human). Table 86 in the Appendix shows distributions of response frequencies for response positions 1, 2, 3, 8, 9, and 10 of the reversers and the non-reversers for order of dealing with "H" pictures. Table 34 shows a Chi-square analysis for response positions 1, 2, 3, 8, 9, and 10 which was significant at the .05 level, with more of the reversers than the non-reversers dealing more frequently with "H" pictures early and late. Chi-square analyses for response positions 1, 2, 3, and 4 did not reveal any significant differences between the reversers and the non-reversers. The distributions of response frequencies for response positions 1, 2, 3, and 4 are given in Table 87 in the Appendix and it may be seen that the early response positions, alone, did not result in significant Chi-squares. According to response position analyses, more of the reversers than the non-reversers dealt more frequently with "H" pictures at the extremes, both early and late, but not early alone. The hypothesis that the reversers would have a different threshold for human figures on the Picture Selection Test was sustained for response position analyses of dealing with "H" pictures, since significantly more of the reversers than the non-reversers had low and high thresholds for human figures.

Table 34

Chi-square Test of the Reversers and the Non-reversers for Response Positions 1, 2, 3, 8, 9, and 10 for Order of Dealing with "H" Pictures on the Picture Selection Test

Number of Responses	Number of Subjects		Total
	Reverser	Non-reverser	
4 - 6	15	25	40
7 - 10	20	12	32
Total	35	37	72

Note.--df = 1, $X^2 = 4.94$, $p < .05$.

As an additional test of the hypothesis that the reversers would have a different threshold for human figures on the Picture Selection Test, response position analyses were made of the first response to either of the two pictures of people in each picture set for the reversers and the non-reversers. The distributions of response frequencies for response positions 1, 2, 3, and 4 may be seen in Table 88 in the Appendix. Table 35 shows a Chi-square analysis for response positions 1, 2, 3, and 4 which was significant at the .05 level, with more of the reversers than the non-reversers dealing more frequently with either of the two pictures of people early. Additional Chi-square analyses also indicated that more of the reversers dealt more frequently with either of the two pictures of people early. The hypothesis that the

Table 35

Chi-square Test of the Reversers and the Non-reversers for Response Positions 1, 2, 3, and 4 for Order of Dealing With Either "H" or "M" Pictures on the Picture Selection Test

Number of Responses	Number of Subjects		Total
	Reverser	Non-reverser	
0 - 8	16	25	41
9 - 10	24	15	39
Total	40	40	80

Note.--df = 1, $X^2 = 4.05$, $p < .05$.

reversers would have a different threshold for human figures on the Picture Selection Test than would the non-reversers was sustained for response position analyses of dealing with either of the two pictures of people in each picture set, since significantly more of the reversers than the non-reversers had a low threshold for dealing with either of the two pictures of people.

In Hypothesis 5 it is also stated that the reversers would have a different threshold for human figures in activity on the Picture Selection Test than would the non-reversers. Response position analyses were made of the reversers and the non-reversers for dealing with "M" pictures (the picture in each picture set which was considered as most closely representing a human in activity). Table 89 in the Appendix shows

the response frequencies for response positions 1, 2, 3, and 4. Table 36 shows a Chi-square analysis for response positions 1, 2, 3, and 4 which was significant at the .05 level, with more of the reversers than the non-reversers having more responses to the "M" pictures early. Additional Chi-square analyses also showed that more of the reversers than the non-reversers dealt more frequently with human figures in activity early. The hypothesis that the reversers would have a different threshold for human figures in activity on the Picture Selection Test than would the non-reversers was sustained for response position analyses of dealing with "M" pictures, since more of the reversers had a low threshold for dealing with "M" pictures.

Table 36

Chi-square Test of the Reversers and the Non-reversers for Response Positions 1, 2, 3, and 4 for Order of Dealing With "M" Pictures on the Picture Selection Test

Number of Responses	Number of Subjects		Total
	Reverser	Non-reverser	
0 - 5	14	24	38
6 - 10	26	16	42
Total	40	40	80

Note.--df = 1, $X^2 = 5.01$, $p < .05$.

Chi-square tests involving median scores could not be applied to the "verbalization" data because the subjects verbalized differing numbers of H and M, and some subjects verbalized no H or M. A median of order of first response for verbalizations of H or M becomes meaningless when derived from a widely unequal number of responses, especially when in some cases there are no responses of H or M. Chi-square analyses were therefore obtained by the response position method of analysis.

The statement in Hypothesis 5 that the reversers would have a different threshold for human figures on the Picture Selection Test than would the non-reversers was tested for verbalizations of H by the response position method. Distributions of the reversers and the non-reversers for verbalization response positions 1, 2, 3, and 4; 1, 2, 3, 8, 9, and 10; and 1, 2, 9, and 10 may be seen in Tables 90, 91, and 92 in the Appendix. Table 37 shows a Chi-square analysis for response positions 1, 2, 3, and 4 which was not significant, and which indicates that more of the reversers than the non-reversers did not verbalize more or fewer H responses early. Table 38 shows a Chi-square analysis for response positions 1, 2, 3, 8, 9, and 10 which was not significant, and which indicates that more of the reversers than the non-reversers did not verbalize more or fewer H responses early and late. There were also no significant differences found when response positions 1, 2, 9, and 10 were analyzed.

Table 37

Chi-square Test of the Reversers and the Non-reversers for Response Positions 1, 2, 3, and 4 for Order of Verbalizations of H on the Picture Selection Test

Number of Responses	Number of Subjects		Total
	Reverser	Non-reverser	
0 - 1	6	12	18
2 - 12	34	28	62
Total	40	40	80

Note.--df = 1, $X^2 = 1.87$, $p > .05$.

Table 38

Chi-square Test of the Reversers and the Non-reversers for Response Positions 1, 2, 3, 8, 9, and 10 for Order of Verbalizations of H on the Picture Selection Test

Number of Responses	Number of Subjects		Total
	Reverser	Non-reverser	
0 - 5	25	30	55
6 - 13	15	10	25
Total	40	40	80

Note.--df = 1, $X^2 = 1.45$, $p > .05$.

Additional response position analyses of verbalizations of H also showed no significant differences between the reversers and the non-reversers. The hypothesis that the reversers would have a different threshold for human figures on the Picture Selection Test than would the non-reversers was not sustained, since more of the reversers did not have more or fewer, low, high, or low and high threshold responses for verbalizations of H.

An additional test of the hypothesis that the reversers would have a different threshold for human figures on the Picture Selection Test than would the non-reversers involved verbalizations of the combined measure of H and M. Table 93 in the Appendix shows the response frequencies of the reversers and the non-reversers for response positions 1, 2, 3, and 4. Table 39 shows a Chi-square analysis for response positions 1, 2, 3, and 4 which was significant at the .05 level, with more of the reversers than the non-reversers having more responses early. Additional response position analyses of verbalizations of the combined measure of H and M also indicated that more of the reversers than the non-reversers verbalized more combined H and M responses early. The hypothesis that the reversers would have a different threshold for human figures on the Picture Selection Test than would the non-reversers was sustained for the combined measure of verbalizations of H and M, since more of the reversers had a low threshold for this measure.

Table 39

Chi-square Test of the Reversers and the Non-reversers for Response Positions 1, 2, 3, and 4 for Combined Order of Verbalizations of H and M on the Picture Selection Test

Number of Responses	Number of Subjects		Total
	Reverser	Non-reverser	
0 - 8	10	19	29
9 - 20	30	21	51
Total	40	40	80

Note.--df = 1, $X^2 = 4.38$, $p < .05$.

As an additional test of the statement in Hypothesis 5 that the reversers would have a different threshold for human figures in activity on the Picture Selection Test than would the non-reversers, analyses were made of order of verbalizing M to either of the two pictures of people by the response position method. Table 94 in the Appendix shows the response frequencies of the reversers and the non-reversers for response positions 1, 2, 3, and 4. Table 40 shows a Chi-square analysis for response positions 1, 2, 3, and 4 for verbalizations of M which was significant at the .05 level, with more of the reversers than the non-reversers having more verbalizations of human figures in activity early. Additional Chi-square analyses also showed that more of the reversers than the non-reversers verbalized more M responses early.

Table 40

Chi-square Test of the Reversers and the Non-reversers for Response Positions 1, 2, 3, and 4 for Order of Verbalizations of M on the Picture Selection Test

Number of Responses	Number of Subjects		Total
	Reverser	Non-reverser	
0 - 5	12	23	35
6 - 16	28	17	45
Total	40	40	80

Note.--df = 1, $X^2 = 4.88$, $p < .05$.

The hypothesis that the reversers would have a different threshold for human figures in activity on the Picture Selection Test than would the non-reversers was sustained for response position analyses of verbalizations of M to either of the two pictures of people in each picture set, since more of the reversers had a low threshold for verbalizations of M.

The preceding Chi-square analyses for verbalizations of H, H plus M, and M on the Picture Selection Test could conceivably have been affected if more of the reversers or the non-reversers had produced more or fewer H, H plus M, or M responses. Therefore, the total number of H, H plus M, and M responses was analyzed for the subjects of the reverser and the non-reverser groups. The distributions of the number of H, H plus M, and M responses verbalized by the subjects of

the reverser and the non-reverser groups are shown in Tables 95, 96, and 97 in the Appendix. There were no large differences among the subjects in number of responses between the reverser and the non-reverser groups. However, it was found that more of the reversers had more or fewer H responses. Table 41 shows a Chi-square analysis which was significant at the .05 level, with more of the reversers having more or fewer H responses than did the non-reversers. It was also found that more of the reversers had more or fewer M responses than did the non-reversers. Table 42 shows a Chi-square analysis that was significant at the .05 level, with more of the reversers than the non-reversers verbalizing more or fewer M responses. Since the number of responses produced by the subjects was not greatly different for the reversers and the non-reversers, and since the only differences which evidenced themselves were not those which would have affected the earlier analyses of verbalizations, it was concluded that the earlier verbalization analyses were not influenced by differences in the number of responses produced by the subjects of the reverser and the non-reverser groups.

In Hypothesis 5 it is further stated that the standard deviation of the reaction times to the Picture Selection Test of the reversers would be larger than the standard deviation of the non-reversers. Table 98 in the Appendix shows the median reaction times of the reversers and the non-reversers to the Picture Selection Test. Table 43 shows the means

Table 41

Chi-square Test of the Reversers and the Non-reversers for Total Number of H Produced by the Subjects on the Picture Selection Test

Total Number of H for Subjects	Number of Subjects Reverser	Non-reverser	Total
0 - 3, 10 - 18	25	15	40
4 - 9	15	25	40
Total	40	40	80

Note.--df = 1, $X^2 = 5.00$, $p < .05$.

Table 42

Chi-square Test of the Reversers and the Non-reversers for Total Number of M Produced by the Subjects on the Picture Selection Test

Total Number of M for Subjects	Number of Subjects Reverser	Non-reverser	Total
0 - 10, 16 - 20	30	20	50
11 - 15	10	20	30
Total	40	40	80

Note.--df = 1, $X^2 = 5.36$, $p < .05$.

Table 43

Means and Standard Deviations of Median Reaction Times to the Picture Selection Test of the Reversers and the Non-reversers

Group	Mean	SD
Reversers	3.81	1.825
Non-reversers	3.79	2.267

Note.--Includes 40 subjects in each group.

and standard deviations of the median reaction times of the reversers and the non-reversers to the Picture Selection Test. The standard deviation of the reversers was 1.825 and the standard deviation of the non-reversers was 2.267. Table 44 shows the results of tests for normality of distribution of the median reaction times of the reversers and the non-reversers. Since the reaction times of the non-reverser group were not normally distributed, the standard deviations of the two groups could not be analyzed by an F test. However, the two standard deviations were obviously very similar. Table 45 shows a Chi-square analysis of the reversers and the non-reversers for median reaction times to the Picture Selection Test, which was not significant. Since the standard deviations of the median reaction times of the reversers and the non-reversers were almost identical, it appears that the reversers did not have more variability in reaction time than

Table 44

Normality of Distribution of Median Reaction Times to the Picture Selection Test of the Reversers and the Non-reversers

Group	Mean[a]	SD[a]	df	X^2	p
Reversers	3.43	1.77	1	3.45	.07
Non-reversers	3.38	2.95	1	19.47	.001

Note.--Includes 40 subjects in each group.

[a]Derived from group scores.

Table 45

Chi-square Test of the Reversers and the Non-reversers for Median Reaction Times to the Picture Selection Test

Reaction Time	Number of Subjects		Total
	Reverser	Non-reverser	
0 - 3.3	18	26	44
3.4 - 12.2	22	14	36
Total	40	40	80

Note.--df = 1, $X^2 = 3.22$, $p > .05$.

did the non-reversers. Therefore, the hypothesis that the reversers would have a larger standard deviation for reaction times to the Picture Selection Test than would the non-reversers

was not sustained. The additional Chi-square analyses showed no significant differences between the reversers and the non-reversers in median reaction times to the Picture Selection Test.

In Hypothesis 6 it is stated that the subjects with longer CITs would have a different threshold for human figures on the Picture Selection Test than would the subjects with shorter CITs. The long and short CIT subjects were first tested for order of dealing with either of the two pictures of people in each picture set by means of median scores. Table 99 in the Appendix shows the median scores of the long and short CIT subjects for order of dealing with either of the two pictures of people in each picture set of the Picture Selection Test. Table 46 shows a Chi-square analysis of the long and short CIT subjects for the median scores. The resultant Chi-square was significant at the .005 level, with more of the long CIT subjects than the short CIT subjects dealing with either of the two pictures of people earlier. The hypothesis that the subjects with longer CITs would have a different threshold for human figures on the Picture Selection Test than would the subjects with shorter CITs was sustained for the "dealing with" analyses using median scores of order of response, since more of the long CIT subjects had a lower threshold for dealing with pictures of people.

The hypothesis that the subjects with longer CITs would have a different threshold for human figures on the

Table 46

Chi-square Test of the Long and Short CIT Subjects for Median Scores of Order of Dealing With Either of the Two Pictures of People in Each Picture Set of the Picture Selection Test

Median Score	Number of Subjects		Total
	Long CIT	Short CIT	
1 - 1.5	12	1	13
2 - 6.5	28	39	67
Total	40	40	80

Note.--df = 1, X^2 = 10.66, $p < .005$, Yates correction used.

Picture Selection Test than would the subjects with shorter CITs was also analyzed for the "dealing with" criteria by means of the response position method of analysis. Table 100 in the Appendix shows the distributions of the response frequencies for response positions 1, 2, 3, and 4 of the long and short CIT subjects for order of dealing with the picture in each picture set which was considered as most closely representing passive human content (the "H" picture). Table 47 shows a Chi-square analysis for response positions 1, 2, 3, and 4 which was significant at the .01 level of confidence, with more of the long CIT subjects than the short CIT subjects dealing more or less frequently with "H" pictures early. Table 101 in the Appendix shows the distributions of the

Table 47

Chi-square Test of the Long and Short CIT Subjects for Response Positions 1, 2, 3, and 4 for Order of Dealing With "H" Pictures on the Picture Selection Test

Number of Responses	Number of Subjects Long CIT	Short CIT	Total
0 - 2, 7 - 10	18	7	25
3 - 6	22	33	55
Total	40	40	80

Note.--df = 1, $X^2 = 7.04$, $p < .01$.

response frequencies for response positions 1, 2, 9, and 10. Table 48 shows a Chi-square analysis for response positions 1, 2, 9, and 10 which, for two degrees of freedom, was significant at the .01 level, with more of the long CIT subjects than the short CIT subjects dealing more or less frequently with "H" pictures early and late. Table 102 in the Appendix shows the distributions of response frequencies for response positions 1, 2, 3, 8, 9, and 10. Chi-square analyses for response positions 1, 2, 3, 8, 9, and 10 did not reveal any significant differences between the long and short CIT subjects. Additional response position analyses of dealing with "H" pictures showed that more of the long CIT subjects than the short CIT subjects dealt more or less frequently with "H"

Table 48

Chi-square Test of the Long and Short CIT Subjects for Response Positions 1, 2, 9, and 10 for Order of Dealing With "H" Pictures on the Picture Selection Test

Number of Responses	Number of Subjects		Total
	Long CIT	Short CIT	
0 - 3	17	14	31
4 - 5	9	21	30
6 - 10	14	5	19
Total	40	40	80

Note.--df = 2, $X^2 = 9.36$, $p < .01$.

pictures early and early and late. The hypothesis that the subjects with longer CITs would have a different threshold for human figures on the Picture Selection Test than would the subjects with shorter CITs was sustained for response position analyses of dealing with "H" pictures, since more of the long CIT subjects had more or fewer low threshold responses and more or fewer low and high threshold responses for dealing with "H" pictures.

As an additional test of the hypothesis that the subjects with longer CITs would have a different threshold for human figures on the Picture Selection Test, response position analyses were made of the first response to either of the two pictures of people in each picture set for the long

and short CIT subjects. Table 103 in the Appendix shows the distributions of response frequencies for response positions 1, 2, 3, and 4. Table 49 shows a Chi-square analysis for response positions 1, 2, 3, and 4 which was significant at the .05 level, with more of the long CIT subjects than the short CIT subjects dealing more or less frequently with either of the two pictures of people early. Additional Chi-square analyses also indicated that more of the long CIT subjects than the short CIT subjects dealt more or less frequently with either of the two pictures of people early. The hypothesis that the subjects with longer CITs would have a different threshold for human figures on the Picture Selection Test than would the subjects with shorter CITs was sustained for response position analyses of dealing with either of the two pictures of people in each picture set, since more of the long CIT subjects had more or fewer low threshold responses for dealing with pictures of people.

In Hypothesis 6 it is also stated that the subjects with longer CITs would have a different threshold for human figures in activity on the Picture Selection Test than would the subjects with shorter CITs. Response position analyses were made of the long and short CIT subjects for dealing with "M" pictures on the Picture Selection Test. Table 104 in the Appendix shows the response frequencies for response positions 1, 2, 3, and 4. Table 50 shows a Chi-square analysis for response positions 1, 2, 3, and 4 which was significant

Table 49

Chi-square Test of the Long and Short CIT Subjects for Response Positions 1, 2, 3, and 4 for Order of Dealing With Either "H" or "M" Pictures on the Picture Selection Test

Number of Responses	Number of Subjects Long CIT	Short CIT	Total
0 - 7, 10	28	18	46
8 - 9	12	22	34
Total	40	40	80

Note.--df = 1, $X^2 = 5.12$, $p < .05$.

Table 50

Chi-square Test of the Long and Short CIT Subjects for Response Positions 1, 2, 3, and 4 for Order of Dealing With "M" Pictures on the Picture Selection Test

Number of Responses	Number of Subjects Long CIT	Short CIT	Total
0 - 5, 9 - 10	26	17	43
6 - 8	14	23	37
Total	40	40	80

Note.--df = 1, $X^2 = 4.07$, $p < .05$.

at the .05 level, with more of the long CIT subjects than the short CIT subjects dealing more or less frequently with the "M" pictures early. Additional Chi-square analyses also showed that more of the long CIT subjects than the short CIT subjects dealt more or less frequently with human figures in activity early. The hypothesis that the subjects with longer CITs would have a different threshold for human figures in activity on the Picture Selection Test than would the subjects with shorter CITs was sustained when the response position method of analysis was applied to order of dealing with "M" pictures, since the long CIT group had more subjects with more or fewer low threshold responses for dealing with "M" pictures.

Since Chi-square tests involving median scores could not be meaningfully applied to "verbalization" data for the Picture Selection Test, the analyses of the verbalizations were all made by the response position method.

The statement in Hypothesis 6 that the subjects with longer CITs would have a different threshold for human figures on the Picture Selection Test than would the subjects with shorter CITs was analyzed for verbalizations of H by the response position method. Table 105 in the Appendix shows the distributions of response frequencies of the long and short CIT subjects for verbalizations of H to the pictures of people in the Picture Selection Test for response positions 1, 2, 3, and 4. Table 51 shows a Chi-square analysis for

Table 51

Chi-square Test of the Long and Short CIT Subjects for Response Positions 1, 2, 3, and 4 for Order of Verbalizations of H on the Picture Selection Test

Number of Responses	Number of Subjects Long CIT	Short CIT	Total
0 - 1, 7 - 12	21	8	29
2 - 6	19	32	51
Total	40	40	80

Note.--df = 1, $X^2 = 9.14$, $p < .005$.

response positions 1, 2, 3, and 4 which was significant at the .005 level, with more of the long CIT subjects than the short CIT subjects verbalizing more or fewer H responses early. Table 106 in the Appendix shows the distributions of response frequencies for response positions 1, 2, 3, 8, 9, and 10 for verbalizations of H. Table 52 shows a Chi-square analysis for response positions 1, 2, 3, 8, 9, and 10 which was significant at the .01 level, with more of the long CIT subjects than the short CIT subjects more frequently verbalizing H early and late. Table 107 in the Appendix shows the distributions of response frequencies for response positions 1, 2, 9, and 10. Chi-square analyses were not significant for these response positions. Additional Chi-square analyses

Table 52

Chi-square Test of the Long and Short CIT Subjects for Response Positions 1, 2, 3, 8, 9, and 10 for Order of Verbalizations of H on the Picture Selection Test

Number of Responses	Number of Subjects		Total
	Long CIT	Short CIT	
0 - 5	25	35	60
7 - 13	15	5	20
Total	40	40	80

Note.--df = 1, $X^2 = 6.67$, $p < .01$.

also indicated that more of the long CIT subjects than the short CIT subjects verbalized more or fewer H responses early and verbalized more H responses early and late. The hypothesis that the subjects with longer CITs would have a different threshold for human figures on the Picture Selection Test than would the subjects with shorter CITs was sustained for the response position analyses of verbalizations of H, since more of the long CIT subjects than the short CIT subjects had more or fewer low threshold responses and more low and high threshold responses for verbalizations of H.

An additional test of the hypothesis that the subjects with longer CITs would have a different threshold for human figures on the Picture Selection Test than would the subjects with shorter CITs involved verbalizations of the

combined measure of H and M. Table 108 in the Appendix shows the distributions of response frequencies for the long and short CIT subjects for response positions 1, 2, 3, and 4. Table 53 shows a Chi-square analysis for response positions 1, 2, 3, and 4 which was significant at the .005 level, with more of the long CIT subjects than the short CIT subjects more or less frequently verbalizing combined H and M responses early. Additional response position analyses of verbalizations of the combined measure of H and M also showed that more of the long CIT subjects than the short CIT subjects verbalized more or fewer combined H and M responses early. The hypothesis that the subjects with longer CITs would have a different threshold for human figures on the Picture Selection Test than would the subjects with shorter CITs was sustained for the combined measure of verbalizations of H and M with the response position method, since more of the long CIT subjects had more or fewer low threshold responses for verbalizations of H plus M.

As an additional test of the statement in Hypothesis 6 that the subjects with longer CITs would have a different threshold for human figures in activity on the Picture Selection Test than would the subjects with shorter CITs, analyses were made of order of verbalizing M to either of the two pictures of people by the response position method. Table 109 in the Appendix shows the response frequencies for response positions 1, 2, 3, and 4. Table 54 shows a Chi-square

Table 53

Chi-square Test of the Long and Short CIT Subjects for Response Positions 1, 2, 3, and 4 for Combined Order of Verbalizations of H and M on the Picture Selection Test

Number of Responses	Number of Subjects Long CIT	Short CIT	Total
0 - 6, 12 - 20	23	9	32
7 - 11	17	31	48
Total	40	40	80

Note.--df = 1, X^2 = 10.21, $p < .005$.

Table 54

Chi-square Test of the Long and Short CIT Subjects for Response Positions 1, 2, 3, and 4 for Order of Verbalizations of M on the Picture Selection Test

Number of Responses	Number of Subjects Long CIT	Short CIT	Total
0 - 7, 12 - 16	34	26	60
8 - 11	6	14	20
Total	40	40	80

Note.--df = 1, X^2 = 4.27, $p < .05$.

analysis for response positions 1, 2, 3, and 4 for verbalizations of M which was significant at the .05 level, with more of the long CIT subjects than the short CIT subjects having more or fewer verbalization responses early. Additional response position analyses of verbalizations of M also showed that more of the long CIT subjects than the short CIT subjects more or less frequently verbalized M responses early. The hypothesis that the subjects with longer CITs would have a different threshold for human figures in activity on the Picture Selection Test than would the subjects with shorter CITs was sustained for response position analyses of verbalizations of M to either of the two pictures of people in each picture set, since more of the subjects with longer CITs had more or fewer low threshold responses for verbalizations of M.

Since it is possible that the Chi-square analyses of the verbalizations of H, H plus M, and M could have been affected if more of the long CIT subjects or more of the short CIT subjects individually had produced more or fewer H, H plus M, and M responses, the long and short CIT subjects were analyzed in terms of the total number of H, H plus M, and M responses produced by subjects of the two groups. Distributions of the number of H, H plus M, and M responses produced by the long and short CIT subjects are shown in Tables 110, 111, and 112 in the Appendix. No significant differences were found in Chi-square analyses of the three distributions. Since the subjects of the long CIT group did not have more or

fewer total H, H plus M, or M responses than did the subjects of the short CIT group, it may be considered that the earlier Chi-square analyses involving verbalizations were not influenced by differences in the total number of responses produced by the subjects of the long and short CIT groups.

In Hypothesis 6 it is further stated that the standard deviation of the reaction times to the Picture Selection Test of the long CIT subjects would be larger than the standard deviation of the short CIT subjects. Table 113 in the Appendix shows the median reaction times of the long and short CIT groups to the Picture Selection Test. Table 55 shows the means and standard deviations of the median reaction times of the long and short CIT subjects. The standard deviation of the long CIT subjects was 2.126 and the standard deviation of the short CIT subjects was 1.990. Table 56 shows the results of tests for normality of distribution of the median reaction times of the long and short CIT subjects. Since the reaction times of the long CIT group were not normally distributed, the standard deviations of the two groups could not be analyzed by an F test. However, the two standard deviations were obviously very similar. Table 57 shows a Chi-square analysis of the long and short CIT subjects for median reaction times to the Picture Selection Test, which was not significant. Since the standard deviations of the median reaction times of the long and short CIT subjects were almost identical, it appears that the long CIT subjects did not have

Table 55

Means and Standard Deviations of Median Reaction Times to the Picture Selection Test of the Long and Short CIT Subjects

Group	Mean	SD
Long CIT	3.85	2.126
Short CIT	3.76	1.990

Note.--Includes 40 subjects in each group.

Table 56

Normality of Distribution of Median Reaction Times to the Picture Selection Test of the Long and Short CIT Subjects

Group	Mean[a]	SD[a]	df	X^2	p
Long CIT	3.55	2.16	1	8.08	.005
Short CIT	3.25	2.07	1	2.99	.09

Note.--Includes 40 subjects in each group.

[a]Derived from grouped scores.

Table 57

Chi-square Test of the Long and Short CIT Subjects for Median Reaction Times to the Picture Selection Test

Reaction Time	Number of Subjects Long CIT	Short CIT	Total
1 - 2	13	17	30
3 - 12	27	23	50
Total	40	40	80

Note.--df = 1, X^2 = .853, $p > .05$.

more variability in reaction time than did the short CIT subjects. Therefore, the hypothesis that the long CIT subjects would have a larger standard deviation for reaction times to the Picture Selection Test than would the short CIT subjects was not sustained. The additional Chi-square analyses showed no significant differences between the long and short CIT subjects in median reaction times to the Picture Selection Test.

CHAPTER V

DISCUSSION

Levine, Glass, and Meltzoff (1957) and Levine, Spivack, and Wight (1959) consistently found relationships between reversing and M, with reversers having fewer M responses than were obtained by non-reversers. The current study did not provide conclusive evidence that the reversers had fewer M responses to the Rorschach cards than did the non-reversers.

Although one significant Chi-square was obtained that showed the reversers to have fewer M responses to the Rorschach cards, this result was based on only about half of the total number of cases. Since all other analyses revealed no differences between the two groups, conclusive support for the hypothesis was not provided.

The differences in results for reversing and M between the current study and earlier studies could have stemmed from a combination of several factors. These factors would include: 1. the effects of using college students in the current study as opposed to the use of psychiatric subjects in the earlier studies; 2. the effects of controlling the IQ

scores in this study in contrast to random selection for IQ scores in the other studies; and 3. the effects of using four Rorschach cards in this study in contrast to the use of all ten cards in the earlier studies.

In the earlier pertinent studies involving reversing and M production on the Rorschach (Levine, Glass, & Meltzoff, 1957; Levine, Spivack, & Wight, 1959), the subjects used were psychiatric patients, while in the current study the subjects were college students defined as "normal" subjects. Fager (1960) used a combination of psychiatric subjects and "hospitalized, non-psychiatric" subjects. However, the confusion arising from his results makes his study less valuable for discussion. Although the following discussion may also apply to Fager's psychiatric subjects, it is difficult to say what effects might have been caused by his "hospitalized, non-psychiatric" subjects. The complete lack of results of Fager's study suggests the introduction of some factors that were not present in either the earlier studies or the current study.

The hypothesized relationships between reversing and M production in response to Rorschach cards might not have shown up as strongly with the normal subjects used in this study as with the psychiatric subjects used in the earlier studies because psychiatric and normal subjects may differ in relation to inhibition and in relation to M production. That is, 1. the inhibition factor measured by reversing the

reverse N may be less extreme for normal subjects than for psychiatric subjects, and 2. there may be differences between psychiatric and normal subjects in ways of handling M and perceiving M in response to Rorschach cards.

It has been established that Rorschach experts have related few M responses to psychiatric disorders involving impulsivity (Beck, 1949; Beck, 1952; Klopfer, 1956). It seems likely that poor inhibitors with psychiatric disorders would be more extremely impulsive, and would be more extreme poor inhibitors than would college students who are similarly selected as poor inhibitors. In addition, a psychiatric population would be likely to contain more poor inhibitors than would a college population. Since poor inhibition is defined as an inadequate handling of one's impulses, it is reasonable to assume that psychiatric subjects who are poor inhibitors would be less adequate in handling impulses and in producing M than would normal subjects who are poor inhibitors. Since poor inhibition and few M appear to be related, the poorer the inhibition, the fewer M are likely to result. Therefore, the delineation between poor inhibitors and good inhibitors may be more distinct for psychiatric subjects than for normal subjects. Also, in the studies involving psychiatric subjects fewer M may have been obtained from the poor inhibitors, and more clear-cut differences may have resulted between poor and good inhibitors in number of M produced than would be obtained in a study involving normal subjects.

On the other hand, it might be that psychiatric subjects who are good inhibitors would be less good inhibitors than would normal subjects who are good inhibitors. It also might be that there are fewer good inhibitors among psychiatric subjects than among normal subjects, since good inhibitors are defined as subjects who handle their impulses well. If good inhibitors in psychiatric groups are less clearly good inhibitors than are good inhibitors in normal groups, they consequently would tend to produce less M than would normal subjects who are good inhibitors. Then, less M would be likely to be obtained for both good and poor inhibitors in psychiatric groups than for good and poor inhibitors in normal groups. The differences between good and poor inhibitors in number of M produced would, therefore, be as clear-cut for normal subjects as for psychiatric subjects. It would not appear that differences in intensity of the inhibition factor between psychiatric and normal populations would have caused more distinct differences between good and poor inhibitors of a psychiatric population than between good and poor inhibitors of a normal population.

Relationships between inhibition and M might also have been more distinct for the studies using psychiatric subjects than for the current study because of differences between psychiatric and normal subjects in the handling and perceiving of M. These differences would include: 1. The psychiatric subjects might have reacted more strongly to M

because of more extreme reactions resulting from emotional disturbance, while the normal subjects might have responded in the same ways only with less strength. 2. The psychiatric subjects might have responded differently in relation to M because of increased strivings stemming from adjustments to psychiatric illness. 3. The psychiatric subjects might have preceived M in different ways, so that M might have had different meanings for psychiatric subjects than for normal subjects. In addition, different meanings and perceptions of M could occur between different types of psychiatric disorders. Any combination of the above three factors could have caused more clear-cut results for psychiatric subjects than for normal subjects, and some effects of the third factor could also have caused results to be less clear-cut for the psychiatric subjects.

The differences in production of M between psychiatric and normal subjects which could result from differences in intensity of responses would stem from differences in degree or intensity between psychiatric and normal subjects of the same sorts of personality adjustments. Psychiatric subjects may have more extreme reactions to the same internal and external factors which may exist for normal subjects to a lesser degree. Psychiatric subjects would therefore have more clearly few or many M responses to Rorschach cards. The result would be more clear-cut differences between poor and

good inhibitors in M production for psychiatric subjects than for normal subjects.

The second factor that may provide an explanation for differences in M production between psychiatric and normal subjects is that there could be differences in quality or kind of responses of psychiatric subjects as a result of adjustments to becoming emotionally disturbed. The person who is losing emotional controls tends to attempt to compensate for the increasing losses. Therefore, an increased M production could result from increased strivings of the disturbed person to maintain controls. An increased M for psychiatric subjects in general could cause more data for analysis. However, the results of the earlier studies did not indicate the presence of more data (Levine, Glass, & Meltzoff, 1957; Levine, Spivack, & Wight, 1959). It could be that psychiatric poor inhibitors are more disturbed than are psychiatric good inhibitors. Psychiatric poor inhibitors, therefore, would have more M responses because of having comparatively greater needs for striving. In such a case, results involving M and reversing could be more clear-cut between psychiatric poor and good inhibitors than between normal poor and good inhibitors because of the comparatively greater striving of psychiatric poor inhibitors.

In regard to the third factor listed, differences in M production between psychiatric and normal subjects may be related to differences in quality or kind of response because

of actual differences in emotional-perceptual reactions between psychiatric subjects and normal subjects, and between subjects of various psychiatric disorders. Thus, M may have different perceptual meanings for psychiatric subjects than for normal subjects, and for subjects of different psychiatric disorders. Some psychiatric subjects might, therefore, produce an abundance of M and others might produce very few M, depending upon the type of psychiatric disorder. Differences between psychiatric and normal subjects in meanings of M could result in more distinct differences between psychiatric and normal poor and good inhibitors, could result in less distinct differences, or could balance out to show no statistical effects on differences between psychiatric poor and good inhibitors and normal poor and good inhibitors in M and reversing.

The effects of the three factors listed would be likely to occur in various combinations. For example, certain psychiatric subjects, such as incipient schizophrenics, who are striving particularly strongly to maintain intellective functioning, or hallucinating psychotics, whose perceptual worlds are not stable, may produce an over-abundance of M. Other psychiatric subjects may produce a sparcity of M, because they have given up striving, or for a myriad of other reasons relating to the degree and the nature of their emotional disorders.

Such differences in degree and quality of emotional and intellective reactions are necessarily intermixed and cannot be measured so that their separate effects might be determined. Differences in strength of reactions to the same internal and external stimuli, differences in adjustment to changes in emotional stability, and differences in perceptions and meanings of M between psychiatric subjects and normal subjects, or between subjects with different types of emotional disorders, may all be factors which could have varying degrees of effects upon M production in response to Rorschach cards. However, the more decisive results of the earlier studies may have been attributable to any or all of such factors, resulting in greater variations in number of M responses to the Rorschach cards.

It may also be that different relationships occurred between M and reversing in the earlier studies than in the current study because the current study involved controls for IQ scores, while the subjects of all of the related earlier studies (Fager, 1960; Levine, Glass & Meltzoff, 1957; Levine, Spivack, & Wight, 1959) were randomly selected for IQ scores. As it consistently turned out, reversers had lower IQ scores than did non-reversers when the subjects were randomly selected. Random selection should eventually result in a normal distribution of IQ scores, if the IQ scores are truly representative of the intelligence level of the population in question, or if the IQ test was standardized properly so that

whatever it measured represented a normal distribution of that factor within the population. Since normal distributions of IQ scores did not occur with random selections of reversers and non-reversers, but rather, reversers had lower IQ scores, it may be suspected that there is a relationship between personality factors involved and scoring on intelligence tests. It would appear that the reversers and non-reversers of the earlier studies might actually have been comparable in intelligence level, even though the reversers scored lower on the intelligence tests.

The differences in IQ scores between reversers and non-reversers that were obtained in the earlier studies are less meaningful because the results involving IQ level were contaminated by the use of the same measure for intelligence level that was used in selecting reversers. In addition, it is difficult to know how intelligence scores should be regarded for psychiatric subjects. It would appear that the results of the earlier studies were confused in regard to IQ scores because of the unpredictability of intelligence scores obtained for psychiatric subjects. Relationships between intelligence level and M are also uncertain for psychiatric subjects. The only studies which have not supported a positive relationship between intelligence level and number of M responses have involved schizophrenic adults and disturbed adolescents (Levine, Spivack, & Wight, 1959). Both types of subjects might have been present in the earlier studies.

In the current study, the reversers, although having comparable IQ scores to those of the non-reversers, might actually, then, have been higher in intelligence level. Even though the evidence for this idea was confused in the earlier studies, the consistency of the IQ score differences found between reversers and non-reversers in the earlier studies has presented strong evidence that the differences do exist. The idea that the reversers may actually have been a brighter group than the non-reversers in the current study was supported by the fact that it was not possible to obtain comparable IQ scores between the reversers and the non-reversers by random selection. The reverser group tended to have lower IQ scores than did the non-reversers, and it was necessary to begin selecting the reversers with higher IQ scores to make the reversers and the non-reversers normally distributed for IQ scores. The evidence was also made stronger by the fact that the reversers still tended to score lower than did the non-reversers even though the intelligence test used in the current study was not the same test used in selecting the reversers, even though the subjects in the current study were not psychiatric subjects, and even though the intelligence test used in this study was a different test than that used in the earlier studies.

If the reversers in the current study were actually a brighter group than the non-reversers, and since M is substantially known to be related to intelligence, the reversers in

this study may have had more M responses than would be expected, compared to the non-reversers, because they were brighter as a group than were the non-reversers. If the reversers produced more M because they were brighter than the non-reversers, the results of this study might have tended to be less strong in regard to few M responses and reversing. Thus, the possible greater brightness of the reversers than of the non-reversers might be an additional explanation of why the hypothesized relationships between M and reversing did not show up as strongly in the current study as in the earlier studies which did not involve controls for IQ scores.

Another possible reason why the results between M production and reversing were not as strong in this study as in previous studies is that four Rorschach cards were used in the current study while in the earlier studies the total ten Rorschach cards were used. The use of the fewer number of Rorschach cards would have been likely to result in fewer M responses per subject, even though the cards used in the current study were those which are considered most likely to elicit M responses (Meltzoff, Singer, & Korchin, 1953; Ranzoni, Grant, & Ives, 1950). If fewer total M responses per subject were obtained in this study than in previous studies, the smaller amount of data might have provided less stable results than were obtained in the earlier studies. The general support of the hypothesis, but to a non-conclusive degree, might have been attributable to less adequate data, in terms of the

number of M responses obtained per subject. However, it appears that there were not fewer M responses per subject in this study than in the earlier studies, since the median number of M responses of the reversers in this study and in the earlier studies was apparently at the same point, between less than two and two or more.

The cutting points which were discriminating in analyzing the number of M responses might be expected to have been lower for the current study if fewer M responses per subject were obtained in this study than were obtained in the earlier studies. The only significant Chi-square in the current study in relation to M was for the cutting point of between zero and three or more, while the disciminating cutting point for the earlier studies was between less than two and two or more (the median point for the reversers). Therefore, although the discriminating cutting point was different for this study than for the earlier studies, it was not necessarily lower for this study, as would be expected if fewer M responses had been obtained per subject.

It may be that the number of M responses obtained in this study and in earlier studies was comparable because fewer M responses were obtained by psychiatric subjects because of being more extreme inhibitors, because of differences in the ways that psychiatric subjects may have perceived and handled M on the Rorschach, or because the reversers in the current study obtained a greater number of M as a result of

being brighter than the reversers in the earlier studies. All of these factors, or a combination of them, might have balanced the effect of fewer Rorschach cards being used in the current study and therefore, possibly, fewer M responses being obtained per subject. It appears that the data in this study may be considered to have been comparable in amount and adequacy to the data of the earlier studies in terms of the number of M responses obtained and analyzed for each subject. The use of four cards, rather than ten, does not appear to have affected the results obtained in the current study.

The earlier studies investigated M in relation to reversing on the basis of a sensory-tonic theory of ego inhibition. A more simple explanation that is not contradictory to the results of this study or to previous related studies may be made in terms of emotional adjustment and the ability to handle one's feelings and impulses. That is, a poor handling of one's feelings and impulses is related to a poor emotional adjustment, which is related to a poor handling of interpersonal relationships, which is related to a poor handling of human percepts, and an especially poor handling of the more threatening situation of human percepts involving movement.

In regard to IQ scores, reversers, who handle impulses less well than do non-reversers, would handle impulses less well in all situations, especially those situations involving threat. It would follow that reversers would handle their impulses less well, and would perform less adequately in IQ

test performance, as well as in interpersonal situations and in relation to human percepts.

As far as actual degree of threat is concerned between subjects who do and do not handle impulses well, it is possible that good and poor inhibitors may be equally threatened by similar situations, but that poor inhibitors do not handle impulses as well and thus respond in deviant ways. That is, poor inhibitors might respond less adequately than do good inhibitors under conditions of equal threat. On the other hand, poor inhibitors might become additionally threatened by situations because they do not handle their impulses well. It is probable that the inability to handle impulses well, and a higher level of threat are integrally related. Thus, the inability to handle impulses well is likely to make situations more threatening, and the more threat felt will cause greater difficulty in the handling of impulses. The poor inhibitor is likely to be a person who feels greater threat in situations than is felt by the good inhibitor, and is also likely to be a person who handles the threat less well.

In the current study strong relationships were found between fewer H responses and reversing. The sensory-tonic theorists have not investigated relationships between reversing and H responses on the Rorschach because the primary concern has been with displacement of movement rather than with relationships which inhibition may have to emotional adjustment. However, H may be properly investigated within the

framework of the sensory-tonic theory if we consider inhibition as a measure of movement tendencies, and if we consider dealing with the human percept as a situation provided to measure the movement tendencies or handling of impulses. In terms of the "adjustment" theory, H is a meaningful area of investigation because it would be expected that poor inhibitors, who handle impulses less well than do good inhibitors, would also have more difficulty in dealing with interpersonal relationships, and in handling human percepts, than would good inhibitors.

There are a number of possible reasons why relationships between reversing and H were stronger in the hypothesized direction than were relationships between reversing and M. For example, H may have shown stronger relationships than M with reversing because: 1. H is not contaminated, as is M, by intelligence levels; and because 2. H is not as emotionally loaded and threatening as is M.

If the reversers in the current study were brighter than the non-reversers, the relationships between few H and reversing may have been strong because the reversers dealt less well with human content, as was hypothesized, and the results were not contaminated by the intelligence factor. That is, the results were not obscured, as they may have been in relation to M, because H is not considered related to intelligence, as is M. In terms of the adjustment theory, the H factor may have held up because the reversers did not handle

impulses or interpersonal relationships as well as did the non-reversers, and thus they would have had fewer H responses. Yet, since the production of H apparently does not involve the imaginativeness or intelligence level that appears necessary for the production of M, the H response may be a better measure of the factors involved in inhibition because it does not become as contaminated with intelligence as does M.

Also, in terms of the adjustment theory, the handling of human percepts is not considered as difficult and threatening as is the handling of humans in movement. Therefore, H, being less threatening emotionally, may be too subtle for strong variations to occur with psychiatric subjects. The more subtle H factor might show wider variations with normal subjects, who might be more perceptive of the subtle, and might find the subtle more meaningful. Also, M variations, being representative of stronger feelings, might be representative of the feeling strength of psychiatric subjects, and more appropriate of their strength of response. Thus, if the psychiatric subject has a choice of dealing with H or M, M might be the more appropriate response to deal with, or to deny. If this is the case, then H would automatically be cut down in number because the response was made in terms of M instead. A reverse concept might be that psychiatric subjects, being hypersensitive because of their illness, might be more reactive to the more subtle concepts, and might therefore respond more with H. If this is so, the studies involving psychiatric

subjects might do well to incorporate the use of H, to determine if the inhibition factor, uncontaminated by intelligence, as it would be with M, might have, even more strongly with psychiatric subjects, the hypothesized relationships between inhibition and the handling of human percepts.

Thus, in the current study with normal subjects, H may have shown stronger results than M, both because H is not contaminated by the intelligence factor, and because H, being more subtle, or less emotionally loaded, is more appropriate for response than M. The need to produce M would, therefore, not be as strong in the normal population. If the subjects in this study responded predominantly to H, then automatically there would be less response to M.

It appears that, for some reasons, H showed stronger relationships in the hypothesized direction with measures of inhibition than did M. This seems particularly true because in this study the H factor had the strongest relationships, the H plus M factor was next strongest, and the M factor had the least strong relationships with reversing.

The standard deviation of the reverser group was not larger than the standard deviation of the non-reverser group for reaction times to the Rorschach cards, and therefore, the reversers were not more variable in reaction times than were the non-reversers. It was hypothesized that the reversers would have more difficulty in handling impulses and therefore would have extremely short or very delayed reaction times as

compared to the reaction times of the non-reverser. Although the reaction times of one group were not normally distributed and no F test could be made, the standard deviations of the two groups were so similar that it was obvious there was essentially no difference between the two groups in variability of reaction times. An additional Chi-square analysis showed that the reversers were slower in reaction times than were the non-reversers, and it might be expected that the reversers, who handle impulses less well, would tend to be slower than the non-reversers in reacting to the Rorschach cards.

Since the earlier studies did not report results of reaction times to the Rorschach cards, no comparisons can be made with previous findings. Although reaction times to the Rorschach cards have been considered related to ability to handle impulses, it is highly probable that the relationship is not direct, and that there is an inverse relationship between reaction time variability and quality of responses. The less adequate results in relation to M that were found in this study than were found in previous studies, might be given an additional explanation in terms of the reaction time findings of this study.

Since the poor inhibitors (reversers) took more time to respond than did the good inhibitors (non-reversers), it is possible that taking more time allowed the poor inhibitors to produce more adequate responses and to give more M responses. Relationships have already been reported between

length of response times and number of M responses. It is possible that psychiatric subjects would not be able to take or profit from additional response times. The psychiatric subjects in earlier studies may not have taken more time, and if they did, they may not have been able to use the time to produce more adequate responses. If the normal subjects of this study were more able than psychiatric subjects to take and to make adequate use of longer reaction times, then it would be expected that the large differences in number of M found in the earlier studies might not have been allowed to occur in this study.

It might be supposed that if the poor inhibitors had responded in the same length of time as did the good inhibitors in this study, the poor inhibitors would probably have had less M. Therefore, in a normal group, poor inhibitors might take more time and consequently have more adequate responses. In a psychiatric group, poor inhibitors probably either would not be able to take more time, or if they did take more time, would not be able to make good use of the time in producing more adequate responses. In the first instance, the psychiatric poor inhibitors would respond impulsively or with the same amount of time as would the good inhibitors. They would produce a larger number of less adequate responses than would the good inhibitors because they had not allowed themselves sufficient time to mobilize feelings, when actually they would have needed more time than

would have been required for equal performance from the good inhibitors. Also, if psychiatric poor inhibitors took a greater amount of time, they might be unable to take advantage of the time in producing more adequate responses, because of the less adequate handling of impulses of psychiatric poor inhibitors than of normal poor inhibitors. It is possible that Levine, Glass, and Meltzoff (1957); Levine, Spivack, and Wight (1959); and Fager (1960) might not have had the radical time differences between reversers and non-reversers that were found in this study, because the subjects in their studies were, or included, psychiatric patients.

Since the reversers in this study did have less H and less H plus M than did the non-reversers, they were apparently not handling impulses in regard to human percepts as well as were the non-reversers. Yet, the reversers were not responding impulsively, with extremely short reaction times. It appears that they were attempting to produce more adequate responses and thus were taking more time. They apparently had sufficient controls not to respond impulsively in this situation. Even though the reversers were originally selected on the assumption of poor handling of impulses and possible impulsive reactions, we cannot say for certain that reversing the reverse N was a quick response, but just that the response was probably an inadequate one. There might be a similarity between reversing the reverse N and difficulties in the handling of human percepts, in that both performances might

involve more time than usual, and still involve less adequate responses. It appears that, even with taking extra time, the reversers in this study could not produce as adequate responses as could the non-reversers in relation to human percepts on the Rorschach.

Since the reversers and the non-reversers in this study had essentially the same standard deviations for reaction times to the Rorschach cards, and the reversers had longer reaction times, it appears that the normal poor inhibitors had sufficient controls that they did not need to respond impulsively. The lengths of time taken by the reversers on the reverse N task could also have been the same or greater than the lengths of time taken by the non-reversers, since response adequacy rather than response time was involved in the selection of the reversers. The longer reaction times to the Rorschach cards of the reversers may have permitted the reversers to have more adequate responses and more M responses. However, the longer reaction times of the reversers did not seem to have an effect on their handling of H, because they still had fewer H responses than did the non-reversers. The fact that psychiatric subjects apparently had less adequate responses, and less M responses, could mean that they took less time and needed to respond impulsively, or that they could not utilize time taken, if they took extra time. The fact that the normal reversers still had difficulty with H, in spite of longer reaction times, may mean that H is a more

meaningful area of response, being more subtle and more appropriate to normal subjects, or could mean that the H factor showed up more strongly because of not being contaminated by the intelligence factor.

Reaction times for first responses to the Rorschach cards have been considered a meaningful measure of handling of impulses (Beck, 1949; Klopfer, 1956), and longer reaction times for first responses to Rorschach cards have been related to a larger number of M responses (Biere & Blacker, 1956; Rapaport, Gill, & Schafer, 1946, p. 213; Shipola & Taylor, 1953). However, a more direct measure of handling of impulses in relation to human content might be a measure of reaction times for human content responses. Thus, studies of lengths of time from initial presentation of each Rorschach card to the production of the first H or M response might show more clear-cut differences between reversers and non-reversers than would studies of reaction times for first response to each Rorschach card.

Although Levine, Glass, and Meltzoff (1957) found differences between reversers and non-reversers in relation to CIT, with reversers having longer CITs, such differences were not found in this study. In this study an almost equal number of reversers were long CIT subjects and short CIT subjects. There are a number of possible explanations regarding the lack of results for CIT and reversing in this study:

1. The CIT task and the reversing task, or both, may not be

measures of inhibition. 2. The two tasks may be measures of different aspects or levels of inhibition. 3. If the two tasks are actually measures of the same aspect and level of inhibition, the differences in results between this study and the earlier study could stem from differences in brightness of subjects, differences in intensity of responses between psychiatric and normal subjects, and differences in the sensitivity of the CIT and reversing tasks as such differences in sensitivity may be related to differences in subjects of the two studies. 4. Some additional, unknown variable may have been present and effective in this study and either not present or not effective in the earlier study.

It is possible that the CIT task or the reversing task, or both, are not measures of inhibition. However, in view of relationships that have been found in earlier studies between CIT and inhibition measures (Levine, Glass, & Meltzoff, 1957; Levine & Meltzoff, 1956; Meltzoff & Levine, 1954), and between reversing and inhibition measures (Levine, Glass, & Metlzoff, 1957; Levine, Spivack, & Wight, 1959), and in view of the relationships which have been found in this study in which both CIT and reversing appear to be related to some of the same measures, it seems likely that both the CIT and reversing tasks are measures of inhibition.

It is possible that the CIT and reversing tasks measure two different aspects or levels of inhibition, with CIT measuring one aspect or level, and reversing measuring another

aspect or level of inhibition. Thus, even though CIT and reversing seem to be related to inhibition, they may not be related to each other. Previous to this study, relationships between CIT and reversing had not been thoroughly tested. It should be observed that Levine, Glass, and Meltzoff (1957) used a small group of subjects (n = 27) for their analysis of CIT and reversing, and the subjects were not the same subjects whose responses were analyzed in relation to M on the Rorschach. Because of these shortcomings, the results of their study involving CIT and reversing carry less significance. The only other reported studies involving CIT as a measure of inhibition were by Meltzoff and Levine (1954), and Levine and Meltzoff (1956). The first study reported relationships between CIT and ability to inhibit motor activity with college students, and the second study involved relationships between CIT and M on the Rorschach with college students. Therefore, relationships between CIT and reversing have been assumed, in that both have been considered measures of inhibition, but the two supposed measures of the same aspect or level of inhibition have never been adequately studied in relation to each other. It appears likely that CIT and reversing may measure two different aspects or levels of inhibition, and that the two inhibition tasks may be related, but not in a direct, exact way.

If the CIT and reversing tasks measure two different levels of inhibition, it is possible that the different levels

being measured were a result of differences in the requirements of the two tasks. That is, the CIT task probably involves more awareness on the subject's part as to what is being required of him than would be the case with the reversing task. In the CIT task, the subject is actually requested to inhibit, whereas in the reversing task, the assumption is that the subject, if he is a poor inhibitor, will respond one way without being given instructions in regard to inhibition, and if he is a good inhibitor, will respond another way. It is not known, but the reversers (or some reversers) may reverse the reverse N without being aware of having done so. The two different levels of inhibition, then, would be related to levels of awareness of the requirements of inhibition tasks.

Because of these differences in requirements of the tasks, the subjects selected as poor and good inhibitors may be very different subjects, with different kinds of defenses, and yet the poor inhibitors and good inhibitors may be accurately termed as such whether selected by the CIT task or the reversing task. It should be noted, however, that the poor inhibitors selected by one task are in some certain ways different types of poor inhibitors than are the poor inhibitors selected by the other task. It seems probable that such factors as level of awareness may cause the CIT task and the reversing task to be measuring different aspects or levels of inhibition.

Levine, Glass, and Meltzoff (1957) appear to assume that the CIT and reversing measures are directly comparable. However, if different aspects or levels are being measured, and if, for example, different levels of awareness are a pertinent factor, then the differences in results between this study and Levine, Glass, and Meltzoff's (1957) study regarding relationships found between CIT and reversing could be explained by the fact that psychiatric subjects may have been more or less aware than were the normal subjects in this study of the requirements of the CIT task. Subjects who are more aware may be more or less cooperative in reactions to the task, so it is difficult to predict the effects of awareness. However, the psychiatric subjects may have been more or less sensitive and thus more or less aware, and certainly could have responded differently than the normal subjects because of their illness.

Assuming that Levine, Glass, and Meltzoff's (1957) findings were adequate, and that there is a direct kind of relationship between CIT and reversing, the strong differences between reversers and non-reversers in relation to CIT in their study, in contrast to the lack of differences found in this study may have occurred because of: 1. differences in brightness of subjects; 2. differences in intensity of responses between psychiatric and normal subjects; 3. differences in the sensitivity of the measures of the two inhibition tasks as this relates to differences in the subjects of

the two studies; and 4. the interference of some additional variable in the current study.

The relationships found by Levine, Glass, and Meltzoff (1957) between reversing and CIT and the lack of any such findings in this study could be explained on the basis of differences in brightness between the reversers and the non-reversers of the two studies. If the reversers in this study were brighter than the non-reversers, they would have been likely to respond more quickly on the cognitive inhibition test than would the non-reversers, because of their brightness. Yet, it was hypothesized that the reversers would respond more slowly than would the non-reversers, because of being poor inhibitors. If the reversers in this study were brighter than the non-reversers, and had shorter CITs because of their brightness, the differences in CITs which were expected on the basis of good and poor inhibition would have tended to be made smaller. If the reversers and non-reversers of Levine, Glass, and Meltzoff's study were equal in intelligence level, the two groups would have been more likely to have differences in CITs, with the reversers having longer CITs. Such differences in CITs between the reversers and the non-reversers in this study would have tended to be less if the reversers were brighter than the non-reversers. If the non-reversers in Levine, Glass, and Meltzoff's study were brighter than the reversers, as was indicated by the IQ score differences found, the differences in CITs between the two groups would

have been likely to be made even stronger, since the non-reversers would have been tending to respond with shorter CITs, both on the basis of being good inhibitors and on the basis of brightness.

If the reversers in the current study were brighter than the reversers in Levine, Glass, and Meltzoff's (1957) study, they would have tended to have shorter CITs because of being more bright. However, both the reversers and the non-reversers in the current study had shorter mean CITs than did the reversers and the non-reversers in the earlier study. Since there were differences in reaction times between the subjects of the two studies, it is possible that all of the subjects in the current study may have been brighter than the subjects in the earlier study, and that the differences in mean CITs between the two studies could have been accounted for in terms of brightness. Since different intelligence tests were used in the two studies, definite comparisons between IQ scores cannot be made. It is possible that the college students in this study were brighter than the psychiatric subjects of the earlier study. However, results of both intelligence tests seemed to indicate that the mean score of the subjects of each study was just slightly above average. It appears that the differences in mean CITs of the subjects of the two studies were not related to total differences in brightness between the subjects of the two studies.

It is likely that differences in brightness were in the direction of the reversers in this study being brighter than the non-reversers. Since the additional brightness could have caused the reversers to have shorter CITs, the relationships between reversing and CIT which may otherwise have been in the hypothesized direction could have been nullified.

It is possible that the relationships between CIT and reversing that were found by Levine, Glass, and Meltzoff (1957) did not hold true for this study because of differences in intensity and variability of responses between psychiatric subjects and normal subjects. Less variability and intensity of responses may occur in relation to CIT and reversing for normal subjects than for psychiatric subjects. Psychiatric subjects could perceive stronger emotional loadings in the stimulus words of the cognitive inhibition test, and might handle impulses less well than would normal subjects.

The more extreme reactions could occur for both reversers and non-reverser psychiatric subjects, so that there would not be greater CIT differences between the two groups. The more extreme reactions could result in greater variability in response and create more distinct inhibition time differences between psychiatric reversers and non-reversers. Since Levine, Glass, and Meltzoff's subjects had longer mean CITs than did the subjects of this study, and since their reversers and non-reversers had distinct differences in CIT, it

appears that the cognitive inhibition test may have had greater emotional impact for the psychiatric subjects than it did for the normal subjects, so that the psychiatric subjects took longer to respond. Also, a greater emotional impact of the cognitive inhibition test for the psychiatric subjects may have resulted in more extreme responses and greater differences in CIT between the psychiatric reversers and non-reversers than between the normal reversers and non-reversers.

Since the psychiatric subjects in Levine, Glass, and Meltzoff's (1957) study did have longer mean CITs than did the subjects in the current study, the probability of differences occurring between CIT and reversing was automatically greater for the earlier study than for the current study. The longer CITs offered a larger range within which variabilities in CIT might occur.

It appears likely that the longer mean CITs of the subjects of Levine, Glass, and Meltzoff's (1957) study were not found in this study because the earlier study involved psychiatric subjects, who took longer to respond than did the normal subjects of this study, perhaps because of more intense reactions to the cognitive inhibition test. It also seems likely that the relationships found between CIT and reversing in the earlier study might have occurred or have been made stronger because more variable reactions of the psychiatric subjects than of the normal subjects caused greater differences between the psychiatric reversers and

non-reversers than between the normal reversers and non-reversers.

It is possible that Levine, Glass, and Meltzoff (1957) found relationships between CIT and reversing, and that such relationships were not found in this study because measures of the CIT task are less effective with normal subjects than with psychiatric subjects. Variabilities in response may be more easily revealed with CIT measures than with reverse N measures. CIT measures involve sensitivity to gradations of response, while reverse N measures separate subjects into two groups on an all or none basis. Therefore, the cognitive inhibition test may be more efficient in separating good and poor inhibitors on the basis of the more extreme variations of psychiatric subjects' responses, than in separating normal good and poor inhibitors with less extreme variations in response.

An equal number of reversers and non-reversers fell into the long and short CIT groups in the current study. In spite of this 50-50 break, both measures could still be of the same factor of inhibition, with the extreme subjects in the normal group of this study falling in the hypothesized direction, and with the medial reversers and non-reversers falling at random in the CIT groups. The cognitive inhibition task may be a more sensitive measure than the reversing task because it measures gradations in responses and the reversing task measures in an all or none fashion. The

difference in the two measures might make one more effective in separating poor and good inhibitors among psychiatric subjects, than among normal subjects. In the current study, the CIT measure may not be as effective with normal subjects because it measures gradations that for normal subjects are too small to be meaningful.

Thus, it would appear that the CIT task measures the same thing as the reversing task, but less efficiently, at least for normal subjects, possibly because it is too sensitive, and is likely to place less strong responses of normal subjects into a category, when, for normal subjects, differences in response may be so small that they do not provide an adequate basis for the classification of subjects into groups.

The more extreme reactions of the psychiatric subjects could have resulted in more distinct differences between subjects who were poor and good inhibitors. The CIT measure may have adequately separated extreme poor and good inhibitors in the normal group. The less extreme responses of those normal subjects who might not have been strong poor or good inhibitors might have permitted these subjects to have been placed in the two groups on a random basis, or possibly even to have been placed in the opposite category from that hypothesized. Such placement of these normal subjects might have further nullified the results of this study in relation to reversing and CIT.

A fourth reason for the differences in results in relation to CIT and reversing between the two studies might be that some additional variable influenced the results of the CIT task in the current study. An additional unknown variable might have been present in this study and not present, or at least not effective, in the earlier study. In such a case, both tasks may be measures of inhibition, but the influence of some additional variable caused the two groups selected on the basis of reversing not to be parallel in relation to CIT in this study.

In view of findings of other studies and of this study, it appears likely that CIT and reversing are measures of inhibition, although it is possible that they measure two different aspects or levels of inhibition. If they are both measures of the same aspect or level of inhibition, then the difference in results between this study and that of Levine, Glass, and Meltzoff (1957) appear most likely to be related to the probable greater brightness of the reversers than of the non-reversers in this study, which caused the reversers, who were hypothesized to have longer CITs, to have shorter CITs on the basis of being brighter; differences in intensity of reactions of psychiatric subjects and normal subjects and greater variations in response for psychiatric subjects than for normal subjects; differences in the type of measurements obtained for the CIT task and the reversing task, and so different data obtained, particularly because the subjects were

psychiatric patients in one study and normal subjects in the other study; and the interference of an additional variable which nullified the results of the current study.

The longer CIT subjects in this study did not have fewer H or M responses to the Rorschach cards. In light of these results it would appear that the CIT task is not a measure of inhibition, or, at least, is not a measure of inhibition which shows relationships with the handling of human content on the Rorschach. However, the results of a previous study (Levine & Meltzoff, 1956) and other results in this study suggest that the CIT task is a measure of inhibition which sometimes shows relationships with the handling of human content.

The lack of results in this study in relation to CIT and M was contradictory to results reported by Levine and Meltzoff (1956) which involved relationships between CIT and M for 93 college students. Since it seems likely that CIT is a measure of inhibition, it may be that relationships were found for CIT and M by Levine and Meltzoff (1956) but were not found in this study because: 1. there were important differences between the two studies in experimental design; 2. there were differences in subjects between the two studies; 3. the CIT task provides such insensitive measures that results could be easily influenced one way or another; or 4. the CIT task, itself, involves a level of response that easily permits variations or unpredictability in subjects' responses.

The many differences in design of the two studies which could cause different results cannot be analyzed adequately. It might be noted that Levine and Meltzoff (1956) administered only two Rorschach cards, while the current study involved the use of four cards. The results of the two studies could have differed because of the different number of Rorschach cards used. However, it would be expected that the fewer number of cards, and the possible less adequate data, would produce non-significant results, rather than that this would be the study of the two studies to have significant results.

The subjects in Levine and Meltzoff's (1956) study were college students, as were the subjects in the current study, but there may have been differences between the subjects of the two studies that cannot be stated with assurance, such as differences in brightness. The brightness level of the subjects of the two studies cannot be speculated upon, since no intelligence test was used in analyzing the brightness of the subjects in Levine and Meltzoff's (1956) study.

If the CIT task provides relatively insensitive measures, the subjects selected as long or short CIT subjects might have been categorized on an inadequate basis. That is, if the gradations which are measured by the CIT task are too fine to distinguish between subjects adequately, and particularly to distinguish between normal subjects with stability, then the results of studies involving normal subjects will

not be stable upon repetition. In such a case, the subjects in the current study may not have been divided as adequately into long and short CIT groups as were the subjects of Levine and Meltzoff's (1956) study.

The CIT task appears to measure some aspect or level of inhibition which involves some awareness on the part of the subject as to what is being required of him. Such a level of awareness apparently does not exist when a subject is required to respond to the Rorschach test. Therefore, the CIT task may not always be measuring the same aspect or level of inhibition that is involved in responding to the Rorschach test. The aspect or level of inhibition by which the CIT task divides subjects may not be pertinent to H and M responses on the Rorschach but may be pertinent to the handling of human content in other test situations which involve more awareness. Inhibition measures which involve other aspects or levels of inhibition, probably which involve less awareness of the requirements of the task, would be likely to be more pertinent to H and M responses on the Rorschach than to the handling of human content in test situations which involve more awareness. If the subjects in Levine and Meltzoff's (1956) study were actually less bright than the subjects in this study, or if, for other reasons, they had less awareness of what was involved in the CIT task, they may have been more adequately divided into long and short CIT subjects who would respond to H and M on the Rorschach in such a way that relationships

would be found between CIT and reversing. It might be that these subjects would not show relationships between the CIT measure of inhibition and the handling of human content in other test situations where more awareness was involved, because of the different aspect or level of inhibition that would be involved in the other test situations.

It appears that the CIT task is a measure of inhibition which may show relationships to H and M on the Rorschach, though possibly not in a stable or predictable manner. It is highly possible that relationships between the CIT measure of inhibition and the handling of human content on the Rorschach are not strong because different levels of awareness are involved in the two situations, and a different level or kind of inhibition, or handling of impulses, is required.

The standard deviations and means of the reaction times of the long and short CIT subjects were very similar, and although an F test could not be done, it was obvious that the long CIT subjects did not have more variable reaction times than did the short CIT subjects in response to the Rorschach cards. It may be that reaction times to the Rorschach cards are too directly related to quality of responses to be meaningful measures in themselves.

The long CIT subjects tended to have longer reaction times than did the short CIT subjects. These reaction time results were in the same direction as those of the reversers and the non-reversers. That is, in both cases, the poor

inhibitors tended to have longer reaction times. The result was not significant, and was only a trend for the CIT subjects. Therefore, it is probable that the long CIT subjects did not change results from being significant in the hypothesized direction because they had longer reaction times, and therefore had more time to mobilize and produce more adequate responses and more M responses.

Although an analysis of reaction times for first responses to Rorschach cards may be considered an adequate measure of handling of impulses, an additional and perhaps more meaningful reaction time measure might be an analysis of reaction times for human content responses. Measures of lengths of time from initial presentation of each Rorschach card to the production of the first H or M responses might be considered a more direct approach to the analysis of handling of impulses in relation to human content than would be obtained by reaction times for first responses, without regard for the content of the responses.

A comparison of the results of hypothesis 1 and hypothesis 2, reveals that no support was found for H or M responses to the Rorschach cards with the CIT subjects, that inadequate support was found for M with the reversers and the non-reversers, and that strong support was found for H with the reversers and the non-reversers. Over-all, the relationships between the handling of human content on the Rorschach cards and inhibition measures were not supported for the CIT

subjects, and were supported somewhat for the reversers and the non-reversers. The results would suggest that CIT is not a measure of inhibition. However, other results in this study, and the results of earlier studies (Levine, Glass, & Meltzoff, 1957; Levine & Meltzoff, 1956; Meltzoff & Levine, 1954) have indicated that the CIT task probably is a measure of inhibition. There has seemed to be stronger evidence in this and other studies (Levine, Glass, & Meltzoff, 1957; Levine, Spivack, & Wight, 1959) to suggest that the reversing task is also a measure of inhibition. Therefore, the discrepancies found in this study between the results of analyses of the CIT and reversing measures may be explained in terms of both tasks being measures of inhibition. Assuming that both inhibition tasks are actually measures of inhibition, the differences in results for the two tasks found in this study may have occurred because of: 1. differences in the types of measures obtained from the two tasks; 2. differences in kinds of responses required from the subjects in the two tasks; and 3. differences in the nature of the subjects produced by the different groupings obtained from the two tasks.

The scores resulting from performance on the CIT task are in gradations, while the results of performance on the reversing task immediately categorize the subjects into one group or the other. The finer gradations of the CIT scores might seem to be more accurate because many degrees of inhibition might be defined. However, if the many gradations are

too fine, so that they are not indicative of the subjects' reactions, the seeming greater accuracy of measure might actually tend to create confusion. As a result, particularly for normal subjects, the more extreme good and poor inhibitors might be properly classified by such finite measures, but the less extreme subjects of each group might tend to be classified in one group or the other through variations of response too small to justify the classification. In such a case, the CIT task may be a measure of inhibition, but may be less accurate in classifying subjects than is the reversing task.

The CIT task may not be as strong a measure as is the reversing task, or may not be as strong a measure in relation to the relatively unstructured Rorschach situation, because of differences in response requirements of the two inhibition tasks. The CIT task may be considered a relatively structured situation, in which the subject is given some awareness that he is being required to inhibit a response and produce another one in its place.

The CIT task may not be as strong a measure of inhibition as is the reversing task because the subject is directed to inhibit. When the subject thus has a better awareness of what is required of him, it may be that he has been allowed a choice of whether he will or won't respond quickly, as he was directed to do. Also, a better awareness of the requirements of the task might provide a better opportunity to mobilize and produce quicker responses. If subjects are more aware of

the function of the CIT task than of the function of the reversing task, differences in response could make the CIT task a less effective measure of inhibition. If different degrees of awareness of the requirements of the CIT task exist among CIT subjects, differences in reaction times could occur as a function of degree of awareness, rather than as a function of degree of ability to inhibit. Consequently, less clear-cut differences might result between the long and short CIT groups than between the reversers and the non-reversers because elements inherent in the requirements of the CIT task make it a less strong measure of inhibition.

It may be that the CIT task is not as strong a measure of inhibition in relation to the Rorschach situation as is the reversing task. Requirements for response in the apparently more structured CIT task may be quite different from the requirements for response in the relatively unstructured Rorschach situation. It may be that different aspects or kinds of inhibition are being measured in the apparently more and less structured situations. It may be that different levels of the same kind of inhibition are being tapped in the two situations which seem to involve different levels of awareness. The kind or level of inhibition operative in the apparently less structured reversing task might be operative in less structured situations, for with the reversing task, the subject is not likely to be aware of the process of inhibition or of what is being measured by his performance on the

task. Conversely, the kind or level of inhibition measured by the apparently more structured CIT task might be more operative in more structured situations, including more structured life situations.

Discrepancies may have occurred between the CIT and reversing measures in relationships with H and M on the Rorschach cards in this study because of differences in subjects resulting from different groupings obtained through the two measures of inhibition. It appears possible that the reverser group was brighter than the non-reverser group in this study. Since the CIT subjects were not controlled for IQ score, it is difficult to speculate how the intelligence factor might have influenced the CIT groups. The CIT groups were comparable in intelligence level as measured by IQ scores, since the two groups of CIT subjects were normally distributed and homogeneous in variance for IQ scores. It may be considered that if the long CIT subjects were poor inhibitors, and if they consequently tended to function lower on IQ tests, then the long CIT group may have been brighter, in actuality, than the short CIT group, just as the reversers were possibly brighter than the non-reversers even though the two groups were comparable in IQ scores. If, because of the nature of the CIT task, the long CIT subjects were actually brighter than the reversers, then they may have tended to produce more M, though probably not more H, because of the accepted relationships between M and intelligence. Less strong results between M and

inhibition would have been likely to result if the long CIT subjects were actually brighter than the reversers. It would seem likely that the more bright subjects would have tended to be more aware of the requirements of the CIT task, and would thus have tended to perform as better inhibitors. Thus it would seem most likely that, if any differences in brightness occurred, it would have been in the direction of the good inhibitors, or short CIT subjects, being brighter.

In spite of the fact that 50 per cent of the poor inhibitors in regard to one inhibition task, were good inhibitors in regard to the other inhibition task, making the groups seem quite incomparable and unrelated, the extreme similarity of the results of tests of normality of distribution and homogeneity of variance between the groups of the two inhibition tasks indicates that the two groups were probably, for all practical purposes, comparable in relation to intelligence levels. However, since the subjects were redistributed so thoroughly by the two inhibition tasks, the possibility that differences in results between the two sets of groups may have been attributable to differences in the nature of the subjects cannot be ignored.

The less positive and non-significant results of the CIT subjects and of the reversers and non-reversers in relation to the handling of human content in this study, in contrast to the results of some earlier related studies (Levine, Glass, & Meltzoff, 1957; Levine & Meltzoff, 1956; Levine,

Spivack, & Wight, 1959), may also have been attributable to the use of normal subjects in this study. If the reversing task and the CIT task are actually related measures of inhibition, then it may be that the results for both measures tend to be less positive with normal subjects. The measures derived from the inhibition tasks may not be sufficiently strong to show results in most cases unless the degrees of inhibition are more widely contrasted, as they might be with psychiatric subjects.

If the CIT task is not as strong a measure of inhibition as is the reversing task, the possible factors operating to make the reversing measures less effective may have had sufficient effect to make the results for the CIT measures non-significant. The possible effects of brighter poor inhibitors (reversers and long CIT subjects) and of the use of normal subjects may have resulted in less significant results for the reversers and non-reversers, and in non-significant results for the long and short CIT subjects, because the effects were more devastating for the weaker measure of inhibition.

The hypothesis that the reversers would draw fewer human figures and human figures in activity on the Kinget test was not supported. Results of analyses of human figures and of human figures plus human figures in activity tended to be in the opposite direction from that hypothesized. These two sets of analyses were essentially the same because of the

small number of human activity responses produced. There were so few drawings of humans in activity that this part of the hypothesis could not be tested.

One reason for the opposite results of the analyses of the reversers and the non-reversers for number of human figures and for number of human figures plus human figures in activity might be that the low number of total responses made the analyses unstable. Fifteen of the 40 reversers and 14 of the 40 non-reversers did not produce any drawings of humans. The small number of human content responses allowed analyses only in terms of one cutting point; between one or less and two or more drawings. More reversers than non-reversers had two or more drawings of humans. If more data had allowed more cutting points it might be that the results would have been in a different direction.

Results of the analyses of the reversers and the non-reversers were not significant for order of human figures or for order of human figures plus human figures in activity drawn on the Kinget test. It appears that the few human figures drawn on the Kinget test could also be the reason for the lack of results in the hypothesized direction for order of human figures. There were too few drawings of human figures in activity to make differences between the analyses of order of human figures and order of human figures plus order of human figures in activity. There were too few human

figures in activity drawn to make analyses of order of human figures in activity possible.

The hypothesis involving number of stick figures drawn by the reversers and the non-reversers was also given no support because of the few stick figures drawn.

It appears that the scarcity of human drawings produced by the reversers and the non-reversers made all analyses involving the performance of the reversers and the non-reversers on the Kinget test uncertain or impossible to complete. Therefore, it appears impossible to make definitive statements about relationships between inhibition, as represented by the reversers and the non-reversers, and order or number of human content drawings on the Kinget test.

Kinget (1952) apparently found sufficient human drawings on her test to suggest that variations in number of human figures could be analyzed statistically. Perhaps the Kinget test is not discriminating for human drawings with a normal group of subjects. Perhaps the Kinget test would elicit more variability among psychiatric subjects. It might be that the Kinget test is not discriminating for human content with the particular age level and sex of the subjects in this study. So little as yet is known about the Kinget test that speculations concerning the results of this study, as regards the Kinget test, are limited.

If it is considered that the opposite results found for number of drawings of human content and the non-significant

results found for order of drawings of human content were based on sufficiently stable data to be meaningful, then it might be considered that human content on the Kinget test is not related to the reversing measure of inhibition. Since it appears probable that the reversing measure is related to some aspect or level of inhibition, it would be logical to assume that human drawings on the Kinget test are either not related to measures of inhibition or are not related to the same aspect or level of inhibition as is measured by the reversing task.

It is possible that the Kinget test is not an adequate measure for relationships between inhibition and the handling of human content because: 1. the subject experiences too little pressure while taking the Kinget test to allow an exposure of differences in the handling of impulses; 2. the motoric nature of performance on the Kinget test allows a sufficient release of tensions so that differences in the handling of impulses are not in evidence; or 3. the levels of awareness which may be involved in performance on the Kinget test may confuse results in relation to inhibition and the handling of human content.

The subject is given the Kinget test and is allowed to work in his own way, at his own speed, without the presence of another individual. The relative relaxedness of this situation could allow the subject the freedom to deal with his feelings sufficiently so that there would be no essential

differences between good and poor inhibitors in their response to this task.

It is possible that the release of tensions provided by the motoric response involved in the Kinget test might have allowed some of the tensions of the poor inhibitors to disperse. As a result, the poor inhibitors might have performed in a manner comparable to that of the good inhibitors.

The possible more structured situation of the Kinget test, as opposed to the Rorschach test, might have provided the subjects with more awareness of their impulses, and consequently could have allowed the poor inhibitors to handle impulses as well or better than would the good inhibitors. The fact that the subjects could observe their drawings, could have allowed more awareness of their impulses, and could have created more guardedness on the part of the poor inhibitors than on the part of the good inhibitors for not producing evidence of their impulses. The good inhibitors could have had more awareness of their impulses and possibly could have controlled impulses to produce human drawings. The poor inhibitors could have been unaware and, without control, they might have avoided human drawings or produced human drawings as their impulses dictated.

A confusion is evident in relation to drawing tasks, since, admittedly, the person who has difficulties in handling impulses, and difficulties in interpersonal relationships, may well be unable to draw human figures, and yet the person

who does not handle impulses well and who has little awareness of his own feelings may very often express his feelings in drawings. Therefore, awareness of feelings may be a factor which would create confusion in the analyses of tests which involve drawing.

The handling of human content on the Kinget test may not be related to the same aspect or level of inhibition as that measured by the reversing task. The reversing task apparently involves little awareness of impulses. The probable greater awareness involved in performance on the Kinget test could make the measures derived from the two tests too unrelated to be meaningfully compared. It seems most likely that the possible greater awareness involved in performance on the Kinget test is linked with the motoric and visual features of the test in such a way that it is unapplicable as a method for making analyses of relationships between handling of human content and measures of inhibition as they were analyzed throughout this study.

It is also possible that the above three factors: 1. the relative relaxedness of the test situation; 2. the possible release of tensions allowed by the motoric response; and 3. the possible levels of awareness allowed by motoric and visual features of the test, contributed to the sparcity of human content responses obtained on the Kinget test.

It was hypothesized that the long CIT subjects would draw fewer humans and humans in activity, would draw humans

and humans in activity later in sequence, and would draw fewer stick figures on the Kinget test. No significant differences were found in any of these areas. Again, there was probably insufficient data in all areas of this hypothesis. There were not enough human figures in activity or stick figures to allow analyses of the data. The analyses of human figures and human figures plus human figures in activity were not significant. It is probable that there were not enough drawings of human figures to provide sufficiently stable data for meaningful results of these analyses.

If the data could be considered sufficiently adequate so that analyses of number and order of human figures and human figures plus human figures in activity could be considered meaningful, it could be that human content on the Kinget test is not related to the CIT measure of inhibition. It appears probable that the CIT measure, itself, is somehow related to some aspect or level of inhibition, so it is probable that human content on the Kinget test is either not related to inhibition or is not related to the same aspect or level of inhibition as is measured by the CIT task.

The Kinget test may not be an adequate measure of the handling of human content in relation to inhibition because of: 1. the relatively small amount of pressure placed upon the subject in performing on the task and the consequent opportunities for the subject to come into a greater degree of control of impulses; 2. the possibilities offered for release

of tensions through motoric activity; and 3. levels of awareness allowed by the motoric and visual features of the test.

It appears that the possible greater awareness of impulses of the subjects while performing on the Kinget test did not seem to parallel the same kind or level of a greater awareness that has been suggested in relation to the CIT task. Although it is possible that subjects are likely to become more aware of their expressions of impulses through observing their own drawings, apparently there is no relationship between the CIT and Kinget measures on the basis of a greater degree of awareness or a greater degree of structure that may be considered inherent in the two tasks, as opposed to some of the other tasks in this study. It may be that a confusion has been introduced by the fact that the Kinget test may offer a medium for self expression for subjects who are not aware, or who can accept drawing as a release of impulses that they could not readily express even through disguised verbalizations in other test situations. Thus, the Kinget test may not be an adequate measure of the handling of human content as it has been analyzed in relation to measures of inhibition in this study. It is also possible that the relative lack of pressures, the opportunities for motoric release of tensions, and the levels of awareness of impulses which appear to be involved in performance on the Kinget test may have contributed to the sparcity of human content responses obtained on the test. The Kinget test might be a more adequate measure

of the handling of human content in relation to inhibition as analyzed in this study with different types of subjects, who might react differently to the above three features of the test.

A comparison of hypotheses 3 and 4 reveals that neither the reversing measure nor the CIT measure of inhibition showed relationships in the hypothesized direction with the handling of human content on the Kinget test. The primary reason for the lack of relationships with the handling of human content on the Kinget test for both inhibition measures appeared to be the limited number of drawings of human content. The analyses obtained appeared to be based on insufficient data, or else the data was so limited as to make analyses impossible. If the analyses obtained could be considered adequate, it would appear that the handling of human content on the Kinget test is not related to either the reversing or CIT measures of inhibition. Since other results in this study have indicated that both the reversing and CIT tasks may be measures of some aspects or levels of inhibition, it would seem that the handling of human content on the Kinget test is either not related to inhibition, or is not related to the aspects or levels of inhibition measured by the reversing and CIT tasks.

It seems possible that more data might be obtained and the variability in number and order of human content drawings on the Kinget test between good and poor inhibitors

might increase for subjects of a different age level or sex, or for psychiatric subjects. Some of the above listed factors might be less operative with different types of subjects than those used in this study. Psychiatric poor inhibitors might be less able than normal poor inhibitors to mobilize defenses by making use of the relative freedom from pressures, the motoric release of tensions, and the possible levels of awareness which may be involved in the Kinget test. For example, psychiatric subjects would be likely to be less aware than normal subjects of their own impulses, or might feel greater pressures, and thus might show more variability in relation to the drawing of human content.

Measures on the Picture Selection Test which have been designated as possibly representing either the handling of relatively passive human figures (H) or the handling of active human figures (M) should be given some qualifications and explanations. The verbalization analyses of H and M may probably be considered adequate, meaningful measures of the handling of relatively passive and active human figures, but it should be clear that the responses were those which the subjects verbally reported as perceiving. The resultant thresholds were thresholds for verbalizations and not necessarily for perceptions. We can only speculate what roles the subjects' perceptions may have had in the production of verbalizations of H or M. The analyses involving dealing with "H" or "M" pictures may tentatively be considered H and M

measures, but each should also be regarded as possible combined H plus M measures. It cannot be said how much of active content was perceived and dealt with by the subjects in relation to "H" pictures, or how much of passive content was perceived and dealt with by the subjects in relation to "M" pictures.

The method of analysis which probably most nearly involves the handling of relatively passive human figures, to the exclusion of the handling of human figures in activity, is the response position method of analysis of verbalizations of H. It cannot be said about the verbalization of H data that human activity was not perceived by subjects. It can be said that, for some reasons, perhaps because relatively passive human figures could be handled adequately enough to be verbalized, H was verbalized, and M was not. It would appear that the verbalization of H data can be considered an adequate measure of the handling of human figures, just as H on the Rorschach is considered a measure of the handling of human figures. In the use of H in this study on the Rorschach cards it has not been implied that human figures in activity were not perceived when H responses were given, but simply that H, not M, was verbalized. On both tests, the verbalizations of H were considered to be measures of the handling of human figures.

The response position method of analysis of dealing with "H" pictures involves perceptions of relatively passive

human figures and not of active human figures to the extent that the "H" pictures are truly seen as H pictures. In this study it cannot be said how much of human activity was involved in the subjects' perceptions of the "H" pictures. The analyses of dealing with "H" pictures cannot be considered to be as clear-cut measures of the handling of relatively passive human figures as can the verbalization analyses.

The response position analyses of verbalizations of M are apparently the strongest measures of the handling of human figures in activity because the verbalizations of M, rather than of H, in response to pictures of humans suggest a degree or kind of handling of human figures in activity. The analyses of dealing with "M" pictures are less strong measures of the handling of human figures in activity since it cannot be known whether "M" pictures were seen and dealt with as involving human figures in activity to a greater degree than were "H" pictures.

The median and response position analyses of dealing with either of the two pictures of people in each picture set, and the response position analyses of verbalizations of H plus M can be considered combined measures of the handling of relatively passive human figures and human figures in activity, involving no attempt to isolate H or M. Analyses of dealing with "H" or "M" pictures, although tentatively considered to be H and M measures, respectively, might well be most safely regarded as additional combined H plus M measures, since the

"dealing with" method does not assure definite separations of the handling of relatively passive and active human figures.

The expectation that the reversers would have a different threshold than would the non-reversers for human figures and human figures in activity on the Picture Selection Test was, in general, strongly supported. Of seven different sets of analyses, five showed very strong differences in the same direction, one showed slightly less definitive differences, since the directions were at the two extreme positions, and one was not significant.

The results of analyses between the reversers and the non-reversers for designated measures of the handling of relatively passive human figures were less strong than for other measures of the handling of human content on the Picture Selection Test. The response position method of analysis of verbalizations of H did not show significant differences. The response position method of analysis of dealing with "H" pictures showed more of the reversers than the non-reversers dealing more frequently with "H" pictures early and late. This result still represents differences in thresholds between the reversers and the non-reversers, as was hypothesized, but the differences may be considered less definitive than a unidirectional difference. The reversers' responses for dealing with "H" pictures were neither consistently early or late, but were more variable in thresholds than were the responses of the non-reversers.

Analyses involving M and combined H plus M measures consistently showed that more of the reversers than the non-reversers more frequently responded early.

The reversers most frequently had lower thresholds than did the non-reversers in relation to both H and M measures and for combined H plus M measures. Since the reversers had a tendency to have both lower and higher thresholds for dealing with "H" pictures, and since a non-significant result was found for verbalizations of H, the results may be said to be less strong in relation to relatively passive human figures than in relation to active human figures.

Since there were substantial differences in responses between the reversers and the non-reversers, it would appear that the reversing task is a measure of inhibition which is related to the handling of human content on the Picture Selection Test. It is difficult to state with certainty the reasons for the strong tendency of the reversers to respond early in relation to human content on the Picture Selection Test. It is possible that the reversers' responses were primarily early because human content was less threatening to the reversers than to the non-reversers. It seems more probable that the reversers' responses were early because human content was more threatening to the reversers than to the non-reversers.

The reversers might have responded to human content early on the Picture Selection Test because they were more

readily able to handle human content. Therefore, they would have responded early through having no needs to avoid human content. In view of other results in this study, it is unlikely that the reversers had lower thresholds for human content because they were more able than the non-reversers to handle human content.

It seems probable that the reversers responded earlier than did the non-reversers to human content on the Picture Selection Test because human content was more threatening, and more difficult to handle for the reversers. It is possible that human content was so threatening to the reversers that they could not inhibit tendencies to respond, and therefore had to deal with human content early. It is possible that the probable greater degree of structure of the Picture Selection Test than of other tests in this study made human content less threatening to the reversers than may have been the case with the relatively unstructured Rorschach test or the Kinget test, so that human content was important to them, and was seen early, but was not particularly threatening to them. It is possible that human content was not more threatening to the reversers than to the non-reversers but that the reversers simply handled impulses less well. However, as has been explained, degree of threat and ability to handle impulses are probably integrally related, and should not require separation for explanations of results in this study.

It was theorized that the reversers would respond with different thresholds than would the non-reversers to the human content on the Picture Selection Test because of poorly handled feelings about humans and poorly inhibited reactions to human content. In addition, it has seemed possible that reactions to human content might be more extreme for M measures than for H measures because humans in activity would be likely to be more threatening than more passive human figures. Analyses of responses involving human activity showed greater differences in that the reversers tended to respond more consistently early in relation to active human figures than in relation to more passive human figures, and in that the only non-significant results were obtained in relation to relatively passive human figures.

It would appear that the reversers were more threatened by human content than were the non-reversers on the Picture Selection Test. In addition, it would appear that the reversers were more threatened by human figures in activity than by more passive human figures.

There were essentially no differences between the standard deviations of the reaction times of the reversers and the non-reversers to the Picture Selection Test. Although an F test could not be done, the similarity of the two standard deviations indicates that the reversers did not have a greater variability in reaction times than did the non-reversers.

It is probable that reaction times for first responses to the Picture Selection Test are not measures of inhibition, or are not measures of inhibition in relation to the handling of human content on this test. It is possible that the poor inhibitors (reversers) were taking longer or shorter reaction times, or that they had more variable reaction times to human content on the Picture Selection Test than did the good inhibitors (non-reversers). However, this kind of reaction time data was obliterated in the current study.

The relatively structured organization of the Picture Selection Test makes it possible for the subject to avoid responding (inhibit impulses) by providing highly acceptable, readily available, alternative stimuli for response. Therefore, the subject may be mobilizing defenses while not responding directly to the emotionally loaded material (pictures of humans). In the Rorschach situation the subject is not given alternative responses. Responses are more definitely elicited from the subject, himself, in reaction to relatively unstructured stimuli. On the Picture Selection Test the subject is supplied with readily available, structured stimuli, and the subject may therefore be continuing to respond, with less threatening material, while avoiding the threatening material. As a result, reaction time for the first response is not a factor that is likely to show much significance in relation to how the stimuli of the Picture Selection Test are handled in terms of threat. The subject is provided with

stimuli for responses to make during any inhibition time period.

It might be possible to measure inhibition time in relation to human content on the Picture Selection Test if length of time is noted from initial presentation of a picture card to the time of response to human content (both for responses involving relatively passive human figures and for responses involving human figures in activity).

It appears that the hypothesized greater variability of reaction times of the reversers and the non-reversers cannot be meaningful as analyzed in this study. The lengths of time for first response to the Picture Selection Test were about equal for the reversers and the non-reversers. However, lengths of time for first response appear not to have particular meaning in this study. It is possible that the reversers might have had greater variability or different reaction times than the non-reversers, but this cannot be known without measures of reaction times for responses to human content, rather than for any first response to each picture card. It is possible that the reversers took more time between the responses following the first response than did the non-reversers, and thus had longer inhibition reaction times, or they may have taken the same lengths of time, or less time between responses, or they may have had more or less variability in reaction times between responses.

If the reversers had longer reaction times to human content, it could be that they took more time to mobilize because of being poor inhibitors. If they took less time to respond to human content, it might be speculated that they responded impulsively, without taking adequate time to mobilize defenses. In the latter case, it would be expected that the quality of the responses might have been lowered. For example, the reversers might have dealt with pictures involving human content but have been unable to verbalize human content. They might have been able to verbalize relatively passive human figures but not able to verbalize human figures in activity as readily. We might expect a greater variability among responses of the poor inhibitors, because a combination of the long and short reaction times from poor inhibitors might be anticipated.

It would be feasible to make analyses of reaction times to human content responses, rather than of reaction times for first responses to the Rorschach cards. However, this has been considered an additional analysis rather than an alternative analysis of reaction inhibition times. Since reaction times for first responses to the Rorschach cards may probably be legitimately considered to be lengths of time required for mobilization of impulses, this type of measure may be considered to be meaningful in relation to ability to inhibit.

It is possible that the reaction time measure on the Picture Selection Test, even if altered to a measure of reaction times to human content, would not show differences between the reversers and the non-reversers. For example, the normal subjects used in this study might not show great enough differences to be in evidence.

Since reaction times for the first responses to the Picture Selection Test may not be a true measure of inhibition reaction times, or times needed to mobilize impulses, the results obtained here were not contradictory to the theories concerning poor inhibition and reaction times.

The expectation that the subjects with longer CITs would have a different threshold than would the subjects with shorter CITs for human figures and for human figures in activity on the Picture Selection Test was strongly supported. The median analysis, which is probably the least sensitive but most stable measure, showed more of the long CIT subjects than the short CIT subjects dealing with human content earlier. When analyses were made by methods which were probably more reflective of differences, the predominant tendency was actually for more of the long CIT subjects than the short CIT subjects to produce more or fewer responses early. Six of the eight response position analyses concerning human content showed more of the long CIT subjects than the short CIT subjects producing more or fewer responses early. A tendency was also shown for more of the long CIT subjects to produce

more responses early and late, and to produce more or fewer responses early and late. The latter two variations from the consistent trend in results were in connection with analyses involving relatively passive human figures. In general, the analyses concerning human content, whether active or relatively passive content, were in quite consistent directions, and all analyses showed strong differences in thresholds between the long and short CIT subjects.

It cannot be said how much of human activity was involved in analyses involving relatively passive human figures. The greatest certainty of the handling of human figures without the handling of human figures in activity was probably in relation to the verbalizations of H, although, even in this case, it cannot be said that active human figures were not seen just because M was not verbalized. Response position analyses of verbalizations of H showed more of the long CIT subjects than the short CIT subjects producing more or fewer responses early, and producing more or fewer responses early and late. Response position analyses of dealing with "H" pictures also showed that more of the long CIT subjects produced more or fewer responses early, and produced more or fewer responses early and late. Therefore, although the analyses involving relatively passive human figures showed strong differences in thresholds between the long and short CIT subjects, and showed differences in the same general direction as were obtained for the other analyses of human content, the only

variations in response direction occurred in relation to measures of relatively passive human figures.

All response position analyses of M and of combined H plus M measures showed that more of the long CIT subjects produced more or fewer responses early. Although the median method of analysis of H plus M measures (first responses to either of the two pictures of people) showed more long CIT subjects responding early, the difference of this result can undoubtedly be attributed to the less sensitive aspects of the method of analysis employed.

It appears that the data obtained for the long and short CIT subjects in relation to the handling of human content on the Picture Selection Test showed strong differences in thresholds between the long and short CIT subjects in all areas of human content. However, the least strong and most variable differences occurred in relation to relatively passive human figures. Therefore, it seems possible that relatively passive human figures were less threatening to the long CIT subjects than were more active human figures.

The substantial differences in responses between the long and short CIT subjects suggest that the cognitive inhibition task is a measure of inhibition which is related to the handling of human content on the Picture Selection Test. There are several possibilities why the long CIT subjects responded with different thresholds for the handling of human content on the Picture Selection Test than did the short CIT

subjects. The primary result of more of the long CIT subjects producing more or fewer responses early for both active and more passive human figures, in so far as can be determined, may have occurred because human content was less threatening to the long CIT subjects than to the short CIT subjects. It seems more probable that the long CIT subjects responded in deviant ways because human content was more threatening to them than to the short CIT subjects. Thus, the extremes of response of the long CIT subjects would have been reflecting difficulties in the handling of human content.

If the handling of human content on this instrument was less threatening to the long CIT subjects than to the short CIT subjects, it could be said that some long CIT subjects responded early because they could readily handle the human content, and that other long CIT subjects didn't respond early because the human content was unimportant to them. They could then have responded with the same response positions as did the short CIT subjects, or later. In some instances, the short CIT subjects might have responded later because they couldn't handle human content as well as could the long CIT subjects. However, since there was a tendency for more or fewer, or more, of the long CIT subjects' responses to be both early and late, there is doubtful evidence to support late short CIT reactions.

It seems probable that more of the long CIT subjects produced more or fewer responses early because human content

was more threatening to the long CIT subjects than to the short CIT subjects. In this case, some of the long CIT subjects probably found it necessary to respond impulsively because they could not inhibit impulses, and some probably responded later because a poor ability to inhibit created longer delays. The tendency shown in the results for the long CIT subjects to respond early and late gives support to the idea that the long CIT subjects could not readily handle impulses concerning human content, and so found human content more threatening and difficult to handle.

It is possible that the long CIT subjects were not threatened much more than were the short CIT subjects by human content, because of less threatening aspects of the probable relatively greater structure of the Picture Selection Test than of the other tests of this study. The long CIT subjects might then have been more sensitized to human content because of a greater importance of human content to them than to the short CIT subjects. Consequently, the long CIT subjects might have responded differently than the short CIT subjects because human content was more important to them, but not necessarily because of extreme reactions which caused an inability to control impulses.

The long CIT subjects may not have been threatened by human content any more than were the short CIT subjects, but may have handled impulses less well, and so responded in deviant ways. However, influences of different levels of threat

and different abilities to handle impulses cannot and need not be separated for the purposes of this study, since both factors are undoubtedly integrally related.

It was hypothesized that the long CIT subjects would respond with a different threshold to the human content on the Picture Selection Test because of poorly handled feelings about humans and poorly inhibited reactions to human content in test situations. In addition, it seemed possible that the thresholds for human content might be more extreme in regard to M measures than in regard to H measures because humans in activity would be likely to be more threatening than more passive human figures. Differences between the long and short CIT subjects were more consistently strong for responses to human figures in activity than for responses to more passive human figures. It would appear that the long CIT subjects were more threatened by human content than were the short CIT subjects on the Picture Selection Test. In addition, it would appear that the long CIT subjects were more threatened by human figures in activity than by more passive human figures.

It is probable that reaction times to the Picture Selection Test are not a measure of inhibition, or are not a measure of inhibition in relation to the handling of human content on this test. The long CIT subjects may have had longer, shorter, or more variable reaction times to human

content, but the reaction time data were probably obliterated by the particular time measure selected for this study.

Since the relatively structured Picture Selection Test makes it possible for the subject to continue responding while mobilizing defenses, reaction times for first responses may not be a true measure of inhibition reaction times, or, at least, of inhibition times as related to human content. If the length of time for first response does not have particular meaning in relation to the Picture Selection Test, then differences might have been found between the long and short CIT subjects with measures of time from initial presentation of each set of pictures to the first response involving human content. However, such time measures were not taken in this study.

Since the measure of reaction times utilized in this study may very likely be faulty for the relatively structured organization of the Picture Selection Test, the results obtained here cannot be said to be contradictory to the theories underlying poor inhibition and reaction times.

A comparison of data between the reversers and the non-reversers and the long and short CIT subjects for the handling of human content on the Picture Selection Test, in general, showed more definitive results for the reversers and the non-reversers than for the long and short CIT subjects. That is, most of the analyses of human content of the reversers and the non-reversers most consistently showed that more

of the reversers dealt more frequently with human content early, while most of the analyses of the long and short CIT subjects most consistently showed the less definitive results of more of the long CIT subjects dealing more or less frequently with human content early. If we accept that both tasks are measures of inhibition, it may be that the reverser data were predominantly more definitive than the CIT data because the reversing task is a more adequate measure of the same factor of inhibition as is measured by the CIT task.

If the reversing task is a stronger measure of inhibition than the CIT task in relation to the Picture Selection Test, it might be expected that differences in results between the reversers and the non-reversers in relation to all areas of human content on the Picture Selection Test would be stronger than differences between the long and short CIT subjects. As it turned out, the reversers and the non-reversers had stronger results for all areas of human content than did the long and short CIT subjects, with the exception of one set of results in relation to relatively passive human figures, which was non-significant. The long and short CIT subjects, while having slightly less strong results in all areas of human content than were obtained by the reversers and the non-reversers, had these results for all areas of human content, and had no non-significant results. Therefore, the non-significant results obtained by the reversers and the non-reversers for verbalizations of relatively passive human

figures would seem to be inconsistent with the other results obtained on the Picture Selection Test.

It is possible that the reversing task does tend to have stronger results in relation to human content on the Picture Selection Test than does the CIT task, and that the inconsistent non-significant results in relation to relatively passive human figures may be attributed to probability. That is, with any large number of statistical analyses, on the basis of probability, some non-significant results may occur even though the groups are significantly different in the characteristics analyzed. The reversers and the non-reversers may actually have had stronger differences than the CIT groups for both active and relatively passive human figures, with stronger results for active human figures than for relatively passive human figures. In such a case, it might be said that the inconsistent non-significant results of the reversers and the non-reversers in regard to relatively passive human figures might have occurred for either of the groups of subjects, but happened to occur for the reversers and the non-reversers.

The apparent inconsistency could also have occurred as a result of the reversing task being a more effective measure of inhibition than the CIT task in relation to the handling of human content on the Picture Selection Test. If the reversing task is a stronger measure of inhibition than the CIT task, the reversers would have been poorer inhibitors than would the long CIT subjects. Stronger results for active

human figures and combined measures of active and relatively passive human figures would therefore more logically have occurred with the reversers and the non-reversers than with the long and short CIT subjects. The stronger reactions of the reversers and the non-reversers for responses involving active human figures may have produced sharper delineations between responses involving active and relatively passive human figures for the reversers and the non-reversers than for the long and short CIT subjects. Therefore, the M measures of the reversers and the non-reversers might have tended to be derived primarily from perceptions of active human figures, and the H measures might have tended to be derived primarily from perceptions of relatively passive human figures, to a greater extent than would have been the case with the long and short CIT subjects. Less significant differences would be expected for H measures than for M measures, since relatively passive human figures are probably less threatening than active human figures. Less strong results would be expected for H measures which are not influenced by perceptions of active human figures than for H measures which are influenced by perceptions of active human figures. Therefore, the reversers and the non-reversers would be expected to have had less strong differences for H measures which would have been influenced by few or no perceptions of active human figures than would be expected with the long and short CIT

subjects for H measures which would have been influenced by perceptions of active human figures.

The long CIT subjects, being better inhibitors, would have responded less definitely to active human figures on the Picture Selection Test, and H measures would have been less separate from M measures than would have been the case with the reversers and the non-reversers. Therefore, because the CIT subjects would not have had as strong differences between good and poor inhibitors, they would have had less strong differences in reactions to measures of active human figures than would the reversers and the non-reversers. The results would have tended to be quite strong and consistent for both active and relatively passive human figures and for combined measures of active and relatively passive human figures with the CIT subjects, because there would have been little difference between the two kinds of responses.

Thus, the reversers, being poorer inhibitors than the long CIT subjects, could well have been more threatened by relatively passive human figures than would the long CIT subjects. If the long CIT subjects had been responding to relatively passive human figures predominantly as pure passive human figure responses, they might have had more inclination than the reversers to have non-significant results.

If the reversers were more concerned with active human figures responses than with relatively passive human figure responses, and if the long CIT subjects were not as much more

concerned with active human figure responses as with relatively passive human figure responses, the reversers would not only have made more distinctions between active and relatively passive human figure responses, but might also have tended to respond to active human figures first, or later, or to be emphasizing and mobilizing defenses around active human figure responses. Consequently, relatively passive human figure responses would have tended to be less emphasized, and to be less important to the reversers than would active human figure responses. The H measures of the reversers would not only have been more distinctly reflective of perceptions of relatively passive human figures than would have been the case for the long CIT subjects, but they would have been given less emphasis. On both counts, the results concerning relatively passive human figures would have tended to be less significant for the reversers and the non-reversers than for the long and short CIT subjects. The long CIT subjects may well have responded to relatively passive and active human figures in similar ways because of not making as strong perceptual distinctions between relatively passive and active human figures, and from not emphasizing and mobilizing around active human figures as much more strongly than they mobilized around relatively passive human figures.

Comparisons between the median method of analysis of dealing with human content, and the response position method of analysis of verbalization and "dealing with" data involving

human content on the Picture Selection Test reveal that the median method of analysis is probably the most consistent and stable, but is apparently slightly less sensitive than the response position method. The median analysis could only be done for "dealing with" data because the median scores would have become meaningless when derived from the highly variable number of responses obtained in the verbalization method.

In comparing possible differences between "dealing with" and verbalization data on the Picture Selection Test, it should be noted that the "dealing with" data are a recording of any response to either of the two pictures of people in each picture set, or to the pictures designated as "H" or "M" pictures, while the verbalization data are a record of actual verbalizations of H or M to either of the two pictures of people. The median and response position analyses of dealing with either of the two pictures of people in each picture set do not involve any attempt to designate H or M responses, but simply refer to dealing with human content, whether active or passive content. The response position analyses of dealing with "H" or "M" pictures involve a tentative attempt to analyze relatively passive human content as opposed to active human content. The "H" and "M" pictures are tentatively defined as pictures involving relatively passive human content ("H" pictures) and as pictures involving active human content ("M" pictures). No matter how objectively static and passive a picture of a human might appear, it cannot be said that

some perceptions of the picture do not involve action. No matter how dynamic and active a picture of a human might objectively appear, it cannot be said that some perceptions of the picture do not involve passive human content. Therefore, "H" and "M" pictures can only be tentatively defined as such. Verbalization data give perhaps stronger indications as to whether a subject is perceiving H or M. However, it cannot be said that a person is perceiving what he verbalizes. Psychologists assume that people often do not verbalize perceptions, and that in some cases they avoid verbalizing some of their strongest perceptions. The verbalization data can therefore only be regarded as the material which the subject verbally recognizes as perceiving. It is possible that the material which is verbalized is that which the subject perceives and also is able to handle. A disturbed person is likely to verbalize because he cannot help himself, and consequently he may verbalize material which is not well handled. Since the subjects in this study were normal subjects, and since the Picture Selection Test is relatively structured, and consequently may not involve excessive threat, it seems likely that in this study the material which was verbalized was material which was most easily handled, rather than material which could not be held back, even with the poor inhibitors. Poor inhibitors of a disturbed population might be more likely to respond impulsively to material which is threatening. Further studies of this test, or this type of

test, involving comparisons between "dealing with" and verbalization data, might help to clarify some of the factors underlying the verbalizations of various kinds of subjects, and might also clarify any distinctions there might be between "H" and "M" pictures.

For the purposes of this study, the responses made in relation to "H" and "M" pictures (and possibly the verbalization responses) on the Picture Selection Test should be viewed as responses involving human content, with only tentative speculations as to differences in response between relatively passive or active aspects that are being handled. In this study the data involving verbalizations of H or M probably most clearly separate responses consisting of passive and active elements.

The results of this study suggest that both the reversing task and the CIT task may be measures of inhibition. It appears that the reversing task may be a consistently stronger measure of inhibition than the CIT task, at least in so far as inhibition, as defined in this study, may be related to the handling of human content in the test situations provided in this study. The CIT task appears to involve more structure, and more awareness on the part of the subjects of what is required of them, than might be the case with the reversing task. Therefore, it is possible that the two inhibition tasks measure different aspects or levels of inhibition. For example, the CIT task may well be a stronger, more pertinent

measure of inhibition in relation to relatively more structured test and life situations than in relation to less structured situations.

It appears that at least two of the three test situations used in this study are adequate measures of the handling of human content in relation to inhibition. The Picture Selection Test was apparently the strongest measure of the handling of human content for both inhibition tasks. The Rorschach cards appeared to be somewhat pertinent in relation to the measures of the reversing task. Stronger results might have occurred in analyses of reversing and M on the Rorschach cards, so that the results would have been more consistent with the results of earlier studies, if psychiatric subjects had been used instead of normal subjects, and if possible intelligence level differences had not occurred between the reversers and the non-reversers. The Kinget test may not be an adequate measure of the handling of human content in relation to inhibition, as the results were analyzed in this study. Some of the same features of this test situation which may have made the test inapplicable for the measures analyzed may well have caused the sparcity of data obtained. It cannot be known whether the inadequate amount of data made the analyses less stable and meaningless in all instances or whether the test is not an adequate measure anyway because of such features inherent in the test. The factors which may have caused less data and confused results might have less effect on

another type of subject, so that the Kinget test might be applicable for the measures of this study with other types of subjects.

In general, inhibition measures seem to have stronger relationships for the handling of humans in activity than for the handling of relatively passive human figures. The non-conclusive results for reversing and M on the Rorschach cards and the stronger results for reversing and H on the Rorschach cards seem to be contradictory to other results in this study which showed stronger results for inhibition measures and the handling of humans in activity than for inhibition measures and the handling of relatively passive human figures. However, earlier studies have shown strong relationships between inhibition measures and M on the Rorschach (Levine, Glass, & Meltzoff, 1957; Levine & Meltzoff, 1956; Levine, Spivack, & Wight, 1959). The factor of intelligence level, alone, could have caused the non-conclusive results for reversing and M on the Rorschach cards, and could have made H a stronger mreasure than M because H is apparently not affected by intelligence level. Also, the fact that M is probably more emotionally loaded than H would make it seem logical that results would be stronger for M than for H. It is possible that H on the Rorschach might be more appropriate as a measure of human content than M with normal subjects, and that results for M would not tend to be as strong with normal subjects as with psychiatric subjects. On the other hand, it might be that

psychiatric subjects would be more sensitive to H and would have even stronger results for H than for M.

Relationships were not found for reaction times of the reversers and the non-reversers or of the CIT subjects for the Rorschach cards or for the Picture Selection Test. It appears that the poor inhibitors tended to have slower reaction times than did the good inhibitors, and that the longer times may have sided in the production of more and better responses. It would seem that reaction times for initial responses to Rorschach cards are not effective measures of inhibition in relation to the handling of human content, in spite of a general acceptance that reaction times for first responses to Rorschach cards are measures of inhibition and are related to number of M responses on the Rorschach. It may be that reaction times for human content responses would be more effective measures of inhibition than reaction times for first responses. In addition, reaction times for first responses to the Picture Selection Test do not seem to be measures of inhibition times. It may be that the degree of structure of the Picture Selection Test allows enough assistance to subjects in producing responses that reaction times for first responses become meaningless. It may be that reaction times for human content responses would be more meaningful measures of inhibition, as related to the handling of human content, than would reaction times for first responses.

The fact that CIT, a measure of reaction times, showed some results in relation to the Picture Selection Test that were consistent, and yet the reaction time measures for the Rorschach cards and the Picture Selection Test showed no significant differences, may be caused by the effects of different factors in the CIT measure than in the reaction time measures. The CIT task makes clear demands. The subject is required to inhibit a learned response and produce another. On the Rorschach cards and the Picture Selection Test, the subject has a wide choice of ways to respond. Instead of taking a longer period of time before responding to a Rorschach card, the subject may produce a less adequate response more quickly. The subject may give different responses to the same area or may respond to a different area of a Rorschach card than that which is most threatening to him. On the relatively structured Picture Selection Test the subject is provided with readily available stimuli for response, and thus may quite easily produce a response to another picture than the one which he may be avoiding during a period of inhibition. Thus, the CIT task probably measures a kind or level of inhibition time, reaction times to the Rorschach cards are probably not clear inhibition measures without consideration of quality of responses, and reaction times to the Picture Selection Test are probably not measures of inhibition times because the subject is provided with opportunities for response during any inhibition period.

CHAPTER VI

SUMMARY

In previous studies relationships have been found between reversing and M and CIT and M on the Rorschach. Questions have been raised by the studies of reversing and M in that: 1. psychiatric subjects were always used; and 2. the subjects were not controlled for IQ scores, and random selection methods revealed IQ score differences with reversers having lower IQ scores. The differences found in IQ scores were confused because: 1. the same measure was used for IQ scores and in the selection of the reversers; and 2. IQ scores for psychiatric subjects are extremely unstable and unreliable. In addition, relationships between intelligence level and M are uncertain for psychiatric subjects. A study of CIT and M resulted in significant differences for college students. However, only two Rorschach cards were used, and they were presented on slides. Reversing and CIT, although both are considered measures of inhibition, have not been adequately studied in relation to each other. In only one study, involving a small number of psychiatric subjects, relationships were found between CIT and reversing. Since the previous

related studies were based on a sensory-tonic theory, M is the only measure of human content that has been investigated in relation to these inhibition measures.

The current study was an investigation of both reversing and CIT measures of inhibition in relation to each other, and in relation to the handling of human content, both active and passive content, in three different test situations which may be considered to be of varying degrees of structure. The three different test situations were the Rorschach test, the Kinget test, and a Picture Selection Test which was developed for use in this study. Reaction times were also studied in relation to the Rorschach cards and the Picture Selection Test as possible measures of inhibition times. This study involved normal subjects, and involved controls for IQ scores in the selection of the reversers and the non-reversers. As it happened, the CIT subjects were also comparable in relation to IQ scores.

Relatively passive human figures were used in addition to active human figures in this study because it was felt that poor inhibitors, who apparently do not handle impulses well, would have difficulty in handling human content, and would have more difficulty in handling active human figures than in handling passive human figures. A poor ability to handle impulses and a high level of threat are probably integrally related. The inability to handle impulses well is likely to make situations more threatening, and the more

threat felt will probably cause greater difficulty in the handling of impulses. Therefore, the poor inhibitor is likely to be a person who feels more threat in relation to human content than does the good inhibitor as well as being a person who handles impulses in regard to human content less well.

It was hypothesized that the poor inhibitors would have fewer H and M on the Rorschach cards; would draw fewer human figures and human figures in activity, and more stick figures on the Kinget test; would draw human figures and human figures in activity later in sequence on the Kinget test; and would have different thresholds for human figures and human figures in activity on the Picture Selection Test, than would the good inhibitors. It was hypothesized that the reversers would have longer CITs than would the non-reversers. It was also hypothesized that the poor inhibitors would have larger standard deviations for reaction times to the Rorschach cards and the Picture Selection Test than would the good inhibitors.

The analyses of the reversers and the non-reversers in relation to the Rorschach test revealed strong relationships for H and non-conclusive results for M. The reversers did not have a larger standard deviation for reaction times to the Rorschach cards, although they did have longer reaction times than did the non-reversers. The reversers did not have longer CITs than did the non-reversers. The CIT subjects did not have relationships for the handling of human content on the Rorschach test. The long CIT subjects did not

have a larger standard deviation for reaction times to the Rorschach test than did the short CIT subjects. Neither the reversers and the non-reversers nor the CIT subjects had relationships for the handling of human content on the Kinget test. Both the reversers and the non-reversers and the CIT subjects had strong relationships for the handling of human content on the Picture Selection Test, and both showed stronger relationships for the handling of human figures in activity than for the handling of relatively passive human figures on this test. The results of analyses of the CIT subjects in relation to the Picture Selection Test were, in general, less strong but more consistent than were the results of analyses of the reversers and the non-reversers. That is, the reversers and the non-reversers had non-significant results for verbalizations of relatively passive human figures, but stronger results than were obtained by the CIT subjects for all of the other analyses involving the handling of human content on the Picture Selection Test. All of the analyses of the CIT subjects for the handling of human content on the Picture Selection Test showed significant results. The analyses of reaction times to the Picture Selection Test did not show significant results with either the reversers and the non-reversers or with the CIT subjects.

The non-conclusive results found in this study for reversing and M on the Rorschach cards, in contrast to the significant results found for reversing and M in earlier

studies may be explained in that: 1. The psychiatric subjects of the earlier studies and the normal subjects of the current study may have differed in relation to inhibition or in relation to the handling and perceiving of M. 2. This study involved controls for IQ scores and the earlier studies involved random selection of subjects, so the reversers in this study may actually have been brighter than the non-reversers and consequently have had more M when less M was hypothesized. 3. Four Rorschach cards were used in this study and ten cards were used in the earlier studies, which could, but apparently didn't, provide less stable data for this study. Thus, the reversing task may be considered a measure of inhibition in relation to M on the Rorschach, in spite of the non-conclusive results of the current study.

The stronger results for reversing and H on the Rorschach in this study than for reversing and M could have resulted because: 1. H is not contaminated by the intelligence factor, as is M; and 2. H is not as emotionally loaded as is M, and consequently might have been a more appropriate measure than M for normal subjects. However, a reverse concept might be that psychiatric subjects would be more sensitive to the more subtle H than to M.

The reversers may not have had more variable reaction times to the Rorschach cards than did the non-reversers because reaction time variability could be related to the quality of responses given. The subject has a wide choice of ways

to respond to the Rorschach cards. Instead of taking a longer period of time, he may produce a response more quickly, that is a less adequate response than he might have given with a longer reaction time. The longer reaction times found for the reversers than for the non-reversers may have allowed the reversers to produce better responses and more M responses. Reaction times for human content responses may be a more adequate measure of inhibition times in relation to the handling of human content on the Rorschach cards.

Although comparisons of the reversers and the non-reversers in relation to CIT revealed no relationships, other results of this study and the results of other studies suggest that both the reversing task and the CIT task are measures of inhibition. Thus, the lack of results between the reversing and CIT tasks in this study suggests that the two tasks may be measuring different aspects or levels of inhibition. If the small number of subjects used by Levine, Glass, and Meltzoff (1957) can be considered adequate, the difference between the significant results of their study and the non-significant results of this study for relationships between reversing and CIT tasks may be explained because of: 1. differences in brightness of subjects so that, for example, the reversers in this study may have obtained shorter CITs because of being brighter than the non-reversers, when they were hypothesized to have longer CITs; 2. differences in intensity of reactions of psychiatric and normal subjects,

and greater variations in response among psychiatric subjects; 3. differences in the sensitivity of the measures of the two inhibition tasks and consequent differences in psychiatric and normal subject groupings; and 4. the interference of an additional variable which nullified the results of the current study.

Since other results in this study and the results of Levine and Meltzoff's (1956) study provide support that CIT is a measure of inhibition, the lack of relationships found in this study for CIT in relation to H or M on the Rorschach cards and the significant results of Levine and Meltzoff's (1956) study may be explained by such factors as: 1. differences in design between the two studies; 2. differences in the nature of the subjects of the two studies; 3. chance differences in subject groupings derived from the finely gradated CIT measures, which may not separate normal poor and good inhibitors with stability; and 4. differences in subject groupings between the studies because the CIT task probably involves various levels of awareness and so variations in subjects' responses. Thus, the CIT task may be a more appropriate measure for the handling of human content in more structured situations than the Rorschach test, which, being relatively unstructured, probably does not involve much awareness of impulses.

The long CIT subjects did not have more variable reaction times to the Rorschach cards than did the short CIT

subjects, possibly because reaction time variability is too directly related to quality of responses to be a meaningful measure in itself. Also, the tendency for the long CIT subjects to have longer reaction times than the short CIT subjects may have allowed the long CIT subjects to have more M responses. Reaction times for human content responses may be more meaningful measures of inhibition times as they are related to the handling of human content on the Rorschach cards.

Since both the CIT and reversing tasks appear to be measures of inhibition, the differences in results obtained for the two inhibition measures in relation to the handling of human content on the Rorschach cards in this study may have occurred because of: 1. differences in types of measures obtained from the two tasks, with the CIT gradations being less accurate and stable in separating subjects into two groups; 2. differences in kinds of responses required by the two tasks, with the CIT task being more structured, involving more awareness, and being less strong as a measure of inhibition in relation to the Rorschach cards than the reversing task; and 3. differences in the nature of the subjects as a result of the different groupings produced by the two tasks. Thus, the CIT task is probably not as strong a measure of inhibition as is the reversing task, at least in relation to the Rorschach cards. The use of normal subjects instead of psychiatric subjects, and the probable greater brightness of the poor inhibitors seemed to have made the results less

positive for both inhibition measures, and to have had the strongest effects in weakening results for the less strong CIT measure of inhibition.

There were probably not sufficient data to produce adequate results with the reversers and the non-reversers or with the CIT subjects for the handling of human content on the Kinget test. Such features of the Kinget test as: 1. relative lack of pressures; 2. opportunities for motoric release of tensions; and 3. levels of awareness of impulses; may have been responsible for the sparcity of data obtained. However, if the non-significant results found in relation to number and order of human figures, and of human figures plus human figures in activity are considered to have been based on adequate data, the above three features could also have caused the Kinget test to be inapplicable as a measure of the handling of human content in relation to inhibition measures. The sparcity of data and possible inadequacy of the Kinget test as a measure of the handling of human content may have resulted because of the nature of the subjects in this study. More data might be obtained, or the Kinget test might be a more adequate measure of the handling of human content in relation to inhibition, with subjects of different age levels or sex, or with psychiatric subjects.

The verbalization method of analysis of H and M on the Picture Selection Test probably provides the most clear-cut measures of the handling of relatively passive and active

human figures for this test. The other methods of analysis of the test are most safely considered simply to be measures of the handling of human content.

The substantial differences in response between the reversers and the non-reversers, and between the long and short CIT subjects, indicate that both the reversing task and the CIT task are measures of inhibition that are related to the handling of human content on the Picture Selection Test.

The reversers might have responded predominantly early on the Picture Selection Test because human content was less threatening to them than to the non-reversers, but they probably responded early because human content was more threatening to them. Thus, the reversers probably could not inhibit impulses to respond. The probable greater structure of the Picture Selection Test than of the other tests in this study might have made human content somewhat less threatening to the reversers, so that they responded early because human content was more important to them than to the non-reversers, and not because of extreme threat.

The reversers appeared to be more threatened by human content than did the non-reversers. In addition, it would appear that the reversers were more threatened by the handling of human figures in activity than by the handling of more passive human figures.

The lack of differences found between the reversers and the non-reversers for reaction times to the Picture

Selection Test probably occurred because reaction times for first responses to the Picture Selection Test are not adequate measures of inhibition times, since the subject is provided with readily available stimuli for response. Reaction times for human content responses may be more meaningful inhibition measures than reaction times for first responses to the Picture Selection Test.

The predominant result of more of the long CIT subjects producing more or fewer responses early might have occurred because human content was less threatening to the long CIT subjects. However, the long CIT subjects probably responded in deviant ways because human content was more threatening to them than to the short CIT subjects. Thus, the extremes in response of the long CIT subjects would have been reflecting difficulties in the handling of human content. Some of the long CIT subjects probably responded impulsively because they could not inhibit impulses to respond, and some probably responded late because the poor ability to handle impulses created longer delays. The long CIT subjects may not have been exceedingly threatened by human content in view of a low degree of threat of the probably relatively structured Picture Selection Test. Thus, they would have responded differently than the short CIT subjects because human content was more important to them rather than because of extreme reactions and an inability to control impulses to respond.

The long CIT subjects appeared to be more threatened by human content than did the short CIT subjects. In addition, the results in regard to the handling of relatively active human figures appeared to be stronger for the CIT subjects than did the results in regard to more passive human figures.

The lack of reaction time results for the CIT subjects on the Picture Selection Test probably occurred because this is an inadequate measure of inhibition times. The Picture Selection Test provides readily available stimuli for response during inhibition periods. A measure of reaction times for human content responses may be a more meaningful measure of inhibition times, than reaction times for first responses.

A comparison of the data between the reversers and the non-reversers and the long and short CIT subjects for the handling of human content on the Picture Selection Test, in general, indicated that both tasks are measures of inhibition, and that the reversing task is probably a stronger measure of inhibition than the CIT task. More definitive results predominated for the reversers and the non-reversers than for the CIT subjects. Most of the analyses of human content of the reversers and the non-reversers consistently showed that more of the reversers dealt with human content early, while most of the analyses of the long and short CIT subjects consistently showed the less definitive results of more of the

long CIT subjects dealing more or less frequently with human content early. An apparent inconsistency was that while the reversers and the non-reversers had stronger results for all areas of human content than did the long and short CIT subjects, they obtained one set of results in relation to relatively passive human figures which was non-significant. The long and short CIT subjects had slightly less strong results in all areas of human content than were obtained by the reversers and the non-reversers, but had no non-significant results.

The apparent inconsistent results of the non-significant relationships of the reversers and the non-reversers for verbalizations of passive human figures could be attributed to probability, but probably may actually support the idea that the reversing task may be a stronger measure of inhibition than the CIT task. If the reversing task is a stronger measure of inhibition, and the reversers were poorer inhibitors than were the long CIT subjects, the reversers may have had stronger reactions for active human figure responses than did the long CIT subjects. Thus, the relatively passive human figure responses would have been more distinct from active human figure responses, and would have been more purely passive human figure responses for the reversers than for the long CIT subjects. Since results were expected to be stronger for active human figures than for relatively passive human figures, the results involving the more pure passive human

figure responses of the reversers and the non-reversers might have tended to be less strong than those involving the less pure passive human figure responses of the long and short CIT subjects. Also, the reversers might have tended to produce active human figure responses early or late because active human figures were more threatening to them than to the long CIT subjects, and they were mobilizing stronger defenses around active human figures. The results in regard to relatively passive human figures, therefore, would have been less distinct because the predominant response was to active human figures instead of to relatively passive human figures, and because relatively passive human figures were given less concern. The long CIT subjects may well have responded to active and relatively passive human figures in similar ways because less strong distinctions were being made between active and relatively passive components of human content responses, and because active human figures were not as strongly emphasized in responses.

The results of this study suggest that both the reversing task and the CIT task are measures of inhibition. The reversing task is probably a stronger measure of inhibition than the CIT task, as inhibition is defined in this study. It is possible that the two inhibition tasks measure different aspects or levels of inhibition, since the CIT task appears to involve more structure and more awareness of the subject of what is being required of him than does the

reversing task. The CIT analyses only showed strong results in relation to the test situation which probably involved the greatest structure of the three test situations used in this study, and it is possible that the CIT task is most pertinent in relation to more structured test and life situations than to less structured situations, as a measure of inhibition.

At least two of the three test situations used in this study are probably adequate measures of the handling of human content in relation to inhibition measures. The Picture Selection Test was apparently the strongest measure of the handling of human content for both inhibition tasks. The Rorschach cards appeared to be somewhat pertinent in relation to measures of the reversing task. Although the only strong results occurred in relation to H and reversing, stronger results than occurred might have been possible for M so that results would have been consistent with results of earlier studies, if psychiatric subjects had been used instead of normal subjects, and if possible intelligence level differences had not occurred between the reversers and the non-reversers. The Kinget test may not be an adequate measure of the handling of human content in relation to inhibition. It cannot be known whether the sparcity of data made all of the analyses meaningless, or whether the non-significant results obtained reflect the inadequacy of the test as a measure of the handling of human content in relation to inhibition. The test may be inadequate for the subjects of this

study, and may be adequate for other types of subjects who would be less affected by features stemming from the visual and motor aspects of the test.

In general, inhibition measures seem to have stronger relationships with the handling of human figures in activity than with the handling of relatively passive human figures. The non-conclusive results for reversing and M on the Rorschach cards, and the stronger results for H seem to be contradictory to such a conclusion. However, the factor of intelligence level, alone, could have caused the non-conclusive results for M on the Rorschach cards. Earlier studies have shown relationships for M and inhibition measures, and analyses of the Picture Selection Test in relation to inhibition measures in this study consistently showed stronger results for active human figures than for relatively passive human figures.

If H is actually a stronger measure than M for the handling of human content on the Rorschach cards because of the influence of such factors as the relationship between M on the Rorschach and intelligence level, then it might be that studies of psychiatric subjects would show even stronger results for H than for M.

Differences were not found for standard deviations of reaction times of the reversers and the non-reversers or of the CIT subjects for the Rorschach cards or the Picture Selection Test. The poor inhibitors tended to have slower reaction

times than did the good inhibitors to the Rorschach cards, which may have aided the poor inhibitors in the production of more M responses. It would seem that reaction times to the Rorschach cards are not strong measures of ability to inhibit without a consideration of quality of responses produced. It appears that the relatively structured nature of the Picture Selection Test allows enough assistance to the subject in producing responses that reaction times for first responses are meaningless as measures of inhibition times. It may be that reaction times for actual human content responses would be more meaningful measures of inhibition times, as such inhibition times may be related to the handling of human content on these tests, than would reaction times for first responses.

The fact that CIT, which is a measure of reaction times, appeared to be related to results on the Picture Selection Test, and yet the analyses of standard deviations of reaction times to the Rorschach cards and the Picture Selection Test showed no relationships, suggests that CIT is the most adequate inhibition time measure of the three reaction time measures. In the CIT task the subject is required to inhibit. However, reaction times for first responses to the Rorschach cards are probably not fully meaningful measures of inhibition times without consideration of quality of responses produced, while reaction times for first responses to the Picture Selection Test are probably not measures of inhibition

times because the test contains readily available stimuli for responses to be produced during an inhibition period.

The poor inhibitors were expected to have longer times for the relatively defined CIT task, and to have deviant, that is, longer or shorter reaction times for the Rorschach cards and the Picture Selection Test. Since the poor inhibitors tended to have longer reaction times for first responses to the Rorschach cards, it might be that analyses of elapsed times are more adequate measures of inhibition times for the Rorschach cards than analyses of variability in reaction times. Possibly the poor inhibitors took more time in order to produce more adequate responses. Since the psychiatric subjects might not be able to make use of more time in producing more adequate responses, analyses of variability in reaction times for first responses to the Rorschach cards might be more pertinent for psychiatric subjects than for normal subjects.

Some suggestions for future studies were:

1. Analyses of psychiatric versus normal subjects for relationships between the two measures of inhibition and the three test situations.

2. Analyses of psychiatric versus normal subjects to determine differences in ways of inhibiting on the two inhibition tasks.

3. Analyses of psychiatric versus normal subjects to determine differences in the handling and perceiving of M on the Rorschach.

4. Analyses of both psychiatric and normal subjects to see if H may be a stronger measure of the handling of human content in relation to inhibition with psychiatric subjects as well as with normal subjects (as was indicated by this study), and also to see if H is possibly a stronger measure of the handling of human content than M for the Rorschach test, since M may be affected by intelligence.

5. Analyses of both random selection and controlling for IQ scores, to see if reversers are actually brighter than non-reversers when they have the same IQ scores.

6. Further analyses of CIT and reversing inhibition measures in relation to the handling of human content in situations of possibly varying degrees of structure.

7. Analyses of the Kinget test for more information concerning number and variability of human content responses for various age levels, for sex differences, and for psychiatric versus normal subjects.

8. Further analyses of the Picture Selection Test to more nearly define H and M measures, to see differences between verbalization and "dealing with" measures, and to more nearly determine what dynamics underly these responses for various subjects.

9. Analyses of reaction times to human content responses as possible more adequate measures of inhibition times for the Rorschach test and the Picture Selection Test than reaction times for first responses to these tests.

10. Analyses of the adequacy of variability in reaction times and lengths of time for first responses to Rorschach cards as measures of inhibition times, with psychiatric and normal subjects, since normal poor inhibitors may take more time and produce more adequate responses than may psychiatric poor inhibitors.

11. Analyses of possible relationships between adequacy of responses produced, lengths of response times, and inhibition measures for Rorschach cards, with psychiatric and normal subjects.

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APPENDIX

Table 58

OSPE Scores of the Reversers and the Non-reversers

OSPE Score	Number of Subjects	
	Reverser	Non-reverser
10	3	3
9	4	4
8	4	3
7	7	7
6	4	5
5	7	7
4	4	4
3	3	3
2	3	2
1	1	2
Total	40	40

Table 59

Number of H Responses to the Rorschach Cards Produced by the Reversers and the Non-reversers

Number of H Responses	Number of Subjects Reverser	Non-reverser
0	22	22
1	13	3
2	5	9
3	0	3
4	0	1
5	0	2
Total	40	40

Table 60

Combined Number of H and M Responses to the Rorschach Cards Produced by the Reversers and the Non-reversers

Combined Number of H and M Responses	Number of Subjects	
	Reverser	Non-reverser
0	6	3
1	6	8
2	15	5
3	7	6
4	0	7
5	4	3
6	1	3
7	1	0
8	0	2
9	0	2
10	0	0
11	0	0
12	0	1
Total	40	40

Table 61

Number of M Responses to the Rorschach Cards Produced by the Reversers and the Non-reversers

Number of M Responses	Number of Subjects	
	Reverser	Non-reverser
0	10	5
1	10	10
2	11	8
3	5	8
4	2	3
5	0	2
6	2	2
7	0	1
8	0	1
Total	40	40

Table 62

Median Reaction Times to the Rorschach Cards of the Reversers and the Non-reversers

Reaction Time	Number of Subjects	
	Reverser	Non-reverser
0 - 4	4	4
5 - 9	3	13
10 - 14	3	10
15 - 19	8	5
20 - 24	9	1
25 - 29	2	1
30 - 34	3	1
35 - 39	4	2
40 - 44	0	1
45 - 49	2	0
50 - 54	0	1
55 - 59	0	0
60 - 64	1	0
65 - 69	1	1
Total	40	40

Table 63

Median CIT Scores of the Reversers and the Non-reversers

Median CIT Score	Number of Subjects	
	Reverser	Non-reverser
1.0	0	0
1.1	0	1
1.2	1	0
1.3	0	0
1.4	0	0
1.5	0	1
1.6	3	2
1.7	4	1
1.8	4	3
1.9	3	1
2.0	1	1
2.1	2	2
2.2	1	5
2.3	3	2
2.4	2	2
2.5	2	5
2.6	3	0
2.7	2	1
2.8	0	4
2.9	1	1
3.0	1	2
3.1	1	0
3.2	2	1
3.3	0	1
3.4	0	1
3.5	0	1
3.6	0	0
3.7	0	0
3.8	0	0
3.9	3	0
4.0	0	0
4.1	1	0
4.2	0	0
4.3	0	0
4.4	0	1
4.5	0	0
4.6	0	0
4.7	0	1
4.8	0	0
4.9	0	0
5.0	0	0
Total	40	40

Table 64

Distributions of Median CIT Scores of the Long and Short CIT Groups

CIT Score	Number of Subjects			
	Long CIT		Short CIT	
	Reverser	Non-reverser	Reverser	Non-reverser
1.1	0	0	0	1
1.2	0	0	1	0
1.3	0	0	0	0
1.4	0	0	0	0
1.5	0	0	0	1
1.6	0	0	3	2
1.7	0	0	4	1
1.8	0	0	4	3
1.9	0	0	3	1
2.0	0	0	1	1
2.1	0	0	2	2
2.2	0	0	1	5
2.3	1	0	2	2
2.4	2	2	0	0
2.5	2	5	0	0
2.6	3	0	0	0
2.7	2	1	0	0
2.8	0	4	0	0
2.9	1	1	0	0
3.0	1	2	0	0
3.1	1	0	0	0
3.2	2	1	0	0
3.3	0	1	0	0
3.4	0	1	0	0
3.5	0	1	0	0
3.6	0	0	0	0
3.7	0	0	0	0
3.8	0	0	0	0
3.9	3	0	0	0
4.0	0	0	0	0
4.1	1	0	0	0
4.2	0	0	0	0
4.3	0	0	0	0
4.4	0	1	0	0
4.5	0	0	0	0
4.6	0	0	0	0
4.7	0	1	0	0
Total	19	21	21	19

Table 65

Number of Reversers and Non-reversers

in the Long and Short CIT Groups

Number of Subjects	Long CIT		Short CIT	
	Reverser	Non-reverser	Reverser	Non-reverser
1st 20	9	11	12	8
1st 25	11	14	15	10
1st 30	15	15	18	12
1st 35	16	19	19	16
40	19	21	21	19

Table 66

OSPE Scores of the Long and Short CIT Subjects

OSPE Score	Number of Subjects Long CIT	Short CIT
10	5	1
9	4	4
8	2	5
7	8	6
6	3	6
5	8	6
4	4	4
3	4	2
2	2	3
1	0	3
Total	40	40

Table 67

Number of H Responses to the Rorschach Cards Produced by the Long and Short CIT Subjects

Number of H Responses	Number of Subjects	
	Long CIT	Short CIT
0	21	23
1	8	8
2	10	4
3	1	2
4	0	1
5	0	2
6	0	0
7	0	0
8	0	0
9	0	0
Total	40	40

Table 68

Combined Number of H and M Responses to the Rorschach Cards Produced by the Long and Short CIT Subjects

Combined Number of H and M Responses	Number of Subjects	
	Long CIT	Short CIT
0	3	6
1	5	9
2	14	6
3	6	7
4	4	3
5	4	3
6	1	3
7	1	0
8	1	1
9	1	1
10	0	0
11	0	0
12	0	1
Total	40	40

Table 69

Number of M Responses to the Rorschach Cards Produced by the Long and Short CIT Subjects

Number of M Responses	Number of Subjects	
	Long CIT	Short CIT
0	6	9
1	8	12
2	14	5
3	6	7
4	2	3
5	1	1
6	2	2
7	1	0
8	0	1
Total	40	40

Table 70

Median Reaction Times to the Rorschach Cards of the Long and Short CIT Subjects

Reaction Time	Number of Subjects	
	Long CIT	Short CIT
0 - 4	3	5
5 - 9	7	9
10 - 14	6	7
15 - 19	7	6
20 - 24	6	4
25 - 29	2	1
30 - 34	3	1
35 - 39	3	3
40 - 44	1	0
45 - 49	0	2
50 - 54	1	0
55 - 59	0	0
60 - 64	0	1
65 - 69	1	1
Total	40	40

Table 71

Number of Human Figures on the Kinget Test Drawn by the Reversers and the Non-reversers

Number of Human Figures	Number of Subjects	
	Reverser	Non-reverser
0	16	15
1	7	17
2	11	6
3	5	2
4	1	0
5	0	0
6	0	0
Total	40	40

Table 72

Combined Number of Human Figures and Human Figures in Activity on the Kinget Test Drawn by the Reversers and the Non-reversers

Number of Human Figures plus Human Figures in Activity	Number of Subjects	
	Reverser	Non-reverser
0	15	14
1	7	17
2	10	6
3	5	2
4	1	0
5	1	1
6	1	0
Total	40	40

Table 73

Number of Human Figures in Activity on the Kinget Test Drawn by the Reversers and the Non-reversers

Number of Human Figures in Activity	Number of Subjects	
	Reverser	Non-reverser
0	37	37
1	0	2
2	0	0
3	3	1
Total	40	40

Table 74

Presence of Stick Figures on the Kinget Test Drawn by the Reversers and the Non-reversers

Presence of Stick Figures	Number of Subjects	
	Reverser	Non-reverser
Yes	3	0
No	37	40
Total	40	40

Table 75

Order of Human Figures on the Kinget Test Drawn by the Reversers and the Non-reversers

Order of Human Figures	Number of Subjects	
	Reverser	Non-reverser
1	7	8
2	8	6
3	0	4
4	2	1
5	2	1
6	0	2
7	2	0
8	2	3
0	17	15
Total	40	40

Table 76

Order of Human Figures and Human Figures in Activity on the Kinget Test Drawn by the Reversers and the Non-reversers

Order of Human Figures	Number of Subjects	
	Reverser	Non-reverser
1	7	8
2	8	6
3	0	4
4	3	1
5	3	2
6	0	2
7	2	0
8	2	3
0	15	14
Total	40	40

Table 77

Order of Human Figures in Activity on the Kinget Test Drawn by the Reversers and the Non-reversers

Order of Human Figures	Number of Subjects	
	Reverser	Non-reverser
1	0	0
2	1	0
3	0	0
4	1	0
5	1	2
6	0	0
7	0	0
8	0	1
0	37	37
Total	40	40

Table 78

Number of Human Figures on the Kinget Test Drawn by the Long and Short CIT Subjects

Number of Human Figures	Number of Subjects	
	Long CIT	Short CIT
0	13	18
1	11	13
2	10	7
3	5	2
4	1	0
5	0	0
Total	40	40

Table 79

Combined Number of Human Figures and Human Figures in Activity on the Kinget Test Drawn by the Long and Short CIT Subjects

Number of Human Figures plus Human Figures in Activity	Number of Subjects	
	Long CIT	Short CIT
0	13	16
1	10	14
2	10	6
3	4	3
4	1	0
5	1	1
6	1	0
Total	40	40

Table 80

Number of Human Figures in Activity on the Kinget Test Drawn by the Long and Short CIT Subjects

Number of Human Figures in Activity	Number of Subjects	
	Long CIT	Short CIT
0	37	37
1	1	1
2	0	0
3	2	2
Total	40	40

Table 81

Presence of Stick Figures on the Kinget Test Drawn by the Long and Short CIT Subjects

Presence of Stick Figures	Number of Subjects	
	Long CIT	Short CIT
Yes	0	3
No	40	37
Total	40	40

Table 82

Order of Human Figures on the Kinget Test Drawn by the Long and Short CIT Subjects

Order of Human Figures	Number of Subjects	
	Long CIT	Short CIT
1	11	4
2	6	8
3	2	2
4	1	2
5	1	2
6	1	1
7	0	2
8	4	1
0	14	18
Total	40	40

Table 83

Combined Order of Human Figures and Human Figures in Activity on the Kinget Test Drawn by the Long and Short CIT Subjects

Order of Human Figures plus Human Figures in Activity	Number of Subjects	
	Long CIT	Short CIT
1	11	4
2	6	8
3	2	2
4	1	3
5	2	3
6	1	1
7	0	2
8	4	1
0	13	16
Total	40	40

Table 84

Order of Human Figures in Activity on the Kinget Test Drawn by the Long and Short CIT Subjects

Order of Human Figures in Activity	Number of Subjects	
	Long CIT	Short CIT
1	0	0
2	0	1
3	0	0
4	0	1
5	2	1
6	0	0
7	0	0
8	1	0
0	37	37
Total	40	40

Table 85

Median Scores for Order of Dealing With Either of the Two Pictures of People in Each Picture Set of the Picture Selection Test of the Reversers and the Non-reversers

Median Score	Number of Subjects	
	Reverser	Non-reverser
1.0	2	2
1.5	6	3
2.0	13	13
2.5	8	2
3.0	5	9
3.5	2	3
4.0	3	4
4.5	0	2
5.0	1	1
5.5	0	0
6.0	0	0
6.5	0	1
Total	40	40

Table 86

Response Frequencies for Order of Dealing With "H" Pictures on the Picture Selection Test for Response Positions 1, 2, 3, 8, 9, and 10 of the Reversers and the Non-reversers

Number of Responses	Number of Subjects	
	Reverser	Non-reverser
0	0	0
1	0	0
2	1	2
3	4	0
4	2	5
5	5	9
6	8	12
7	14	7
8	4	3
9	0	1
10	2	1
Total	40	40

Table 87

Response Frequencies for Order of Dealing With "H" Pictures on the Picture Selection Test for Response Positions 1, 2, 3, and 4 of the Reversers and the Non-reversers

Number of Responses	Number of Subjects	
	Reverser	Non-reverser
0	0	0
1	2	3
2	0	4
3	10	6
4	8	7
5	9	6
6	3	6
7	2	5
8	3	1
9	2	1
10	1	1
Total	40	40

Table 88

Response Frequencies for Order of Dealing With Either "H" or "M" Pictures on the Picture Selection Test for Response Positions 1, 2, 3, and 4 of the Reversers and the Non-reversers

Number of Responses	Number of Subjects	
	Reverser	Non-reverser
0	0	0
1	0	0
2	0	0
3	0	1
4	0	1
5	1	3
6	3	6
7	5	6
8	7	8
9	12	7
10	12	8
Total	40	40

Table 89

Response Frequencies for Order of Dealing With "M" Pictures on the Picture Selection Test for Response Positions 1, 2, 3, and 4 of the Reversers and the Non-reversers

Number of Responses	Number of Subjects	
	Reverser	Non-reverser
0	0	0
1	2	3
2	1	4
3	3	3
4	5	10
5	3	4
6	10	7
7	9	2
8	4	5
9	1	1
10	2	1
Total	40	40

Table 90

Response Frequencies for Order of Verbalizations of H on the Picture Selection Test for Response Positions 1, 2, 3, and 4 of the Reversers and the Non-reversers

Number of Responses	Number of Subjects	
	Reverser	Non-reverser
0	3	4
1	3	8
2	9	6
3	2	4
4	8	5
5	6	4
6	3	4
7	2	4
8	0	0
9	3	0
10	0	0
11	0	0
12	1	1
13	0	0
14	0	0
15	0	0
16	0	0
Total	40	40

Table 91

Response Frequencies for Order of Verbalizations of H on the Picture Selection Test for Response Positions 1, 2, 3, 8, 9, and 10 of the Reversers and the Non-reversers

Number of Responses	Number of Subjects	
	Reverser	Non-reverser
0	1	1
1	3	4
2	7	6
3	7	8
4	4	4
5	3	7
6	4	1
7	4	3
8	3	3
9	1	1
10	1	1
11	0	1
12	1	0
13	1	0
Total	40	40

Table 92

Response Frequencies for Order of Verbalizations of H on the Picture Selection Test for Response Positions 1, 2, 9, and 10 of the Reversers and the Non-reversers

Number of Responses	Number of Subjects	
	Reverser	Non-reverser
0	4	4
1	7	9
2	6	9
3	6	6
4	6	2
5	3	2
6	4	5
7	3	2
8	0	1
9	0	0
10	0	0
11	1	0
Total	40	40

Table 93

Response Frequencies for Combined Order of Verbalizations of H and M on the Picture Selection Test for Response Positions 1, 2, 3, and 4 of the Reversers and the Non-reversers

Number of Responses	Number of Subjects	
	Reverser	Non-reverser
0	0	0
1	0	0
2	0	0
3	0	2
4	1	1
5	1	1
6	3	3
7	2	6
8	3	6
9	7	6
10	7	5
11	4	2
12	3	3
13	3	2
14	2	0
15	0	0
16	1	1
17	1	1
18	1	1
19	0	0
20	1	0
Total	40	40

Table 94

Response Frequencies for Order of Verbalizations of M on the Picture Selection Test for Response Positions 1, 2, 3, and 4 of the Reversers and the Non-reversers

Number of Responses	Number of Subjects	
	Reverser	Non-reverser
0	3	0
1	2	4
2	1	2
3	1	9
4	3	0
5	2	8
6	8	4
7	5	3
8	5	2
9	4	2
10	4	1
11	0	2
12	1	1
13	0	1
14	0	0
15	0	1
16	1	0
Total	40	40

Table 95

Total Number of H Verbalizations of the Reverser and the Non-reverser Subjects

Total Number of H for Subjects	Number of Subjects	
	Reverser	Non-reverser
0	1	1
1	0	2
2	1	1
3	7	2
4	4	5
5	1	6
6	3	4
7	1	2
8	2	4
9	4	4
10	6	1
11	3	1
12	2	2
13	1	0
14	1	1
15	1	1
16	2	1
17	0	1
18	0	1
Total	40	40

Table 96

Total Number of H and M Verbalizations of the Reverser and the Non-reverser Subjects

Total Number of H and M for Subjects	Number of Subjects	
	Reverser	Non-reverser
9	0	1
10	0	0
11	0	0
12	1	0
13	0	0
14	0	1
15	0	0
16	1	0
17	2	1
18	0	2
19	5	10
20	31	25
Total	40	40

Table 97

Total Number of M Verbalizations of the Reverser and the Non-reverser Subjects

Total Number of M for Subjects	Number of Subjects	
	Reverser	Non-reverser
0	2	0
1	1	0
2	1	1
3	0	2
4	0	2
5	0	0
6	1	1
7	1	2
8	2	2
9	2	1
10	7	1
11	3	4
12	2	4
13	2	2
14	2	4
15	1	6
16	6	2
17	5	2
18	1	2
19	0	2
20	1	0
Total	40	40

Table 98

Median Reaction Times to the Picture Selection Test of the Reversers and the Non-reversers

Reaction Time	Number of Subjects	
	Reverser	Non-reverser
1	4	5
2	8	13
3	13	10
4	8	4
5	3	3
6	1	0
7	2	2
8	0	1
9	0	1
10	0	0
11	1	0
12	0	1
Total	40	40

Table 99

Median Scores for Order of Dealing With Either of the Two Pictures of People in Each Picture Set of the Picture Selection Test of the Long and Short CIT Subjects

Median Score	Number of Subjects	
	Long CIT	Short CIT
1.0	4	0
1.5	8	1
2.0	7	19
2.5	3	7
3.0	6	8
3.5	4	1
4.0	4	3
4.5	1	1
5.0	2	0
5.5	0	0
6.0	0	0
6.5	1	0
Total	40	40

Table 100

Response Frequencies for Order of Dealing With "H" Pictures on the Picture Selection Test for Response Positions 1, 2, 3, and 4 of the Long and Short CIT Subjects

Number of Responses	Number of Subjects Long CIT	Short CIT
0	0	0
1	4	1
2	3	1
3	8	8
4	3	12
5	7	8
6	4	5
7	3	4
8	3	1
9	3	0
10	2	0
Total	40	40

Table 101

Response Frequencies for Order of Dealing With "H" Pictures on the Picture Selection Test for Response Positions 1, 2, 9, and 10 of the Long and Short CIT Subjects

Number of Responses	Number of Subjects Long CIT	Short CIT
0	0	0
1	2	3
2	3	5
3	12	6
4	3	14
5	6	7
6	10	4
7	0	1
8	2	0
9	1	0
10	1	0
Total	40	40

Table 102

Response Frequencies for Order of Dealing With "H" Pictures on the Picture Selection Test for Response Positions 1, 2, 3, 8, 9, and 10 of the Long and Short CIT Subjects

Number of Responses	Number of Subjects	
	Long CIT	Short CIT
0	0	0
1	0	0
2	0	3
3	2	2
4	2	5
5	9	5
6	10	10
7	11	10
8	2	5
9	1	0
10	3	0
Total	40	40

Table 103

Response Frequencies for Order of Dealing With Either "H" or "M" Pictures on the Picture Selection Test for Response Positions 1, 2, 3, and 4 of the Long and Short CIT Subjects

Number of Responses	Number of Subjects	
	Long CIT	Short CIT
0	0	0
1	0	0
2	0	0
3	1	0
4	1	0
5	3	1
6	5	4
7	7	4
8	5	10
9	7	12
10	11	9
Total	40	40

Table 104

Response Frequencies for Order of Dealing With "M" Pictures on the Picture Selection Test for Response Positions 1, 2, 3, and 4 of the Long and Short CIT Subjects

Number of Responses	Number of Subjects Long CIT	Short CIT
0	0	0
1	2	3
2	2	3
3	4	2
4	8	7
5	5	2
6	6	11
7	4	7
8	4	5
9	2	0
10	3	0
Total	40	40

Table 105

Response Frequencies for Order of Verbalizations of H on the Picture Selection Test for Response Positions 1, 2, 3, and 4 of the Long and Short CIT Subjects

Number of Responses	Number of Subjects Long CIT	Short CIT
0	4	3
1	9	2
2	4	11
3	2	4
4	5	8
5	5	5
6	3	4
7	4	2
8	0	0
9	2	1
10	0	0
11	0	0
12	2	0
Total	40	40

Table 106

Response Frequencies for Order of Verbalizations of H on the Picture Selection Test for Response Positions 1, 2, 3, 8, 9, and 10 of the Long and Short CIT Subjects

Number of Responses	Number of Subjects Long CIT	Short CIT
0	2	0
1	2	5
2	6	7
3	7	8
4	5	3
5	3	7
6	0	5
7	6	1
8	4	2
9	2	0
10	1	1
11	1	0
12	1	0
13	0	1
Total	40	40

Table 107

Response Frequencies for Order of Verbalizations of H on the Picture Selection Test for Response Positions 1, 2, 9, and 10 of the Long and Short CIT Subjects

Number of Responses	Number of Subjects	
	Long CIT	Short CIT
0	4	4
1	9	7
2	6	9
3	4	8
4	3	5
5	3	2
6	6	3
7	4	1
8	1	0
9	0	0
10	0	0
11	0	1
Total	40	40

Table 108

Response Frequencies for Combined Order of Verbalizations of H and M on the Picture Selection Test for Response Positions 1, 2, 3, and 4 of the Long and Short CIT Subjects

Number of Responses	Number of Subjects	
	Long CIT	Short CIT
0	0	0
1	0	0
2	0	0
3	2	0
4	1	1
5	1	1
6	5	1
7	3	5
8	3	6
9	6	7
10	5	7
11	0	6
12	4	2
13	3	2
14	0	2
15	0	0
16	2	0
17	2	0
18	2	0
19	0	0
20	1	0
Total	40	40

Table 109

Response Frequencies for Order of Verbalizations of M on the Picture Selection Test for Response Positions 1, 2, 3, and 4 of the Long and Short CIT Subjects

Number of Responses	Number of Subjects	
	Long CIT	Short CIT
0	1	2
1	3	3
2	2	1
3	5	5
4	2	1
5	6	4
6	6	6
7	4	4
8	3	4
9	0	6
10	2	3
11	1	1
12	2	0
13	1	0
14	0	0
15	1	0
16	1	0
Total	40	40

Table 110

Total Number of H Verbalizations of the Long and Short CIT Subjects

Total Number of M for Subjects	Number of Subjects	
	Long CIT	Short CIT
0	2	0
1	1	1
2	2	0
3	2	7
4	4	5
5	5	2
6	1	6
7	2	1
8	3	3
9	3	5
10	6	1
11	1	3
12	2	2
13	1	0
14	2	0
15	1	1
16	1	2
17	1	0
18	0	1
Total	40	40

Table 111

Total Number of H and M Verbalizations of the Long and Short CIT Subjects

Total Number of H and M for Subjects	Number of Subjects	
	Long CIT	Short CIT
9	1	0
10	0	0
11	0	0
12	0	1
13	0	0
14	1	0
15	0	0
16	0	1
17	2	1
18	2	0
19	5	10
20	29	27
Total	40	40

Table 112

Total Number of M Verbalizations of the Long and Short CIT Subjects

Total Number of M for Subjects	Number of Subjects	
	Long CIT	Short CIT
0	0	2
1	1	0
2	1	1
3	1	1
4	1	1
5	0	0
6	2	0
7	3	0
8	1	3
9	1	2
10	6	2
11	4	3
12	2	4
13	3	1
14	1	5
15	3	4
16	4	4
17	1	6
18	2	1
19	2	0
20	1	0
Total	40	40

Table 113

Median Reaction Times to the Picture Selection Test of the Long and Short CIT Subjects

Reaction Time	Number of Subjects	
	Long CIT	Short CIT
1	2	7
2	11	10
3	13	10
4	8	4
5	1	5
6	1	0
7	1	3
8	1	0
9	1	0
10	0	0
11	0	1
12	1	0
Total	40	40

Cognitive Inhibition Test Words

love	--	hate
father	--	mother
party	--	fun
suicide	--	death
house	--	home
bite	--	teeth
hat	--	coat
drink	--	water
tobacco	--	smoke
book	--	read