THE EFFECT OF COLOR ON HUMAN FIGURE DRAWINGS
AS RELATED TO LEVEL OF SOCIAL ADAPTABILITY

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CHAPTER I
INTRODUCTION

By the end of the 19th century early psychologists were trying various unstructured stimuli in experimentation for personality assessment. By the 1930's these ideas arose from within the relatively new science of psychology, and were proclaimed at the time as a revolutionary new method of learning more about man's personality - projectives. Early followers in this "projective movement" believed that projective tests could offer X-rays of personality by study and evaluation of the "total personality". Psychometricians of the times, however, gave them no real serious consideration. There were two early conceptual problems that gave rise to this: (a) the nature of projection, and (b) the assumptions of projective theory (King, 1960).

The first problem was approached by Freud who possibly foresaw projective techniques as instruments compatible with his psycho-analytic theory. Initially Freud viewed the nature of projection as being simply a defense mechanism. "A person who ascribes to another person a trait or desire of his own that it would be painful for his ego to admit, is said to be projecting..." (p. 22; Anderson, 1951).
In its inception by Freud then, the idea of "projection" had only psychopathological connotations.

It was considered the main mechanism underlying paranoia and paranoid disorders. The tendency on the part of the patient to externalize unacceptable inner drives and other undesirable internal proclivities to the outer world was described as projection (p. 9; Rabin, 1968).

Later in his life Freud and his followers added more to their original definition and wrote concerning projection that:

...it makes its appearance not only in paranoia but under other psychological conditions as well; in fact it has a regular share assigned to it in our attitude to the external world. For when we refer the causes of certain sensations to the external world, instead of looking for them (as we do in the case of others) inside ourselves this normal proceeding, too, deserves to be called projection (p. 452; Freud, 1949).

Bell (1968) suggested that the role of a person's unconscious was the chief determinant of projection. He, like Freud, saw the attribution of unconscious impulses, feelings, ideas, and attitudes upon others through the projective process. He also believed that projecting was a natural drive in the individual, to reduce personal tension.

In 1938 Murray introduced the term "projective tests" and described the methods as follows:

In an attempt to discover the covert (inhibited) and unconscious (partially repressed) tendencies of normal persons, a number of procedures were devised. These procedures are simply different methods of stimulating imaginative processes and facilitating their expression in words or in action (p. 8).

Rabin (1968) tells that:
With the orientation that "personalities constitute the subject matter of psychology", Murray and his associates rejected the exclusive positivism, peripheralism and elementarism which dominated the psychology of that period. They advocated a more dynamic approach to personality; one that is concerned with "drives, images, needs, or instincts" (p. 7).

For psychology a new era had begun, revolt against the traditional academic, and arid psychology of the times. The Rorschach is considered to be the first research instrument used by clinicians to be classified as a projective technique. Its success and popularity played a major role in spearheading the projective technique movement (Abraham, 1973).

Rorschach (1942) believed that his inkblot technique measured the subject's contact with reality or affectivity, and he cited three important factors of this measurement: Form, Movement, and Color. A subject that associates an inkblot with a butterfly because he believes they look similar has based his association on the inkblots' form. If a subject sees a flying butterfly, he has added a movement condition to his association of butterflies (although the inkblot is obviously not moving). Another subject may respond, "a bat, because it is black", which shows he is cueing his association by color. The total number of each kind of response on the test yields an indication of how a subject deals with reality and how realistic his mode for associations is.

In 1939, Lawrence Frank published the first theore-
tical paper on projective methods for the study of personality. In this work (which was later expanded into a monograph) he describes a projective technique as "a method of studying the personality by confronting the subject with a situation to which he will respond according to what the situation means to him and how he feels when so responding" (Frank, 1948, p. 46).

Rabin (1968) summed up what he believed to be the necessary ingredients for a thoroughgoing and complete definition of projective techniques:

In the first place, the nature of the stimulus is characterized mainly by its ambiguity or, more appropriately, by the freedom it allows the respondent, due to the fact that it is not overly limited to conventional form requiring conventional response. Secondly, the response, the task of the subject, involves quantity, variety and richness with little awareness of the purpose to which the material may be part, and the implications that may be drawn from it. Third, the task of the examiner-interpreter is complex, for his analysis is holistic-ideographic, and he attributes to the responses that he obtains a multi-dimensionality necessary for such analysis (pp. 11-12).

What all this meant was that finally, in the 1930's, the new projective techniques enabled psychologists to contribute and communicate meaningful information to their professional colleagues in other fields about personality, dynamics, and diagnosis of patients. Before this time psychologists had few concepts to apply and only numbers to show as any sort of diagnosis. This fact was a source of motivation for many psychologists. Murstein (1965) in his
introduction asks:

Could the unique configuration of habits, traits, and genetic background that made up his personality really be understood by a score of "27" on a neurotic inventory? Those who answered this question in the negative eagerly seized on the newly arrived projective techniques as "saviors" of the unique personality (Introduction, XV).

Also during this time it was suggested that paper-and-pencil tests could be biased by social desirability factors which, at the time, was not believed possible with projective techniques. Only projective tests, it was thought, could break into a person's inner world and disclose information that could not otherwise be revealed by the individual (Murstein, 1965).

Unfortunately projective techniques did not live up to their expectations of being psychological X-rays, and therefore did not bring about the salvation of the "unique personality" hoped for. Masling (1965) says that belief in this X-ray idea (King, 1960) has resulted in the failure of researchers to correctly assess the situational and interpersonal factors' influence on the projective response. He states that:

Subsequent investigation has shown that the method of administration, the nature of the testing situation, the sex, status, and personality of the examiner, as well as the behavior of the subject, all influence the nature of the response and/or the interpretation given to it (p. 117; Murstein, 1965).

In a general sense, we are projecting whenever we respond to our environment according to our individual motivations, needs, and unique ways of doing things. A pro-
jective test (or technique) is an "instrument" especially sensitive to the covert or unconscious aspects of an individual's behavior, and which relays these "feelings" to the clinician by evoking responsive data with a minimum of subject awareness concerning the purpose of the testing (Lindsey, 1961). Frank (1948) commented: "The essential feature of a projective technique is that it evokes from the subject what is in various ways expressive of his private world and personality process" (p. 47).

Drawings hold a special place as projective instruments. They are minimally threatening and yet provide a good introduction into the clinician's testing procedure. When they are used to begin the battery of tests, an easy bridge is established to the clinical examination. Drawing tests are unthreatening, because the examiner can be excluded, for the most part, from the testing process. Especially with children, "drawings...serve as a means of more easily establishing rapport and are a good ice breaker with a shy and negative child (p. 258; Hammer, in Klopf er et al., 1956)."

It is this aspect of projectives, human figure drawings, which I have focused on in this study. I will now offer a more complete background, specifically on the Draw-A-Person test and the possible effects of color on a person's performance on the test.
CHAPTER II

BACKGROUND

"I could draw it," the dreamer says frequently, "but I don't know how to say it."

Sigmund Freud: New Introductory Lectures on Psychoanalysis

Drawing Test Uses

Man has from the beginning of time expressed himself through the use of pictures. It is, in fact, from the outgrowth of pictures that man devised his first crude symbols which eventually evolved into a written language. Though Konttinen (1958) quotes:

...comparatively little is known about the extent to which people are able to communicate by means of their drawings or about how the communication takes place (p. 1?).

drawing has historically been a natural mode of expression for man and one in which, in this century, much attention has been drawn to in terms of revealing personality. Stern (1952) has said:

The technique used (in drawings) is on a level with primitive thought. It is on the same plane as the unconscious thought itself... It seems that the affect emanating from a picture reaches into the unconscious more deeply than does that of language, due to the fact that pictorial expression is more
adequate to the developmental stage in which the trauma occurred; it has remained more within the range of the concrete and physical than has the verbal expression (Buck and Hammer, 1969, pp. 3-4).

There have been many scientific attempts to discover why man draws human figures the way he does. For over a hundred years now there has been a great interest in gaining insight into personality, emotional status, and mental abilities from drawings (Schildkrout, et al., 1972). These attempts can be split up into three major schools of thought. The first, exemplified by Goodenough (1926) and Harris (1963), sees human figure drawings as a developmental test of mental maturity. The second school of thought, suggested by Buck (1948) and Machover (1949), views human figure drawings as a projective technique which reveals personality traits. The third school, established by Koppitz (1968), tries to accept both approaches, attempting a compromise. Laura Bender, in the Preface to Schildkrout et al. (1972) states:

Goodenough established the use of children’s human figure drawings as an index of intellectual development while she also recognized that the drawings revealed emotional maturity and, thus, psychopathology. Machover used psychoanalytic theory and the concept that the human figure drawing was a projection of the internalized body image in her psychodiagnostic interpretations of drawings. Koppitz preferred the interpersonal relationship theories of Henry Stack Sullivan while she determined maturational levels in children (Preface, P. V.).

Human figure drawings then, have been used both as a developmental test and as a test of general personality adjustment.
Developmental Test Approach

Because psychometrics were predominant in the early stages of psychology as a science, the earliest psychological studies of human figure drawings were focused on mental development in children's drawings. In 1885 Ebenezer Cooke described stages of development in children through the use of their drawings. His work had an impact educationally, especially in art instruction. As time progressed the child study movement arose and many similar studies, chiefly descriptive, appeared (Ferez, 1963; Barnes, 1891, 1893; Skinn, 1897; Herrick 1893; O'Shea, 1894, 1897, 1921; Gotze, 1963). Each of these works created new interest in the meanings and uses of children's drawings (Goodenough, 1926).

The best known and valued research on the developmental approach to human figure drawings was done by Goodenough, (Abraham, 1973) who published her findings in Measurement of Intelligence by Drawings (1926). In this book she explained the fifty-one points of measurement by which she judged the drawings of children, four through nine years of age, demonstrating that children's drawings are closely associated with intellectual development. In this book she unveiled the "Draw-A-Man Test", standardizing and validating it, and provided a detailed scoring system for it. Her five item categories for judging the scoring included: (1) body parts, (2) dimensional representation proportion and perspective, (3) clothing and activity represented, (4) precision of motor control in the
execution of the drawing, and (5) the location of specific body parts. Goodenough (1926) claimed that her Draw-A-Man test was:

...a serviceable test for intellectual development, which is useful both in making comparisons between groups, and as a supplement to the usual type of intelligence test in the study of individual cases (p. 81).

It is worth noting that Goodenough believed that children draw what they know more than what they see and are thereby influenced by past experience rather than present reality. Goodenough even suggested that "drawings made by children might furnish considerable aid in the early diagnosis of personality disorders and mental adjustments" (Schildkrout, et al., 1972), since they are subjective reflections. It was not until later, however, that this hypothesis was embraced.

The Goodenough Draw-A-Man (D-A-M) test is a sound one, having a significant degree of correlation to I.Q. (Goodenough, 1926) and the verbal part of the California Mental Maturity Test (CMMT) (Coleman et al., 1959). In addition, the test is easy to administer and to score. A complete explanation of her test, with examples, can be found in her textbook (Goodenough, 1926).

The purpose of the Goodenough D-A-M Test is to give the clinician or researcher an approximation of a child subject's mental age. The child is given paper and pencil and is told to draw a complete picture of a man, taking as much time as he needs. The child is left alone to make the drawing. Coleman
et al. (1959) report:

The test makes three demands of the subject: (a) visualization of the human figure; (b) organization and interpretation (i.e., abstract conceptualization of form, etc.); (c) reproduction, by way of motor skills, of the visualized image, as seen and interpreted (p. 275).

In determining the mental age of the child, the basal age in this test is three. For each form criterion met by the drawing, the child is credited with an additional three months of intellectual development. The total number of months credited is then added to the basal age. This sum gives the child's mental age. Thus a child credited with twelve of the criteria in his drawing, would have a mental age score of six years.

This form of the Draw-A-Person stood for around 55 years until Dale Harris (1963) revised it, and published The Harris-Goodenough Test of Psychological Maturity. Anastasi (1961) observed that just as in the original test, the revision emphasizes the child's accuracy of observation and his development of conceptual thinking. Recently confirming this, Adier (1970) found that the figure drawing procedure was essentially a one factor test (cognition) and suggested that the major valid use of the test be in evaluating cognitive maturity. Cohn (1972) even later supported these findings, stating that the D-A-P may be more of an objective rather than a projective measure.

As was to be suggested later, however, a child's developmental level is not the sole determinant of his approach to
the drawing task. Goodenough and Harris both believed that the child would project salient aspects of his own self-image when asked to draw a person. Although scoring for Goodenough's D-A-N was quantitative, she conceded "that in a small proportion of drawings, qualitative differences may be observed of a type which cannot readily be accounted for" (pp. 62-63, 1926). These differences were classified into four types: the "Verbalist" type (large amount of detail conveying only a few concepts), the "Individual response" type (drawing has no meaning except to the child himself), "flight of ideas" type (as when only one eye is drawn) and "uneven mental development" type (when the same drawing consists of both mature and immature characteristics (Goodenough, 1926).

She concludes the presentation of her results by saying:

...the present experiment,...has by no means exhausted the possibilities which these drawings possess for the study of child development. ...if properly understood, they would contribute much to our knowledge of child interests and personality traits (p. 80).

Abraham (1973) observes that:

...it was not until the emergence of the "projective techniques" of personality research in the 1940's, that this potential of human figure drawings was fully recognized and the qualitative aspects of drawing explored (p. 4).

Projective Approach

In the 1930's there arose within psychology a revolution of protest against the rigidity of psychometrics in the study of personality. Clinicians began looking for some way to
get more information about their patients than simply I.Q., and in their efforts to discover the more dynamic processes of personality, had some success with projective techniques (Zubin, et al., 1965).

There are three basic assumptions underlying projective techniques. The first is that personality is a product of the interaction (or "active dynamic process") between an individual organism (of organic inheritance) and environmental experience. The second is that perception reflects both the internal and external world of the individual, being idiosyncratic and selective, resulting from the "dual process of socialization and individuation". The final assumption is that both environmental and personal factors determine the individual's idiosyncratic perceptions, which effect all overt behavior therefore no behavior can be considered "accidental" (Abraham, 1973). Hammer (1958) states:

...it may safely be said that every act, expression, or response of an individual—his gestures, perception, feelings, selections, verbalizations, or motor acts—in some way bears the stamp of his personality (p. 5).

What all this leads up to is that since all behavior has meaning, as being a reflection of an individual's "idiosyncratic perceptions", when the subject is presented with ambiguous stimuli (unlike any situation he has ever faced and therefore allowing unbiased responses) his "reaction" can be judged as an indication of his personality characteristics.

John Buck (1948) and Karen Nachower (1949) were two of
the first people to use drawings as a personality tool. They hypothesized that there are cues to the drawer's personality projected in drawings. They offered probably the first thorough attempt to provide a theoretical explanation for the projective qualities of human figure drawings. Nachover's central belief was that the drawer is guided by the image he has of himself (his body) and that he produces a drawing that involves both his conscious and unconscious attitudes and perceptions. She speculated that figure drawings, as a projection of inner thoughts, feelings, and personal style, reflect significant and persistent personality dispositions.

Nachover's Human Figure Drawing Test grew out of her experiences with the Goodenough drawing test for appraising children's intelligence, and Buck's House-Tree-Person test was born as an outcropping of an intelligence scale he was working on at the time (Hammer, 1958).

Levy (1958) offered the first real systematic explanation of the projective hypothesis in human figure drawings based on five assumptions about projective interpretation. He states first of all that, "The basic assumption is that figure drawings are determined" (p. 85). He next says that "a figure drawing is determined by nuclear psychodynamic factors" (p. 86), meaning the central components of personality. He stipulates that in order to have psychodiagnostic value a technique must be "concerned with segments of behavior which are nuclear". Thirdly he says that these nuclear
psychodynamic factors result in a "body image" concept produced in the figure drawing. In his fourth assumption he says,

Although a figure drawing is determined by a combination of cultural, personal training, biochemical, transitory and characteriological factors, the latter may be isolated, identified and to some extent quantified (p. 86).

His final assumption is that there are "intermediating operations" between the nuclear factors which affect the drawing and the figure drawing.

The research on drawings by Buck (1948), Machover (1949), and Levy (1958) along with the work of Goodenough (1926) and Harris (1963) has stimulated a steady flow of new research with projective drawings by researchers and clinicians alike, and has resulted in many variations of their original drawing tests by clinicians. Some of these variations include The Levy Animal-Drawing-Story Technique (LAOS) (Levy and Levy, 1952), The Drawing Completion Test (Kinget, 1952), Draw-A-Person-In-The Rain (Hammer, 1958), The Draw-A-Member-Of-A-Minority-Group Technique (Hammer, 1958), The Draw-A-Group Test (Here and Hore, 1956), The Family Drawing Test, (Reznikoff and Reznikoff, 1956), and the Kinetic Family Drawing (K-F-J) (Burns and Kaufman, 1970). It would appear that despite empirical confirmation of validity and reliability, clinical psychologists consider drawing tests valuable projective instruments, to help in the diagnosis and evaluation of emotional problems.
There appears to be a discrepant view of figure drawings, however, between clinicians and researchers. Researchers, for the most part, have dealt with the reliability and validity of both specific indicators and global evaluations. They are also interested in such factors as age, sex, race, type of instructions, cultural biases, induced stress, groups used, etc., which may affect the drawings. For a more complete background on the projective figure literature, the reader should consult the literature reviews of Swensen (1957, 1968), Roback (1968), Hammer (1969), and Molish (1972).

It is obvious from scanning any of these reviews that they abound in contradictory findings. Although figure drawing tests are among the most widely used projective tests (along with the Rorschach and Thematic Apperception Test), research findings on the D-A-P have consistently yielded contradictory findings. Swensen (1968) in fact concluded, "The one consistency is inconsistency" (p. 229). As a result of these inconsistencies in reliability and validity, the D-A-P is reportedly being used less and less both in clinical practices (Holt, 1967; Shomrby and Kelly, 1970) and in academic training curricula (McCully, 1965; Jackson and Wohl, 1966; Molish, 1969, 1972).

There were those however, who protested discarding the D-A-P completely (pointing out that these inconsistencies are common problems among all projective techniques, except Sentence Completion) and tried to uncover the causes of the
conflicting results. Abraham (1973) comments:

They were stimulated by the inconsistencies of empirical findings to uncover the causes of the conflicting results. In their attempts to do so they have improved research methodologies and conducted researches at a "substantially higher level of sophistication, and thus provided more support... for the use of human figure drawing as a diagnostic instrument" (Swensen, 1958, p. 211) (p. 13).

One area of investigation in the literature on projective drawings has tested the findings of Buck and Wachover to discover how applicable the use of graphic traits are in drawings, as cues to personality traits within the drawer (Beck, 1955; Blum, 1954; Jolles, 1952; Hammer, 1954; Ainsworth, 1951). Frequently however, the graphic traits were subjectively interpreted and related to personality traits equally subjectively attributed - such as teachers' judgment of a child's adjustment (Vane and Eisen, 1962). A personality trait was suggested (by a teacher for instance) and matched psychoanalytically with a graphic trait portrayed in the drawing.

In other cases (Levy, 1950; Pfanne, 1968) the size of the figure drawn was taken as an indication of self-concept. Later Bennett (1964) stated that a small drawing in itself does not automatically warrant a cookbook assumption that the drawer has feelings of inadequacy and warned of following simple correspondence techniques between graphic traits and personality traits.

It can be concluded then, that no single clue per se is specifically related to a personality trait or pattern of
traits. Rather it is the inter-relationship of the clues that leads to a generality about the personality. Simple correspondence techniques are invalid (Bennett, 1966).

Pursuing this line of thought, it would appear that graphic traits can be classified in two different categories. Some graphic traits are covert or overt symbolic representations of personality characteristics (i.e. have personality correlates: for instance, the graphic traits knees, fingernails, and ears may be associated with the personality characteristic homosexuality). Obviously since a homosexual (for example) will draw more graphic traits than just knees, fingernails, ears, or whatever graphic traits may correlate with homosexuality in his picture, there exists another category of graphic traits that bring into the drawer's picture a sense of reality (i.e. more closure for the picture) and may therefore be considered an index of reality for that person. It has already been suggested that human figure drawing can be used both as a developmental test and as a test of general personality adjustment. I am suggesting here that all of the graphic traits, depending upon the scoring system used, contribute to the developmental test score (which can be taken as an index of reality content), and within this total group of graphic traits there exists a sub-group which symbolically have personality correlates which are representations of personality characteristics.
Developmental-Projective Approach

Koppitz (1968), one researcher interested in the differences between "developmental scoring items" and "emotional indicators" stated:

...no one has ever made a comprehensive and systematic investigation of all the different aspects of HPDs [Human Figure Drawings] and of their relationship to each other (p. IX).

In her work she sets forth to do this, thereby tapping "the full richness of HPDs". She quotes that her system is:

An attempt...to analyze HPDs objectively for developmental and emotional signs and symbols and to interpret them clinically for personality dynamics (p. 3).

Her HPD test is standardized for males and females, 5 to 12 years old. In her instructions, she asks for a "whole" person, thereby avoiding cartoon and stick figures which may hide true projective feelings. Also only one drawing is asked for; Koppitz believes that a second drawing rarely offers any further information. Abraham (1973) says that, "Koppitz's most important deviation from the traditional approach to figure drawings is in her basic assumptions" (p. 16). Her basic assumptions are as follows:

...HPDs reflect primarily a child's level of development and his inter-personal relationships, that is, his attitudes toward himself and toward the significant others in his life... HPDs may reveal a child's attitudes toward life's stresses and his way of meeting them; drawings may also reflect strong fears and anxieties which may concern the child, consciously or unconsciously, at that given moment (Koppitz, 1968, pp. 3-4).

She further believes that:
...the HFDS is not regarded as a portrait of the child's basic and enduring personality traits nor as an image of the child's actual appearance. Instead, it is believed that HFDS reflect the child's current stage of mental development and his attitudes and concerns of the given moment, all of which will change in time due to maturation and experience. The HFDS' particular value is seen in its very sensitivity to change within the child, and these changes may be both developmental and/or emotional. The HFDS is regarded here as a portrait of the inner child of the moment (p. 4).

Koppitz then sees HFDS as indicators of mental maturity and socio-emotional maturity. She also points to a sort of "relativity" that is present and must be considered in children's drawings. Although this author found no statement by Koppitz in response to the lack of test-re-test reliabilities reported in the literature for her scoring system, it may actually be that because (according to Koppitz) children's HFDS reveal information which reflects "feelings at that given moment", we may not expect to get the same information about the same child reliably (which might also explain some of the research inconsistencies of others).

In this author's opinion, Koppitz is playing the projective approach of Machover off of the developmental approach of Goodenough and Harris, and producing findings which she believes result from the best information from both approaches. She believes that if developmental techniques give us developmental information and projective techniques give us projective information, then by using a developmental technique with projective interpretations, the HFDS will yield more information about the subject and offer a more reliable and
valid test.

Koppitz (1965) did find a number of signs on human figure drawings that were valid emotional indicators, distinguishing these from what she called developmental scoring items. I contend therefore from this study and from those mentioned previously in the section on the Projective Approach, that there are two inclusive classes of graphic traits - reality traits (what Koppitz calls "developmental scoring items") and personality traits (what Koppitz calls "emotional indicators").

There is then a considerable amount of information that can be obtained from human figure drawings. Goodenough (1926) and Harris (1963) saw them as an estimate of intelligence. It is possible to determine from a person's drawing whether he is below average, average, or above average in intelligence. (An exception must be made, however, with individuals who have suffered some functional or organic loss of intelligence.) This estimate of intelligence is made according to the quality of the drawing, e.g. correct body part proportions, inclusion of details, appropriateness of dress, and the overall expressive ability.

The drawer may also project qualities in his drawing that reflect his own self-concept. These may include his masculine versus feminine feelings (i.e. sexual identification) - drawing an opposite sex figure; grandiosity - drawing a person too large to fit on the paper entirely; inferiority - drawing a
disproportionately small figure (in relationship to the page); seductiveness - drawings with much adornment and general narcissistic qualities; and rebelliousness - drawings (typically adolescent) that show hostile or scowling expressions, stick figures, or partially completed human figure drawings (e.g. evidence of a lack of compliance to instructions to draw a whole person).

The drawer might also be projecting his concept of some other person, specifically when asked to make a second drawing (i.e. the first drawing may reveal his self-concept and the second drawing reveals his concept of others). This is evident in drawings by people who feel themselves inferior - they draw a small figure first and then a very large second figure, or by children who draw aggressive looking adult figures. Hostility is a quality that may be evident both in the self and other drawing, and is easily projected in human figure drawings through facial expression or by the inclusion of a weapon in the picture.

Human figure drawings may also yield an indication of an individual's reality contact. Bizarre facial expressions, diagramatic drawings (box-like figures), overtly symbolic drawings, transparent drawings, and empty drawings (empty features) are all signs of poor reality testing (usually pointing to psychoses). In some cases "bizarreness" may actually be a projection of the individual's acting out tendencies. Pictures depicting violence, nudes, or animal
(istic) characteristics are all indicative of aggressive impulses that lead to acting out (McElhaney, 1969).

One of the most informative pieces of information the human figure drawing yields is that of the drawer's defenses. "The way a person draws a human figure reveals the kinds of defenses that he is employing," (McElhaney, 1969, p. 6). The defenses most observed are repression - immature drawings, or drawings of "fairy tale" quality; regression - drawings below the intellectual level of the drawer; projection - drawings with specifically emphasized body parts (nose, joints, ears, etc.); and intellectualization - drawings that portray excessive attention to detail (e.g. eyelashes, shoe-strings, fingernails, etc.).

Human figure drawings may also reveal organic brain damage. Individuals with organic impairment are generally incapable of smooth symmetry in their drawings and are unable to draw good body parts proportions, all of which leads to the production of a bizarre human figure (McElhaney, 1969).

Color

Goethe suggested once that we leave the theoretical and approach the real, with the addition of color. We do, in fact live in a world of color where the chromatic character of an object cannot be easily separated from the identity. Because color is a vital environmental factor it is associated with the realistic.

 Lucklesh (1918) points to the psychological importance
of color saying:

The wonderful gift of color vision has made it possible to touch the emotional side of the human organisms through color in nature and through the use of color in such arts as painting, architecture, literature, dancing and drama... At least there is much of interest in the colors of nature, much that apparently is tuned in sympathy with human moods, and much that has been the source of our meagre language of color (p. 30).

Thompson and Bachrach (1951) state that:

The recognition of colors is but one step in color perception, followed by an association and fusion of colors to objects and classes of objects and these associations, in turn, effect the perception of the object (p. 173).

For example, a person first sees bananas as yellow, makes the association of the color to the bananas, and later on expects bananas, if they are indeed real, to be yellow. Perceptually then, it appears that the world is integrated in terms of color which goes beyond the simple knowledge or recognition of the color (Thompson and Bachrach, 1951).

Relating this to the Rorschach, Rapaport, et al. (1946) state that, "colors have an impact upon the associative processes similar to that of affects in everyday life..." (p. 238).

Because color is so important in our daily lives, I believe it would be reasonable to assume that a projective technique such as the D-A-T, which reflects a person's feelings generally speaking, would receive much from the addition of color.

Color has been an area of interest in psychology, from
its biological and psychological effects to its projective choice meanings. For the most part however, there exists an extensive literature on the projective uses of color, which tend to stress what particular color choices mean about a personality (Jaensch, 1930; Pfister, 1964; Zimmerman and Garfinkel, 1942; Bieber and Herkimer, 1948, Birren, 1952, 1978; Kowar, 1949; Alschuler and Mattwick, 1943). My interest is not in what particular colors mean in terms of a drawing test, however, or which colors are used the most; rather I am interested in the motivational effects of color overall in figure drawings, in relation to the drawing output.

A look through the literature, however, reveals that the research I am suggesting makes up a very grey area. The use of color with projective tests has not been frequently reported on in the literature (with the exception of the various color hypotheses suggested from the Rorschach). The motivational effects of color are dealt with primarily in industrial and educational research, which tends to report what colors are more conducive to higher quality and quantity in production. There are some psychological studies concerning color and personality which will be mentioned here and then I will review the pertinent findings dealing with the response to color on the Rorschach.

Color and Personality

Lemke (1931) found a significant relationship between bold and shy personality in the use of color and form in
crayon drawings with children from seventeen different elementary school classes. Heuver (1935) found that both colors and forms express feeling tones. Brower and Weider (1950) conducted a study similar to Lenke's (1931) and reported that high self-esteem subjects will use more colors in their drawings than low self-esteem subjects, the use of fewer colors being an index of emotional constriction.

It is worth noting that Goodenough (1926) in her instructions to the tester for her early form of the D-A-P stated that crayons were not to be used. This stipulation was accepted and continued to be observed by Goodenough and most other researchers of drawing tests, despite the fact that no published explanation was actually given for avoiding the use of color. Harris (1950) however, in an article, comments that clinicians generally agree that the use of color in drawings can be significant for studying personality.

Hammer (1958) took Buck's House-Tree-Person (H-T-P) procedure and looked at the differences in projective information between chromatic (color) drawings and achromatic (pencil) drawings. He concluded from his results that:

The data...suggest that the deduction that the achromatic and chromatic drawing phases of the H-T-P actually tap somewhat different levels of personality. The chromatic H-T-P cuts through the defenses to lay bare a deeper level of personality than does the achromatic set of drawings, and in this manner a crude hierarchy of the subject's conflicts and his defenses is established and a richer personality picture derived (p. 208).

Having a similar interest Spencer (1969), encouraged
by Buck, experimented with the H-T-P using crayons and watercolors and later reported:

As the experiment progressed, it seemed that a combination of the crayon H-T-P and the watercolor H-T-P produced more diagnostic and prognostic material than either one alone (p. 37).

Hammer (1969) offered a three-factor hypothesis to explain this clinically-observed phenomenon. First he suggested that the use of colors has an emotional impact upon the drawer. Second he believes the associative value of crayons "tends to elicit childhood adjustment levels in adult subjects". Thirdly, he believes that the subject's defenses are shattered and that he is more vulnerable psychologically by the time he is asked to make a color drawing.

Koppitz (1965) compared drawing medium and instructions and found that the D-I-P can be used as a developmental test of mental maturity regardless of the drawing medium used. She also discovered that the "emotional indicators" (of internal state; e.g. teeth, clouds, hands cut off, etc.) differed both in the number and type of pencil and crayon drawings. It has been found then, that there are differences in the number and type of graphic traits produced in color than in pencil.

Color and Motivation

There is also some relevant literature on the motivational effects of color. Research has been done in three major areas; color as a biological cue, the esthetic appeal of color resulting from the subject's experience, and the symbolic value
of stimuli dependent

...upon the subject's experience, but also upon the symbolic import of the stimulus within the context within which the colored stimulus is presented as well as the subject's more general cultural expectations (Schaie, 1963, p. 513).

It is known that colors can serve as biological cues for food seeking and mating behaviors in animals. Goethe (1943) suggested in his book Farbenlehre (Theory of Color) that the biological cue function of color may be of importance in human color response. Flack and Shick (1974) reported that there is a relationship between color and both blood pressure and pulse rate, and rate of breathing. Goldstein (1939, 1942) studied patients with organic pathology and found that backgrounds of different colors produced behavioral effects differentially different. Birren (1961) states that:

Though medical science may eschew the idea of color therapy for any direct biological action upon the human body, it does admit actions and influences in the realm of the psychic (p. 137).

He also says that, "color brings about a reflex action upon the vascular system, if only through the feelings and emotions" (1978, p. 47).

The aesthetic properties of colored stimuli are responsible for the mood state aroused in humans (happiness, distress, boredom, etc.). Schaie (1963) suggests that with the aesthetic function of color, "feelings may be elicited which relate to perceptual, tactual or kinesthetic sensations involving complex formal attributes of the stimulus" (p. 514). Goldstein (1950) reported that, "The influence of color is
increased in neurotics and psychotics" (p. 145). Another esthetic function of color causes the arousal of associations as exemplified in Karwoski and Obert's (1938) study of synesthetic experiences mediated by color with music. Deutsch (1950) says that:

...the emotional excitements (produced by color) are brought forth through association...these superficial associations lead to deeper lying memories, which explain the affective emphasis of the attitudes toward the colors (p. 156).

Colors may also have symbolic meaning and, depending on the particular culture, may have many symbolic meanings which are in fact contradictory. The color blue, for instance, is associated both with royalty (e.g. the color "royal blue") and depression (e.g. feeling "blue"). Overall, considering all three areas of study, it would appear that the motivating effects of the symbolic meaning(s) of color are grounded culturally and based on the esthetic properties of colored stimuli which are based on the biological cue functions.

Color then, may have some affects upon us biologically that are represented emotionally - good or bad, and these affects are represented as associations which are projections of our underlying feelings. These affects may be linked to motivation, both physiologically and psychologically. Birren (1978) comments:

It has long been known that the stimulation of color will produce reactions throughout the human organism and that the activity of one sense organ will influence another (p. 147).

In a fairly recent study, Francis Dwyer (1976) looked
at the effect of I.Q. level on the instructional effectiveness of black and white and color illustrations. He concluded that:

...it seems plausible that the effectiveness of the color treatment may be attributed to the fact that color increased student interest in the content material. There is also the possibility that we are dealing with a generation of students conditioned by color television and that color may be a prerequisite if optimum interest is to be aroused in a learning situation (p. 49).

Although the D-A-F is not a learning situation for the subject it is still clear that color may be a good medium to hold interest.

Birren (1978) refers to an article in Time magazine, September 17, 1973 which reported on some of the findings of a three year study by Henner Ertel, director of an institute for rationale psychology at Munich, on the impact of environmental color on the learning capacity of children. It reported that light blue, yellow, yellow-green, and orange (popular color) environments, raised I.Q. as much as 12 points, whereas in white, black, and brown environments, I.Q.'s dropped. It was also reported that the children were more alert and creative in the popular color environments, but became duller in the white, black, and brown environments (p. 51).

Schachtel (1943) summarizes the literature generally on color and motivation by saying:

...the nature of this connection (color and affect) has remained vague and has been expressed in circumscriptions, or in the most general terms, varying according to the more physiological, psychological,
or cultural interest of different observers. (p. 393).

There is then some reason to believe that color—whether as a biological cue, because of its esthetic appeal resulting from a person’s experience, or because of its symbolic value—has a motivational affect upon people.

**Rorschach Color Motivation**

Beck (1968) suggests that “the Rorschach inkblots yield information regarding the subject’s realities... The things which the patient says he sees are the measure of his ability to know reality” (p. 117). He goes on to say that the Rorschach technique allows for judging the reality the subject has experienced, using the reality experienced by society in general as a frame of reference. “When a person perceives in the test a large enough number of forms that agree with these criterion percepts (of society), we can predict of him that he will be a realist in a world external to himself” (p. 118).

Brody (1953) reports that “responses to color are utilized as indicators of the individual’s emotional responsiveness to the environment” (p. 263). He even goes so far as to suggest that the particular type of color response a person makes is an indication of the amount of control he has over his affectivity.

Schachtel (1943) believed that “A certain susceptibility to the stimulation by color in the perceptual organization of
a subject 'represents', or is related to this subject's affectivity (p. 394). He further suggests that, every color perception, even the mere registration of the presence of color as an "aside" from the focus of a person's attention and stream of experience, has, however slight, psychological and biological implications; but the color has to have a certain impact in order to have a determining effect on the response to the inkblots, and the subject has to be susceptible to this impact of color. If he is susceptible, this will mean that color will have impressed him many times and consequently his visual memory engrams will be colorful. Hence, the presence of color in the Rorschach plates will impress him, as color in the visible nature and material world around him has always impressed him, and in trying to find a likeness to the inkblots one or the other of these colorful engrams is likely to be recalled (p. 395).

Rorschach commented in his book (1942):

There is a definite correlation between the extent of emotional excitement, the extent of motor activity, and the number of responses influenced by color perception... Colors draw people into estratension... (p. 99).

This extratensiveness in normals leads to the control of both affectivity and motility, which results in social skill. Response to color then can be a measure of an individual's level of socialization (though too much affective and motile control inhibits social acting out). Beck (1968) puts it another way: "Response to color...presents information as to the individual's sensitivity to events known to be exacting to the healthy persons of his cultural group generally" (p. 27). The Rorschach then, exposes the relationship between the person's experienced reality and the realities with which he will collide and offers a better understanding
of the "representation" of affect by color. Beck (1968) also says that color response is an indication of feeling experience level. Anderson (1951) clarifies the color hypothesis as follows:

...whatever the significance of color reactions may be, the prediction made from such reactions will be in terms of an individual's reaction to commonly experienced aspects of the external environment (p. 532).

Klopfer's (1954) scoring technique of Rorschach's test yielded two different types of color response relationships: the absolute number of color responses, which he held as being a good measure of affective lability; and the percentage from the overall responses which made up the responses to the "color cards" (VIII, IX, X). This latter relationship is what I wish to tap with human figure drawings.

It would appear then, that people respond differently to color, depending upon their degree of "emotional responsiveness to the environment", or their level of socialization. From the Rorschach literature we would expect a highly socialized or socially adapted person to integrate both color and form well (i.e. make use of color to improve upon form). Likewise we would expect a poorly socialized or poorly socially adapted person to have a great difficulty in integrating color and form (i.e. using color to improve form) to the extent of losing form control. There would also be a middle group, falling into the "normative range" in terms of social adaptability, the numbers of which, although having
difficulty integrating color and form, are able to retain their form level (i.e. are unable to use color to improve form, but are able to sustain their form).

In relationship to drawings then, highly socialized people would be expected to portray more graphic traits given the use of color; people with a low level of social adaptability would be expected to portray more graphic traits with pencil, because of their loss of form control when using color; and the middle group's trait output would be expected to be about the same for color and pencil.

Summary

What has evolved primarily from Goodenough, Harris, Buck, Machover, and Koppitz is a psychoanalytic theory by which clinical psychologists assume that psychodynamics and symbolic expression are inter-related and, for any given individual, a knowledge of either will allow one to predict the other (e.g. people that draw teeth in their figure drawing(s) have aggressive emotions). This unfortunately leads to "cookbook" assumptions about the drawer's personality. The need for reliability causes researchers to press on from a belief in a single clue revealing a personality trait or pattern of traits.

Koppitz (1966a) for instance, first found 30 drawing items that have clinical validity as emotional indicators for children ages five through twelve and then designed a study to determine which of the emotional indicators were
related to the specific conscious or unconscious attitudes that are revealed by aggressive or shy behavior respectively (1966b). Only four of these emotional indicators appeared significantly more often on the drawings of aggressive subjects than on the drawings of shy subjects ($p < .05$) and only two appeared significantly more often on shy subjects' drawings than aggressive subjects' drawings, yet in her discussion she associates each significant emotional indicator with shyness or aggressiveness. Reliability, however, demands an inter-relationship of clues (or patterns of clues) that leads to some ideas about the total personality.

In the Draw-A-Person test, graphic traits yield the most obvious clues as to the drawer's personality. It appears to me that the more graphic traits portrayed in a drawing, the better picture the clinician will get about the subject's personality traits. Buck (1948) probably had this in mind when he asked his subjects for three different objects - a house, a tree, and a person.

I expect then, that subjects will respond differently in the drawings of graphic traits with pencil versus color. Specifically: some subjects will draw many more graphic traits with color, some subjects will draw a few more/less graphic traits using color (a negligible amount) or will show no consistent preference in the number of graphic traits produced in color versus pencil, and some subjects will decrease their graphic trait output when using color, as com-
pared to pencil.

I believe that the task before the clinician then is to "motivate" the subject to draw as many graphic traits as he can, without biasing his projection (i.e., getting the subject to draw as much as possible without telling him what to draw specifically, beyond the minimum instructions). Schubert demonstrated in his 1969 study, that D-A-P quality is a function of motivation. One area of interest in this thesis then, will be to discover whether the use of color by the subject will increase the number of graphic traits displayed overall. I believe that color, with its biological cues, esthetic properties, and symbolic value, will have such a motivating effect.

Hammer (1969) has commented that:

In its concern with the deciphering of the symbolic meaning of the different individual colors in various projective art techniques, psychodiagnostic psychology has bypassed an awareness of the perhaps richer clinical yield: the tapping of the generally deeper level of the personality by chromatic, as compared to the achromatic, projective drawings (p. 28).

Studies on color with the Rorschach have revealed that a person's response to the color cards is an indication of the person's emotional responsiveness to the environment (Brody, 1953). Schachtel (1943) believed that level of susceptibility to stimulation by color was an indication of the person's affectivity. Rorschach (1942) himself believed that colors drew people into extratension, and pointed to a definite correlation between affectivity and the number of responses
influenced by color. From the Rorschach literature we would expect then, that those subjects producing more graphic traits using color will score highest on the test of social adaptability, thus showing a high level of socialization; subjects whose graphic trait production is not affected by using color will score in the normative range on the test of social adaptability; and that subjects with a higher production of pencil graphic traits will score lowest on the test of social adaptability, suggesting social timidity and introversion.

Color then, would appear to have the potential to motivate people. This motivation would be reactionary, depending upon the person's degree of sensitivity and affectivity. Extratsensitivity results in the control of this affectivity and also a person's motility, all of which leads to social skill. This means that a person's response to color is a measure of his level of socialization. This has all lead me to make the following hypotheses:

(1) The use of color will yield significantly more graphic traits overall, as compared to the traditional pencil method.

(2) There will be a significant relationship between the number of graphic traits portrayed in color, and a person's degree of social adaptability.

I believe that if by the use of color, a significantly greater number of graphic traits are portrayed (than with the
traditional pencil medium; on the D-A-F, then future re-
search can then be done taking this color/trait hypothesis
into the arena of psychodynamics and symbolic expression,
along with the earlier findings of Rorschach (1942), Buck
(1948), Hammer (1969), Koppitz (1965), and others. The
increase in information about a subject through the use of
color may than add more validity and reliability to pro-
jective drawing tests.
CHAPTER III

METHOD

A. Sample

Subjects for this study were 30 male and 30 female undergraduate volunteers from the Psychology 100 subject pool at Ohio State University. They were between the ages of 18 and 21. All 60 subjects stated that they were not color blind.

B. Test Administration

Each subject was tested individually so there would be no opportunity whatsoever to gain ideas from another subject, intentionally or accidentally. An oral presentation explaining my interest in comparing human figure drawings began the testing session. A summary of this presentation is reproduced in Appendix 1.

Each subject was given an 8½x11 sheet of white paper and either a #2 pencil with an eraser on one end, or a set of color pencils consisting of eight colors - red, yellow, green, blue, brown, black, orange, and purple. An eraser was also provided. The drawing medium (i.e. pencil or color) alternated; the first subject used a pencil first, the second subject used the color pencils first, the third
subject used pencil first, and et cetera. This alternation of mediums between subjects was employed for two reasons. First, it may be that a subject will take more time and draw more in his first picture when he is fresh, than in a second picture. On the other hand, the first picture might serve as a "warm-up" to the subject for the second drawing and thus the first might not be as detailed. It was expected that the random assignment of the random group of subjects controlled for these biases (and any others that might have arisen within the groups). A check for any significant differences in the number of graphic traits between groups according to the medium used first was later carried out with the data and is discussed in the "RESULTS" chapter of this thesis.

Having received the materials to draw with, the subject was then asked to "Draw a human figure". Though there are many variations of instructions, these were decided on to be the most open-ended and least biasing to the subject by the experiment. All questions and comments were answered by the experimenter, "Just draw a human figure".

After the subject was finished with the first drawing, the experimenter collected all the materials used (e.g. pencil or color pencils). The subject number was then marked on the back of the drawing for later identification purposes in recording information (i.e. subject 1a, 1b; subject 2a, 2b; etc.). After the drawing was placed out of the subject's view, the experimenter administered the Vocabulary subtest of the
Wechsler Adult Intelligence Scale (WAIS) in order to get an intelligence measure. Which it was thought would be valuable to look at in terms of relatedness to the other factors test. This subtest consists of 40 words, of gradually increasing difficulty. The subjects were told the following:

It is important for researchers to make sure the groups they are testing are as similar as possible, except for the variable(s) they are testing for. An important variable to always check for is intelligence. From this Vocabulary test I will get a measure of your intelligence. The list of words I have starts out relatively simple and gets progressively difficult. Ready...

Zimmerman and Woo-Sam (1973) in a review of clinical interpretations of the WAIS state that the Vocabulary subtest is considered to be the best single measure of intelligence. Coken (1957) reported a correlation of 0.83 on the WISC with a measure of G. These findings have been supported by Pink and Shontz (1958), Loft (1976), and Saunders and Gittinger (1973).

The Vocabulary test was also used as a break between drawings wherein the subject was presented with a different task, thereby temporarily taking his mind off of drawing, and as an attempt to eliminate any "carry-over" effect from the first drawing to the second.

Next the experimenter administered the Picture Arrangement (PA) subtest of the Wechsler Adult Intelligence Scale, in order to get a measure of the subject’s degree of social adaptability. Wechsler’s instructions for the PA subtest were followed. The subject was presented with eight groups of
pictures of increasing difficulty (varying from three to six in number) one group at a time, in a predetermined scrambled order. The subject was asked by the experimenter to put the pictures in their proper sequence. The test was timed and credit was given for each correct arrangement within the specified time limit. Some alternate arrangements were also credited, as directed by Wechsler's scoring key (Appendix 2). Extra credit was given in the last two groups of pictures for exceptional speed and accuracy.

The PA subtest of the WAIS is an empirically validated test of social adaptability. Schill (1966) administered the WAIS PA and Vocabulary subtests (just as was done in this study) to a sample of college undergraduates on the basis of extreme scores on the WAISQ social introversion-extroversion ($S_I$) scale. His hypothesis that subjects with high $S_I$ scores (introverts) would show poorer PA performance than those with low $S_I$ scores (extraverts) was confirmed ($p<.02$, one-tailed test).

Since the PA subtest involves either some human or practical situation, it can be said that the score is a reflection of a person's social intelligence. Wechsler (1972) himself stated, "The understanding of these situations more nearly corresponds to what other writers have referred to as 'social intelligence'" (p. 209). He later adds however, that "social intelligence is just general intelligence applied to social situations" (p. 209).
It is also worth noting some earlier studies. Schaffer (1948) found high PA scores with subjects displaying narcissistic character disorders. This he attributed to their characteristically facile social anticipations. Anderson (1951) reports that persons displaying psychopathic character disorders often have conspicuously high PA scores; "this is especially true for shrewd 'schemers' who can quickly size up a social situation and manipulate it for their own ends" (p. 570).

After these tests were given, the subject was presented with another sheet of 9½ x 11 white paper and told, "Draw a human figure, this time using ———". Whichever medium was not used in the first drawing was used here (i.e. if color pencils were used for the drawing, then the pencil was used for the second, and vice-versa). Once again all questions and comments were answered, "Just draw a human figure". Stick figures, profiles, busts, monsters, comic figures, and whatever the subject volunteered on paper as being a drawing of a person was accepted by the experimenter.

Employing individual testing sessions, alternating drawing mediums, open-ended directions and responses to questions and comments, and accepting any drawing the subject was willing to submit as a fulfillment of the instructions were all means of making the experiment as bias-free as possible.

C. Scoring

Having collected two drawings from each subject, the
task at hand was then one of critically determining how many graphic traits were expressed in each type of drawing. In order to structure the scoring task so as to be consistent and systematic, it was decided that an established scoring technique should be employed. In choosing a scoring technique it was considered important that only specific concrete graphic traits were recognized for credit and not abstractions, such as the placement of the figure on the page, written picture explanations, and "unattached" props (e.g., sun, clouds, rocks, houses, etc.).

The scoring system suggested in the Goodenough-Harris Drawing Test Manual (Harris, 1963) appeared to fulfill the scoring requirements for this study, and so was adopted. Their system offered a Man Point Scale and a Woman Point Scale, differentiating between the scoring of men figures and female figures. The Drawing Test manual offers illustrative drawings which supplement their requirements for scoring the different items. Special Short Scoring Guides for scoring the Man Point Scale and the Woman Point Scale are also included, and are reproduced in Appendices 3 and 4. These scoring guides were followed point by point (1-73, Man Point Scale; 1-71, Woman Point Scale), with each point being scored either 0 or 1, for every drawing. Each subject was asked to identify the sex of his/her drawings after the second drawing was completed, in order to determine which Scoring Guide to specifically use. A "drawing score" for each
drawing was then derived by adding up all the points (i.e., graphic traits) recorded in the sex-appropriate Scoring Guide. The scoring total for each drawing was then recorded for each subject; total number of pencil graphic traits displayed and total number of color graphic traits displayed.

All 60 of the WAIS Vocabulary tests were scored together by the experimenter blindly, at the end of the study (i.e., after the last subject had been run). This was done to reduce the scoring variance, resulting from day to day scoring by the experimenter.

The WAIS Picture Arrangement subtests were scored blindly as the experiment progressed. All scores were recorded for each subject.

D. Statistical Treatment of the Data

It was decided by the experimenter that, since it was questionable whether the data were normally distributed or not, distribution-free tests procedures would be used. First a Wilcoxon two-sample test (using ranked sums) was employed to determine whether the spread of scores on Intelligence and Social Adaptability were the same for both males and females. Because the list of traits on the Goodenough-Harris Man Scoring Guide differed in some traits from point to point from the Woman Scoring Guide (i.e. some of the same traits were not measured on both scoring guides) the difference score was used in the analysis (number of color traits minus...
the number of pencil traits). This allowed for the analysis of the difference scores (color minus pencil) by sex and by order (which medium was used first).

A Wilcoxon one-sample test was done on the Medium variable (color versus pencil) to see if there were any significant differences between the number of graphic traits expressed in pencil and those expressed with color. A Spearman Correlation Coefficient was then calculated, examining the data for possible correlations between the difference scores (the number of color traits minus the number of pencil traits) and the Social Adaptability scores. This was followed by two Spearman rank order correlations, testing whether the absolute number of pencil traits and/or color traits were correlated with the social adaptability measure. All of these tests were computed again, this time by sex, looking for possible trends.
CHAPTER IV

RESULTS

An examination of the data revealed that 58.3% (n=35) of the subjects tested drew many more graphic traits with color than with pencil (i.e. had a Difference score [color traits minus pencil traits] of +2 or greater). 47.5% (n=16) of these subjects were male and 54.3% (n=19) of these subjects were female.

15.3% (n=11) of the subjects tested drew a few more/less graphic traits using color (a negligible amount) (i.e. had a Difference score [color traits minus pencil traits] of between ±1. 54.55% (n=6) of these subjects were male and 44.45% (n=5) of these subjects were female.

A further examination of the data revealed that 23.3% (n=14) of the subjects tested decreased their graphic trait output when using color as compared to pencil (i.e. had a Difference score [color traits minus pencil traits] of -2 or less). 57.14% (n=8) of these subjects were male and 42.86% (n=6) of these subjects were female.

Overall then, some of the subjects in my sample drew more graphic traits with color, some drew less graphic traits with color, and for some in my sample, the difference between...
the number of color traits and pencil traits was negligible.

An analysis of the data for sex differences was also carried out. There was, first of all, found to be a significant sex difference on the Intelligence measure. Males scored significantly higher on the WAIS Vocabulary subtest than females \( z=2.98, p<.003; \) two-tailed test.

There were no significant sex differences on the Social Adaptability measure \( z=0.79, \) n.s.; two-tailed test). Neither sex proved to be significantly more socially adapted.

There were also no significant sex differences in the number of color traits and pencil traits produced \( z=0.96, \) n.s.; two-tailed test). Neither sex portrayed significantly more color or pencil traits than the other.

Further analysis of the data showed that there was no significant Order effect, pencil used first versus color used first \( z=0.84, \) n.s., two-tailed test). Overall there were no significant differences in the trait output when using pencil first or color first. There were also no trends according to sex on this variable \( z=0.59, \) n.s., males; \( z=0.81, \) n.s., female).

The Wilcoxon one-sample test on the Medium variable (color traits versus pencil traits), which tested Hypothesis 1: The use of color will yield significantly more graphic traits overall, as compared to the traditional pencil method, revealed a significant difference in the trait output measure. Overall there were significantly more color traits produced
than pencil traits ($z=3.33$, $p<.01$; two-tailed test), as hypothesized. This finding also held for males ($z=8.36$, $p<.01$; two-tailed test) and for females ($z=7.26$, $p<.01$; two-tailed test).

The Spearman correlation coefficient comparing the Difference scores and the Social Adaptability scores, testing Hypothesis 2: There will be a significant relationship between the number of graphic traits portrayed in color, and a person's degree of social adaptability, for the whole sample was not significantly different from zero ($\rho=.07$, $n=60$, n.s.). Two other Spearman correlations were carried out, comparing the absolute number of pencil traits with the social adaptability measure, and the absolute number of color traits with the social adaptability measure, and confirmed this earlier finding. The rank order correlation between the absolute number of pencil traits and social adaptability was not significantly different from zero ($\rho=.11$, $n=60$, n.s.), and that between the absolute number of color traits and social adaptability was not significantly different from zero ($\rho=.14$, $n=60$, n.s.). Hence, the number of color traits a person produced was not related to that person's level of social adaptability for the sample as a whole.

These findings were analyzed further by sex, comparing the absolute number of color traits with social adaptability and comparing the absolute number of pencil traits with social adaptability, both separately for males and females.
There was no correlation for either males or females between the number of pencil traits and social adaptability ($\rho=.061$, $n=30$, n.s. for males, and $\rho=.21$, $n=30$, n.s. for females). There was a significant correlation found between the number of color traits and social adaptability for males ($\rho=.48$, $n=30$, $p<.02$), though not for females ($\rho=.01$, $n=30$, n.s.).

A Spearman correlation coefficient was computed, comparing the Difference scores and the Intelligence scores overall, but was not significant ($\rho=.136$, $n=60$, n.s.).

The Spearman correlation was repeated by sex, yielding significant results for males ($\rho=.48$, $n=30$, $p<.02$), but not for females ($\rho=.10$, $n=30$, n.s.).

Because of the significantly better performance by males on Intelligence, a partial correlation was computed to assess the impact of Intelligence on the correlation between the Difference and Social Adaptability scores. This analysis showed that Intelligence had only a slight influence upon the relationship ($\rho_{xy,z}=.08$, $n=60$, n.s.; versus $\rho_{xy}=.11$, $n=60$, n.s.). This partial correlation analysis was repeated by sex. In addition the absolute number of color traits with Social Adaptability were correlated for the whole sample and for each sex separately with Intelligence partialled out.

A comparison of these results with the results of the same analyses without Intelligence partialled out, is presented in Table 1. The entries in this table demonstrate that the results are essentially identical with or without intelligence
partialed out of the pertinent relationships.

**TABLE 1**

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Males (n=30)</th>
<th>Females (n=30)</th>
<th>Overall (n=60)</th>
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</thead>
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<tr>
<td>Diff. x Soc. Ad.</td>
<td>.48, p&lt;.02</td>
<td>.27, n.s.</td>
<td>.073, n.s.</td>
</tr>
<tr>
<td>Diff. x Soc. Ad. with Intelligence partialled out</td>
<td>.47, p&lt;.02</td>
<td>.27, n.s.</td>
<td>.08, n.s.</td>
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<td>Pencil x Soc. Ad.</td>
<td>.00, n.s.</td>
<td>.21, n.s.</td>
<td>.11, n.s.</td>
</tr>
<tr>
<td>Pencil x Soc. Ad. with Intelligence partialled out</td>
<td>.03, n.s.</td>
<td>.20, n.s.</td>
<td>.12, n.s.</td>
</tr>
<tr>
<td>Color x Soc. Ad.</td>
<td>.41, p&lt;.03</td>
<td>.01, n.s.</td>
<td>.14, n.s.</td>
</tr>
<tr>
<td>Color x Soc. Ad. with Intelligence partialled out</td>
<td>.41, p&lt;.03</td>
<td>.01, n.s.</td>
<td>.14, n.s.</td>
</tr>
</tbody>
</table>
CHAPTER V
DISCUSSION

As expected, some of the subjects (38.3%) drew substantially more graphic traits using color, some (23.3%) drew substantially more graphic traits using pencil, and for some (18.7%) the difference in color traits and pencil traits was negligible.

It is necessary first to make some behavioral observations. In my random sample I tested several "artists", some of which had been trained and others of which were untrained but motivated to draw from natural talent. These subjects typically either spent lots of time on both drawings, using a pencil on one drawing and the black color pencil on the other, or quickly sketched their "favorite" figure to draw. In both cases I feel I received premeditated human figure drawings. Although I am sure we all have experimented with drawing figures, a person of artistic capabilities practices much more in an effort to produce a personally satisfying figure. This practice-effect among artists may have affected my data by constricting the difference score since, except for the tendency to shade in with color for some, most of the artists drew the same details with both the

52
color and the pencil medium. The exact information can not be retrieved, however, because all the subjects were not asked if they were artists and so it would entail a subjective judgment on the experimenter's part to decide what pictures were drawn by artists.

Another factor which may have influenced my data was a cultural one. There were several foreign subjects included in my sample who may have in fact been socially adapted by their own cultural standards. It could be the case, however, that they may not have scored well on the Social Adaptability measure. Unfortunately, because all of the subjects were identified by a subject number (i.e. their identities were concealed) it was impossible to check their Social Adaptability scores.

A factor that was controlled for in this study that was not in previous studies (Koppitz, 1965, 1966; Buck and Hammer, 1969) was the difference in line thickness between pencil and crayons. Because of the line characteristic differences, some graphic traits are more suitably drawn with one medium than the other. Thus all graphic traits do not have the same likelihood of appearing. To control for this bias, I chose color pencils instead of crayons, so that the line thicknesses between pencil and color drawings would be the same.

Finally, I feel it important to point out the possible sex-type bias in the Harris-Goodenough Scoring Guides.
Though only published 17 years ago, they appeared to be dated in terms of what could be considered masculine and feminine today. It was my observation that drawings of females scored higher, the more feminine they looked, according to the Woman Scoring Guide (e.g., figures with pants scored points on the Man Scale, but not on the Woman Scale). Today, however, there exists more ambiguity about sex-types, which could be expressed in drawings. For this reason a revised Scoring Guide is needed.

Statistically, the significantly better performance of males on the Vocabulary subtest of the WAIS than females \( z=2.98, p<.003 \), two-tailed test) is surprising. Wechsler (1972) reports a mean scale score of 13 for males and 13.2 for females, at around age 21. Possibly the college

population had an effect on this result, since drawing tests are not as reliable as a rough measure of I.Q. with a group beyond the age of 16-17. The only other explanation I can suggest is that if females are more motivated in task-oriented areas than males and my sample included 30 males who were motivated enough to begin fulfilling their requirement of four hours of participation in psychology experiments during the initial two and a half weeks the psychology subject pool was open, then I tested a more highly motivated sample of males than is typical, which could have led to the significantly higher vocabulary scores. There were no other significant sex differences found between the means
of the factors tested. A Spearman correlation coefficient comparing the Difference scores and the Intelligence score was computed, but was not significant (rho=.136, n=60, n.s.). This analysis was then repeated by sex, yielding significant results for males (rho=.48, n=30, p<.02) but not for females (rho=.10, n=30, n.s.).

It was also found that the order of use (pencil used first or color used first) had no significant effect upon the number of graphic traits produced by either pencil or color (z=0.835, n.s.). This was the case for both sexes (z=0.56, n.s., males; z=0.81, n.s., females). This proves to be even more important when considered along with the highly significant difference between the number of color traits portrayed and the number of pencil traits portrayed.

This study had pointed out an extremely significant difference overall, between the number of pencil traits displayed and the number of color traits displayed (z=3.33, p<.0005; two-tailed test). This finding gives support to the hypothesis that, in general, people will draw more when using color than when using the traditional pencil medium when asked to draw a human figure. Broken down according to sex, the hypothesis held for both males (z=8.36, p<.00001; two-tailed test) and females (z=7.26, p<.00001; two-tailed test).

From the developmental standpoint (e.g., the drawing test as a developmental measure), if these findings could be replicated with a younger sample, the use of color would give
an overall effect of higher intelligence, since more traits would be expected. This would mean it would be necessary to develop new norms for a color drawing test as an adjustment for the increase in the number of traits. Since there are validated norms already, and there exist reliable drawing tests that measure development, it is questionable whether or not the use of color would improve the test as a developmental measure.

Projectively speaking, it has been suggested that the use of color on drawing tests only increases the chances of pathological signs occurring, and thus make a person look "sicker". Though this is a possibility, depending upon how a person uses color (what he does with it), I contend that if we are to employ this test as a projective instrument, we should recognize the findings of Koppitz (1965), who found that significantly more emotional indicators were present in color drawings, and Buck (1945), who discovered that color cuts through defenses to the deeper levels of a person's subconscious, revealing more clearly the person's personality. Other research confirms the significance of color choices (Jaenach, 1930; Pfister, 1964; Birren, 1952, 1978). My subjects were not forced to use colors and some did refuse, picking out only the black color pencil to make their color drawing with. As in research with the Rorschach, I presented my subjects with colors and allowed them to use them as they desired.
Despite, then, knowing that color reflects a person's emotional feelings (Koppitz, 1965), how well a person can control his emotions (Rorschach, 1942), and a person's deeper subconscious feelings (Buck, 1948), clinicians continue to administer drawing tests with pencil as a part of the projective battery. I believe that my findings, showing that there are significantly more color traits drawn than pencil traits in a college population, offer additional support for the use of color with projective drawing tests. The next research step would be to combine the significant color findings (mentioned above) in a way that would test the hypothesis that by drawing more with color, people are in fact revealing more about their personalities.

My last hypothesis was that there would be a correlation between the number of color traits and the social adaptability scores. The Spearman rank order statistic on the whole sample yielded no such correlation in support of the hypothesis. In my sample then, overall the number of color traits portrayed was not related to Social Adaptability. When the sample was broken down by sex, however, there was found to be a significant positive relationship for males, between the number of graphic traits in color and Social Adaptability. For females, there was a non-significant negative relationship.

Because males in my sample scored significantly higher on Intelligence than females and because there was a significant
correlation for males between the number of color graphic traits and social adaptability, it was decided that a partial correlation should be carried out, partialing out Intelligence in all the pertinent analyses. As can be seen in Table 1, these analyses simply confirm the findings in which intelligence was not partialled out of the pertinent relationships.

It is unclear why there was no correlation among females. It is possible that, had some other test of Social Adaptability been used, a correlation might have been found overall. The lack of correlation for females in this study, however, points out that future research in this area should look for sex differences in the factors tested when analyzing data.

Summary

This study pointed out several important factors in human figure drawing tests. First of all, both males and females draw significantly more graphic traits with color than with the pencil medium \( z=3.3, p<.00005 \). An argument was made, as a result, for using color pencils on projective tests instead of the traditional pencil method.

There was also found to be for males, a significant correlation between the number of color traits drawn and Social Adaptability \( \rho=.48, n=30, p<.02 \). For females this relationship was negative and non-significant \( \rho=.005, n=30, n.s. \).

Finally, it was suggested that both artistic ability and cultural background may have influenced the sample of data. It
was felt that an artist’s “practice-effect” may have influenced the data, by constricting the difference score. Because the sample was not polled for artistic ability and because judgment or artistic ability would have been a subjective decision for the experimenter, it could not be tested whether artists had such an effect on the data. It was further suggested that, since there were several foreign subjects in the study, none of whom could be identified because of anonymity, cultural differences with respect to adaptivity may have influenced the finding.
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APPENDIX 1
SUMMARY OF ORAL PRESENTATION

I am interested in comparing human figure drawings done in pencil with those drawings done in color. From the differences I then expect to be able to classify people according to some personality measure.

I will have you draw some pictures for me during this session and will also give you an intelligence test and a test of personality. All the information I get from you will be kept confidential. Your identity will be concealed. The information you give me will be classified by number and letter—subject # and type of information (a, b, c, d).

Do you have any questions? Do wish to withdraw from this study?
<table>
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</tr>
<tr>
<td>2. House 1st Trial</td>
<td>60''</td>
</tr>
<tr>
<td>3. Hold up</td>
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<td>4. Louie</td>
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<tr>
<td>5. Enett</td>
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</tr>
<tr>
<td>6. Flett</td>
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</tr>
<tr>
<td>7. Fish</td>
<td>120''</td>
</tr>
<tr>
<td>8. Taxi</td>
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</tr>
</tbody>
</table>

SCORE
APPENDIX J

HARRIS SHORT SCORING GUIDE FOR MAN POINT SCALE

Short Scoring Guide

MAN POINT SCALE

1. Head present
2. Neck present
3. Neck, two dimensions
4. Eye present
5. Eye detail: brows or lashes
6. Eye detail: pupil
7. Eye detail: proportion
8. Eye detail: glance
9. Nose present
10. Nose, two dimensions
11. Mouth present
12. Lips, two dimensions
13. Both nose and lips in two dimensions
14. Both chin and forehead shown
15. Projection of chin shown; chin clearly differentiated from lower lip
16. Line of jaw indicated
17. Bridge of nose
18. Hair I
19. Hair II
20. Hair III
21. Hair IV
22. Ear present
23. Ear present: proportion and position
24. Fingers present
25. Correct number of fingers shown
26. Detail of fingers orientated
27. Opposition of thumb shown
28. Hands present
29. Wrist at side
30. Arms present
31. Shoulders I
32. Shoulders II
33. Arms at sides engaged in activity
34. Elbow joint shown
35. Legs present
36. Hip I (crest)
37. Hip II
38. Knee joint shown
39. Feet I: my indication
40. Feet II: proportion
41. Feet III: heel
42. Feet IV: perspective
43. Feet V: detail
44. Attachments of arms and legs I
45. Attachments of arms and legs II
46. Trunk present
47. Trunk in proportion, two dimensions
48. Proportion: head I
49. Proportion: head II
50. Proportion: face
51. Proportion: arms I
52. Proportion: arms II
53. Proportion: legs
54. Proportion: limbs in two dimensions
55. Clothing I
56. Clothing II
57. Clothing III
58. Clothing IV
59. Clothing V
60. Profile I
61. Profile II
62. Full face
63. Motor coordination: lines
64. Motor coordination: structures
65. Superior motor coordination
66. Directed lines and form: head outline
67. Directed lines and form: trunk outline
68. Directed lines and form: arms and legs
69. Directed lines and form: facial features
70. "Sketching" technique
71. "Modeling" technique
72. Arm movement
73. Leg movement

* For use only after the scoring requirements have been mastered.
# APPENDIX 4

## HARRIS SHORT SCORING GUIDE FOR WOMAN POINT SCALE

### Short Scoring Guide *

<table>
<thead>
<tr>
<th>WOMAN POINT SCALE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Head present</strong></td>
</tr>
<tr>
<td><strong>2. Neck present</strong></td>
</tr>
<tr>
<td><strong>3. Neck, two dimensions</strong></td>
</tr>
<tr>
<td><strong>4. Eyes present</strong></td>
</tr>
<tr>
<td><strong>5. Eye detail: bow or lashes</strong></td>
</tr>
<tr>
<td><strong>6. Eye detail: pupil</strong></td>
</tr>
<tr>
<td><strong>7. Eye detail: proportion</strong></td>
</tr>
<tr>
<td><strong>8. Cheeks</strong></td>
</tr>
<tr>
<td><strong>9. Nose present</strong></td>
</tr>
<tr>
<td><strong>10. Nose, two dimensions</strong></td>
</tr>
<tr>
<td><strong>12. Nastils shown</strong></td>
</tr>
<tr>
<td><strong>13. Mouth present</strong></td>
</tr>
<tr>
<td><strong>14. Lips, two dimensions</strong></td>
</tr>
<tr>
<td><strong>15. “Cosmetic hips”</strong></td>
</tr>
<tr>
<td><strong>16. Both nose and lips in two dimensions</strong></td>
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<tr>
<td><strong>17. Back chin and forehead shown</strong></td>
</tr>
<tr>
<td><strong>18. Line of jaw indicated</strong></td>
</tr>
<tr>
<td><strong>19. Hair I</strong></td>
</tr>
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<td><strong>20. Hair II</strong></td>
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<td><strong>21. Hair III</strong></td>
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<td><strong>22. Hair IV</strong></td>
</tr>
<tr>
<td><strong>23. Necklace or earrings</strong></td>
</tr>
<tr>
<td><strong>24. Arms present</strong></td>
</tr>
<tr>
<td><strong>25. Shoulders</strong></td>
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<tr>
<td><strong>26. Arms at side (or engaged in activity or behind back)</strong></td>
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* For use only after the scoring requirements have been mastered.
## APPENDIX 5

### RAW DATA

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First = medium used in first drawing (pencil or color)  
Color = number of color traits portrayed  
Pencil = number of pencil traits portrayed  
Social = Score on Picture Arrangement test  
Vocab = Score on Vocabulary test  
Difcomp = Difference score (number of color traits minus the number of pencil traits)