

THE RELATIONSHIP BETWEEN THREE ANXIETY RELATED CLUSTERS IN PROJECTIVE
DRAWINGS AND ANXIETY AND EGO-STRENGTH SCALES OF THE MINNESOTA
MULTIPHASIC PERSONALITY INVENTORY - 2.

by

ANDRÉ BRINK

Submitted in accordance with the requirements for the degree of

MASTER OF ARTS

in the subject

CLINICAL PSYCHOLOGY

at

RHODES UNIVERSITY

SUPERVISOR: DR. C. MALCOLM

JANUARY 2002

SUMMARY

Based on the shortcomings of past research, the need for understanding and investigation of the general relationship between self-report measures and human figure drawings required understanding and investigation (Riethmiller & Handler, 1997b; Waehler, 1997) while utilising a quantitative, configural scoring approach. Riethmiller and Handler (1997a; 1997b) hypothesised that subjects have one of two typical approach styles to anxiety/stress that influences their execution of the Human Figure Drawing (HFD) Test: “Avoidance” or “Coping” as measured by composite scoring index clusters. They argue that these two approach styles had to be taken into account when investigating anxiety on the HFD Test. According to Handler and Reyher (1965) those who experience more intense anxiety typically rely on an “Avoidant” approach, while those with lower anxiety typically rely on a “Coping” approach. The “Coping” response is hypothesised to suggest good ego-strength, and the “Avoidant” response poor ego-strength. Handler and Reyher (1964; 1965; 1966) also argued that there are two sources of anxiety on projective drawings: internal and external sources of anxiety. They hypothesised that the “External” anxiety cluster (measured by utilising the car drawing) and self-report measures both assess ‘external’ anxiety. Using Handler’s (1967) HFD index scoring manual, this research therefore investigated the level of correlation of the two MMPI-2 anxiety scale scores with (a) the hypothesised Stress Approach HFD cluster scores, as well as with (b) the “External” anxiety cluster score, while the hypothesised Stress Approach HFD cluster scores were compared with the (c) MMPI-2 ego strength scale score. The results of the investigated relationships yielded non-significant correlations overall. The differences in nature of the two measurement instruments, and the potential weaknesses of this study, as two likely explanations for these correlations, are discussed. In the consideration of the differences of the two measurement instruments, the weaknesses of SR measures and criterion-related validity are discussed while self-attributed and implicit motives are contrasted with each other. Potential extraneous variables and possible truncated range are discussed as potential weaknesses of this study.

CONTENTS

	<u>Page no</u>
INTRODUCTION	1
<u>CHAPTER 1: THEORETICAL REVIEW</u>	3-20
1.1 Development	3
1.1.1. A brief overview of the historical beginnings of projective techniques	3
1.1.2. The development of human figure drawings as a projective test	4
1.2. Theoretical assumptions	6
1.2.1. An underlying theory for projective techniques	6
1.2.1.1. The concept of projection	6
1.2.1.1.1. Criticism of the broader usage of the term 'projection' in projective techniques	7
1.2.1.1.2. Justification for the broad usage of the term 'projection' in projective techniques	8
1.2.1.2. The nature of projective techniques	10
1.2.1.3. Underlying assumptions about personality in the use of projective techniques	11
1.2.1.4. The mutual characteristics of projective tests	12
1.2.2. Machover's HFD Test	13
1.2.2.1. Projection of the self-image	14
1.2.2.1.1. Sources of projected self-image	16
1.2.2.2. The interpretive system	17
1.3. Advantages of the HFD projective test	18
1.4. The use of projective drawings	19
<u>CHAPTER 2: RESEARCH REVIEW</u>	21-49
2.1. Initial research on HFD	21
2.2. A comparative overview of three major reviews	21
2.2.1. The body-image hypothesis	22
2.2.2. The Molecular and Molar approaches	22
2.2.2.1. The Molecular approach: the evaluation of Machover's individual indicators	23
2.2.2.2. The Molar approach: the evaluation of the global judgment of drawings	23
2.3. The Molar approach vs. the Molecular approach	24
2.3.1. Support for the Molar approach	24
2.3.2. Criticism against the Molar approach	27
2.3.3. Attempts at synthesis	30
2.3.3.1. The criterion scale	30
2.3.3.2. Actuarial prediction	31
2.3.3.3. Sophisticated clinical prediction	31
2.3.3.4. Quantitative index	31

2.4.	The current status of the DAP and research	32
2.4.1.	The controversy regarding further research on the DAP and continued clinical use	32
2.4.1.1.	The requirement of Test Validity	33
2.4.1.2.	The need for more focused research based on previous findings	35
2.4.1.3.	Conclusion	35
2.4.2.	Criticism of research designs	36
2.4.2.1.	The research of single HFD items against scales of SR measures	36
2.4.2.2.	The relationship between SR measures and projective drawings	38
2.4.2.3.	The lack of quantification	39
2.4.2.4.	External vs. Internal/Intrapsychic anxiety	40
2.4.2.5.	Differential response to stress	41
2.5.	A review of coping theory	42
2.5.1.	Coping	42
2.5.2.	Coping strategies	43
2.5.2.1	The effectiveness of coping strategies	44
2.5.3.	The Dispositional and Situational hypotheses	45
2.5.3.1	The Dispositional hypothesis	45
2.5.3.2.	The Situational hypothesis	45
2.5.3.3.	Appraisal and coping strategies	46
2.5.3.3.1.	Difference in appraisal	47
2.5.3.3.1.1.	Trait anxiety	47
2.5.3.3.1.2.	Self-efficacy	48
2.5.3.3.1.3.	Locus of personal control	48
2.5.3.3.2.	Early origins	48
2.5.3.3.3.	Conclusion	49
2.5.3.4.	Dispositional vs. Situational hypothesis	49
2.5.3.5.	Conclusion	49
 <u>CHAPTER 3: OVERVIEW OF CURRENT RESEARCH FOCUS</u>		 50-53
3.1.	Brief outline of research review highlights	50
3.2.	Rationale for resultant focus	51
3.3.	The research question	52
3.3.1.	Comparing the Stress Approach Style HFD clusters and the two MMPI-2 Anxiety scales	52
3.3.2.	Comparing the Stress Approach Style HFD clusters and the MMPI-2 Ego Strength scales	52
3.3.3.	Comparing the External Anxiety HFD cluster and the two MMPI-2 Anxiety scales	53
3.3.4.	Investigation summary	53

<u>CHAPTER 4: METHODOLOGY</u>	54-63
4.1. Participants	54
4.1.1. Clinical population	54
4.1.2. Sample size	54
4.1.3. Non-random sample	54
4.1.4. Requirements	55
4.1.5. Informed consent	55
4.2. Testing materials	56
4.2.3. The Minnesota Multiphasic Personality Inventory (MMPI-2)	56
4.2.3.1. The scales	56
4.2.3.1.1. The A-Scale	57
4.2.3.1.2. The Anx-Scale	57
4.2.3.1.3. The Es-Scale	57
4.2.4. The Projective Drawings	58
4.2.4.1. Handler's scoring manual	58
4.2.4.1.1. Inter-rater reliability	58
4.2.4.1.2. Scoring	59
4.2.4.2. The shortened scoring manual	59
4.2.4.2.1. The 'Detail' index	59
4.2.4.2.2. Scoring inversion	60
4.3. Procedure	60
4.3.1. The MMPI-2	60
4.3.2. Projective Drawings	61
4.4. Data processing	62
4.4.1. Separate scoring	62
4.4.2. The MMPI-2 scales	62
4.4.3. The drawing clusters	62
4.4.4. Statistical analysis	63
 <u>CHAPTER 5: THE RESULTS AND DISCUSSION</u>	 64-85
5.1. The Results	64
5.1.1. Comparing the Stress Approach Style HFD clusters and the two MMPI-2 Anxiety scales	65
5.1.2. Comparing the Stress Approach Style HFD clusters and the MMPI-2 Ego Strength scale	65
5.1.3. Comparing the External Anxiety HFD cluster and the two MMPI-2 Anxiety scales	65
5.2. Discussion	66
5.2.1. Possible differences in the nature of the two measurement instruments	66
5.2.1.1. Weaknesses of SR measures	67
5.2.1.1.1. Insightfulness	67
5.2.1.1.2. Honesty	68
5.2.1.1.3. Implications	68
5.2.1.2. Self-attributed vs. Implicit motives	69
5.2.1.3. Criterion-related validity	70

5.2.1.3.1.	Construct validity	71
5.2.1.3.1.1.	Measurement of State vs. Trait Anxiety	71
5.2.1.3.1.2.	Measurement of Dispositional Stress Response vs. Situational Stress Response	72
5.2.2.3.2.	Variation in state anxiety and situational stress response despite the influence of trait anxiety and the dispositional stress response	74
5.2.2.	Potential weaknesses of this study	75
5.2.2.1.	Potential extraneous variables	75
5.2.2.2.	A possible truncated range	76
5.2.2.3.	Possible effects of the inferences above on the investigated comparisons	79
5.2.2.3.1.	Comparison of the Stress Approach HFD clusters and the two MMPI-2 Anxiety scales	80
5.2.2.3.2.	Comparison of the stress approach HFD clusters and the two MMPI-2 Ego Strength scales	81
5.2.2.3.3.	Comparison of the External Anxiety projective drawing cluster and the two MMPI-2 Anxiety scales	82
5.2.4.	Conclusions and further recommendations	83
BIBLIOGRAPHY		86-96
APPENDICES		97-113

INTRODUCTION

The development of projective techniques started roughly around the beginning of the century. Although other developments in projective drawings also started around the same time, it was Karen Machover who offered a psychology of drawing, more closely tied in with the psychodynamics of personality. (Copeland, 1952) In 1949 she published her *Personality projection in the drawing of the human figure*, wherein the Human Figure Drawing (HFD) as a projective assessment device was formalised. The test procedure required the simple task of the subject making two drawings, one person of each sex, which was then interpreted by using an interpretive system (Machover, 1949). This HFD assessment could be used with any patient, had various other advantages (Lubin, Larsen, & Matarazzo, 1984; Machover, 1952; Waehler, 1997), and therefore became one of the most popular and frequently used assessment devices in the USA and abroad (e.g. Piotrowski & Keller, 1993; Watkins, Campbell, Nieberding, & Hallmark, 1995).

However, despite its clinical popularity, controversy has raged over the validity of the HFD test since Machover's publication, giving rise to an increasing amount of research. Reports that supported Machover's projective drawing theory were quickly followed by others reporting the contrary (Maloney & Glasser, 1982). According to Riethmiller and Handler (1997a) this controversy over the validity of projective drawing interpretations has continued until the present. In this debate there has been a polarisation of researchers on HFD with some (e.g. Hammer, 1969; Riethmiller & Handler, 1997a, 1997b) making validity claims, whilst others (e.g.; Joiner & Schmidt, 1997; Roback, 1968) claim the HFD test interpretation invalid. Thus, the validity of the HFD test is still not clear, with researchers like Joiner and Schmidt (1997) questioning whether projective drawings as a technique warrant further research and clinical use.

But Riethmiller and Handler (1997a, 1997b) criticise research designs for being too simplistic. They are of the opinion that further efforts to understand the relations between Self-Report (SR) and projective methods, using a configural scoring approach instead of single individual signs, are likely to enhance the personality assessment enterprise.

Handler and Reyher (1964; 1965; 1966) also hypothesise that there are possibly two different sources of anxiety on the HFD - internal and external sources of anxiety: while it is hypothesised that the HFD taps both types of anxiety they argue that the automobile drawing only taps for 'external' anxiety. Furthermore, Riethmiller and Handler (1997a; 1997b) hypothesise that subjects have typical approach styles to anxiety/stress that will determine their execution of the HFD task when the HFD evokes intrapsychic ('internal') anxiety. Further research on the HFD test and anxiety should therefore implement a configural scoring approach, differentiate between internal/intrapsychic anxiety and external sources of anxiety, while considering subjects' differential response to stress.

In line with a configural approach, Handler and Reyher (1964, 1965, 1966) and Riethmiller and Handler (1997a, 1997b) identified three HFD anxiety-related index clusters, the "External", "Avoidant", and "Coping" clusters. Considering the arguments directly above, the research question is therefore asked:

What is the level of agreement between these three HFD anxiety index clusters and the scales of a well-established clinical SR measure of personality such as the Minnesota Multiphasic Personality Inventory 2 (MMPI-2)?

This research will thus investigate the level of correlation of the two MMPI-2 anxiety scale scores with (a) the hypothesised Stress Approach HFD cluster scores, as well as with (b) the "External" anxiety cluster score, while the hypothesised Stress Approach HFD cluster scores will be compared with the (c) MMPI-2 ego strength scale score.

CHAPTER 1

THEORETICAL REVIEW

1.1 Development

1.1.1. A brief overview of the development of Projective Techniques

In 1859, de Tours presumed that there was a link between genius, artistic ability and insanity. Then, in 1875, Max Simon made diagnostic evaluations, based on the artwork of the insane (Anastasi & Foley, 1940). In the 1880's Lombroso and Simon linked the artwork of people, categorised as insane, to their personal conflicts, which is similar to the psychodynamic viewpoint of projective art today (Naumburg, 1950). In 1895 Binet and Henri started using inkblots in the investigation of visual imagination (Tulchin, 1940). Various psychologists started experimenting with inkblots, pictures and various visual stimuli from the end of the 19th century (Rabin, 1968). In 1906 Jung discovered that word association techniques could be used to identify important areas of unconscious conflict (Jung, 1910). Independently, Kent and Rosanoff (1910) published their findings that there were marked differences between the word associations of normal and mentally disordered subjects. Around the same time Freud (1910/1958a) alluded to the process of projection in art:

Kindly nature has given the artist the ability to express his most secret mental impulses, which are hidden even from himself, by means of the works that he creates... (p. 107)

It was Herman Rorschach who first investigated the relationship between modes of perception, and personality and psychopathology by using inkblots (Lindzey, 1961; Rabin, 1968). These results were reported in *Psychodiagnostik*, published in 1921 (Rorschach, 1942). In 1935 Morgan and Murray published the Thematic Apperception Test which required the subject to construct stories congruent with the pictures presented to them (Lindzey, 1961). From the start this test was embedded in a theoretical framework markedly influenced by the principles of psychoanalysis (Rabin, 1968).

According to Cattell (1952), the first tests which explicitly and deliberately employ the design of projection were published in 1936 and 1937 independently by Cattell in England and by Murray and Sears in America. They included Cattell's *A guide to mental testing*, Murray's *Techniques for a systematic investigation of phantasy*, and Sears's *Experimental studies of projection*. It was, however, not until the late 1930's that the use of the term 'projective techniques' or 'projective methods', and the placement of a number of existing modes of personality diagnosis under one umbrella started taking place (Rabin, 1968). Horowitz and Murphy first used the term 'projective technique' in a publication in 1938, although Frank received the credit regarding the origin of the label (Lindzey, 1961). At the same time, without any prior influence by Frank, Murray used the term 'projective test' in his *Explorations in Personality* in 1938 (Rabin, 1968; Lindzey, 1961). The term 'projective technique' was popularised by Frank's influential paper *Projective methods for the study of personality* (1939). This was subsequently expanded by Frank into the well-known 1948 monograph entitled *Projective Methods* (Rabin, 1968).

1.1.2. The development of human figure drawings as a projective test

Against this backdrop, and under the strong influence of the development of projective techniques and the use of artwork as a mental health tool, HFD developed as a projective technique (Lindzey, 1961).

Florence Goodenough published her Goodenough Draw-A-Man Test (1926) for the assessment of intelligence through drawings. She later observed certain qualitative differences in drawings, which she believed might be indicative of psychopathic tendencies and therefore encouraged further investigation. Evidence accumulated that both children's and adults' drawings could be helpful in differential personality diagnosis. Karen Machover, however, turned the tide of thinking, offering a psychology of drawing more closely tied in with the psychodynamics of personality. (Copeland, 1952)

In her routine application of the Goodenough test for the measurement of intelligence in children, Machover (1952) noticed that children's drawings, achieving the same IQ on the Goodenough scale, were portraying different features. She spent most of the years that followed in the systemisation and decoding of this "...private, ideographic communication" (p.344). This was done by gathering a wide variety of clinical material from clinics and hospitals culminating in the publishing of her well-known *Personality projection in the drawing of the human figure*, first published in 1948 (Machover, 1949). In this publication she pointed out that, although there had previously been wide interest in the revelations contained in drawings, "...it did not...extend in the direction of codification or construction of principles of interpretation that would encompass the whole range of personality analysis" (p.19). Machover's test required the subject to draw any person, followed by a second person of the opposite sex on a second sheet of paper. These drawings were then interpreted according to certain principles and guidelines of the interpretive system outlined in Machover's publication (1949). Her work, although incomplete, represented a systematic approach, whereby an interpretive key was provided for the understanding of human figure drawings. The theoretical assumptions underlying this HFD projective test will be discussed below.

Similar to Machover's research, Buck's House-Tree-Person (H-T-P) procedure grew out of an intelligence scale on which he was working (Hammer, 1968), published in *The H-T-P technique, a qualitative and quantitative scoring method* (1948). While the test of Machover only focuses on the drawing of a person, Buck's test requires the subject to draw a house, a tree and a person on separate pieces of paper. According to Buck (1948) his test can be utilised for screening purposes, to gather important diagnostic and prognostic information, and to measure intelligence in adults. This technique is, thus, meant to be used as both a projective and intelligence test (Retief, 1958). Other projective drawing tests, such as the Kinetic Family Drawing (Burns & Kaufman, 1970), were also later developed. However the techniques developed by Buck and Machover became the two most well known systematic approaches to the interpretation of human figure drawings as a projective personality assessment technique (McNeish & Naglieri, 1993).

Of the two techniques, Machover's has had the widest influence on projective drawings, especially in the interpretation of children's drawings (Albee & Hamlin, 1949; McNeish & Naglieri, 1993; Naglieri & Pheifer, 1992). Machover's test and theory has also become the basis for further research and elaboration on HFD theory and practice, as observed by Levy (1959). The HFD Test based on Machover's work was also later generally called the Draw-A-Person (DAP) Projective Test (Hammer, 1968; Wanderer, 1969).

1.2. Theoretical assumptions

As a projective test, HFD share the same underlying theoretical assumptions as projective techniques.

1.2.1. An underlying theory for projective techniques

Although various theoretical orientations have attempted to provide some underlying theory for projective techniques, none have succeeded in a complete integration between theory and technique. Although a single, comprehensive and integrated theory is lacking in the field of projective techniques, psychoanalytic theory reportedly shows the most promise (Lindzey, 1961). Bell (1948) pointed out that the creative contributions of Freud, as well as those of the psychoanalytic movement, were a major historical force in shaping underlying theories and assumptions in the construction of projective tests. Moreover, the intimate association between psychoanalytic theory and projective techniques had a strong influence on both the use and interpretation of the latter by clinicians in the field. In addition, projective techniques derived their title from the psychoanalytic concept of 'projection'. (Bell, 1948; Lindzey, 1961)

1.2.1.1. The concept of Projection

Central to the generally excepted theory underlying all projective techniques, including the HFD Test, is the concept of projection (Bell, 1948; Reber, 1995). Projection was first introduced by Freud as early as 1895 in a paper titled "*The Anxiety Neurosis*" (Bell, 1948;

Bellak, 1959). In a single brief statement in this paper Freud (1924a) alluded to a process whereby inner stimulation is projected into the outer world. A year later Freud (1896/1924b) dealt again with this same process and this time applied the label 'projection' to the mechanism whereby the paranoid avoids recognition of self-reproach or self-distrust by directing these tendencies upon others. However, in the field of projective techniques, the exact definition of projection has come into dispute, with certain critics challenging the central theoretical assumption of projective tests. These arguments retain direct bearing on the theoretical assumptions underlying all projective techniques, they therefore remain relevant, and will be discussed below.

1.2.1.1.1. Criticism of the broader usage of the term 'projection' in projective techniques

Van Lennep (1952) criticised the varied use of the term projection, as applied to many projective tests, whereby "all kinds of utterances and expressions" of the subject are included in the use of the term (p.151). In his opinion, projection is solely an unconscious defence mechanism, as was first defined by Freud. He argues that, with the term projection, Freud meant principally the tendency, under certain circumstances, to attribute to other persons' characteristics, emotional structures, and social relationships that might be more relevant to the critic himself. He reasons that, though a proportion of what some of the projective tests tap might fall under this category and thus be true projection, the rest do not, and could therefore not be considered projection. Certain tests, claiming to be projective techniques (including the HFD Test) should therefore rather be categorised as expressive techniques (Van Lennep, 1952). Sharing a similar view of projection, Healy, Bronner, and Bowers, cited in Bellak (1959), define projection as "...a defensive process under the sway of the pleasure principle whereby the ego thrusts forth on the external world unconscious wishes and ideas which, if allowed to penetrate into consciousness, would be painful to the ego." (p. 8)

The opinions above echo the views of classical psychoanalysis, in which projection is restricted to the process where one's own traits, emotions, dispositions, for example, are

ascribed to another. The implication is that there is an accompanying denial of these feelings or tendencies, and that the projection functions as a defence mechanism to protect the individual from anxiety and repressed underlying conflict. (Reber, 1995).

1.2.1.1.2. *Justification for the broader usage of the term ‘projection’ in projective techniques*

Others (Bellak, 1959; Lindzey, 1961; Rabin, 1968) have criticised these views which treat projection solely as a pathological defence mechanism. Bellak (1959) pointed out that although projection was originally connected to psychoses and neuroses, Freud later applied it to other forms of behaviour as well. This point is illustrated in the following passage written by Freud in 1911:

We should feel tempted to regard this remarkable process as...being absolutely pathognomic...if we were not opportunely reminded (that)...it makes its appearance not only in paranoia but under other psychological conditions as well, and in fact it has a regular share assigned to it in our attitude toward 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 the others) inside ourselves, this normal proceeding, too, deserves to be called projection. (In Freud, 1958b, p.66)

Lindzey (1961) asserts that Freud conceived projection as a mechanism that was important *both* in normal *and* pathological development, as is evident when considering the following passages by Freud in 1913:

This defence procedure, which is a common one both in normal and in pathological mental life, is known as a projection. (In Freud, 1955, p.61)

...projection was not created for the purpose of defence; it also occurs where there is no conflict. The projection outwards of internal perceptions is a primitive mechanism, to which, for instance, our sense perceptions are subject, and which therefore normally plays a very large part in determining the form taken by our external world. Under conditions whose nature has not yet been sufficiently established, internal perceptions of emotional and thought processes can be projected outwards in the same way as sense perceptions; they are thus employed

for building up the external world, though they should by rights remain part of the internal world. (p.64)

Lindzey (1961) thus reasoned that in our perception of the external world we constantly project internal percepts to construct our external world. Bellak (1959) too maintains that, when considering certain passages of Freud (1913/1955), it becomes clear that Freud's main assumption is that memories of percepts influence perception of contemporary stimuli and not exclusively for the narrowly defined purposes of defence. We, therefore, have to assume, Bellak further reasons, that *all* present perception is influenced by past perception. Thus, it is argued that, according to Freud, projection is employed, primarily, as a normal process whereby elements of our internal world are utilised in the creation of the external world, but is also commonly used, secondarily, as a defence mechanism in both normal and pathological mental life (Bellak, 1959; Lindzey, 1961).

Lindzey (1961) criticises the persistence of the typical use of projection exclusively as a defence against anxiety aroused by the unconscious, when there is clear evidence in the literature that Freud used projection in two ways. In order to guard against this narrow view, Lindzey argues for a distinction between the two types of projection. The first type would be *generalised projection* (outlined above as the primary use of projection), which refers to a normal process whereby the individual's inner states or qualities influence their perception and interpretation of the outer world. The second type is *classical projection* (outlined above as the secondary use of projection), which reflects the viewpoint of projection held by classical psychoanalysis and refers to an unconscious and pathological process whereby the individual defends himself against unacceptable impulses or qualities within himself, by mistakenly ascribing them to individuals or objects in the outside world. Lindzey (1961) also argues that Frank's idea of projection was similar to the broader understanding of projection, outlined above, as is evident when examining the paper in which he defined the term 'projective technique'.

Rabin (1968) not only agrees with the above viewpoints but also further asserts that projection, as used in projective techniques, is consonant with this later and broader definition by Freud. Thus, instead of projection being narrowly defined as classical

projection, in the theory of projective techniques, it refers to *both* what is defined as classical as well as generalised projection (Lindzey, 1961; Rabin, 1968).

1.2.1.2. The nature of Projective Techniques

Frank (1948), who received credit for originating the term ‘projective technique’, described it “...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” (p. 46). The approach of projective tests is that this method reveals the total personality, or aspects of the personality in the framework of the whole (Bell, 1948). Since the purpose of projective techniques is to gain insight into the individual personality (Bell, 1948), projective techniques, therefore enquire about the role of all psychological functions and processes that operate within the context of the total personality (Abt, 1959).

The projective hypothesis holds that the individual organises events in terms of their own motivations, perceptions, attitudes, ideas, emotions, and all other aspects of their personality (Abt, 1959). A person is therefore “projecting” all the time when perceiving and responding to the environment (Rabin, 1968). In adopting this hypothesis, an examiner might use almost all behaviour of the individual as a projective technique. In practice however, the subject’s “idiomatic way” of ordering certain situations has proved to be more indicative of the personality (Abt, 1959; Frank, 1948). Projective techniques attempt to create these situations and sample individual behaviour in a structured event of sufficient brevity to be clinically practicable and of sufficient stimulation to call forth a wide range of individual responses (Abt, 1959). It thus attempts to evoke “...from the subject what is in various ways expressive of his private world and personality process” (Frank, 1948, p. 47).

1.2.1.3. Underlying assumptions about personality in the use of projective techniques

Broad underlying assumptions are made about the concept of personality in the use of projection techniques (Bell, 1948; Strumpfer, 1958). Although those who have developed and experimented with projective methods might not agree about the exact nature of personality, these underlying assumptions are shared by most (Bell, 1948).

The first assumption is that personality is not a static phenomenon, but rather a dynamic process (Abt, 1959; Bell, 1948; Strumpfer, 1958). Personality is in a dynamic relationship with the environment and, therefore, has an influence on and is influenced by the environment. The structured nature of personality is the second generally accepted concept. The personality structure evolves through the integration of a particular range of influences (Bell, 1948). The understanding of the nature of these influences depends on the theoretical viewpoint.

The third is that the personality structure reveals itself in the behaviour of the individual (Abt, 1959; Bell, 1948; Strumpfer, 1958). All behaviour is viewed as active and purposeful. It is active in that the individual strives toward the development of a relationship with the world of physical and social reality, and purposeful (or functional) in that the individual's behaviour is goal-directed (Abt, 1959). Behaviour thus reflects the integral relationship between internal and external demands (i.e. that of the self and that of the situation), whereby it attempts to adapt to both these demands (Bell, 1948).

Fourthly, personality is an organised totality (Abt, 1959; Strumpfer, 1958). Therefore when certain aspects of the personality are displayed, it has to be understood within the total context of the whole personality (Strumpfer, 1958). The projective productions of individuals should therefore be regarded merely as parts of a whole (Abt, 1959).

The fifth major assumption concerning the personality is that it has a surface as well as a depth aspect (Bell, 1948; Strumpfer, 1958). The surface manifestations form only one

stratum of the personality. While certain aspects of the personality can be observed, others remain hidden, even to the individual. These hidden aspects reflect the depth aspect, which usually presupposes an unconscious part of the personality. These hidden aspects can only be investigated through surface manifestations. Part of the function of projective tests is to explore the nature of these unconscious areas.

1.2.1.4. The mutual characteristics of projective tests

Projective tests are usually distinguished from other tests in that, even though there are a variety of different types of projective techniques, they generally share certain characteristics (Bell, 1948; Lindzey, 1961; Rabin, 1968; Strumpfer, 1958).

Projective techniques are sensitive to unconscious or latent aspects of the personality. The capacity of projective techniques to tap the private, covert, latent, unconscious components of personality distinguishes them from most other psychological instruments (Lindzey, 1961; Rabin, 1968; Strumpfer, 1958).

The subject is permitted a multiplicity of responses (Lindzey, 1961) and is not limited in the variety of responses that can be elicited. Unlike self-report questionnaires or inventories, the alternative responses are virtually unlimited. Another characteristic, closely linked to the previous one, is the profusion and richness of response data. Not only are the response data numerous, they also tend to be multiform and varied (Lindzey, 1961).

Projective techniques are multidimensional. The same projective test can tap for a variety of different variables. A specific item may have a variety of meanings, depending on the way it is integrated into or differentiated from the whole (Bell, 1948; Lindzey, 1961).

The subject's awareness of the exact nature of the test is limited. Although the subject may know something about the general goal of the investigator, the details, including the variables to be used in the analysis, are routinely kept from the subject. The subject is

also usually unaware of which aspects of their test response are important to the examiner. This reduces conscious control by the subject over analysable behaviour, and produces true responses reflecting their own individuality (Bell, 1948; Lindzey, 1961).

The stimulus presented to the subject is of an ambiguous nature. The vague, 'neutral', incomplete, unfamiliar or ambiguous stimuli and relatively unstructured nature of the task are meant to evoke projections from the subject's internal world (Lindzey, 1961; Rabin, 1968; Strumpfer, 1958). It is also appropriate to use holistic analysis. This implies that a simple variable-by-variable analysis of the individual is not appropriate to the technique (Lindzey, 1961).

Projective techniques also tend to evoke fantasy responses. The subject is encouraged to respond without concern for the sanctions of the real world. This allows the subject to respond freely and imaginatively (Lindzey, 1961; Strumpfer, 1958). The fact that the subject's responses have no right or wrong status is closely related to the previous characteristic. The individual is to respond in whatever manner seems most natural and appropriate. There is, therefore, no criterion of correctness against which subject's responses can be judged (Lindzey, 1961; Strumpfer, 1958).

1.2.2. Machover's HFD Test

The theoretical underpinnings of Machover's HFD test were based on previous work on projective techniques, such as the clarification of projective thinking by Frank in 1939 (Copeland, 1952). In addition, Machover's work (1949) also rests heavily on psychoanalytic theory. This link, between Machover's underlying theory and other projective tests and psychoanalytic theory, is nowhere more explicit than in the following passage:

While the concepts underlying the technique of drawing analysis were developed more or less independently in the course of studying thousands of drawings in clinical contexts, their formulation owes much to established projective methods of personality analysis and to psychoanalytical theory. (Machover, 1949, p.34)

Moreover, it is clear that the concept of projection, particularly as understood in projective theory, played an important role in Machover's understanding and development of the analysis of drawings. In Machover's (1949) first publication, *Phenomenon of Projection*, the various points discussed reflect the typical assumptions of projective techniques in general (discussed under 'Nature of Projective Techniques'). She points to the dynamic and interactive development of the personality; the tendency of projective techniques to uncover deep and unconscious determinants of self-expression which could not be made manifest in direct communication; how conflict is projected in all creativity; and to the fact that there is an intimate link between the drawing of a person and his personality.

It is also evident in her work (Machover, 1949, 1952) that her usage of the term projection is analogous to the broader concept of projection. As discussed above, projection in this sense is not limited to the concept of *classical projection*, in which the use of projection is restricted to a defence, but also includes *generalised projection*. Her wider usage of projection is clear throughout her work, as is evident in the latter half of the following passage:

The process of drawing the human figure is for the subject, whether he realizes it or not, a problem not only in graphic skill, but one of projecting himself in all of the body meanings and attitudes that have come to be represented in his body. (Machover, 1949, p.35)

Copeland's (1952) criticism of Machover's and Frank's usage of the term projection where it is as more than just a defence mechanism, adds to the confirmation that Machover used projection in a broader sense than that of classical projection.

1.2.2.1. Projection of the self-image

Machover (1949, 1952) theorises that when an individual is requested to make a drawing of a person, they will project themselves in the drawing. She believes that this holds the key

to the understanding and interpretation of HFD. Referring to her work on the development of HFD analysis, she states the following:

These efforts were rewarded with comprehension of an ever-extending horizon of graphic detail and variety of projection. Progress became possible only after the basic key was developed – the projection of the body image in its functional implications (Machover, 1952, p. 344)

Machover (1949) holds the view that “...the figure drawn is the person, and the paper corresponds to the environment”. (p.35) In this view, the drawing of a person represents the expression of self, or the body, in the environment. Therefore, the drawing may be characterized “...as a *body image*...[that in turn] may be regarded as the *complex reflection of self-regard – the self-image*” (Machover, 1952, p.348).

The body image projected may not necessarily reflect the body as it appears to other persons. The projected body image is a reflection of the self-image, and may therefore refer to the subject’s deepest wishes, to a frank exposure of defect, to vigorous compensation for defect, or to a combination of all three factors (Machover, 1952). In addition “most drawings contain elements of self-evaluation in both direct and compensated forms of projection and of both conscious and unconscious phases of self-revelation.” (Machover, 1949, p.9).

Furthermore, keeping in mind that the self-image is reflected, Machover holds:

...[that] the human figure drawn by an individual who is directed to “draw a person” relates intimately to the impulses, anxieties, conflicts, and compensations characteristic of that individual. (Machover, 1949, p.35)

She concludes that

... the composite image that constitutes the figure drawn is intimately tied to the self in all of its ramifications. (1952, p.349)

Taking this into consideration, the drawing of the human figure can be analysed to reveal certain elements that aid in understanding the personality dynamics of the subject.

1.2.2.1.1. *Sources of projected self-image*

Machover (1952) makes the assumption that the organisation of the self, in terms of central focus and attitudes, is essentially selective. She states, “We build our image of ‘self’ out of our impulses, our behaviour, and the reality about us...”(1949, p.59). She therefore views the organisation of the self as a product of experience, identifications, projections, and introjections (1952). This process of selection and organisation, is not necessarily totally conscious or unconscious, but may take place with varying degrees of awareness and directness (Machover, 1949). When the subject draws a human figure, the particular expression of the self-image is constructed from a variety of images that the person holds in their mind. The particular organisation of the self, which is a product of various interactions, determines the selective utilisation of images available in the mind, and in the drawing of the human figure. According to Machover (1952), there are a variety of sources from which these images are constituted:

Individual “persons” known to us are legion, and in the process of creating the figure, some conscious and some subliminal determinations are at work to guide us through a fluent unit representation of the body. It has been found that various sources are tapped. Morphological, age, and sex determinants constitute the more general sources from which we draw aspects pertinent to ourselves. Images of cultural and social stereotypes make their contribution to our conception of a “person”...Combining with these social images are the images arising from our own private experience, unique to ourselves. (p. 349)

In her opinion, all of these images intermingle to produce the subtle and complex projection of the self.

1.2.2.2. The interpretive system.

Machover's interpretive system differentiates between two features of a drawing that is given equal diagnostic value: the structural/formal elements of the drawing, and the content.

The structural features include: a consideration of pressure of line, erasures, size of the figure, placement on the page, theme, stance of the figure, background, exactness, proportions, amount of detail, degree of completion, symmetry, midline emphasis, perspective, shading, and reinforcements. Content appraises the individual body parts, clothing and accessories, the postural tone of the figure, and the facial expression (Machover, 1952).

The structural/formal features of the drawing reflect the motor and expressive aspects, and these are inextricably woven into content. In accordance, the expressive aspect depends on two things: where in the figure is it being said, and what is being said in terms of content of the figure. The distribution of graphic energy (i.e. the expressive aspects), as indicated by omissions, disturbance of line, perspective, reinforcements, erasures, or shading, must therefore be interpreted in light of the meanings that a person attaches to the various parts of the body (Machover, 1952). Furthermore, since "...the representation of the body image in drawings tends to invite the graphic expression of any conflict which may be experienced..." (Machover, 1949, p.59), the drawing accordingly indicates the location of conflict (Machover, 1952).

To provide a practical example to illustrate the above explanation: Reinforcement (a structural feature) of the forehead (a content feature) is generally, according to Machover's interpretive system (1949), associated with intellectual capacity in the subject's mind. This could either reflect the subject's perception of themselves as having intellectual capacity, as their wish for possessing intellectual prowess, as a compensation for perceived defect, or as a combination of these. Shading, a structural feature that is associated with anxiety (Machover, 1949, 1952), situated on the forehead, could indicate

anxiety related to intellectual capacity. These two structural indicators of reinforcement and shading, on the forehead (a content feature), could together indicate the area of conflict as the subject's perceived intellectual capacity.

1.3. Advantages of the HFD projective test

Usage of the HFD projective test has various claimed advantages over other tests. Waehler (1997) claims that HFD are easy and quick to administer. The time and material involved are economical and need no special preparation (Machover, 1949). Furthermore, HFD can be done anywhere, with any size groups, and at any time, using a paper and pencil (Machover, 1949, 1952). Another advantage is that, although the HFD test had initially been developed for children, it can be applied to subjects of all ages, and all levels of intelligence and skill (Copeland, 1952).

HFD are designed specifically to tap the unconscious aspects of personality that are not tapped by self-report measures, although they also tap conscious material (Riethmiller and Handler, 1997a). The drawn product offers a direct testimony of the subject's projection without him reporting it (Machover, 1952). A further advantage, listed by Waehler (1997), as well as Riethmiller and Handler (1997a), is the value of projective drawings as an assessment tool with certain populations that might be evasive, or guarded. This is especially relevant in clinical populations that suffer from anxiety, and those who are unwilling to answer self-report questions that are considered threatening. A related advantage is that drawings can be utilised to establish rapport by engaging patients, especially guarded children, in a non-threatening way (Lubin, Larsen, & Matarazzo, 1984; Machover, 1952).

Because the drawing task is ambiguous, and it is not clear to the subject what elements the test-taker is interested in, malingering is made extremely difficult (Machover, 1952). A further advantage is that drawings allow the patient to express themselves in a uniquely personal way, as opposed to most SR measures (Riethmiller and Handler, 1997a). Related to the above is the benefit that the test offers a safe opportunity for release to the

fantasy-laden subject, which might frequently lead to therapeutic effects (Machover, 1952).

Since the test is non-verbal, it is especially useful in a clinical population where language and literacy may be a barrier to self-report measures (Lindzey, 1961; Machover, 1952). Due to the HFD being a versatile test, it is equally appropriate for the verbally shy and the highly articulate subject (Copeland, 1952; Machover, 1952). Waehler (1997) also points out that the HFD test is relatively culture-fair while most SR measures are constructed with items based on a Western cultural paradigm.

1.4. The use of projective drawings

Lubin *et al.* (1984) investigated patterns of psychological test usage in the United States of America between 1935 and 1982. They found that of thirty well-known tests, the usage of the DAP (also known as the HFD) test ranked second in 1959, fourth in 1969 and eighth in 1982.

In a study that investigated the use of projective assessment by school psychologists in the USA, Vukovich (1983) found that 87% of the psychologists in the survey indicated the DAP as important for educational planning, while only 5.3% listed the DAP as inappropriate for the school setting. In the total number of test administrations reported by these psychologists, the DAP was used 42% of the time. This was the highest reported usage from a group of eleven frequently used projective tests. The most frequently cited reasons for using the DAP were to measure self-concept (41% of the time) and personality (36.6% of the time). Intelligence was only measured 3.4% of the time.

In a preliminary review of findings of international surveys on the usage of projective techniques, Piotrowski, Keller and Ogawa (1993) found that the DAP was rated twelfth in Japan, eleventh in the Netherlands, and fifth in the USA. Two important preliminary conclusions were made: a) projective techniques seem as clinically popular overseas as they are in the USA, and b) projective approaches are a major method of personality

assessment world-wide. They state that the latter can be attributed to the lack of local norms and standardisation of the objective tests abroad, along with the problem of cross-cultural differences.

Watkins, Campbell, Nieberding, and Hallmark (1995) surveyed the contemporary practice of psychological assessment by clinical psychologists in the USA. 80% reported use of the DAP, of which 56% reported regular use. The 38 assessment procedures most frequently used by clinical psychologists across seven work settings were ranked. The Projective Drawings (e.g. the DAP and HTP tests) ranked third in mental hospitals, shared fourth place in university departments with the Weschler Adult Intelligence Scale-Revised and Thematic Apperception Test, shared eighth place with the Bender-Gestalt in community mental health centres and outpatient clinics, and ranked eighth in private practice. The lowest rank obtained was tenth place in medical schools. Of nineteen assessment procedures, which clinical psychologists believed clinical students should be competent in, 96% indicated projective drawings. This is the second highest rating with the Minnesota Multiphasic Personality Inventory being the highest with 97%.

As is evident from these reports, projective drawings (specifically the DAP), are still one of the most popular assessment devices in the USA, and preliminary findings (Piotrowski & Keller, 1993) suggests a similar status in other countries.

CHAPTER 2

RESEARCH REVIEW

2.1. Initial research on HFD

The development of HFD gave rise to an increasing amount of research. Not long after Machover's publication at the end of 1948, Royal (1949) investigated 28 drawing characteristics of neurotic patients. Although he did not explicitly state his intent to test Machover's drawing indices, the majority of the 28 did reflect those explicated in her publication (1949). Royal concluded that none of the particular drawing characteristics, as defined and scored in his study, are statistically significant as individual scoring points for the differentiation of the drawings of anxious neurotic patients from control subjects. More research followed from other sources, examining the validity of Machover's drawing indices. Most of this research looked at individual indices, such as Jolles and Beck's (1953a, 1953b) investigation of horizontal and vertical placement of the figure on the page, while others scrutinized Machover's underlying theoretical assumptions in a more direct way. An example is Kamano's (1960) investigation of the body-image hypothesis. Others quickly followed with studies in support of Machover's hypotheses. These were, in turn, followed by research both supporting and challenging her findings (Hammer, 1969). The opposing research findings subsequently gave rise to research reviews that attempted to integrate the findings in a meaningful, accessible way.

2.2. A comparative overview of three major reviews

Swensen (1965) analysed the research literature on HFD from 1949 to 1956, while Roback (1968) and Swensen (1968) independently analysed from 1956 to 1967, and 1957 to 1966 respectively.

2.2.1. The Body-image hypothesis

The basic hypothesis underlying HFD interpretation is the ‘body-image’ hypothesis (as discussed above under *Projection of the self-image*) that a human figure drawing reflects the drawer’s perception of themselves (Machover , 1949, 1952).

In his review of available research findings between 1949 and 1956, Swensen (1965) concluded that “definite research on the basic meaning or significance of human figure drawings is lacking”. (p. 437). In an ensuing critique of Swensen’s findings, Hammer (1965) argues that research on the body-image hypothesis is over-simplistic in that it wrongly assumes that the self-image of the subject would necessarily reflect an objective view of their body. He points out that most drawings represent a fusion of both the realistic perceptions of the person’s self and that of the ego ideal. Roback’s review (1968) of the following ten years, found that although there appeared to be support for Machover’s hypothesis, the inconsistent findings indicated that the relationship between figure drawings and body-image was still unclear. In Swensen’s subsequent review (1968) he concluded that “the results of the last 10 years’ research provide more evidence in support of the body image hypothesis than the previous 10 years has produced.” (p. 25) Although he does not discuss the possible reasons for this, it could be hypothesised that refined research designs took the admonitions of Hammer (discussed above) into consideration.

2.2.2. The Molecular and Molar approaches

Most frequently HFD are evaluated in either a molecular or a molar fashion (Strumpfer, 1962). According to the molecular approach, individual indicators such as Machover’s indexes (1949), are applied in an atomistic fashion to make certain deductions in accordance with the specific area of relevance. In contrast, the molar approach evaluates the content and structure of the figure drawing in a global and impressionistic manner (Roback, 1968; Strumpfer, 1958). The research generated since the advent of HFD is usually in accordance with one of these two approaches.

2.2.2.1. *The Molecular approach: the evaluation of Machover's individual indicators*

In his first review of HFD research, which predominantly contained research on individual indicators, Swensen (1965) concluded the following:

The evidence presented in this paper does not support Machover's hypotheses about the meaning of human figure drawings. More of the evidence directly contradicts her hypotheses than supports them. And, even in the studies where some support for her hypotheses can be found, many of the cases did not render the human figure drawings in the way that would be expected according to Machover. (p. 645-646)

He came to the same conclusion in his subsequent review (1968) and further maintained that the use of structural and content signs on HFD for clinical assessment are not likely to provide any improvement to the clinicians' judgmental accuracy. Roback (1968) too concluded that most of the studies reviewed failed to support Machover's hypotheses. But he pointed out that his study did not attempt a critical analysis of the research methodology and designs utilised in the research reviewed. Moreover, due the fact that most studies were evidently poorly designed, he stated that "...there is still an insufficient number of well-designed investigations from whose findings it could be concluded 'the patient died'." (p. 16).

All three research reviews reported that the majority of individual indicators, as hypothesised by Machover, either failed to find support in the research or yielded conflicting findings, using the molecular approach.

2.2.2.2. *The Molar Approach: evaluation of the global judgement of drawings*

In his earlier research review, Swensen (1965) concluded that drawings rated globally are useful as screening devices only. In his later review of globally rated drawings Swensen (1968) pointed out that global ratings mostly measure the overall quality of a drawing. It also appeared that global judgement significantly relates to variables that are reflections

of gross maladjustment. Although global judgements regarding adjustment can consistently be made more accurately than chance, judges have generally failed to distinguish between diagnostic categories. Swensen concluded that global ratings do not significantly detect specific kinds of pathology. He therefore reaffirmed his earlier conclusion that globally rated drawings are useful as screening devices only.

In his research review, Roback (1968) pointed out that researchers have shown the judges' ability to consistently discriminate between 'normal' drawings and 'bizarre' drawings, and further demonstrated that these type of drawings can be linked to 'normal' persons and 'schizophrenics', respectively. Roback, however, is also of the opinion that the ultimate fate of the DAP test will be one of a rough screening device for determining gross level of adjustment.

2.3. The Molar approach vs. the Molecular approach

2.3.1. Support for the Molar Approach

As shown above, Swensen, in both his studies (1965, 1968), as well as Roback (1968), concluded that the molecular use of individual HFD indicators mostly failed validity studies. Other studies (e.g. Doubros & Mascarenhas, 1967) also found that Machover's individual indicators failed to find support in the research results. These findings are congruent with more recent research findings (e.g. Forrest & Thomas, 1991; Hibbard & Hartman, 1990; Motta, Little, & Tobin, 1993).

Both Swensen (1968) and Roback (1968) did however find some support for the molar approach. Later, in a study considering clinical as well as experimental specifications for a suitable methodology, Wanderer (1969) found that DAP experts, using a molar approach, were capable of identifying 'mental defectives' (p.143) beyond chance expectations. Maloney and Glasser (1982), Yama (1990), and McNeish and Naglieri (1993) investigated the relation between global ratings of HFD and psychological adjustment. Their results demonstrated an acceptable level of validity and suggested that

projective drawings could provide a useful index of overall adjustment when better sources of information were not available. Oas (1984) also demonstrated acceptable levels of validity for judgement of impulsiveness from HFD. Tharinger and Stark (1990) found that qualitative, global ratings of children's drawings were able to predict positive aspects of self-esteem and family functioning. Thus, while the majority of the research on the molecular judgement of drawings, based on Machover's indices, yielded negative or conflicting evidence, the majority on the molar approach produced positive evidence.

Albee and Hamlin (1949, 1950) pointed out that even though certain molecular factors may be important in the interpretation of drawings, many, if not most clinicians make judgements and interpretations of patients' drawings with little conscious attention to the specific molecular factors. The judgements and interpretations made are rather "...as a result of a global impression, of un verbalized comparison of a present drawing with past experience of 'intuitive' or insightful impressions." (1949, p. 389) Roback (1968) shares this view as evident in the following statement:

It is the author's opinion, based upon personal experience with the DAP test and the review of the literature, that in the clinical setting, interpretations based upon figure drawings are usually impressionistic, and based upon a global assessment of the data. (p. 17)

Guinan and Hurley (1965) argue that judgements based on the global or intuitive impressions of the clinician are more appropriate than the atomistic methods. They reason that while the latter may use more carefully defined indices, these are possibly useless and irrelevant. Swensen (1968) maintained that, since global ratings include all of the drawing behaviour contained in a given DAP, global ratings are the most reliable, and therefore the most useful aspect of the DAP. Furthermore, since global ratings of drawings are more reliable than other aspects of drawings, he reasoned that it would more likely be significantly related to a variety of personality and behavioural ratings. He emphasised that the results of the studies he reviewed were congruent with this view and reinforce the efficacy of global judgement rather than interpretation of specific signs on the DAP.

Copeland (1952) criticised the use of the molecular approach by pointing to the interrelation of the parts to the whole:

In stressing the molecular approach which is characteristic of item-analysis, [researchers] failed to see that the total personality is involved in any graphic production, and that isolated parts of a drawing cannot be judged except in relation to the total pattern. (p. 23)

In taking research findings into consideration Tharinger and Stark (1990) also argued that an essential quality of holistic health or pathology had been missed by the emphasis being placed on isolated signs. They were therefore of the opinion that the clinical usefulness of HFD lie in their overall presentation of psychological functioning of the individual and not in the interpretation of specific emotional indicators. Sharing a similar view, George and Waehler (1994) maintain that “expecting single signs or seemingly obvious associations to validly reveal personality characteristics does not account for people’s highly complex nature.” (p. 171). Handler and Habenicht (1994) are of the opinion that the analysis of single signs in drawings is to be discouraged. Instead, they emphasise the need for more sophisticated studies that utilise a holistic, integrative approach to interpretation.

In spite of the controversy over clinicians interpreting single signs and researchers investigating the validity of these, Machover (1949) never intended clinicians to use the individual signs in isolation. The injunction in her original monograph states that patterns of signs, rather than individual signs should be considered in the interpretation of the DAP. Swensen (1968), therefore, maintains that the results of his review reinforce Machover’s admonition not to use single signs in isolation. He also argues that, below the level of conscious awareness, the clinician is adhering to Machover’s advice when judging drawings as a whole.

To conclude, the growing body of research that disproved the validity of the usage of individual signs in isolation, while affirming the efficacy of global judgements, led to the

disrepute of the molecular approach and the popularising of the molar approach. Despite its apparent inability to distinguish between various categories of pathology, the molar approach appears to be the most effective and preferred interpretive approach. This approach is also hypothesised to support Machover's view rather than challenge it.

2.3.2. Criticism against the Molar Approach

Various criticisms have been raised against the molar approach. The leading criticisms are now discussed.

As pointed out previously, from the three research reviews above (Swensen, 1965, 1968; Roback, 1968) it can be concluded that, even though evidence has supported the effectiveness of the molar approach, the latter has been viewed as limited in that it is unable to discriminate more specific categories of pathology. One critique of the molar approach is therefore that it appears to lack specificity in its ability to indicate pathology.

Although it has been demonstrated that clinicians are able to distinguish between drawings of people with or without psychopathology, this does not necessarily mean that clinicians are able to also intuitively gauge drawings for personality features successfully. Claims to the contrary made by clinicians, have to be tested. Lewinsohn (1965), however, found that the overall quality of drawings was *not* related to personality trait measures. Roback (1968) therefore strongly criticised the untested assumptions and generalisations, regarding personality assessment from drawings:

Many clinicians apparently entertain grandiose delusions that they can “intuitively” gain a great deal of information from figure drawings about the personality structure and dynamics of the drawer. However, these same clinicians are often reluctant to allow their experimentally oriented colleagues to test their “insights” by scientific methods. (p. 16)

Wanderer too (1969) argued that in spite of clinicians contending that they do not use their tests in a mechanical, additive way, and that their decisions are ultimately complex judgements, they should not be exempt from scientific scrutiny.

The studies of Albee and Hamlin (1949), as well as that of Schmidt and McGowan (1965), have demonstrated that non-clinical psychologists, without experience in projective techniques, make global judgements as reliably as clinical psychologists. They were of the opinion that this could be ascribed to the overall quality of drawings and not to complex psychological factors. Whitmyre (1953), Nichols and Strumpfer (1962), as well as Cressen (1975) have subsequently shown that when psychologists think they are judging adjustment from drawings, they are really judging artistic quality. Roback (1968) pointed out that most research results from his review suggest that the 'proficiency in drawings' dimension of the drawer strongly influences the clinician's global evaluation of figure drawings. He is of the opinion that the "clinical" cues which psychologists believe are influencing their interpretations, may actually be a reflection of the artistic quality of the drawing. Cressen (1975) has illustrated how, with very disturbed and regressed individuals, bizarre drawings successfully reflect a disorganised mental and emotional state, but when drawings are not as extreme, overall quality seems to be a much less valid indicator of personality integration. Bizarreness of the drawing seems to be the cue clinicians rely on when successfully judging drawings. In sum, although psychologists think they are judging adjustment level from clinical cues revealed in figure drawings, they may actually be responding to artistic parameters such as anatomical form and proportion when judging drawings intuitively.

A similar argument to that of artistic influence is made for the cognitive sophistication of drawings. Adler (1970) warned that one should be hesitant in inferring psychopathology from primitive drawings. Although primitiveness might be presumed to indicate psychopathology in the global judgement of drawings, he argues that primitiveness seems primarily to be a reflection of a low level of cognitive maturity or sophistication. He reasons that many of the "...so-called indicators of pathology are actually a function of this immaturity". (p.57) As has been highlighted above, in making intuitive global judgements of figure drawings the global impression of the drawing is used. Since primitiveness of a drawing likely influences the overall impression of a drawing, there is the danger of wrongly inferring pathology from primitiveness.

There is an absence of agreement concerning the criteria for the global judgement of figure drawings. Although independent investigators, using qualitative judgement, could successfully differentiate drawn figures of schizophrenics from non-schizophrenics, they did not agree as to what was characteristic in differentiating one from the other (Burton & Sjoberg, 1964). Closely related to the above point is the unavailability of criteria to scrutinise the findings of a global drawing analysis. This makes the comparison and evaluation of two or more drawing analyses with different conclusions difficult. Kahn and Jones (1965) argued as follows:

...to demonstrate that experienced clinicians can make valid predictions from global judgements of drawings is interesting but of limited value unless the basis of such clinical predictions can be specified and communicated. (p. 320-321)

Although the multiplicity of indicators and integration of judgements makes the molecular approach complex, it does allow for some measure of communicability, in Strumpf's (1958) opinion. The global/molar approach, on the other hand, is impressionistic, unformulated and intuitive, making the grounds for judgement difficult to communicate to others (Strumpf, 1958, 1962). This becomes especially relevant in the training of clinicians in drawing analysis, as is evident in the following conclusion of Macfarlane and Tuddenham (1952):

Only what is communicable is teachable, and we are faced with the task of training competent clinicians. (p. 28)

In their study of the effects of hostility as a factor in the clinician's personality, Hammer and Piotrowski (1953) found that clinicians' global interpretations of projective drawings appear to have been, in part, determined by their own projections and areas of sensitivity. Since there is no explicit criteria in evaluating drawings in the molar approach, and since the clinician therefore uses a subjective, intuitive evaluation based on their clinical judgement, the interpreter is highly susceptible to their own projections in evaluating drawings.

Closely related to the above is the interpreter's susceptibility (conscious or unconscious) to their own confirmatory bias. Smith and Dumont (1995) conclude that confirmatory bias

...disposes clinicians to find support for initial diagnoses in whatever material is at hand – and what therapists are disposed to find has a number of other determinants, not least, their theoretical orientation, but also the results of other tests as well as the parataxic distortions and projections evoked by their client.(p. 302)

To conclude, although certain research studies have been able to successfully demonstrate acceptable levels of validity using the molar approach, it has come under strong criticism for its insufficient specificity, over-reliance on intuition, the lack of judgement criteria, the lack of communicability, susceptibility to the projections of the interpreter, and the potential influence of artistic quality and cognitive sophistication.

2.3.3. Attempts at synthesis

Attempts have been made by various researchers to develop HFD evaluations that combine some of the advantages of the molecular approach with the validity of the molar approach, while trying to limit the disadvantages typical to the molar approach. The main attempts at synthesis are the following:

2.3.3.1. *The Criterion Scale*

Albee and Hamlin (1950) successfully demonstrated that the use of a criterion scale would lend some objectivity to global interpretations. Ten drawings, judged to indicate different levels of adjustment by various judges, were selected. These were then placed on a continuum representing different levels of adjustment from best to worst. Using this as a criterion scale, judges could effectively differentiate a normal group from two groups of neuropsychiatric outpatients.

Murray and Deabler (1958) showed that psychologists could be taught to correctly match drawings and five diagnostic categories after they were shown their mistakes, along with examples of correct matching. Although diagnostic categories, such as undifferentiated schizophrenia, were the least difficult to identify, personality or character disorders were the most difficult for the judges to identify correctly even after learning.

2.3.3.2. *Actuarial prediction*

A study by Hiler and Nesvig (1965) compared actuarial prediction against naïve clinical prediction. Naïve clinical prediction relies on intuitive and subjective means of selecting and integrating cues in arriving at a judgement. Actuarial prediction, on the other hand, relies on the application of a previously determined formula, based on empirical findings. The research results were in favour of the formula. Taking these findings into consideration, they recommended the channelling of clinical judgement into directions indicated by empirical findings.

2.3.3.3. *Sophisticated clinical prediction*

Stricker (1967) subsequently compared actuarial, naïve clinical, and sophisticated clinical prediction of pathology from figure drawings. Sophisticated clinical prediction uses available empirical data along with subjectivity to come to a final decision through a combinatorial clinical procedure. The findings suggest the relative superiority of sophisticated over naïve clinical judgement and the possibility that, in some circumstances, it may even be superior to actuarial formulas. According to them this raises the possibility that clinical judgement, as practised by some clinicians, can be more accurate than an actuarial formula.

2.3.3.4. *Quantitative index*

Individual signs can also be combined to produce a quantitative index that is like a global measure. One such index is that of Koppitz (1968) wherein specific signs, which she

labelled emotional indicators, are combined. She presented data showing large differences between the distributions of the total number of emotional indicators of clinical and normal adolescent populations. Her findings suggest that a number of emotional indicators are an excellent predictor of pathology. The findings of Currie, Holtzman, and Swartz (1974) also supported this approach. They successfully proved that predictive validity of the emotional indicators of adjustment was high, by comparing these predictions to adjustment ratings nine years later. Using a different composite quantitative index, Groth-Marnat and Roberts (1998) investigated the relationship between HFD and self-esteem, but did not find a relationship between the composite ratings and self-report measures of self-esteem.

In their review of different HFD anxiety measurements, Sims, Dana, and Bolton (1983) concluded that the most promising scoring system is that of Handler (1967), but that it requires further validation, especially against independent psychiatric diagnosis and self-report criteria. The advantages of this scoring system is that it does not over-rely on intuition, provides judgement criteria, enables communicability, does not lend itself to the projections of the interpreter, and limits the potential influence of artistic quality and cognitive sophistication.

2.4. The current status of the DAP and research

2.4.1. The controversy regarding further research on the DAP and continued clinical use

But in spite of these various attempts at synthesis, the status of the DAP is still uncertain. According to Riethmiller and Handler (1997a) the controversy over the validity of HFD has continued until the present. Certain researchers (e.g. Hammer, 1969; Riethmiller & Handler, 1997a, 1997b; Robins, Blatt & Ford, 1991) claimed the HFD to be valid, while others (e.g. Joiner & Schmidt, 1997; Joiner, Schmidt & Barnett, 1996; Roback, 1968) reported the test interpretation to be invalid. In their article Joiner, Schmidt and Barnett (1996) conceded, "...that although drawings may be useful rapport-building devices, they

are not useful measurement devices”. Joiner and Schmidt (1997) further maintain that it is highly unlikely that projective drawings would add diagnostic, prognostic, or any treatment-relevant information that self-report measures and observer ratings devices already provide. Moreover, Joiner *et al.* (1996) express their concern that after fifty years of “unimpressive validity data” (p.128) the use of individual indicators in projective drawings is still used in the clinical assessment of various psychiatric patients in the USA and elsewhere. Wanderer (1969) echoes this concern in the following question:

What causes clinical psychologists to believe in and use instruments which repeatedly fail the test of diagnostic validity? (p. 149)

Thus the validity of the HFD test is still unclear, with certain researchers (e.g. Joiner & Schmidt, 1997) questioning whether HFD techniques warrants further research and clinical use. These two questions will now be addressed by considering various arguments raised in the literature.

2.4.1.1. *The requirement of Test Validity*

Little (1959) is of the opinion that in the clinical situation, where most projective techniques are administered, validity has “a most pragmatic air” in that the clinician wishes to make meaningful and useful statements about his patient from the test results (p. 287). Macfarlane and Tuddenham (1952) maintain that the clinical utility of any test is adequate justification for its use. But, they argue, if the projective test, or interpretive procedure thereof, does not provide valid information regarding the patient, it has no utility in providing clinically useful information.

Roback (1968) stresses that the importance of validity is more than pragmatics, as evident in the following passage:

...applied clinicians have an obligation to their field and their clients to determine the multitudinous variables influencing their interpretations of signs in figure drawings through sound experimental procedures, code these characteristics by scientifically based methods, and accumulate sufficient data from normal as well

as abnormal groups which can be analyzed by appropriate statistical techniques.
(p. 17)

He argues that both clinicians and researchers have an ongoing responsibility to ensure that the clinically used HFD test interpretation techniques will actually do what they purport to do. Criticising the continued use of projective drawings, Smith and Dumont (1995) warn against the use of an instrument of which the validity has not been rigorously demonstrated. In a follow-up article Dumont and Smith (1995) asserted that those who affirm the validity of an instrument are the ones responsible for assuring its validity. They argue that claiming that one's test is valid due to popular theoretical hypotheses, as is hypothesised to happen with projective drawings, is therefore not sufficient.

In stressing the importance of competence and ethicality in psychodiagnosis, Weiner (1989) states the following:

Knowing what one's tests can do is the measure of a psychodiagnostician's competence. Acting accordingly is the measure of his or her ethicality. (p. 829)

He emphasises that competence is a prerequisite for ethicality, and that psychologists who practice or teach psychodiagnosis without being fully informed, concerning the capability of the tests, are behaving unethically. This is especially relevant to HFD where, as shown earlier, available empirical evidence does not support any relationship between specific individual drawing signs and specific behavioural events. Clinicians, who through ignorance, nevertheless use individual signs in this way, are also behaving unethically, by virtue of being incompetent (Dumont & Smith, 1995).

In order to uphold ethical practice of psychodiagnosis, psychologists need to combine good judgement with competence, sustained by constant attention to newly emerging information concerning what tests can and cannot do (Weiner, 1989). This is especially applicable to the HFD test. Ongoing research is therefore essential to determine exactly what the HFD test can and cannot do.

2.4.1.2. *The need for more focused research, based on previous findings*

Despite the negative results of certain research (e.g. Joiner *et al.*, 1996), there is also a quantity of research, listed by Riethmiller and Handler (1997a) that supports the effectiveness of the HFD test as an assessment tool.

But Riethmiller and Handler (1997a) point out that “...research that validates the use of drawings is typically not cited by those who seem convinced that drawing techniques are invalid, whereas those who support the use of the technique often ignore negative findings” (p. 459). They contend that retaining and continuing the use of projective hypotheses which have been continually disconfirmed by research could lead to the danger of making invalid conclusions in the interpretation of figure drawings. Similarly, disregarding positive evidence that supports projective hypotheses may lead to the equivalent danger of mistakenly regarding a potentially valuable tool as totally invalid. Weiner (1989) also points out that, just as it is unethical to claim that a test is more useful than proven, so too is it to denigrate the value of a test. Riethmiller and Handler (1997a) therefore argue that instead of adhering to this extreme form of confirmatory bias, ongoing research should regard and be built on previous findings. Furthermore, when a specific hypothesis concerning the HFD test has been proven or disproved, it only pertains to that aspect, and cannot be generalised to the rest of the test. Drawing conclusions about the whole test when only certain attributes have been researched is a generalisation error. It is, therefore, not acceptable to view a whole test as valid/invalid, when only certain interpretive hypotheses have been proved/disproved. Instead then of researchers attempting to investigate the validity of the whole DAP with any single research study, they argue that research should investigate more specific hypotheses and limit their findings accordingly.

2.4.1.3. *Conclusion*

Continued clinical use is warranted insofar as it is in accordance with research findings. Certain interpretive practices, such as using individual signs molecularly, have to be

discontinued, in accordance with the latest research findings. But other interpretive practices that have achieved a satisfactory level of validity, such as using drawings globally to screen for gross indications of psychopathology, can be continued. Clinicians, therefore, have an ongoing responsibility to ensure that their clinically used HFD interpretation techniques are in accordance with the latest research findings. Continued research on the HFD test is thus warranted and essential to inform ongoing clinical practice, and establish specific validity. Further research on the HFD test should be more specific and refined, built on previous research findings, without making gross generalisations.

2.4.2. Criticism of research designs

The poor quality of research techniques used by many in investigating HFD tests have come under criticism. It is argued that a poor research design influences the meaningfulness of results. Hammer (1996) and Safran (1996), for instance, criticised the research of Smith and Dumont (1995) for giving drawing interpreters a false impression, which they argued resulted in both invalid and unethical findings. The main criticisms of research designs are the following: the research of single items in isolation; the lack of quantification; the neglect of researchers to differentiate between internal / intrapsychic anxiety and external sources of anxiety; and the failure to consider subjects' differential response to stress.

2.4.2.1. *The research of single HFD items against scales of SR measures*

After his review of research on HFD tests, Swensen (1965) recommended that

not only should the reliability of the individual parts and aspects be determined, but the reliability of patterns should also be studied. (p. 649)

A major research problem became the continued use of single interpretations for each drawing sign or variable scored, despite the danger of over-reliance on single signs which had been apparent for some time. The use of single sign interpretations is usually applied

with little concern for other possible alternative interpretations (Handler & Habenicht, 1994). Past (Holmes & Wiederholt, 1982; Johnson, 1971; Mogar, 1962) and recent research (Groth-Marnat & Roberts, 1998; Joiner & Schmidt, 1997; Joiner, Schmidt, & Barnett, 1996) have investigated only *individual* anxiety indexes on the HFD and then concluded that these were not significantly correlated with self-report (SR) measures of depression and anxiety. Riethmiller and Handler (1997a) criticise research that typically concludes that the DAP is invalid, because certain individual drawing items do not correlate with certain MMPI scales. They argue specifically against the comparison of single items of the HFD test with complex scales of self-report measures.

Rushton, Brainerd, and Pressley (1983) stated the following regarding single measures:

Single measures are typically less reliable than multiple measures, and using less reliable measures necessarily attenuates empirical relationships. (p. 34)

They point out that, according to the principle of aggregation, the sum of a set of multiple measurements is a more stable and unbiased estimator than any single measurement from the set. This is because when several measurements are combined, errors due to measurement tend to average out, thereby providing a more accurate picture of relationships in the population. As an example they show how aggregation has long been recognised in paper-and-pencil research. They explicate that when testing for a trait in personality inventories (such as the MMPI), it is not sufficient to aggregate the same item repeatedly. In order to provide an index of a hypothesised trait, it is necessary to aggregate alternative assessments of the same underlying concept. Therefore, multiple items (alternative assessments of the underlying trait) are usually aggregated to provide an index of the underlying trait investigated. Several items are therefore combined into a scale, which is a more accurate estimator of an underlying trait.

Oas (1984) argues that, since various individual drawing variables often reflect more than one aspect of psychological functioning, clusters of variables should be used as indicators in clinical practice. Similar to self-report measures, where some questions can serve as an item for more than one scale, so too can certain drawing variable patterns be clustered

and used as indicators. Riethmiller and Handler (1997a) similarly suggest a configural scoring approach whereby items that measure the same construct are combined, in a similar way to which different items of the MMPI comprise a scale.

Critics thus suggest an aggregation of variables, whereby a HFD scale is compared, rather than a single item of the HFD test, with a scale from another measurement device (e.g. a self-report measure such as the MMPI).

2.4.2.2. *The relationship between SR measures and projective drawings*

In spite of the fact that SR results differ from that of projective techniques, Meyer (1996) points out that cross-method disagreement is not a question of test invalidity, but rather “... a phenomena that can lead to a more refined identification of people and more accurate behavioural predictions.” (p. 575). This implies that both have a unique aspect to contribute to the assessment process.

But, according to Handler and Reyher (1965) and Riethmiller and Handler (1997a, 1997b), SR measures have various shortcomings, compared to performance-based instruments such as the HFD test. They argue that, despite the neglect by researchers to use configural scoring, one of the reasons for the non-significant correlation of studies is that SR measures are more prone to tap only external conscious stress rather than the more symbolic intrapsychic stress also measured by HFD. The reason for this, according to Riethmiller and Handler (1997a; 1997b), is that while SR measures only measure individuals’ conscious motives, performance-based measures are more likely to also measure individuals’ unconscious, underlying motives. Riethmiller and Handler (1997a) are therefore of the opinion that performance-based measures of personality, such as the HFD test, seem to tap very important, or even essential, aspects of personality that are not captured by SR measures.

Despite disagreements between the two measures, Riethmiller and Handler (1997b) and Waehler (1997) have discussed the importance of combining and contrasting SR and

projective/performance-based techniques in assessment. They point out that the relations between the two assessment measures are poorly understood and therefore require further investigation. As has been shown, previous research between HFD and SR measures, because of its neglect to use configural scoring, has not contributed sufficiently to the understanding of the relationship between HFD and SR measures. Thus, further research comparing *single* individual HFD indicators with SR methods is bound to be fruitless. Riethmiller and Handler (1997b) suggest that further efforts to understand the relations between SR and projective methods, using a configural scoring approach instead of single individual signs, are likely to enhance the personality assessment enterprise.

2.4.2.3. *The lack of quantification*

Burton and Sjoberg (1964) warn that because the global aspects of the HFD tests are emphasised, it should not be presumed that efforts at quantification should be discontinued. Hiler and Nesvig (1965) also think that much reasoning by analogy is used as a basis for arriving at interpretations in HFD. But although such reasoning is a useful source of hypotheses, it is argued that it is no substitute for empirical investigation. In their view, it is therefore probable that many of the criteria used to evaluate figure drawings are based on invalid hypotheses, which then lead to errors in the judgement of dynamics and degree of pathology. Such invalid criteria then tend to counteract the valid criteria used, thus lowering the accuracy of discrimination beyond that obtainable if only valid criteria had been used. According to them, empirical investigations can help limit invalid HFD interpretation criteria.

Lindzey (1961) argues that one of the essential contributions of quantification is to permit simple and meaningful estimates of the role of chance. Such estimates play an essential role in the interpretations of research findings (whether findings could be ascribed to chance alone or not) and the proper use of testing instruments (standardisation for example). An additional important function is to permit the identification of relationships that could not be established through a casual, or even a careful, examination of the data by the unaided observer (Lindzey, 1961). Since increased

reliability and validity evidence, along with good standardisation samples, is needed for the DAP technique to meet current standards necessary for any test (Naglieri & Pfeifer, 1992), the use of quantification in research and clinical practice is advisable. Hiler and Nesvig (1965) too are of the opinion that it is possible to develop empirically based interpretive criteria for the DAP test that would markedly increase its effectiveness as a clinical instrument.

Lindzey (1961) asserts that although certain clinicians may use the HFD test in a global and qualitative way and therefore resist quantification, "...there seems little doubt that if we define this term broadly enough, we can argue strongly that all serious investigators must resort to some type of quantification." (p. 170) He consequently argued for a broader application of quantification, where even dichotomous options (such as 'yes-no' or 'presence-absence' options) in qualitative evaluations are quantified for research purposes.

2.4.2.4. *External vs. Internal/Intrapsychic anxiety*

One of the reasons, named by Handler and Reyher (1965) for conflicting research evidence regarding anxiety indices, is the neglect of researchers to differentiate between internal/intrapsychic anxiety and external sources of anxiety. Handler and Reyher (1964, 1966) demonstrated that there are two sources of manifest anxiety on the DAP: external sources, and intrapsychic processes. In their studies different anxiety index score patterns emerged on the drawings of automobiles than that of the HFD. They found that not only was the DAP sensitive to both internally and externally produced anxiety, but also that the drawing of an automobile enabled the investigator to differentiate between external and internal sources of anxiety.

In consonance with their results, they hypothesised that because of the relative 'neutral' nature of an automobile, it taps only for anxiety brought about by external situations, while the HFD tends to also elicit and tap the projection of intrapsychic anxiety. According to them, HFD therefore reflects both external and intrapsychic anxiety, while the automobile drawing taps mostly external anxiety. They argued that the automobile

drawing therefore enables the investigator to establish the level of external anxiety before assessing intrapsychic anxiety with the drawing of the human figure. The car drawing should thus be used to control for or tap external anxiety. Moreover, they suggested the use of the automobile drawing to check out clinical hypotheses with a diagnostic evaluation using projective drawings.

2.4.2.5. *Differential response to stress*

Handler and Reyher (1964, 1965) suggested that contradictory research findings regarding some anxiety indexes of HFD also result from the failure of researchers to consider subjects' differential responses to stress. According to them, this differential response to stress is explained by differences in the subject's characteristic mode of approach to stress situations. Handler and Reyher (1964) observed that the anxiety-producing characteristics of the drawing task creates a desire in some subjects to finish the task with a minimum of effort and to leave the situation as quickly as possible. This results in a reduction of time-consuming drawing characteristics such as shading, reinforcement, and erasures. Yet they also noted that certain subjects spent more time on drawings and tended to display the traditional indicators of anxiety such as shading, detail and erasures. It appeared that this would indicate an adaptive response to the task, in an appropriate attempt to make the figures as true to life as possible by giving them substance. In their view, this behaviour denoted adaptability, flexibility, and an appropriate reaction to a reality situation. Thus, instead of avoiding the threatening material, these patients seemed to cope by directly and actively dealing with the source of threat represented by the human figure. Engle and Suppes (1970) later suggested an analogous hypothesis that anxiety might result in one of two response patterns: subjects may draw primitive, distorted, poorly planned figures; or they may react with caution by including a great deal of detail and carefully correcting mistakes.

Handler and Reyher (1966) and Riethmiller and Handler (1997a; 1997b) identified two different response patterns on the anxiety indexes of the HFD test, which they initially termed 'constriction' and 'expansion'. The expansive pattern suggested a desire to finish

quickly with as little involvement as possible, and was hypothesised to reflect an “avoidant” approach style to stress. The constricted pattern suggested a controlled, detailed and deliberate drawing approach that is hypothesised to reflect a “coping” approach style. Handler and Reyher (1965) hypothesise that adaptability and flexibility, which are denoted by the “coping” response, indicate good ego-strength, while the “avoidant” response pattern suggests poor ego-strength. Individuals with high anxiety levels are hypothesised to rely on “avoidance”, while those with lower anxiety levels tend to rely on “coping”. These two approaches to stress, display different and opposing patterns on the anxiety indexes of the HFD test. Riethmiller and Handler (1997a) hypothesise that not taking this into account will result in non-significant findings when investigating anxiety indexes on the HFD test. They also point out that these two identified clusters are a clear example of a configural scoring approach to the HFD.

2.5 **A review of coping theory**

A brief overview of coping theory in psychological literature will now be given to place the findings and hypotheses of Handler and Reyher (1964; 1965; 1966), and Riethmiller and Handler (1997a; 1997b) into the context of available psychological theory concerning coping responses and typical coping approaches.

2.5.1. **Coping**

Weiten (1992) defines ‘coping’ as the “...active efforts to master, reduce, or tolerate the demands created by stress” (p.477), while Taylor, Peplau and Sears (1994) define it as “...the process of attempting to manage demands that are viewed as taxing or exceeding our resources” (p.478). Coping can therefore be viewed as an attempt or effort to master or manage demands on our resources created by stress. Thus, in spite of the definition of ‘coping’ by Riethmiller and Handler (1997a; 1997b) referring only to an active and constructive method of dealing directly with stress, coping as psychological construct in the psychological literature is viewed as neutral and can either be helpful or maladaptive.

2.5.2. Coping Strategies

Spielberger (1979) defines state anxiety ('A-state') as the unpleasant emotional reaction to specific stress. According to him, any external or internal stimulus that is cognitively appraised as threatening will evoke an A-state reaction. He identified two approaches used to reduce A-state aroused by an external danger: the attempt to modify the environment to eliminate danger, or to try to avoid the source of danger.

Correspondingly, the approaches that are employed in coping efforts have been divided into two main types: a direct/problem-solving approach and an indirect/emotion-regulation/avoidance approach (Billings & Moos, 1984; Lazarus & Folkman, 1984; Taylor *et al.*, 1994). Many studies view emotion-oriented coping and avoidance coping strategies as highly interrelated constructs (Carver, Scheier & Weintraub, 1989), and use these terms interchangeably (Taylor *et al.*, 1994). A variety of terms have however been used in the literature to describe the direct/problem-solving approach and indirect/motion-regulation/avoidance approaches, which are comprised of paired groupings respectively as follows: environment modification and avoidance (Spielberger, 1979); direct coping and defensive coping (McConnell, 1980; Morris, 1982); constructive coping and defensive coping (Weiten, 1992); problem-solving/active coping and emotion focused/avoidance coping (Taylor *et al.*, 1994); problem-focused coping and emotion-focused coping (Vitaliano *et al.*, 1990; Zimbardo, 1995); and approach and avoidance (Rutherford & Endler, 1999).

While the goal of the *problem-focused coping** approach is to confront the problem directly, the goal of *emotion-focused coping* approach would be aimed at self-protection and lessening the discomfort caused by the stress. The problem-focused approach includes all strategies designed to deal directly with the stressor, whether through overt

* When no specific article is being discussed, the terms *problem-focused coping* and *emotion-focused coping* (Zimbardo, 1995; Vitaliano *et al.*, 1990) will be used to denote the two relevant coping approaches. However, when a particular article is under discussion the same terminology of the relevant article will be used, with the above terms in brackets for clarification.

action or realistic problem-solving activities. The emotion-focused approach includes all strategies that do not deal directly with the stressor (i.e. avoidance of the conflict), but through some way attempt to change or regulate a person's emotions and thoughts about the stressor (Morris, 1982; Spielberger 1979; Taylor *et al.*, 1994; Weiten, 1992; Zimbardo, 1995).

As is thus evident from the above, especially according to Taylor *et al.*'s (1994) 'problem-solving/active' coping and 'emotion focused/avoidance' coping, the 'coping' approach of Riethmiller and Handler (1997a; 1997b) is congruent with the problem-focused approach, while their 'avoidance' approach is congruent with the emotion-focused approach.

2.5.2.1. The Effectiveness of Coping Strategies

The problem-focused coping approach is more useful for managing controllable stressors, while the emotion-focused coping approach is useful for managing the impact of more uncontrollable stressors. Hence, successful coping depends on matching coping strategies to the features of the stressful event. However, emotion-focused coping strategies often cause a distortion of reality and, when overused, can lead to maladaptive coping (Zimbardo, 1995).

Spielberger (1979) states that psychological defence mechanisms (a form of emotion-focused coping) are almost always inefficient and are often maladaptive, since the underlying problems that caused the anxiety remain unchanged. Kobasa (1982) found that those who used more avoidance coping (i.e. emotion-focused coping) strategies such as attempting to deny, minimise or get away from the stressful situation, showed more symptoms of psychological and physical strain. In comparison to stressed individuals who reported depressed mood or physical symptoms, persons who adapted well to stressors without experiencing extreme strain were less likely to rely on avoidance coping (Holahan & Moos, 1987).

Therefore, Handler and Reyher's (1965) hypothesis, that a person displaying a "coping" response pattern is more likely to suggest good ego-strength while someone displaying an "avoidant" response pattern is more likely to have poor ego-strength, is congruent with the literature. However, this does *not* make their hypothesis valid, but only indicates that it is *not* in contradiction to psychological theory.

To conclude, in research literature, active (problem-focused) coping has been shown to be more effective than avoidance coping in general. When an individual utilises avoidance coping, instead of attempting to resolve the problem, stressful situations appear to worsen (Felton, Revenson, & Himrichsen, 1984; Holahan & Moos, 1987).

2.5.3. The Dispositional and Situational hypotheses

The observation that different people use different coping strategies in similar situations has led to two theories, regarding the origin of the type of coping strategies used, namely the dispositional and situational hypotheses.

2.5.3.1. The Dispositional hypothesis

Coping style is defined as a general tendency for a person to deal with a stressful event in a particular way (Taylor *et al.*, 1994). According to the dispositional hypothesis, people have typical coping styles which they generally rely on, notwithstanding the particular nature of the situation which confronts them. According to these views, coping styles are hypothesised to have been learned earlier in life and employ either avoidance (emotion-focused) or approach (problem-focused) coping strategies across situations (Rutherford & Endler, 1999).

2.5.3.2. The Situational hypothesis

According to the situational hypothesis, coping responses are determined by a person's appraisal of the specific situation, and thus will vary intra-individually from context to

context (Rutherford & Endler, 1999). This has led to the investigation of the links between appraisal and coping strategies. These will now be discussed briefly before discussing the link between the two hypotheses above.

2.5.3.3. Appraisal and Coping Strategies

Folkman & Lazarus (1980) have shown that problem-focused coping strategies were most frequently used in changeable situations. In a study of stress processes and depressive symptomatology, Folkman and Lazarus (1986) found that subjects high in depressive symptoms appraised themselves as having more at stake and as a result needing to hold themselves back from doing what they desired. Their appraisal of a situation as too risky/threatening led to more reliance on avoidance rather than using active problem-focused coping strategies. Forsythe and Compas (1987) also found a significant relationship between appraisal and coping. Lower symptom scores were associated with relatively more problem-focused coping in events that were appraised as controllable, and with relatively more emotion-focused coping in events appraised as less controllable.

Since appraisal thus seemed to mediate between the stressor and the coping strategy, investigations into a goodness-of-fit relationship followed. Vitaliano *et al.*, (1990) demonstrated a goodness-of-fit between appraisal, coping, and distress. They found that when the situation was appraised as changeable, problem-focused coping was inversely related to depression, while emotion-focused coping was positively related to depression. However, in situations that were realistically appraised as unchangeable, the opposite was found. Thus problem-focused coping is most adaptive for situations appraised as changeable, whilst emotion-focused coping is most adaptive in unchangeable situations. They also found that people with the highest depression scores were those that used high levels of wishful thinking (an emotion-focused coping strategy) when confronted with a situation that they appraised as potentially changeable. This is congruent with the findings of Folkman and Lazarus (1986) that subjects high in depressive symptoms

appraised themselves as having more at stake and as a result holding back from doing as they desired.

Although appraisal has thus been demonstrated to play an important role in coping strategy, the question is raised as to why different people appraise the same situation differently.

2.5.3.3.1. *Difference in appraisal*

The relationship of trait anxiety, self-efficacy, and locus of personal control to appraisal will briefly be highlighted.

2.5.3.3.1.1. Trait anxiety

According to Spielberger (1979) the objective characteristics of a situation, the thoughts and memories that are elicited or recalled, and the individual's coping skills and previous experiences in dealing with similar circumstances all contribute to the appraisal of a situation as more or less threatening. However, trait anxiety also contributes significantly to threat appraisals. He defines trait anxiety as individual differences in anxiety proneness. Accordingly, people with high trait anxiety tend to view the world as more dangerous than people with low trait anxiety and they respond according to their perceptions of threat with more frequent increases in state anxiety. Even though high A-Trait individuals will not experience a high A-State when not feeling threatened in a situation, they tend to experience more situations as threatening. Since people with high trait anxiety tend to see many different situations as threatening, they are especially vulnerable to stress (Spielberger, 1979). In short, trait-anxiety (anxiety proneness) is hypothesised to influence an individual's threat appraisal and resultant state anxiety.

2.5.3.3.1.2. Self-efficacy

Bandura (1982) believes that perceived self-efficacy predicts a wide range of adaptive behaviour, including coping responses. An individual's perceived self-efficacy concerns appraisals of how effectively a person can deal with situations involving unpredictable and stressful elements (Bandura, Cioffi, Taylor, & Brouillard, 1988). To summarise, perceived self-efficacy (the individual's appraisal of himself in dealing with stressful situations) determines coping responses.

2.5.3.3.1.3. Locus of personal control

The concept of locus of control explains events according to whether they are appraised as resulting from efforts under one's control or from outside factors over which one has no control. People who have an internal locus of control (called internalisers) believe that they are responsible for what happens to them, while people who have an external locus of control (called externalisers) believe that outside factors are responsible (Papalia, & Olds, 1988). Because internalisers believe that they can exert control over what happens to them, they tend to utilise direct (problem-focused) coping methods, while externalisers, who believe that events are beyond their control, tend to employ defensive (emotion-focused) coping strategies (McConnell, 1980). The individual's locus of control (the general tendency to appraise events as either under one's control or not) therefore also directly influences his coping tendency.

2.5.3.3.2. **Early origins**

But, both locus of control and coping seem typically to be learned at an early age (McConnell, 1980), while individual differences in trait anxiety (i.e. anxiety proneness) is also argued to be due to early childhood experiences and early parent-child relationships (Spielberger, 1979). In addition, it is also believed that early experiences with success and failure lead people to develop fairly stable conceptions of their self-efficacy in different life domains (Bandura *et al.*, 1988).

2.5.3.3.3. Conclusion

The premises above that trait-anxiety influences an individual's situational appraisal, that perceived self-efficacy determines coping responses, and that the individual's locus of control influences his coping tendency, together with the premises that locus of control, trait anxiety, self-efficacy and coping are typically learned early in life, suggests some stability in the individual's appraisal of situational stress and a tendency towards certain coping strategies.

2.5.3.4. Dispositional vs. Situational hypothesis

In their examination of the role of dispositional coping styles, state anxiety, and situational appraisal in the prediction of situational coping strategies, Rutherford & Endler (1999) found support for the overall importance of coping style in the prediction of situational coping responses. Their evidence suggested dispositional coping styles contributed substantially to the prediction of situation-specific coping, especially in the prediction of cognitive coping strategies. Though the dispositional hypothesis expects the coping style - while the situational hypothesis expects the appraisal of the situation - to better predict coping behaviour, evidence suggests that dispositional coping styles interact with and influence situation-specific coping.

2.5.3.5. Conclusion

From the literature reviewed, it is suggested that a person's dispositional coping style, together with his situational appraisal, influences his situational coping responses. The hypotheses of Riethmiller and Handler (1997a; 1997b), regarding typical approach styles to stress (e.g. the 'coping' and 'avoidance' approach styles) are thus congruent with current psychological theory of coping styles.

CHAPTER 3

OVERVIEW OF CURRENT RESEARCH FOCUS

3.1. Brief outline of research review highlights

The majority of research has disproved the validity of the molecular approach, while affirming the efficacy of the molar approach. The molar approach has, however, come under strong criticism for its insufficient specificity, its over-reliance on intuition, the lack of judgement criteria and communicability, its susceptibility to the projections of the interpreter, and the potential influence of artistic quality and cognitive sophistication. Various researchers have, therefore, subsequently attempted to develop HFD evaluations that combine some of the advantages of the molecular approach with the validity of the molar approach.

One of these attempts is the quantitative scoring index of Handler (1967). Unlike the molar approach, this scoring system does not over-rely on intuition, provides judgement criteria, enables communicability, does not lend itself to the projections of the interpreter, and limits the potential influence of artistic quality and cognitive sophistication. Sims, Dana, and Bolton (1983) have evaluated it as one of the most promising scoring systems. They did however specify that it does require further validation, especially against self-report criteria.

Moreover, although Riethmiller and Handler (1997a; 1997b) are of the opinion that the HFD test taps important aspects of personality that are not captured by self-report measures, they maintain that further efforts to understand the relations between self-report and projective methods are likely to enhance the personality assessment enterprise.

It has also been shown above that ongoing research on the HFD test should be more specific and refined, and based on previous research findings, in order to inform ongoing clinical practice. In addition, further research on the HFD test and anxiety should utilise a

quantitative research method, implement a configural scoring approach, and differentiate between internal/intrapsychic anxiety and external sources of anxiety, while considering subjects' differential responses to stress.

3.2. Rationale for resultant focus

Considering the above, the decision was made that, in formulating the research question and choice of research design, the current research study should adhere to and integrate these findings, suggestions and admonitions specified in the research review above. In particular the following will form the focus in this research study:

- a) The relationship between self-report measures and the HFD assessment, using configural scoring instead of single signs, will be the focus of this study, since it needs to be understood and should consequently be investigated (Riethmiller & Handler, 1997a, 1997b; Sims, Dana, & Bolton, 1983).
- b) In line with the requirement of a quantitative, configural scoring approach in further research investigations in HFD assessment, identified scoring index clusters by Handler and Reyher (1964, 1965, 1966), as well as that of Riethmiller and Handler (1997a, 1997b), will be investigated, using Handler's HFD index scoring manual (1967).
- c) The hypothesis by Handler and Reyher (1964; 1965; 1966), that there are possibly two different sources of anxiety on the HFD - internal and external sources of anxiety – will be taken into account with specific investigation of external anxiety on the automobile drawing.
- d) The hypothesis by Riethmiller and Handler (1997a; 1997b) that subjects have typical approach styles to anxiety/stress which determine their execution of the HFD task when intrapsychic anxiety is evoked, will be incorporated.

3.3. The Research Question

As discussed above, Handler and Reyher (1964, 1965, 1966) and Riethmiller and Handler (1997a, 1997b), identified three HFD anxiety related index clusters, the “External”, “Avoidant”, and “Coping” clusters. The research question is therefore:

What is the level of agreement between these three HFD anxiety index clusters and the scales of a well-established clinical SR measure of personality such as the Minnesota Multiphasic Personality Inventory 2 (MMPI-2)?

3.3.1. Comparing the Stress Approach HFD clusters and the two MMPI-2 Anxiety scales

Considering the hypothesis by Handler and Reyher (1965) that those who experience more intense anxiety typically rely on an “Avoidant” approach, while those with lower anxiety typically rely on a “Coping” approach, is congruent with the available literature (Felton, Revenson, & Himrichsen, 1984; Holahan & Moos, 1987; Spielberger, 1979), this research study will compare the level of agreement between the scores of the two anxiety scales (A-scale and Anx-scale) of the MMPI-2 with that of the HFD “Avoidant”-approach cluster and the “Coping”-approach cluster.

3.3.2. Comparing the Stress Approach HFD clusters and the MMPI-2 Ego Strength scales

According to Handler and Reyher (1965) the “Coping” response is hypothesised to suggest good ego-strength, while the “Avoidant” response pattern is hypothesised to suggest poor ego-strength. The Es (ego strength) scale score on the MMPI-2 will therefore be compared to the HFD “Avoidant”-Approach cluster, and the “Coping”-Approach cluster.

3.3.3. Comparing the External Anxiety projective drawing cluster and the two MMPI-2 Anxiety scales

Due to the hypothesis by Handler and Reyher (1964; 1965; 1966), that the “External” anxiety cluster (measured by utilising the car drawing) and self-report measures both assess ‘external’ anxiety, the relationship between this cluster and the two anxiety scales (A-scale and Anx-scale) of the MMPI-2 will be investigated.

3.3.4. Investigation summary

This research will thus investigate the level of correlation of the two MMPI-2 anxiety scale scores with (a) the hypothesised Stress Approach HFD cluster scores, as well as with (b) the “External” anxiety cluster score, while the hypothesised Stress Approach HFD cluster scores will be compared with the (c) MMPI-2 ego strength scale score.

CHAPTER 4

METHODOLOGY

4.1. Participants:

4.1.1. Clinical population

A sample from a clinical population was selected for this study. The reasons for this are primarily to research the HFD as a clinical tool, and secondarily so that people with anxiety could be included in the sample, thus enabling the investigation of the related anxiety scales and clusters.

4.1.2. Sample size

A sample size of 32 adult subjects was selected from two clinical settings in Cape Town. The sample consisted of 21 psychiatric in-patients from both ward 1 (high-functioning, non-psychotic inpatients) of Valkenburg Psychiatric Hospital and ward G22 (high-functioning, non-psychotic inpatients with eating-disorders) of Groote Schuur Hospital, as well as 11 psychiatric outpatients from Groote Schuur Hospital. Of the total sample, 7 were males and 25 females.

4.1.3. Non-random sample

Due to the practical constraints of limited access to clinical patients, reliance on volunteers, and the exclusion of subjects not meeting the specified requirements, a random sample of clinical patients could not be selected without compromising the sample size - the sample size being an essential requirement for the validity of inter-correlations. Although the sample is, therefore, not a guaranteed true representation of the total population of clinical patients, it could, however, be argued that the potential differences between this sample and the population of clinical patients are small due to the following: Instead of selecting patients from one clinical setting, patients were

obtained from three different clinical settings, raising the likelihood that the attributes of the population of clinical patients were included in the sample. It can, however, not be guaranteed. It could thus be argued that because the findings on this sample cannot be generalised, it is therefore limited to this sample of clinical volunteers.

4.1.4. Requirements

Because of the interest in investigating the HFD as assessment tool for adults, and the restricted age range for use of the MMPI-2, it was required that subjects be between the ages of 21 and 70 years. Psychotic patients were excluded in order to prevent the potential contamination of responses. Since drawings are also influenced by intellectual capacity and the drawings of mentally retarded subjects had been observed to be especially impoverished, mentally retarded subjects were also excluded. It was also essential that subjects be literate and fluent in English as required by the MMPI-2.

All of these requirements were met before a subject participated in this study. Therefore candidates not meeting the requirements were excluded from the sample before testing. Patients were screened with the assistance of hospital personnel through both their personal knowledge of the patients and through the patients' clinical files. A basic mental state examination was done to control for possible changes (such as psychotic states) in the mental state of psychiatric outpatients.

4.1.5. Informed consent

Participation of subjects in this study was voluntary. Informed consent was attained by explaining the basic nature of the research to the patient, answering all questions and concerns regarding participation, and asking their written permission via an informed consent agreement contract (see Appendix A). However, a detailed account of the research question and methodology was not provided to the subject in order to limit potential (conscious or unconscious) manipulation of self-report questionnaires.

4.2. Testing Materials:

4.2.3. The Minnesota Multiphasic Personality Inventory (MMPI-2)

The MMPI-2 (Butcher, Dahlstrom, Graham & Tellegen, 1989) was selected as a self-report instrument because of its wide clinical use, the amount it has been researched, its proven validity and its general acceptance as an assessment instrument (Lubin, Larson, & Matarazzo, 1984; Meyer, 1997; Watkins, Campbell, Nieberding, and Hallmark, 1995), as well as the presence of the three scales under investigation.

According to Butcher *et al.* (1989), Hathaway and McKinley started developments on the first inventory in a hospital setting at the University of Minnesota during the 1930's, and published the first MMPI in 1942. The final version of the restandardised inventory, named the MMPI-2, was published in 1989.

The manual of the MMPI-2 (Butcher *et al.*, 1989) describes the MMPI-2 as a broadband test, designed to assess a number of the major patterns of personality and emotional disorders, which can be administered easily to a single individual or to groups of subjects. The MMPI-2 reportedly provides objective scores and profiles determined from well-documented USA national norms (Butcher *et al.*, 1989). Although no standardised norms or research providing precise information about the test's local use, are currently available for South Africa, the test is widely accepted and used within this psychological/psychiatric context. The test consists of a series of questions to which the testee has to select either a true or false option. The answers are then scored, adjusted, profiled, and compared to the provided norms for different interpretive possibilities.

4.2.3.1. *The scales*

Due to the practical requirement of brevity, the whole MMPI-2 was not selected for administration but only the scales under investigation. This excluded scales such as the L (lie) scale, F (infrequency) scale and K (correction) scale. Although the K-scale was not

required for the scales under investigation, the absence of the former two scales meant that no conclusions regarding intentional lying, ‘faking good’, ‘faking bad’ or haphazard answering of the subjects could be made. Since the A-scale, Anx-scale and Es-scale were under investigation, all the items that comprise these scales were selected and combined to form a shortened questionnaire of 97 items.

4.2.3.1.1. The A-Scale

The A-Scale is an anxiety scale that has 39 items. While high scores reflect distress, anxiety, discomfort, and general emotional upset, low scores, by contrast, reflect absence of emotional distress. High scorers tend to be inhibited and over-controlled, incapable of making decisions without hesitation and uncertainty, conforming and easily upset in social situations. Low scorers, on the other hand, tend to be energetic, competitive, and socially outgoing. They may also be unable to tolerate frustration and usually prefer action to contemplation. (Butcher *et al.*, 1989)

4.2.3.1.2. The Anx-Scale

The Anx-Scale is an anxiety scale that contains 23 items. High scorers on this scale report general symptoms of anxiety including tension, somatic problems (such as heart pounding and shortness of breath), sleeping difficulties, worries and poor concentration. They typically fear losing their minds, find life a strain, and have difficulty making decisions. In addition, they also appear to be aware of these symptoms and problems, and freely admit to having them. (Butcher *et al.*, 1989)

4.2.3.1.3. The Es-Scale

The Es-Scale is an ego strength scale that consists of 52 items. The Es-scale was originally developed to assess the capability of an individual to profit from individual or group psychotherapy. It is a measure of adaptability, resiliency, personal resourcefulness, and effective functioning, and is a good general indicator of psychological health. High

Es scores are associated with spontaneity, good contact with reality, feelings of personal adequacy, and good physical functioning, while low scores suggest the absence of these. People with high scores are able to cope with stress and to recover from problems, while those with low scores are likely to report inhibition, physical ailments, and feeling unable to deal with environmental pressures. The latter also tend to have poor self-concepts and difficulty in adapting to problem situations. (Butcher *et al.*, 1989)

4.2.4. The Projective Drawings

In accordance with the research question, the DAP and Draw-A-Car projective drawings were used. These were then scored for the three clusters under investigation, using a shortened scoring manual.

4.2.4.1. *Handler's scoring manual*

Handler (1967) started work on a manual for scoring DAP anxiety indexes due to a lack of formal published scoring criteria. This manual implemented a number of Machover's anxiety indexes, providing scoring criteria to them, to facilitate quantitative research. He reported that in this process he has drawn heavily from a thesis by Hoyt and from a dissertation by Goldworth in 1955. Handler and Reyher (1964) first employed a rough version of Handler's scoring manual. The manual was then upgraded and used in a later study by Handler and Reyher (1966). Handler then finally published the manual in 1967 for use in HFD research. This manual is simple and easy to administer and does not require any training.

4.2.4.1.1. Inter-rater reliability

Handler and Reyher (1966) reported inter-rater reliabilities ranging from .67 to .97, with a median of .87. Handler (1967) also reported unpublished research of Jacobson and Nordquist in 1966, both reporting inter-rater reliabilities ranging from .79 to 1.00, but while Jacobson reported a median score of .88, Nordquist reported a median score of .91.

Attkisson, Waidler, Jeffrey, and Lambert (1974) later obtained a median inter-rater reliability coefficient of .90. The research literature above thus suggests good inter-rater reliability. Although no rater reliability of the current researcher is available, the inter-reliability figures above suggest that a reasonable reliability could be expected.

4.2.4.1.2. Scoring

The scoring manual consists of twenty indexes of anxiety, each containing the option of either a four-point scale or a two-point scale. With the four-point scale option an index is scored 0 to 4, according to the corresponding criteria presented. For certain indexes alternative scoring criteria is presented for the four-point scales. On the two-point scale option the index is simply scored for presence or absence. Accordingly either a plus or minus is indicated, or a 1 or 0.

4.2.4.2. *The shortened scoring manual*

The four-point version indexes from Handler's manual (1967) were selected to produce a shortened operational manual (see Appendix D), containing only the sixteen relevant indexes as required for the three clusters under investigation. The criteria in the shortened manual are therefore identical to that of the original manual, except for the 'Detail' index. Hence the shortened scoring manual does not exclude any elements required for scoring the scales, but is rather a more focused questionnaire excluding irrelevant scales.

4.2.4.2.1. The 'Detail' index

While this research study required the index of 'Detail', the original manual only contained criteria for 'Detail loss', wherein subsequent figure drawings are compared to one another. Though not containing this index, the original manual does however make suggestions for the construction of a 'Lack of detail' index. In accordance with the suggestions of Handler's manual (1967), while using drawing criteria from

Goodenough's Draw-A-Man Test (1926), criteria for a 'Lack of detail' scale (named 'Detail' in the operational manual) with relevant scoring procedure, were constructed.

4.2.4.2.2. Scoring inversion

With *high* scores of the indexes of 'Shading', 'Erasure', 'Reinforcement' and 'Detail' being considered indicators of 'Coping', and *low* scores of the same indexes considered indicators of 'Avoidance' (Riethmiller & Handler, 1997a), these indexes were therefore used for both clusters. But since composite scores for the clusters are required, and since *low* scores on these indexes indicate 'Avoidance', this would mean that *lower* scores on these indexes should therefore result in a *higher* composite score for the cluster of 'Avoidance'. This meant that although exactly the same criteria were used for scoring in both the 'Coping' and 'Avoidance' composite clusters, the scoring of the latter had to be inverted on the scoring sheet (see Appendix E) to add to the relevant composite score. Similarly, the scoring for 'Line sketchiness' was inverted for the 'Coping' cluster composite score.

To conclude, although the composite scoring clusters of 'Coping' and 'Avoidance' both share the same scoring indexes, their scoring were inverted to one another in accordance with the suggestions of Riethmiller and Handler (1997a).

4.3. Procedure:

4.3.1. The MMPI-2

The questionnaire was administered in accordance with the guidelines provided with the MMPI-2 test manual (Butcher *et al.*, 1989). Subjects were provided with the following: an HB classification lead pencil, an eraser, and the MMPI-2 scales questionnaire with an instruction sheet affixed on the front (see Appendix B). It was briefly explained to the subjects that they were required to answer a questionnaire by means of true and false options. They were then asked to read the instructions carefully and ensure that they understood what was required. They were told that any uncertainties regarding the

procedure would be clarified by the test taker, when asked to do so by the testee, both before and during the test. The test taker then gave testees an opportunity for clarification questions. After all questions were addressed, subjects were requested to start the questionnaire. After completing the questionnaire, the subjects were reminded of possible unanswered questions they intended to return to later, but might have forgotten to. Once subjects reported their questionnaires as completed, they were instructed to retain them until after the completion of the drawings.

4.3.2. Projective Drawings

Subjects were provided with the following test material: an A4 size sheet of standard white printer paper, an HB classification lead pencil and an eraser. They also received an instruction sheet (see Appendix C). They were then asked to familiarise themselves with the instructions as set out on the instruction sheet. The instruction sheet detailed the test material, the requirements of the test and the drawing order. The drawing order pertained to a standardized procedure, whereby subjects were asked to, in turn, draw a car, and only after completion of this, a person of the opposite sex. A drawing of a person of the opposite sex was requested from subjects, due to the findings of Handler and Reyher (1966) that a person reflected more anxiety when drawing a figure of the opposite sex. In order to control for the potential variable of adaptation (potentially less anxiety with the second drawing) every other participant was provided with a different instruction sheet wherein he/she was instructed to draw the person first (thus every second subject reversed the drawing order).

The test taker then provided the testees the opportunity to ask clarification questions. After all questions were answered, the testees were instructed to start with the drawings, as set out on the instruction sheet. After the completion of the first drawings, these were checked for correct drawing order by the test taker, after which subjects were provided with a second piece of paper to complete the second drawing. Finally, subjects were then required to write the corresponding identification number of the questionnaire on the drawing pages (to make matching with the subject's questionnaire answers possible).

4.4. Data Processing:

4.4.1. Separate scoring

Although the researcher, who scored the drawings, was aware of the nature of the study, scoring was done blind by keeping the SR-sheets separate from the drawings. Digit codes, instead of names, were used on subjects' drawing and answer sheets, thus enabling separation and later matching for analysis. The researcher was thus blind to the subjects' corresponding results when scoring, thus preventing potential mental matching of drawings and self-report sheets (which could result in biased scoring).

4.4.2. The MMPI-2 scales

The A-scale, Anx-scale and Es-scale of the MMPI-2 were scored in accordance with the guidelines of the MMPI-2 scoring manual, so that a composite score for each scale was obtained.

4.4.3. The drawing clusters

The drawings were scored on a scoring sheet (see Appendix E) according to the scoring manual (see Appendix D) of each of the three clusters under investigation. Each cluster consists of a number of anxiety indexes identified by Riethmiller and Handler (1997a). The 'coping' cluster consists of nine, the 'avoidant' cluster of ten, and the 'external' cluster of six anxiety indexes respectively. The scoring of these anxiety indexes were done in accordance with the shortened scoring manual of Handler (1967), set out above. While the 'external' anxiety cluster was scored on the 'car' drawing, the 'avoidant' and 'coping' clusters were scored on the person drawing, in accordance with the hypotheses set out by Riethmiller and Handler (1997a). The scores of these indexes were then summated to provide a composite cluster score for each scale (see Appendix E).

4.4.4. Statistical analysis

Being the most appropriate test for correlating the scales under question, a Pearson product-moment correlation coefficient was computed to assess the level of correlation. The coefficient of determination was used to determine the proportion of common variance between the relevant drawing clusters and MMPI-2 scales.

CHAPTER 5

THE RESULTS AND DISCUSSION

5.1 Results

The results of the computed correlations between the relevant drawing clusters and MMPI-2 scales are displayed below in Table 1 (below). Table 1 contains all the scales and clusters under investigation in matrix form. Columns one to three, as well as rows one to three represent the A-scale, ANX-scale and Es-scale scores of the MMPI-2 respectively. The HFD clusters “Coping”, “Avoidance” and “External Anxiety” are represented by columns four to six, and rows four to six respectively.

Table 1

		Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
	<u>A</u>	<u>ANX</u>	<u>Es</u>	<u>Cope</u>	<u>Avoid</u>	<u>Exter</u>	
Row 1	<u>A</u>	1					
Row 2	<u>ANX</u>	0.854038	1				
Row 3	<u>Es</u>	-0.64155	-0.61146	1			
Row 4	<u>Cope</u>	<u>0.108111</u>	<u>-0.00955</u>	<u>-0.10513</u>	1		
Row 5	<u>Avoid</u>	<u>0.046389</u>	<u>0.166014</u>	<u>0.034669</u>	-0.78148	1	
Row 6	<u>Exter</u>	<u>0.024879</u>	<u>0.087488</u>	0.031467	0.221162	-0.28826	1

5.1.1. Comparing the Stress Approach HFD clusters and the two MMPI-2 Anxiety scales

Looking at Table 1 (column 2, row 4) a very low negative correlation ($r = -0.00955$) between the MMPI-2 ANX-scale and HFD “Coping” cluster is observed. This suggests that there is no relationship between the two items. Moreover, less than 1% (0.01%) of the variance is explained by common variance, suggesting that non-shared variables are mostly responsible for the variance of each. Correlating the scores of the MMPI-2 A-scale with that of the HFD “Coping” cluster (column 1, row 4), an extremely weak

correlation is found between the two ($r = 0.108111$). Of the variation in each of the two items, only 1.2% is explained by common variance.

The correlation between the MMPI-2 A-scale and HFD “Avoidance” cluster (column 1, row 5) is very low ($r = 0.046389$) suggesting the absence of a significant relationship between the two. With the common variance less than 1% (0.2%), the variance of each item is mostly unrelated to that of the other.

With the comparison of the scores between the MMPI-2 ANX-scale and HFD “Avoidance” cluster (column 2, row 5) the obtained correlation ($r = 0.166014$) suggests that only 2.7% of the variance of the two tests is explained by common variance.

5.1.2. Comparing the Stress Approach HFD clusters and the MMPI-2 Ego Strength scale

When comparing the scores of the MMPI-2 Es-scale with that of the HFD “Coping” cluster (column 3, row 4), no significant relationship is found between the two ($r = -0.10513$). With only 1.1% common variance, 98.9% of the variance of each item is therefore unrelated to that of the other, suggesting that variables not shared by the two are predominantly responsible for the variance of each.

The very low correlation ($r = 0.034669$) between the MMPI-2 Es-scale and HFD “Avoidance” cluster (column 3, row 5) suggests no significant relationship between the two items. With the common variance being 0.1%, the variance of each item is mostly unrelated to that of the other.

5.1.3. Comparing the External Anxiety projective drawing cluster and the two MMPI-2 Anxiety scales

The very low correlation ($r = 0.024879$) between the A-scale and “External Anxiety” drawing cluster (column 1, row 6) suggests that there is no significant relationship

between the two. Since the common variance is 0.06%, the variance of the two items is unrelated to each other.

The very low correlation ($r = 0.087488$) between the ANX-scale and HFD “External Anxiety” drawing cluster (column 2, row 6) suggests no meaningful relationship between the two items. The low common variance of 0.7% indicates mainly independent variance of the two items.

5.2. Discussion

The Stress Approach HFD clusters correlated extremely low with the MMPI-2 Anxiety and Ego Strength scales, suggesting no meaningful relationships between them, with the exception of the correlation between the “Avoidance” cluster and ANX-scale that displayed a very weak relationship. The same applies to the low correlations between the External Anxiety HFD cluster and the two MMPI-2 Anxiety scales. Moreover, the extremely low common variances in all the comparisons suggested that non-shared variables are almost entirely responsible for the variance of each.

This raises the question: *What is the reason for such low correlations and extremely low common variances?* The two likely sources investigated are the differences in nature of the two measurement instruments and the potential weaknesses of this study. In the first instance the possibility is investigated that the obtained findings are correct in that they reflect reality: there are no significant relationships between the variables investigated. In the second instance the possibility is investigated that the findings do not necessarily reflect reality: possible significant relationships are obscured by the shortcomings of this research study.

5.2.1. Possible differences in the nature of the two measurement instruments

One possibility why such low correlations were attained by this study involves the nature of the two measurement instruments.

5.2.1.1. Weaknesses of SR Measures

In a study by Ehrenworth and Archer (1985), in which therapists had to rate their patients' MMPI answer sheets, the results of the options selected reportedly fell within the range of '*Accurate in some respects, but contains sufficiently inaccurate material to be of questionable validity*' down to '*Generally inaccurate and incomplete*'. Achenbach, McConaughy and Howell (1987) too found that SR measures share little overlap with that of both external criteria of individuals' abilities and behavioural ratings by parents, teachers, peers, or clinicians. This has led to some criticism of the over-reliance on self-report measures where the patients had to report information about themselves. According to Meyer (1997), self-report data convey only what patients know of themselves and wish to share with an evaluator. The accuracy of this information is, therefore, dependent on two aspects, the insightfulness and the honesty of the reported information.

5.2.1.1.1. *Insightfulness:*

SR questionnaires usually require the subjects to make certain judgements about themselves, past behaviours and environmental interactions by selecting from the options provided which in the testee's opinion is closest to the truth (Viglione, 1996). But, according to Meyer (1997), patients must first know themselves and have the necessary insight to accurately report their problems and experiences. He argues that the problem lies in that not all patients having the necessary insight to provide accurate information about themselves. According to Meyer (1996, 1997), clinical tests need to be validated for patients with problematic clinical conditions. Furthermore these same clinical subjects are usually unlikely to possess the requisite abilities and insight to accurately report on themselves. He reasons that clinical patients frequently have deeper underlying psychodynamic defence structures (such as repression or splitting) that prevent certain information from reaching the patient's conscious awareness. Since patients can only report what they are aware of, the information kept from awareness by the patient's

defences is therefore not reported. Furthermore, their problems and defences might cloud even that information which is in the patient's awareness.

5.2.1.1.2. *Honesty:*

The patient must also be willing to communicate what he knows honestly and openly to the evaluator. But Meyer (1997) points to the fact that what the patients report of themselves is frequently congruent with their self-image, which may not be an accurate reflection. Patients might thus provide an inaccurate picture of themselves and their condition by trying to display an image of themselves that is more in accordance with what they consider to be socially desirable. In their attempt to portray a certain image, patients might thus deliberately over-emphasise, under-emphasise, deny or omit certain information, thus negatively influencing a full and accurate picture of themselves and their condition. He further maintains that certain clinical conditions could lead the patient to report information that might not be deemed accurate when investigated. For instance, while patients with certain paranoid traits may be guarded and non-disclosing or decide to deliberately provide false information, those with dependent traits might attempt to gain approval by being over-critical of themselves, and someone with histrionic traits might exaggerate certain points.

5.2.1.1.3. *Implications*

Projective techniques do not require a patient to directly communicate personal knowledge or make judgements about themselves, because the patient is not aware of the evaluation criteria used in the test (Meyer, 1996). As pointed out earlier in Chapter One, although the subject may know something about the general goal of the investigator, the details of it, including the variables to be used in the analysis, are routinely kept from the subject. The subject is also usually unaware of the aspects of the test response of interest to the examiner. This reduces conscious control by the subject over the behaviour that is to be analysed and thus produces true responses reflecting his own individuality (Bell, 1948; Lindzey, 1961; Machover, 1952). Unlike SR measures, projective drawings cannot

therefore be influenced by patients' insight and honesty unless they have access to judgement criteria.

While the MMPI-2 thus relies on the self-report of the individual (Meyer, 1997), the projective drawings, used in this study, rely on the hypothesised measure of elicited anxiety (Handler & Reyher, 1997a). The shortages discussed directly above (under 5.2.1.1.) are thus directly relevant to the self-report measurement (the MMPI-2) used in this investigation. The MMPI-2 does, however, make provision for detecting deliberate falsification of responses. But as pointed out above, because of the absence of the L (lie) scale and F (infrequency) scale from the shortened questionnaire (due to practicality), no conclusions regarding excessive intentional lying, 'faking good', 'faking bad' or the subject's haphazard answering could be made. But even if these scales had been included, it is unlikely that it would have been able to detect the omission or influence of information brought about by unconscious defences.

It is thus possible that the compromised accuracy of the MMPI-2, as discussed above, might have had an influence on the comparisons investigated in this study.

5.2.1.2. Self-attributed vs. Implicit motives

McClelland, Koestner and Weinberger (1989) argue that it has been wrongfully assumed that projective tests and questionnaires are simply alternative ways of measuring the same variables. They theorise that the former taps implicit motives, while the latter taps for self-attributed motives. Implicit motives are a person's non-conscious motives, that are not explicitly communicated. These motives are theorised to be built on affective experiences with natural incentives early in the person's life, even before the development of language. Self-attributed motives on the other hand, represent the conscious value or worth to individuals of specific achievement-, affiliation- or power-related activities. Thus while implicit motives represent a more primitive motivational system derived from affective experiences, self-attributed motives are based on more cognitively elaborated constructs. Because of their different nature, they argue that tests

tapping for self-attributed motives (e.g. SR measures) will normally correlate poorly with tests that tap for implicit motives (e.g. projective measures).

There is a growing body of research supporting McClelland *et al.*'s (1989) theory regarding the measurement of self-attributed motives as opposed to measuring implicit motives. In a meta-analysis of 105 empirical research articles Spangler (1992) found that on average TAT-based correlations were larger than questionnaire-based correlations between measure of achievement needs and outcome. He concluded that the results of his study support the distinction of self-attributed and implicit motives made by McClelland *et al.* (1989). Bornstein, Bowers and Robinson (1995) also found that the average correlations between TAT achievement needs and outcomes were higher than the average correlations between questionnaire achievement and outcomes. They concluded that projective dependency scores showed better predictive validity than objective dependency (e.g. self-report measures) scores. Bornstein (1996) later also found that while induced mood state significantly influenced participants' scores on the projective dependency test, it did not affect their scores on the objective dependency test.

Considering the arguments directly above regarding the different foci of self-report measures and projective measures, it could thus be possible that similar differences in nature also influenced the correlations between the measurements of the projective drawings and SR measures used in this study. Further research is however required to investigate this possibility.

5.2.1.3. Criterion-related validity

Criterion-related validity refers to the validity of the test by its ability to agree with another measure/criterion. It is usually demonstrated by comparing a test score with one or more variables considered to be a direct measure of the characteristic in question (Karon, 1968). The question that is thus raised, is whether the measure/criterion used in this study (e.g. the scales of the MMPI-2) is indeed a direct measure of certain variables in question (e.g. anxiety).

5.2.1.3.1. **Construct validity**

According to Blatt (1975), Blatt and Allison (1968) and Karon (1968) there is an increasing awareness that current diagnostic concepts are only gross categories and that patients usually function on several levels of psychological organisation, which transcend any single category. They argue that research based on inconsistently defined concepts, applied with varying degrees of precision, will lead to ambiguous and contradictory findings. Furthermore Sims, Dana and Bolton (1983) are of the opinion that the construct of anxiety has been loosely used in interpretive guides and in validation research. Arguing the necessity for more careful attention to adequate definition, they suggest that research should examine alternative hypotheses for anxiety scoring components, and emphasise more careful construct validation procedures. With this in mind, the possibility that the two instruments could measure different constructs was considered.

5.2.1.3.1.1. Measurement of State vs. trait anxiety

Looking at the results of this study, the question can thus be asked whether the construct of anxiety, as delineated in SR measures (such as the MMPI-2) is similar to that of the construct of anxiety as assumed in HFD research. Even though the same term is used (in this case anxiety) in both instances, this does not guarantee that the term ‘anxiety’ has the same denotation in both.

As discussed above, according to the hypotheses of Handler and Reyher (1964; 1965; 1966) the HFD measures both intrapsychic and external anxiety. However it could be argued that the external anxiety of the subject, as it is at the moment of drawing, is reflected in the drawings (i.e. both the figure and automobile drawings). In addition, at the moment of drawing, the intrapsychic anxiety is elicited by the drawing of the human figure. Since the HFD thus reflects both types of anxiety, as it is *at the time of drawing*, it could thus be argued that projective drawings measure current anxiety that Spielberger (1979) termed state anxiety. In contrast, as is apparent in the nature of the questions as well as the description of the anxiety scales, the MMPI-2 does not measure the anxiety of

the moment but rather experienced anxiety in general. It could therefore be argued that this ‘anxiety in general’ as measured by the MMPI-2 is more analogous to anxiety proneness, or as Spielberger (1979) calls it, trait anxiety.

Hence, it could be reasoned that while the MMPI-2 probably taps trait anxiety, projective drawings are likely to tap state anxiety, the latter of which can be further sub-divided into external and intrapsychic anxiety.

5.2.1.3.1.2. Measurement of Dispositional Stress Response vs. Situational Stress Response

A similar argument to the one above can be made for the measuring of the individual’s stress response. When the individual makes the drawing, it is hypothesised by Handler and Reyher (1997a, 1997b) that he would react with a specific stress response to experienced stress/anxiety. This response would then influence the person’s drawing task and reflect in the drawing characteristics. But the projective drawing task takes place in the here-and-now, and therefore theoretically also captures the hypothetical variables of stress response (i.e. “avoidance” and “coping” clusters) in the here-and-now. However, since projective drawings capture the hypothetical variables of stress response (i.e. “avoidance” and “coping” clusters) in the here-and-now, these stress response clusters are more likely a direct measurement of the individual’s situational stress response (the stress response at the moment of drawing), rather than that of the dispositional stress response (the stress response usually relied on). If projective drawings do measure the dispositional stress response, it could thus be argued that it only measures it indirectly insofar as the situational stress response is a representation of the dispositional stress response. But if the situational stress response differs from the dispositional stress response on the occasion of the drawing, it is likely that the former is measured and not the latter. (The possibility of variation in the situational stress response is explored directly below.)

Chart 1

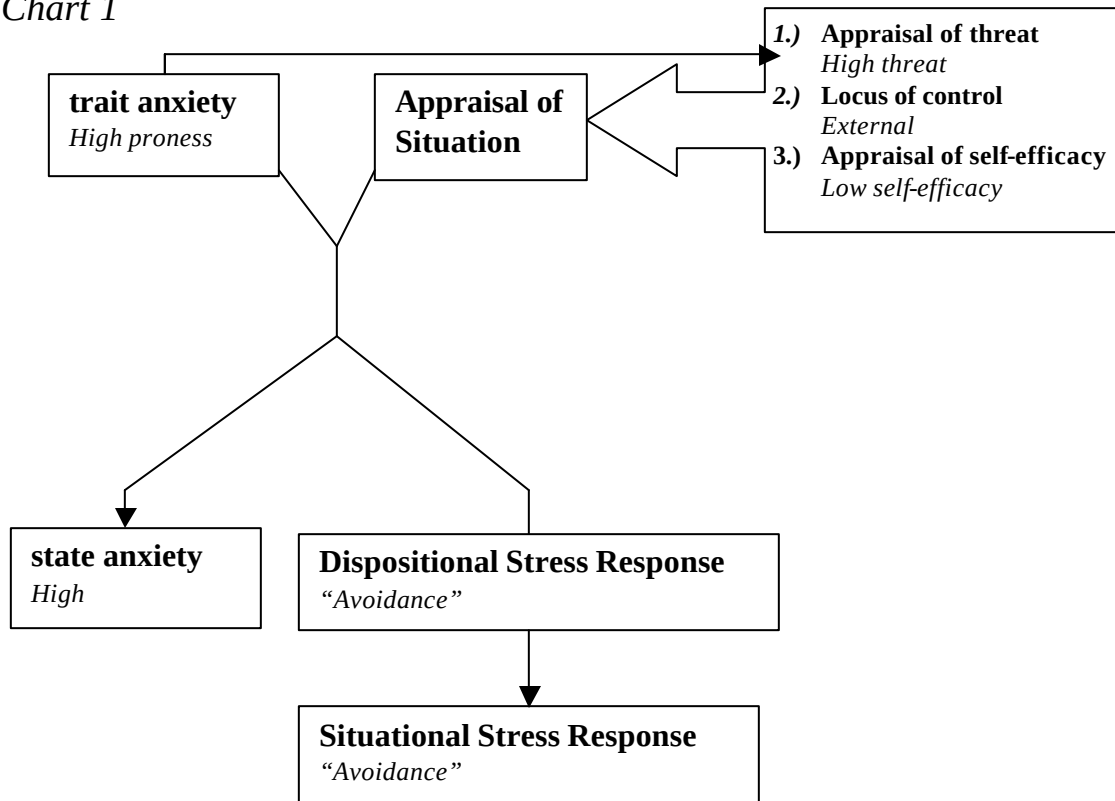
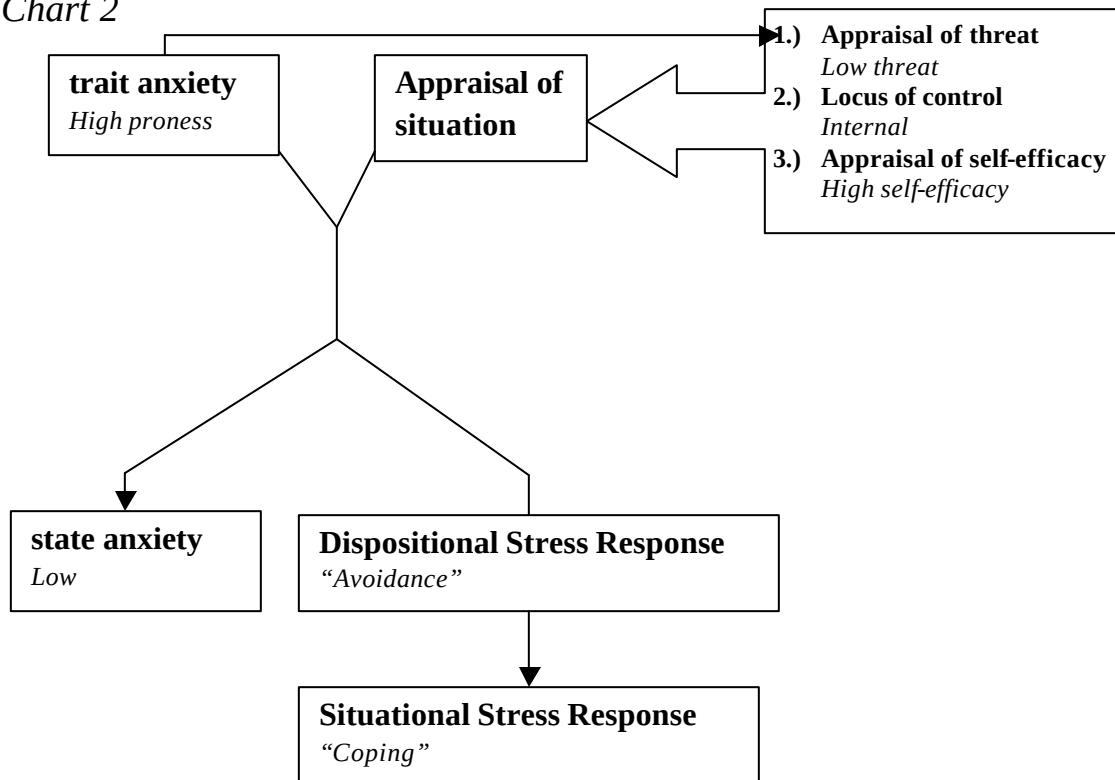


Chart 2



To conclude, it is likely that the HFD stress response clusters measure the Situational Stress Response, while probably only indirectly measuring the Dispositional Stress Response in so far as it is represented by the former.

5.2.1.3.2. *Variation in state anxiety and situational stress response despite the influence of trait anxiety and the dispositional stress response.*

As has been shown above in chapter four, both anxiety proneness (trait anxiety) and situational appraisal (including appraisal of threat, locus of control, and appraisal of self-efficacy) determine the situational anxiety (state anxiety) level of the individual, and whether or not he relies on his dispositional stress response (the stress response most generally relied on) in his approach to the situation (Forsythe & Compas, 1987; Folkman & Lazarus, 1986; Spielberger, 1979; Vitaliano *et al.*, 1990).

Keeping this in mind, it should thus be theoretically possible for individuals with a specific level of trait anxiety and type of dispositional stress response to experience different levels of state anxiety and different situational stress responses in different situations. To illustrate this point, two hypothetical examples will be investigated. Chart 1 and Chart 2 show simple graphic representations of two hypothetical scenarios, true to the theory and findings above, with the variables in bold and the hypothetical levels of each variable underneath.

In one possible scenario, as represented in Chart 1, an individual with high trait anxiety could experience high state anxiety in a specific situation because of his appraisal of that situation. Should the individual appraise the situation as too high a risk to deal with, he could fall back on his dispositional stress response, “avoidance” in this example, as a response to the stressful situation. In the second scenario, Chart 2 shows how the same individual with high trait anxiety could have lower levels of state anxiety in a different situation because he appraises that situation differently. The individual hypothetically appraises this particular situation as falling within his locus of control, and less of a threat, while appraising himself as being more efficient to deal with the situation. It is

thus possible, in theory, that the individual's situational appraisal could lead to experiencing sufficient situational confidence to try and “cope” with the stressful situation rather than relying on a dispositional stress response of “avoidance”. Considering these two examples, it is thus theoretically possible for the same individual with high trait anxiety, and a dispositional stress response of “avoidance”, to experience high state anxiety and use “avoidance” in one situation (see Chart 1) while experiencing low state anxiety and using a “coping” response in another (see Chart 2).

It is thus possible for individuals with a specific type of dispositional stress response (e.g. “avoidance”) to use a different situational stress response (e.g. “coping”), depending on their appraisal of that specific situation.

5.2.2. Potential weaknesses of this study

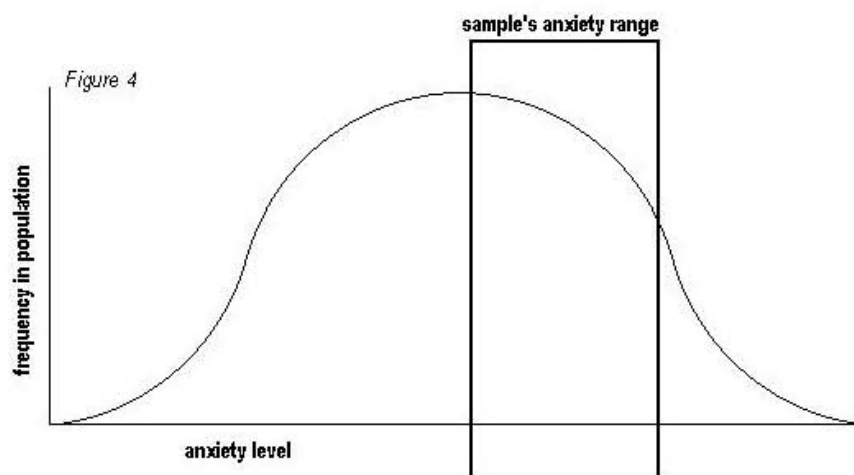
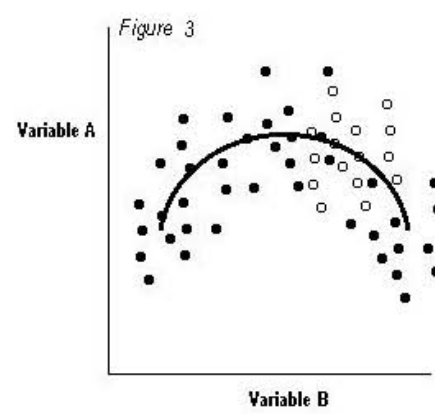
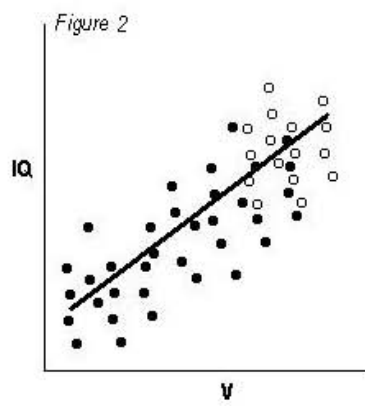
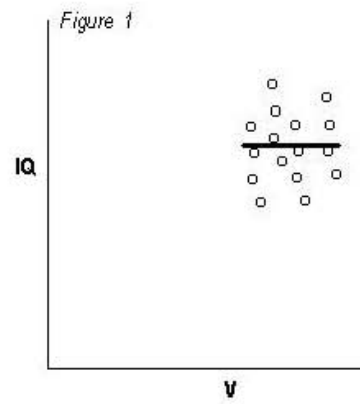
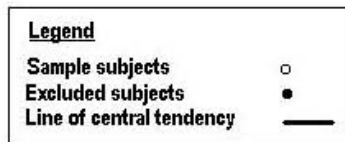
5.2.2.1. Potential extraneous variables

It is not known whether certain variables, which were not controlled for due to the limited availability of clinical volunteers, might have an impact on the results of this study. These variables refer chiefly to the nature of potential sub-groupings of clinical subjects. It could be argued that subjects that volunteered to participate in this study represent a specific sub-grouping. In the information-gathering phase there were subjects that declined to participate due to their high level of anxiety, lack of time, and various other reasons. Some subjects agreed initially, but later during testing, withdrew for similar reasons. It is therefore possible that these two sub-groupings could contain (amongst others) subjects of two different anxiety levels. This does not mean that anxiety was the only reason why subjects declined to participate or withdrew, but that subjects with different levels of anxiety might have fallen within these two groupings. It is likely that subjects with the highest level of anxiety fell under those groupings that declined to participate. Those with less anxiety (though more than that of the clinical sample), agreed initially but later withdrew during testing when their anxiety levels increased. This means that the subjects that volunteered may represent a restricted anxiety range (as is

also supported by the MMPI-2 anxiety scores). Likewise those with a high tendency to “avoidance” coping could have related to the test as a stressor by avoiding it. It is also not clear whether the nature of other sub-groupings differed regarding the variables under investigation. Potential sub-groupings include gender, diagnostic category, stages of clinical treatment/help, and classification as in-/outpatients. Due to the limited availability of clinical volunteers, which led to the relatively small sample size, these groupings were not controlled for.

5.2.2.2. A Possible Truncated range

Spatz (1993) points out the possibility of attaining weak correlation scores when in reality a stronger relationship exists. In a truncated range, the sample does not include the full spectrum of a variable under investigation, but only a certain grouping. As an example he uses the hypothetical investigation of a relationship between IQ scores with another variable, which, for argument’s sake will be named V. In this scenario, where university students are selected as a sample for investigating the level of correlation between IQ scores and V, low r -values might be attained, when a stronger relationship between these two variables exists in the bigger population of people. This could be ascribed to the fact that the students represent a certain sub-population, the latter which had to meet entry requirements for university (e.g. obtain certain academic standards) and therefore most likely fall above a certain IQ level. Using university students would thus result in using a specific sub-grouping with a higher IQ than the population average, with the exclusion of that part of the population with the lower IQ scores. Graphically, the constructed scatterplot of the resultant correlation would then look similar to that of Figure 1, which might lead researchers to erroneously conclude that there is no relationship between the two variables under investigation. However, if a wider range of people with different IQ’s were included, it would have resulted in stronger correlation scores (Spatz, 1993). As a hypothetical example, the resultant scatterplot could then more closely approximate that of Figure 2.



The fact that the whole range of IQ scores was not included, but only one end of the spectrum, resulted in a low correlation, when a stronger relationship exists in the bigger population of people.

A similar argument, to the one above of IQ and students, can also be made for anxiety and clinical patients. Just as the student sample provided mostly only subjects with a higher than average IQ, it could be argued that the clinical sample provided mostly only subjects with higher than average anxiety. The limited range of attained anxiety scores (mostly high) on the MMPI-2 support this. Keeping this in mind it can be argued that subjects from a clinical population are from the bigger population that are seeking help because they feel they are unable to cope with certain problems. These problems, and the resultant high levels of stress and anxiety that accompany them, arguably contribute to higher anxiety scores of people from a clinical population than those of the general population of people. It is thus possible that due to a clinical sample being used, only a limited range (the high range) of anxiety scores were present from the range of anxiety present in the general population. With the sample further consisting of volunteers, argued above to be a subgroup of clinical patients, the range is limited even further. Thus, graphically this sample of clinical patients would likely represent only a portion, at the high end, of a normal distribution of the population of people (see Figure 4). This would result in the very weak correlations between the variables under investigation, when in fact stronger relationships exist in the bigger population of people.

Furthermore, due to the likelihood of a truncated range, the possibility of non-linear relationships can therefore also not be excluded. If there were any non-linear relationships, these would also not be visible due to the truncated range (see Figure 3). If such a non-linear relationship exists between certain variables, very low or no correlations might be obtained. In addition, apparent relationships that seem negative, when looking at the r -value, might actually be a certain portion of the graph (see right half of Figure 3) and would therefore be positive on a different sample (see left half of Figure 3). The converse is also true depending on the nature of the non-linear relationship

(e.g. the scatterplot might be inverted in comparison to that illustrated in Figure 3, displaying a U-shaped line of central tendency).

Taking the above into consideration, it may thus be possible that certain relationships from this study that appear as non-existent or weak, might be due to the use of a selective grouping (the clinical sample) resulting in a truncated range, when a stronger relationship might exist in the general population of people. But, since both the clinical population and the clinical sample contain clinical subjects, the arguments above support both the sample and population as being truncated ranges of the broader population of “normal” people, and does not pertain to the clinical sample as a truncated range of the clinical population. Therefore, although it could be argued that stronger relationships might exist in the broader population of normal people, it cannot be argued similarly that stronger relationships exist in the population of clinical patients.

Considering the above arguments, it is likely that stronger relationships could exist in the broad population of people than in the clinical sample of this study, but (generalisability aside) not in the clinical population from which this sample was taken. What is more, it is likely that the clinical population as a sub-grouping represents a truncated range of the larger population of people, in relation to anxiety level. If this is so, it could suggest that anxiety research on the HFD would only display stronger relationships when it is not restricted to a clinical population, but when the whole spectrum of people with anxiety levels is included. In addition, this could also mean that the HFD clusters are not refined enough to be able to distinguish between clinical patients, regarding the variables under investigation, but might be effective in the general population that would include the whole spectrum of anxiety. This possibility requires further research.

5.2.3. Possible effects of the inferences above on the investigated comparisons

The potential influences of the inferences made above on the investigated comparisons of this study are now explored below.

5.2.3.1. Comparison of the Stress Approach HFD clusters and the two MMPI-2 Anxiety scales

Because of the hypothesis by Handler and Reyher (1965), that those who experience more intense anxiety typically rely on an “Avoidant” approach, while those with lower anxiety typically rely on a “Coping” approach, this research study examined the level of agreement between the scores of the two MMPI-2 anxiety scales (A-scale and Anx-scale) with that of the HFD “Avoidant” and “Coping” clusters. The resulting correlations showed that relationships between these variables were however small, while most of the variance of compared variables was due to non-shared variables. But with the comparison of the scores between the MMPI-2 ANX-scale and HFD “Avoidance” cluster, the obtained correlation ($r = 0.166014$) did suggest a weak relationship between the two variables in the expected direction.

As has been shown, Trait anxiety does not directly determine the type of stress response selected, but only indirectly as it is mediated by situational appraisal, which seems to play a determining factor in the selection of a situational stress response. And since the HFD is likely to measure the situational stress response, while the MMPI-2 measures trait anxiety, as shown above, correlations between the MMPI-2 anxiety scales and HFD stress response clusters are therefore likely to be low.

Because trait anxiety is one of the variables that plays a role in the selection of the situational stress response, the question could be raised as to why trait anxiety, as measured by the MMPI-2, did not correlate more highly with situational stress. Furthermore, why did the “Coping” cluster not yield a negative correlation, in accordance with Handler *et al.*’s hypothesis above? This explanation alone, although providing a partial answer, is therefore not sufficient to account entirely for the low correlations attained in this comparison.

5.2.3.2. Comparison of the Stress Approach HFD clusters and the MMPI-2 Ego Strength scales

According to Handler and Reyher (1965) the “Coping” response is hypothesised to suggest good ego strength, while the “Avoidant” response pattern is hypothesised to suggest poor ego strength. The Stress Approach HFD clusters were therefore compared with the MMPI-2 ego strength scale score. The results of this study do not support this relationship when the ego strength, as measured by a self-report measure (the MMPI-2), is compared with the stress approach, as measured by the HFD (the hypothesised “Coping” and “Avoidance clusters).

As has been shown above, situational appraisal is an essential factor in the selection of the situational stress response. This could theoretically mean that an individual with low ego strength might use “coping” in situations appraised as less threatening or within the individual’s capability to change, while someone with higher ego strength might rely on “avoidance” in certain situations deemed to be highly threatening and outside of his control. Ego strength does then not necessarily play a direct role, but an indirect role in the influence it could have on the individual’s appraisal of himself.

But if the latter is so, why then did the correlations not show a stronger relationship? It was observed that most of the MMPI-2 ego strength scale scores fell within a certain range below the average. It could thus be shown how the same arguments above, regarding a truncated range, made for anxiety level in the clinical sample and clinical population, is applicable here to MMPI-2 ego strength. However, since this cannot be proved to be the only possible cause, further research, taking the above into consideration, is required.

5.2.3.3. Comparison of the External Anxiety projective drawing cluster and the two MMPI-2 Anxiety scales

In line with the hypothesis by Handler and Reyher (1964; 1965; 1966), that the “External” anxiety cluster (measured by utilising the car drawing) and self-report measures both assess ‘external’ anxiety, the relationship between this cluster and the two anxiety scales (A-scale and Anx-scale) of the MMPI-2 were investigated. The findings of this study did however not support this hypothesis. A potential reason for these findings could be that different types of anxiety were measured.

While trait anxiety has been shown to be relatively stable over time, state anxiety could differ from situation to situation (Spielberger, 1979). But, as had been demonstrated above, it could be reasoned that the MMPI-2 might mostly tap trait anxiety (anxiety proneness) while the HFD/Car drawing probably taps state anxiety (situational anxiety). Given this, an individual would arguably show similar MMPI-2 anxiety scores, while the projective drawings could display totally different anxiety scores, across two measurement situations within a relative short span of time of one another (such as a few days or weeks). This is congruent with research findings reporting good MMPI-2 test-retest reliability (Butcher *et al.*, 1989; Butcher, Graham, Dahlstrom, & Bowman, 1990), while research on the structural aspects of the HFD has reported poor test-retest reliability (Roback 1968; Swensen, 1965, 1968). The poor test-retest reliability of projective drawings does not necessarily indicate poor validity, because as Karon (1968) has pointed out, temporal consistency (test-retest reliability over time) is relevant only if the characteristic being measured does not fluctuate with time. It could thus be that structural indicators on HFD (such as those used by the “external” anxiety cluster) have poor test-retest reliability because the variables measured (e.g. state anxiety) fluctuate with time.

It is thus possible, by comparing the MMPI-2 anxiety scales with the automobile drawing “external anxiety” cluster, that trait anxiety is being compared with state anxiety. What is more, since “external” anxiety and “intrapsychic” anxiety are two types of state anxiety

(as shown above), trait anxiety is probably being compared with a specific type of state anxiety. Thus, it could be that by comparing the DAP “external anxiety” clusters with the MMPI-2 anxiety scales, a specific sub-type of state anxiety (“external anxiety”) is likely being compared with trait anxiety. These possibilities need to be investigated in future research.

5.2.4. Conclusions and further recommendations

The differences in the nature of the two measurement devices could explain why such poor correlations were obtained. While the MMPI-2 relies on the self-report of the individual, the projective drawings used in this study rely on the hypothesised measure of elicited anxiety. As has been shown, the accuracy of self-report measures are reliant on the insight and honesty of the reporter, both of which might sometimes be suspect in the use of a clinical sample. In addition, the possibility that projective drawings tap implicit motives while SR methods tap self-attributed motives, which are both motives that normally correlate poorly with one another, could explain the poor correlations.

Closely related to this was the question of criterion-related validity. The possibility that the two measurement instruments used could measure different constructs was considered. From the investigation of the construct of ‘anxiety’, as measured by both instruments, it was reasoned that in all likelihood the MMPI-2 taps trait anxiety, while the HFD taps certain sub-types of state anxiety. The construct of ‘stress response’, as hypothetically measured by the relevant clusters, was also investigated. It was argued that the HFD stress response clusters chiefly measure the Situational Stress Response, while, probably only indirectly measuring the Dispositional Stress Response insofar as it is represented by the former. It was also demonstrated how trait anxiety does not directly determine the type of stress response selected, but only indirectly as it is mediated by situational appraisal. Therefore, since the HFD is likely to measure the situational stress response, and the MMPI-2 measures trait anxiety, correlations between the MMPI-2 anxiety scales and HFD stress response clusters are likely to be low. Continued research on the relationship between anxiety self-report measures and HFD anxiety measures should carefully examine the constructs measured by each, even though they appear to be

the same. Research examining the possibility that HFD is more prone to tap state anxiety, rather than the general anxiety measured by the MMPI-2, also needs to be investigated. The possibility that projective drawings are more prone to measure situational stress responses and implicit motives, needs to be explored by investigating the agreement between the HFD measurement of variables (such as the HFD clusters) and objective ratings of clinicians, parents and peers (e.g. using subject behaviour as possible indicator).

The questions that remained unanswered were: why did trait anxiety, as hypothetically measured by the MMPI-2, not correlate more highly with situational stress, since trait anxiety is theoretically one of the variables that plays a role in the selection of the situational stress response?; and why did the “Coping” cluster not yield a negative correlation, in accordance with Handler *et al.*’s hypothesis above? This explanation alone was, therefore, not sufficient to account entirely for the poor correlations attained in the comparison between MMPI-2 measured anxiety levels and HFD Stress Response clusters. The possibility of, and influence by, possible mediator variables (e.g. aspects of situational appraisal) between trait anxiety and situational stress response needs to be investigated.

Certain identified sub-groupings within this clinical sample might have functioned as extraneous variables influencing the results of the study. It is therefore recommended that, by utilising a bigger sample, future research should attempt to control for the potential effects that these variables might have on the results. It is also likely that both the clinical sample and clinical population represent a truncated range of the bigger population of people, regarding anxiety level. It is thus possible that stronger relationships between the investigated variables could exist in the broader population of people than in the clinical sample of this study. This could mean that the HFD clusters are not refined enough to be able to distinguish between clinical patients, regarding the variables under investigation, but might be effective in the general population, which would include the whole spectrum of anxiety. This possibility requires further research

whereby a sample representative of the general population is selected, thereby including the whole spectrum of anxiety levels, and not only clinical patients.

In the investigation of the comparison of the Stress Approach HFD clusters and the MMPI-2 Ego Strength scales, it was reasoned that ego strength does not play a direct role in influencing the individual's appraisal of himself. It was also shown how the same arguments regarding a truncated range, made for anxiety level in the clinical sample and clinical population, is applicable here to MMPI-2 ego strength. Similar to the recommendations above, further research on the relative influence of ego strength on the situational appraisal and avoidance of ego strength measurement of a truncated range is indicated.

A potential reason for the poor correlations, in the comparison between the External Anxiety projective drawing cluster and the two MMPI-2 Anxiety scales, was that different types of anxiety were measured. It could be that by comparing the HFD "external anxiety" clusters with the MMPI-2 anxiety scales, a specific sub-type of state anxiety ("external anxiety") was being compared with trait anxiety. As pointed out above, the possibility that the automobile drawing measures a form of state anxiety needs to be investigated in future research.

To conclude, although the findings of this study suggest that there is no significant relationship between the measured constructs of projective drawings and SR measures, they could be ascribed to differences in the nature of the two measurement instruments, or to weaknesses in the study, or to a combination of both factors. Further research is required taking the possibilities and admonitions above into consideration. Specifically, future research should investigate the relationships explored in this study, in the larger population. Particular attention also needs to be paid to the investigation of similarly termed constructs of measurement which might have different denotations. Furthermore, considering the hypothesised difference in nature between SR measures and projective measures, HFD validation research is also required to compare HFD with other projective devices that tap for similar constructs.

BIBLIOGRAPHY

- Abt, L. E. (1959). A theory of projective psychology. In L. E. Abt & L. Bellak (Eds.), *Projective Psychology – Clinical approaches to the total personality*. New York: Grove Press.
- Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioural and emotional problems: Implications for cross-informant correlations for situational specificity. *Psychological Bulletin*, 101, 213-232.
- Adler, P. T. (1970). Evaluation of the Figure Drawing Technique: Reliability, factorial structure, and diagnostic usefulness. *Journal of Consulting and Clinical Psychology*, 35(1), 52-57.
- Albee, G. W., & Hamlin, R. M. (1949). An investigation of the reliability and validity of judgments of adjustment inferred from drawings. *Journal of Clinical Psychology*, 5, 389-392.
- Albee, G. W., & Hamlin, R. M. (1950). Judgment of adjustment from drawings; the applicability of rating scale methods. *Journal of Clinical Psychology*, 6, 363-365.
- Anastasi, A., & Foley, J. P. (1940). A survey of the literature on artistic behaviour in the abnormal: III. Spontaneous productions. *Psychological Monographs*, 52(6), 1-71.
- Attkisson, C. C., Waidler, V. J., Jeffrey, P. M., & Lambert, E. W. (1974). Interrater reliability of the Handler Draw-A-Person scoring. *Perceptual and Motor Skills*, 38, 567-573.
- Bandura, A. (1982). Self-efficacy mechanisms in human agency. *American Psychologist*, 37, 122-147.
- Bandura, A., Cioffi, D., Taylor, C.B., & Brouillard, M.E. (1988). Perceived self-efficacy in coping with cognitive stressors and opioid activation. *Journal of Personality and Social Psychology*, 55, 479-488.
- Bell, J. E., (1948). *Projective Techniques: A dynamic approach to the study of the personality*. New York: Longmans, Green & Co.
- Bellak, L. (1959). On the problems of the concept of projection – a theory of apperceptive distortion. In L. E. Abt & L. Bellak (Eds.), *Projective Psychology – Clinical approaches to the total personality*. New York: Grove Press.
- Billings, A. C., & Moos, R. H. (1984). Coping, stress, and social resources among adults with unipolar depression. *Journal of Personality and Social Psychology*, 46, 877-891.

- Blatt, S. J. (1975). The validity of projective techniques and their research and clinical contribution. *Journal of Personality Assessment*, 39(4), 327-343.
- Blatt, S. J., & Allison, J. (1968). The intelligence test in personality assessment. In A. Rabin (Ed.), *Projective techniques in personality assessment – a modern introduction*. New York: Grove Press.
- Bornstein, R. F., Bowers, K. S., & Robinson, K. J. (1995). Differential relationships of objective and projective dependency scores to self-report measures of interpersonal life events in college student subjects. *Journal of Personality Assessment*, 65(2), 255-269.
- Bornstein, R. F., Bowers, K. S., & Bonner, S. (1996). Effects of induced mood states on objective and projective dependency scores. *Journal of Personality Assessment*, 67(2), 324-340.
- Buck, J. N. (1948). The H-T-P technique, a qualitative and quantitative scoring method. *Journal of Clinical Psychology, Monograph Supplement*, 5, 1-120.
- Burns, R. C., & Kaufman, S. H. (1970). *Kinetic Family Drawings: An introduction to understanding children through kinetic drawings*. New York: Bruner/Mazel.
- Burton, A., & Sjöberg, B. (1964). The diagnostic validity of Human Figure Drawings in Schizophrenia. *Journal of Psychology*, 57, 3-18.
- Butcher, J. N., Dahlstrom, W. G., Graham, J. R., & Tellegen, A. (1989). *The Minnesota Multiphasic Personality Inventory – 2*. United States of America: The University of Minnesota Press:
- Butcher, J. N., Graham, J. R., Dahlstrom, W. G., & Bowman, E. (1990). The MMPI – 2 with college students. *Journal of Personality Assessment*, 54(1&2), 1-15.
- Carver, C. S., Scheier, M. F. and Weintraub, J.K. (1989). Assessing coping strategies: a theoretically based approach. *Journal of Personality and Social Psychology*, 56, 267-283.
- Cattell, R. B. (1952). Principles of design in “projective” or misperception tests of personality. In H. H. Anderson & G. L. Anderson (Eds.), *An introduction to projective techniques and other devices for understanding the dynamics of human behaviour*. New York: Prentice Hall Inc.
- Copeland, L. D. (1952). *A controlled investigation of the reliability and validity of Machover’s Human Figure Drawings test*. The Netherlands: Rijksuniversiteit.
- Cressen, R. (1975). Artistic quality of drawings and judges’ evaluations of the DAP. *Journal of Personality Assessment*, 39(2), 132-137.

- Curie, S. F., Holtzman, W. F., & Swartz, J. D. (1974). Early indications of personality traits viewed retrospectively. *Journal of School Psychology, 12*, 51-50.
- Doubros, S. G., & Mascarenhas, J. (1967). Effects of test produced anxiety on Human Figure Drawings. *Perceptual and Motor Skills, 25*, 773-775.
- Dumont, F., & Smith, D. (1995). Projectives and their infirm research base. *Professional Psychology: Research and Practice, 27*, 419-421.
- Ehrenworth, N. V., & Archer, R. P. (1985). A comparison of clinical accuracy ratings of interpretive approaches for adolescent MMPI responses. *Journal of Personality Assessment, 49*, 413-421.
- Engle, P. L., & Suppes, J. S. (1970). The relationship between human figure drawing and test anxiety in children. *Journal of Projective Techniques and Personality Assessment, 34*, 223-231.
- Felton, B. J., Revenson, T. A., & Hinrichsen, G. A. (1984). Stress and coping in the explanation of psychological adjustment among chronically ill adults. *Social Science and Medicine, 18*, 889-898.
- Frank, L. K. (1939). Projective methods for the study of personality. *Journal of Psychology, 8*, 389-413.
- Frank, L. K. (1948). *Projective Methods*. Springfield: Charles C. Thomas.
- Freud, S. (1924a). The justification for detaching from neurasthenia a particular syndrome: the anxiety neurosis. In S. Freud, *Collected papers*. (Vol. 1, pp. 76-106). London: Hogarth. (Originally published in 1895.)
- Freud, S. (1924b). Further remarks on the defence neuro-psychoses. In S. Freud, *Collected papers*. (Vol. 1., pp. 105-182). London: Hogarth. (Originally published in 1896.)
- Freud, S. (1955). Totem and taboo. In J. Strachey (Ed.), *The complete psychological works of Sigmund Freud*. (Vol. 13, pp. 1-161). London: Hogarth. (Originally published in 1913.)
- Freud, S. (1958a). Leonardo da Vinci and a memory of his childhood. In J. Strachey (Ed.), *The complete psychological works of Sigmund Freud*. (Vol. 11, pp. 63-137). London: Hogarth. (Originally published in 1910.)
- Freud, S. (1958b). Psychoanalytic notes on an autobiographical account of a case of paranoia (dementia paranoides). In J. Strachey (Ed.), *The complete psychological works of Sigmund Freud*. (Vol. 12, pp. 9-82). London: Hogarth. (Originally published in 1911.)

- Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behaviour*, 21, 219-239.
- Folkman, S., & Lazarus, R. S. (1986). Stress processes and depressive symptomatology. *Journal of Abnormal Psychology*, 95, 107-113.
- Forest, M., & Thomas, G. V. (1991). An exploratory study of drawings by bereaved children. *British Journal of Clinical Psychology*, 30, 373-374.
- Forsythe, C. J., & Compas, B. (1987). Interaction of cognitive appraisals of stressful events and coping. *Cognitive Behavior Therapy*, 11, 473-485.
- George, B. L., & Waehler, C. A. (1994). The ups and downs of TAT card 17BM. *Journal of Personality Assessment*, 63(1), 167-172.
- Goodenough, F. L. (1926). Measurement of intelligence by drawings. New York: World Book Company.
- Groth-Marnat, G., & Roberts, L. (1998). Human Figure Drawings and House Tree Person Drawings as indicators of self-esteem: A quantitative approach. *Journal of Clinical Psychology*, 54(2), 219-222.
- Guinan, J. F., & Hurley, J. R. (1965). An investigation on the reliability of Human Figure Drawings. *Journal of Projective techniques*, 29, 300-304.
- Hammer, E. F. (1965). Critique of Swensen's "Empirical evaluations of Human Figure Drawings". In B. I. Murstein (Ed.), *Handbook of Projective Techniques*. New York: Basic Books.
- Hammer, E. F. (1968). Projective drawings. In A. Rabin (Ed.), *Projective techniques in personality assessment – a modern introduction*. New York: Grove Press.
- Hammer, E. F. (1969). DAP: Back against the wall? *Journal of Consulting and Clinical Psychology*, 33(2), 151-156.
- Hammer, E. F. (1996). Deception? *Professional Psychology: Research and Practice*, 27, 418.
- Hammer, E. F. & Piotrowski, Z. A. (1953). Hostility as a factor in the clinician's personality as it affects his interpretation of projective drawings. *Journal of Projective techniques*, 17, 210-216.
- Handler, L. (1967). Anxiety indices in the Draw-A-Person test: A scoring manual. *Journal of Projective techniques*, 31, 45-67.

- Handler, L., & Habenicht, D. (1994). The Kinetic Family Drawing Technique: A review of the literature. *Journal of Personality Assessment*, 62(3), 440-464.
- Handler, L., & Reyher, J. (1964). The effects of stress on the Draw-A-Person test. *Journal of Consulting Psychology*, 28, 259-264.
- Handler, L., & Reyher, J. (1965). Figure Drawing Anxiety Indexes: A review of the literature. *Journal of Projective techniques*, 29, 305-313.
- Handler, L., & Reyher, J. (1966). Relationship between GSR and anxiety indexes in projective drawing. *Journal of Consulting Psychology*, 30(3), 60-67.
- Hibbard, R. A., & Hartman, G. L. (1990). Emotional indicators in human figure drawings of sexually victimised and nonabused children. *Journal of Clinical Psychology*, 46, 211-219.
- Hiler, E. W., & Nesvig, D. (1965). An evaluation of criteria used by clinicians to infer pathology from figure drawings. *Journal of Consulting Psychology*, 29, 520-529.
- Holahan, C. J., & Moos, R. H. (1987). Risk, Resistance, and Psychological Distress: A longitudinal analysis with adults and children. *Journal of Abnormal Psychology*, 96(1), 3-13.
- Holmes, C. B., & Wiederholt, J. (1982). Depression and figure size on the Draw-A-Person Test. *Perceptual and Motor Skills*, 55, 825-826.
- Jacobson, H. (1966). Extraversion-introversion and the effects of stress on the Draw-A-Person Test. In L. Handler (1967), *Anxiety indices in the Draw-A-Person test: A scoring manual*. *Journal of Projective techniques*, 31, 45-67.
- Johnson, J. J. (1971). Notes on the validity of Machover's indicators of anxiety. *Perceptual and Motor Skills*, 33, 126.
- Joiner, T. E., Schmidt, K. L., & Barnett, J. (1996). Size, detail, and line heaviness in children's drawings as correlates of emotional distress: (More) negative evidence. *Journal of Personality Assessment*, 67, 127-141.
- Joiner, T. E., & Schmidt, K. L. (1997). Drawing conclusions – or not – from drawings. *Journal of Personality Assessment*, 69(3), 476-481.
- Jolles, I., & Beck, H. S. (1953a). A study of some hypotheses for the qualitative interpretation of the H-T-P for children of elementary school age: III Horizontal Placement. *Journal of Clinical Psychology*, 9, 161-164.

- Jolles, I., & Beck, H. S. (1953b). A study of some hypotheses for the qualitative interpretation of the HT-P for children of elementary school age: IV Vertical Placement. *Journal of Clinical Psychology*, 9, 164-167.
- Jung, C. G. (1910). The association method. *American Journal of Psychology*, 21, 219-269.
- Kahn, M. V., & Jones, N. F. (1965). Human Figure Drawings as predictors of admission to a psychiatric hospital. *Journal of Projective techniques*, 29, 318-322.
- Kamano, D. K. (1960). An investigation of the meanings of Human Figure Drawings. *Journal of Clinical Psychology*, 16, 429-430.
- Karon, B. P. (1968). Problems of validities. In A. Rabin (Ed.), *Projective techniques in personality assessment – a modern introduction*. New York: Grove Press.
- Kent, G. H., & Rosanoff, A. J. (1910). A study of association in insanity: Part 1 – Association in normal subjects. *American Journal of Insanity*, 67, 37-96.
- Kobasa, S. C. (1982). Commitment and coping in stress resistance among lawyers. *Journal of Personality and Social Psychology*, 42, 168-177.
- Koppitz, E. M. (1968). *Psychological evaluation of children's human figure drawings*. New York: Grune & Stratton.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer-Verlag.
- Levy, S. (1959). Figure drawing as a projective test. In L. E. Abt & L. Bellak (Eds.), *Projective Psychology – Clinical approaches to the total personality*. New York: Grove Press.
- Lewinsohn, P. M. (1965). Psychological correlates of overall quality of Figure Drawings. *Journal of Consulting Psychology*, 29(6), 504-512.
- Lindzey, G. (1961). *Projective techniques and cross-cultural research*. New York: Appleton-Century-Crafts.
- Little, K. B. (1959). Problems in the validation of projective techniques. *Journal of Projective techniques*, 23, 287-290.
- Lubin, B., Larsen, R. M., & Matarazzo, J. D. (1984). Patterns of psychological test usage in the United States: 1935-1982. *American Psychologist*, 39, 451-454.

- Macfarlane, J. W., & Tuddenham, R. D. (1952). Problems in the validation of projective techniques. In H. H. Anderson & G. L. Anderson (Eds.), *An introduction to projective techniques and other devices for understanding the dynamics of human behaviour*. New York: Prentice Hall Inc.
- Machover, K. (1949). *Personality projection in the drawing of the human figure*. Springfield: Charles C Thomas. (Originally published in 1948.)
- Machover, K. (1952). Drawings of the human figure: A method of personality investigation. In H. H. Anderson & G. L. Anderson (Eds.), *An introduction to projective techniques and other devices for understanding the dynamics of human behaviour*. New York: Prentice Hall Inc.
- Maloney, M. P., & Glasser, A. (1982). An evaluation of the clinical utility of the Draw-A-Person test. *Journal of Clinical Psychology*, 38, 183-190.
- McClelland, D. C., Koestner, R., & Weinberger, J. (1989). How do self-attributed and implicit motives differ? *Psychological review*, 96 (4), 690-702.
- McConell, J. V. (1980). *Understanding human behavior: An introduction to psychology*. New York: Holt, Rinehart & Winston.
- McNeish, T. J., & Naglieri, J. A. (1993). Identification of individuals with serious emotional disturbance using the Draw A Person: Screening procedure for emotional disturbance. *The Journal of Special Education*, 27 (1), 115-121.
- Meyer, G. J. (1996). The Rorschach and MMPI: Toward a more scientifically differentiated understanding of cross-method assessment. *Journal of Personality Assessment*, 67(3), 558-578.
- Meyer, G. J. (1997). On the integration of personality assessment methods: The Rorschach and MMPI. *Journal of Personality Assessment*, 68(2), 297-330.
- Mogar, R. E. (1962). Anxiety indices in Human Figure Drawings: A replication and extension. *Journal of Consulting Psychology*, 26(1), 108.
- Morris, C. G. (1982). *Psychology: An introduction*. New Jersey: Prentice Hall.
- Motta, R. W., Little, S. G., & Tobin, M. I. (1993). The use and abuse of human figure drawings. *School Psychology Quarterly*, 8, 162-169.
- Murray, D. C., & Deabler H. L. (1958). Drawings, diagnoses, and the clinician's learning curve. *Journal of Projective techniques*, 22, 415-420.

- Naglieri, J. A., & Pheifer, S. I. (1992). Performance of disruptive behavior disordered and normal samples on the Draw A Person: Screening procedure for emotional disturbance. *Psychological Assessment*, 4(2), 156-159.
- Naumburg, M. (1950). *Schizophrenic art: It's meaning in psychotherapy*. New York: Grune & Stratton.
- Nichols, R. C., & Strumpfer, D. A. (1962). A factor analysis of Draw-A-Person test scores, *Journal of Consulting Psychology*, 26, 151-161.
- Nordquist, V. (1966). The relationship between heart rate and anxiety indexes in projective drawings. In Handler, L. (1967). Anxiety indices in the Draw-A-Person test: A scoring manual. *Journal of Projective techniques*, 31, 45-67.
- Oas, P. (1984). Validity of the Draw-A-Person and Bender Gestalt Tests as measures of impulsivity with adolescents. *Journal of Consulting and Clinical Psychology*, 52, 1011-1019.
- Papalia, D. E., & Olds S. W. (1988). *Psychology: International Student Edition*. New York: McGraw-Hill.
- Piotrowski, C., Keller, J. W., & Ogawa, T. (1993). Projective Techniques: An international perspective. *Psychological Reports*, 72, 179-182.
- Rabin, A. I. (1968). *Projective techniques in personality assessment – a modern introduction*. New York: Grove Press.
- Reber, A. S. (1995). *The Penguin dictionary of psychology*. London: Penguin Books.
- Retief, N. (1958). 'n Empiriese ondersoek na die geldigheid van die HTP. Unpublished Master's thesis, Stellenbosch University, Stellenbosch.
- Riethmiller, R. J., & Handler, L. (1997a). Problematic methods and unwarranted conclusions in HFD research: Suggestions for improved research procedures. *Journal of Personality Assessment*, 69(3), 459-475.
- Riethmiller, R. J., & Handler, L. (1997b). The great figure drawing controversy: The integration of research and clinical practice. *Journal of Personality Assessment*, 69(3), 488-496.
- Roback, H. R. (1968). Human Figure Drawings: Their utility in the clinical psychologist's armentarium for personality assessment. *Psychological bulletin*, 70, 1-19.
- Robins, C. E., Blatt, S. J., & Ford, R. Q. (1991). Changes in Human Figure Drawings during intensive treatment. *Journal of Personality Assessment*, 57(3), 477-497.

- Rorschach, H. (1942). *Psychodiagnostics: a diagnostic test based on perception*. New York: Grune & Stratton. (Originally published in 1921)
- Royal, R. E. (1949). Drawing characteristics of neurotic patients using a drawing-of-a-man-and-woman technique. *Journal of Clinical Psychology*, 5, 392-395.
- Rushton, J. P., Brainerd, C., & Pressley, M. (1983). Behavioural development and construct validity: The principle of aggregation. *Psychological Bulletin*, 94(1), 18-38.
- Rutherford, A., & Endler, N. S. (1999). Predicting approach-avoidance: the roles of coping styles, state anxiety, and situational appraisal. *Anxiety, Stress, and Coping*, 12, 63-84.
- Safran, S. (1996). DAP or method? *Professional Psychology: Research and Practice*, 27, 418-419.
- Schmidt, L. D., & McGowan, J. F. (1965). The differentiation of Human Figure Drawings. In B. I. Murstein (Ed.), *Handbook of Projective Techniques*. New York: Basic Books.
- Sims, J., Dana, R. H., & Bolton, B. (1983). The validity of the Draw-A-Person Test as an anxiety measure. *Journal of Personality Assessment*, 47(3), 250-257.
- Smith, D., & Dumont, F. (1995). A cautionary study: Unwarranted interpretations of the Draw-A-Person Test. *Professional Psychology: Research and Practice*, 26, 3, 298-303.
- Spangler, W. D. (1992). Validity of questionnaire and TAT measures of need for achievement: Two meta-analyses. *Psychological Bulletin*, 112(1), 140-154.
- Spatz, S. (1993). *Basic Statistics: Tales of distributions*. California: Brooks/Cole Publishing.
- Spielberger, C. (1979). *Understanding Stress and Anxiety*. Kenwyn, South Africa: Juta & Co.
- Stricker, G. (1967). Actuarial, naïve clinical, and sophisticated clinical prediction of pathology from figure drawings. *Journal of Consulting Psychology*, 31(5), 492-494.
- Strumpfer, D. J. W. (1958). 'n Ondersoek na die diagnostiese waarde van sekere komuniseerbare maatstawwe vir die evaluasie van menslike figuur tekeninge. Unpublished report, Potchefstroom University of Christian Higher Education, Potchefstroom.

- Strumpfer, D. J. W. (1962). A study of some communicable measures for the evaluation of Human Figure Drawings. *Journal of Projective techniques*, 26, 342-353.
- Swensen, C. H. (1965). Empirical evaluations of Human Figure Drawings. In B. I. Murstein (Ed.), *Handbook of Projective Techniques*. New York: Basic Books.
- Swensen, C. H. (1968). Empirical evaluations of Human Figure Drawings: 1957-1966. *Psychological Bulletin*, 70(1), 22-44.
- Taylor, S. E., Peplau, L. A., & Sears, D. O. (1994). *Social Psychology*. New Jersey: Prentice Hall.
- Tharinger, D. J., & Stark, K. (1990). A qualitative versus quantitative approach to evaluating the Draw-A-Person and Kinetic Family Drawing: A Study of Mood- and Anxiety-Disorder Children. *Journal of Consulting and Clinical Psychology*, 2(4), 151-156.
- Tulchin, S. H. (1940). The pre-Rorschach use of ink blot tests. *Rorschach Research Exchange*, 4, 1-7.
- Van Lennep, D. J. (1952). The Four-picture Test. In Anderson, H. H. & Anderson G. L. (Eds.), *An introduction to projective techniques & other devices for understanding the dynamics of human behaviour*. New York: Prentice-Hall Inc.
- Viglione, D. J. (1996). Data and issues to consider in reconciling self-report and the Rorschach. *Journal of Personality Assessment*, 67(3), 579-587.
- Vitaliano, P. P., DeWolfe, D. J., Maiuro, R. D., Russo, J., & Katon, W. (1990). Appraised changeability of a stressor as a modifier of the relationship between coping and depression: A tests of the hypothesis of fit. *Journal of Personality and Social Psychology*, 59 (3), 582-592.
- Vukovich, D. H. (1983). The use of projective assessment by school psychologists. *School Psychology Review*, 12, 358-364.
- Waehler, C. A. (1997). Drawing bridges between science and practice. *Journal of Personality Assessment*, 69(3), 482-487.
- Wanderer, Z. V. (1969). Validity of Clinical Judgments based on human figure drawings. *Journal of Consulting and Clinical Psychology*, 33(2), 143-150.
- Watkins, C. E., Campbell, V. L., Nieberding, R., & Hallmark, R. (1995). Contemporary practice of psychological assessment by clinical psychologists. *Professional Psychology: Research and Practice*, 26(1), 54-60.

- Weiner, I. B. (1989). On competence and ethicality in psychodiagnostic assessment. *Journal of Personality Assessment*, 53(4), 827-831.
- Weiten, W. (1992). *Psychology themes and variations*. California: Brooks/Cole publishing.
- Whitmyre, J. W. (1953). The significance of artistic excellence in the judgment of adjustment inferred from human figure drawings. *Journal of Consulting Psychology*, 71, 421-424.
- Yama. M. F. (1990). The usefulness of Human Figure Drawings as an index of overall adjustment. *Journal of Personality Assessment*, 54(1&2), 78-86.
- Zimbardo, P. G. (1995). *Essentials of psychology and life*. Illinois: Scott, Foresun & Co.

APPENDIX A

**RHODES UNIVERSITY
DEPARTMENT OF PSYCHOLOGY
AGREEMENT
BETWEEN STUDENT RESEARCHER AND
RESEARCH PARTICIPANT**

**I (participant's name and surname)_____ agree to
participate in the research project of André Brink on the development of drawings
as an assessment tool of anxiety in the clinical field.**

I understand that:

1. The researcher is a student conducting the research as part of the requirements for a Masters degree at Rhodes University.
2. The researcher is interested in the relationship between drawings and self-report measures as assessment tools of anxiety.
3. My participation will involve my completing a questionnaire and two drawings which will take about 60 minutes in total.
4. In the questionnaire I will be asked to answer questions of a personal nature, but I have the right not to answer any questions about any aspects of my life which I am not willing to disclose.
5. The drawings and the questionnaire answer sheets will not contain my name, but a serial number for statistical purposes that will enable regrouping of the drawings and answer sheets after separation.
6. The drawings and the questionnaire answer sheets will be completely anonymous, and in no way will anyone, including the researcher, be able to link the serial number to the name of the participant.
7. I am invited to voice to the researcher any concerns I have about my participation in the study and to have these addressed to my satisfaction.
8. I am free to withdraw from the study at any time – however I commit myself to full participation, unless some unusual circumstances occur or I have concerns about my participation which I did not originally anticipate.

Signed on (Date) _____/_____/2001

(Participant's signature) _____

(Researcher's signature) _____

(Witness's signature) _____

APPENDIX B

NR.....

PLEASE DO NOT OPEN UNTIL TOLD TO DO SO

PLEASE READ THE INSTRUCTIONS, BELOW, CAREFULLY.

IF YOU HAVE ANY QUESTIONS, PLEASE ASK THE ASSISTANT.

Instructions

- This inventory consists of numbered statements.
- Read each statement and decide whether it is true as applied to you, or false as applied to you.
- You are to mark your answers by encircling the appropriate option on the sheet with the questions.
- Look at the example down below:

A		T	F
----------	--	----------	----------

(example A)

- If a statement is True or mostly True, as applied to you, encircle the T in the corresponding box at the end of the line (see example A above).

B		T	F
----------	--	----------	----------

(example B)

- If a statement is False or mostly False, as applied to you, encircle the F in the corresponding box at the end of the line (see example B above).
- Remember to provide a response to every statement.
- Select only one option (T or F) per question by selecting the option (T or F) which is more correct as applied to you.
- Remember to give your own opinion of yourself.
- Since this test is anonymous, please be completely honest with each response.
- Though there is no time limit, do not deliberate too long over a response, since the first intuitive choice is usually the correct one.
- Make your circles heavy and dark around your choice (T or F).
- Erase completely any answer you wish to change, and do not forget to encircle the new option once the old one is erased.

NOW OPEN THE BOOKLET AND GO AHEAD

1	I have a good appetite.	T	F
2	I work under a great deal of tension.	T	F
3	At times I have fits of laughing and crying that I cannot control.	T	F
4	I have nightmares every few nights.	T	F
5	I find it hard to keep my mind on a task or job.	T	F
6	I've had very peculiar and strange experiences.	T	F
7	I seldom worry about my health.	T	F
8	I have a cough most of the time.	T	F
9	I have had periods of days, weeks, or months when I could not take care of things because I couldn't get going.	T	F
10	My sleep is fitful and disturbed.	T	F
11	I am in just as good physical health as most of my friends.	T	F
12	Parts of my body often have feelings like burning, tingling, crawling, or like going to sleep.	T	F
13	I wish I could be as happy as others seem to be.	T	F
14	When I am with people, I am bothered by hearing very strange things.	T	F
15	Most of the time I feel blue.	T	F
16	I am easily downed in an argument.	T	F
17	I do many things which I regret afterwards (I regret things more than others seem to).	T	F
18	I have met problems so full of possibilities that I have been unable to make up my mind about them.	T	F
19	Some people are so bossy that I feel like doing the opposite of what they request, even though I know they are right.	T	F
20	I like collecting flowers or growing house plants.	T	F
21	Criticism or scolding hurts me terribly.	T	F
22	I like to cook.	T	F
23	I have often lost out on things because I couldn't make up my mind soon enough.	T	F
24	Most nights I go to sleep without thoughts or ideas bothering me.	T	F
25	During the past few years I have been well most of the time.	T	F
26	I have never had a fainting spell.	T	F
27	When I get bored I like to stir up some excitement.	T	F
28	I am afraid of losing my mind.	T	F
29	I feel weak all over much of the time.	T	F
30	My hands have not become clumsy or awkward.	T	F
31	I have had no difficulty in keeping my balance in walking.	T	F
32	I like to flirt.	T	F
33	I frequently find myself worrying about something.	T	F
34	I like science.	T	F
35	I hardly ever notice my heart pounding and I am seldom short of breath.	T	F

36	I like to talk about sex.	T	F
37	I get mad easily and then get over it soon.	T	F
38	I brood a great deal.	T	F
39	I dream frequently about things that are best kept to myself.	T	F
40	I believe I am no more nervous than most people.	T	F
41	My way of doing things is apt to be misunderstood by others.	T	F
42	I have had blank spells in which my activities were interrupted and I did not know what was going on around me.	T	F
43	I can be friendly with people who do things which I consider wrong.	T	F
44	I have difficulty in starting to do things.	T	F
45	If I were an artist I would like to draw flowers.	T	F
46	When in a group of people I have trouble thinking of the right things to talk about.	T	F
47	When I leave home I do not worry about whether the door is locked and the windows closed.	T	F
48	I believe my sins are unpardonable.	T	F
49	I have often felt that strangers were looking at me critically.	T	F
50	Life is a strain for me much of the time.	T	F
51	Even when I am with people, I feel lonely much of the time.	T	F
52	I am easily embarrassed.	T	F
53	I worry over money and business.	T	F
54	I cannot keep my mind on one thing.	T	F
55	I feel anxiety about something or someone almost all of the time.	T	F
56	I have certainly had more than my share of things to worry about.	T	F
57	At times I hear so well it bothers me.	T	F
58	I forget right away what people say to me.	T	F
59	I usually have to stop and think before I act even in small matters.	T	F
60	Often I cross the street in order not to meet someone I see.	T	F
61	I often feel as if things are not real.	T	F
62	I have strange and peculiar thoughts.	T	F
63	Sometimes I enjoy hurting persons I love.	T	F
64	I have more trouble concentrating than others seem to have.	T	F
65	Sometimes some unimportant thought will run through my mind and bother me for days.	T	F
66	People often disappoint me.	T	F
67	I have sometimes felt that difficulties were piling up so high that I could not overcome them.	T	F
68	At periods my mind seems to work more slowly than usual.	T	F
69	It makes me feel like a failure when I hear of the success of someone I know well.	T	F
70	I am not afraid of fire.	T	F

71	I very seldom have spells of the blues.	T	F
72	I wish I could get over worrying about things I have said that may have injured other peoples feelings.	T	F
73	I feel unable to tell anyone about myself.	T	F
74	My plans have frequently seemed so full of difficulties that I have had to give them up.	T	F
75	Often, even though everything is going fine for me, I feel that I don't care about anything.	T	F
76	I am usually calm and not easily upset.	T	F
77	I would certainly enjoy beating criminals at their own game.	T	F
78	I am apt to take disappoints so keenly that I can't put them out of my mind.	T	F
79	At times I think I am no good at all.	T	F
80	One or more members of my family are very nervous.	T	F
81	I worry quite a bit over possible misfortunes.	T	F
82	I am apt to pass up something I want to do because others feel that I am not going about it the right way.	T	F
83	The man who had the most to do with me when I was a child (such as my father, stepfather, etc.) was very strict with me.	T	F
84	I have several times had a change of heart about my lifework.	T	F
85	I am afraid of finding myself in a closet or small place.	T	F
86	I must admit that I have at times been worried beyond reason over something that really did not matter.	T	F
87	Dirt frightens or disgusts me.	T	F
88	I have a daydream life about which I do not tell other people.	T	F
89	I often feel guilty because I pretend to feel more sorry about something than I really do.	T	F
90	I am made nervous by certain animals.	T	F
91	Several times a week I feel as if something dreadful is about to happen.	T	F
92	I feel tired a good deal of the time.	T	F
93	I sometimes feel that I am about to go to pieces.	T	F
94	I have often been frightened in the middle of the night.	T	F
95	I am not feeling much pressure or stress these days.	T	F
96	Having to make important decisions makes me nervous.	T	F
97	I worry a great deal over money.	T	F

APPENDIX C

INSTRUCTIONS

Please read these instructions carefully and feel free to ask any questions if there is anything that you are unsure of or do not understand.

MATERIALS

Please ensure that you have received all of the following materials:

- a) 1 x A4 size sheet of white printer paper attached to a clipboard
- b) 1 x sharp pencil (HB classification)
- c) 1 x eraser

NB: If you do not have all of these materials please ask so that the required materials can be provided to you.

REQUIREMENTS

- a) You will now be required to complete a series of drawings.
- b) There is no time limit.
- c) Do not be concerned about your artistic ability. All that is required is for you to try your best in making the drawings to the best of your ability.
- d) It is required that separate drawings are made on separate pieces of paper.
- e) You are not allowed a new sheet of paper before the drawing is completed.
- f) You are not allowed to restart a drawing on the back of the page.
- g) After completion of the first drawing, put up your hand and a second sheet of paper will be provided to you. The new sheet has to be attached to your clipboard before drawing.

DRAWING ORDER

- a) On the first sheet it is required that you draw a car (motor vehicle).
- b) On the second sheet it is required that you draw a person of the opposite sex

APPENDIX D**ANXIETY INDEXES OF THE DAP TEST:
A SCORING MANUAL**

===== 1. Shading =====

A) Shading on any essential body area is scored.

B) Essential body areas are as follows:

1. Head (including facial features)
2. Neck
3. One hand or both hands
4. One foot or both feet
5. One leg or both legs
6. One arm or both arms
7. Trunk

Hair is not scored here but is considered in a separate category.

C) A design on clothing, e.g. cross-hatching or any consistent pattern of lines is scored as shading.

D) Facial markings that indicate the presence of a beard should be scored as shading.

E) Score as follows:

Score 0 when there is no shading**Score 1** when there is shading on any one body area**Score 2** when there is shading on any two body areas**Score 3** when there is shading on more than two body areas

===== 2. Erasure =====

A) Any erasure on any essential body area is scored.

B) Essential body areas are as follows:

1. Head (including facial features)
2. Neck
3. One hand or both hands
4. One foot or both feet
5. One leg or both legs
6. One arm or both arms
7. Trunk

C) Score as follows:

Score 0 when there are no erasures

Score 1 when there is erasure on any one body area

Score 2 when there is erasure on any two body areas

Score 3 when there is erasure on more than two body areas

=====

3. Reinforcement

=====

- A) Reinforcement consists of retracing of lines (lines that have been redrawn, or gone over).
- B) This does not include shading.
- C) Reinforcement is often confused with sketchiness of a line. Some subjects habitually draw using a sketchy line and therefore if most of the drawing is sketchy, Reinforcement should not be scored.
- D) In addition, lines that have been erased and redrawn with a single line are not scored as reinforced.
- E) Score as follows:

Score 0 if less than a quarter of the lines on the figure is reinforced

Score 1 if approximately a quarter of the lines on the figure is reinforced

Score 2 if approximately half of the lines on the figure is reinforced

Score 3 if approximately three-quarters or more of the lines on the figure is reinforced

=====

4. Light Line

=====

- A) This index should be considered separately from “Light Pressure”. The line quality of the drawing is scored according to the *predominant* (encompassing more than half of the drawing) type of line employed.
- B) Score as follows:

Score 0 if the line quality is predominantly Medium (M).

Score 1 if the line quality is predominantly Medium-Light (ML) or Light-Medium (LM).

Score 2 if the line quality is predominantly Light (L).

Score 3 if the line quality is predominantly Light-Light (LL)

=====

5. Heavy Line

=====

- A) This index should be considered separately from “Heavy Pressure”. The line quality of the drawing is scored according to the *predominant* (encompassing more than half of the drawing) type of line employed.
- B) Score as follows:

Score 0 if the line quality is predominantly Medium (M).

Score 1 if the line quality is predominantly Medium-Heavy (MH) or Heavy-Medium (HM).

Score 2 if the line quality is predominantly Heavy (H).

Score 3 if the line quality is predominantly Heavy-Heavy (HH)

=====

6. Omission

=====

- A) Score if there is an omission of any essential body area or when the figure is placed so that one or more essential body areas has been cut off by the edge of the paper.
- B) Essential body areas are as follows:
1. Head
 2. Neck
 3. One hand or both hands
 4. One foot or both feet
 5. One leg or both legs
 6. One arm or both arms
 7. Trunk
 8. Hair
 9. Each facial feature:
 - a) eyes
 - b) nose
 - c) mouth
 - d) ears, unless covered by hair
 - e) eyebrows
- C) If arms or legs are omitted, hands and feet are also scored as omitted.
- D) If legs come to a point, feet are counted as omitted unless shoes or toes are indicated.
- E) Eyes do not have to be drawn in detail.
- F) If a profile drawing is being scored, do not score a body part as omitted if it would obviously not be seen in the profile view.
- G) A hand is considered as omitted unless fingers are indicated. In a case of clenched fists, lines must show that fingers are present.

H) Score as follows:

Score 0 when there are no omissions

Score 1 when one body part is omitted

Score 2 when two body parts are omitted

Score 3 when three or more body parts are omitted

=====

7. Small Size

=====

- A) Locate the axis of the drawing running from the head to the feet of the figure. Estimate this line to conform as nearly as possible to the midline of the figure. The head, trunk and legs should all be taken into account in locating the axis. Where the figure is curved, the axis should be placed at an angle approximating the drawing. After having located the axis, draw it through and beyond the figure.
- B) Construct perpendicular lines from the axis to the highest and lowest points of the drawing. Hair, toes, heels, fingers, hands or clothing, if found at one extreme or the other, should be included in the determination of the highest and lowest points of the drawing. Things other than parts of the body or clothing should not be included.
- C) Measure to the nearest millimetre along the axis between the perpendicular lines.
- D) Score as follows:

Score 0 if the figure is 169mm or more in size.

Score 1 if the figure is 168mm to 141mm in size.

Score 2 if the figure is 142mm to 116mm in size.

Score 3 if the figure is 117mm or less in size.

=====

8. Large Size

=====

- A) The same basics apply as Small Size, but score as follows:

Score 0 if the figure is 183mm or less in size.

Score 1 if the figure is 184mm to 211mm in size.

Score 2 if the figure is 212mm to 238mm in size.

Score 3 if the figure is 239mm or more in size.

=====

9. Line Discontinuity

=====

- A) Line Discontinuity refers to the frequency of broken lines used in the drawing, and to the spaces left between various body parts. On very close inspection these body parts may appear to be unconnected.
- C) A line discontinuity is scored if it is possible to go from the outside of the body wall without crossing a body line.
- D) If the drawing is done with a sketchy line, it is difficult to determine whether Line Discontinuity is to be scored. Line Discontinuity should not be scored if, despite the sketchiness, it is impossible to go from the outside of the body wall to the inside without crossing a body line.
- E) Score as follows:

Score 0 if there are no more than three line discontinuities in a drawing.

Score 1 if four or five line discontinuities are present in the drawing.

Score 2 if six, seven or eight line discontinuities are present.

Score 3 if nine or more line discontinuities are present.

=====

10. Distortion

=====

- A) This index refers to either size (porportion) distortion, or to oddly shaped body parts.
- B) Score as follows:

Score 0 if the drawing is well-proportioned, and if the body parts are not oddly shaped.

Score 1 if one or two body parts are out of proportion, but not to any great extent, or if one or two body parts are slightly misshapen.

Score 2 if approximately half the drawing is out of proportion, and/or distorted.

Score 3 if more than half the figure is out of proportion, or oddly shaped.

=====

11. Heavy Line Pressure

=====

- A) These indexes refer to the pressure put upon the pencil while drawing.
- B) Line pressure is measured by turning the drawing on its back and passing the fingertips lightly over the surface of the paper.
- C) The score is determined according to the extent and distinctness of the raised outline felt on the back of the drawing.

D) Score as follows:

Score 0 if a *moderately* raised outline can be felt on half to (but not including) three quarters of the drawing.

Score 1 if a *moderately* raised outline can be felt on three quarters or more of the drawing, or if a *markedly* raised outline can be felt on less than half of the drawing.

Score 2 if a *markedly* raised outline can be felt on half through (but not including) three quarters of the drawing.

Score 3 if a *markedly* raised outline can be felt on three quarters or more of the drawing.

=====

12. Detail

=====

- A. There are three subcategories (a, b and c) under each category (Eyes, Mouth, etc.).
- B. Give one point only for each of the subcategories (eg. a, b and c) that is met under each category (eg. Eyes, Mouth, etc.).
- C. Give points for all the subcategories (i.e. a, b and c) that is met under each category (if more than one criterium is met, give points to those met).
- D. Therefore, the maximum that a person can score per category (Eyes, Mouth, etc.) is three, and the minimum 0.
- E. Applying the above rules to the categories and subcategories below, give points for the subcategories met:

Eyes

One point for each of the following present:

- a) Pupils
- b) Brows
- c) Lashes.

Mouth

One point for each of the following categories met:

- a) Either upper or lower lips in 2D
- b) Both upper and lower lips distinguishable in 2D
- c) Chin marked of from underlip - in profile: indentation between mouth and chin;
in full face: extra line under mouth

Nose

One point for each of the following present:

- a) Nose ridge (vertical ridge extending downward) - simple triangle does not count.
- b) Nostrils
- c) Nose-“wings” (around nostrils)

Clothing

One point for each of the following categories met:

- a) At least 2 items of the following (unless an appropriate costume, eg. a spacesuit, or bathing costume. If swimming trunks with men/boys, then nipples and belly-button must be present.): hat, collar, tie, belt, buttons, seams, pockets, wristwatch, earrings, necklace, bracelets/ 'bangles', glasses/sunglasses.
- b) At least 4 items of the following: hat, collar, tie, belt, buttons, seams, pockets, wristwatch, earrings, necklace, bracelets/ 'bangles', glasses/sunglasses.
- c) At least 6 items of the following: hat, collar, tie, belt, buttons, seams, pockets, wristwatch, earrings, necklace, bracelets/ 'bangles', glasses/sunglasses.

Feet

One point for each of the following present:

- a) 2D feet or shoes.
- b) Heel - any method, and if suggested by the position of the feet from front view.
- c) With shoes: shoelaces, high heels or shoe soles; With bare feet: the right number of toes with toe detail correct -opposition of bigtoes to one another.

Hands

One point for each of the following present:

- a) Right number of fingers - if both hands are shown, the right number on both.
- b) Thumbs distinguishable - angle larger than between other fingers.
- c) Finger detail correct - opposition of thumbs to one another (eg. Both inwards or outwards)

Extras

- a) Anything held or carried eg suitcase, rifle, book, teacup.
- b) Any unusual extra clothing pieces not covered before eg army webbing, diving equipment, etc.
- c) A cigarette, lollipop or pipe in the mouth.

F. When finished giving points for subcategories met, add the total amount of points to give the sum total.

G. Now score as follows:

Score 0 if the sum total of points falls in the range 0-4

Score 1 if the sum total of points falls in the range 5-9

Score 2 if the sum total of points falls in the range 10-14

Score 3 if the sum total of points falls in the range 15-21

=====

13. Line Sketchiness

=====

- A) This index refers to the use of multiple, tentative (usually light) lines in stead of using solid lines.
- B) Line sketchiness is identified whenever multiple, tentative (usually light) lines are used to represent solid lines.
- C) Score as follows:

Score 0 if less than a quarter of the lines on the figure is sketchy

Score 1 if approximately a quarter of the lines on the figure is sketchy

Score 2 if approximately half of the lines on the figure is sketchy

Score 3 if approximately three-quarters or more of the lines on the figure is sketchy

=====

14. Semi-/detached body parts

=====

- A) This index refers to body parts that are detached or semi-detached.
- B) A body-part is seen as detached/semi-detached when it appears as though there is a discontinuity between this body part and the rest of the body and/or it appears to be separated from the rest of the body.
- C) Score as follows:

Score 0 if there are no detached or semi-detached body parts

Score 1 if there is one detached or semi-detached body part

Score 2 if there are two detached or semi-detached body parts

Score 3 if there are three or more detached or semi-detached body parts

=====

15. Diffusion of body boundaries

=====

- A) This index refers to the diffusion of body boundaries.
- B) Body boundaries is seen as the outer border or outline of the drawn human figure.
- C) Diffusion of body boundaries refers to the lack of clarity/solidity of these boundaries.

D) Score as follows:

Score 0 if there are no diffusion of body boundaries

Score 1 if there are slight diffusion of body boundaries

Score 2 if there are mild diffusion of body boundaries

Score 3 if there are severe diffusion of body boundaries

=====

16. Emphasis Line

=====

- A) This index should not be confused with shading.
- B) Emphasis Line refers only to a line or series of lines drawn to emphasise specific body areas, or lines drawn to give the figure a three-dimensional quality.
- C) Examples: Thus, while cross-hatching on the skirt is scored as Shading, lines indicating pleats or folds in the skirt would be scored as Emphasis Line. Similarly, while markings on the face to indicate a beard would be scored as Shading, marks which indicate a dimple, facial crease or fold, chin, furrows in the forehead, etc., are scored as Emphasis Line.

D) Score as follows:

Score 0 when no emphasis lines are present.

Score 1 when 1 or 2 emphasis lines are present.

Score 2 when 3 emphasis lines are present.

Score 3 when 4 or more emphasis lines are present.

APPENDIX E

Nr.	Index	Score	Invert
1	Shading		
3	Erasure		
4	Reinforcement		
5	Light Line	XXXXXXXX	
6	Heavy Line	XXXXXXXX	
7	Omission	XXXXXXXX	
8	Small Size	XXXXXXXX	
9	Large Size	XXXXXXXX	
10	Line Discontinuity	XXXXXXXX	
11	Distortion	XXXXXXXX	
13	Detail		
14	Line Sketchiness		
15	Semi-/detached body parts	XXXXXXXX	
16	Diffusion of body boundaries	XXXXXXXX	

DETAIL

eyes	
mouth	
nose	
clothing	
feet	
hands	
extras	
total	

	<u>COPING</u>		
1	Shading		
3	Erasure		
4	Reinforcement		
6	Heavy Line		
8	Small Size		
10	Line Discontinuity		
13	Detail		
14	Line Sketchiness	<i>Invert</i>	
15	Semi-/detached body parts		
	TOTAL		

	<u>AVOIDANT</u>		
1	Shading	<i>Invert</i>	
3	Erasure	<i>Invert</i>	
4	Reinforcement	<i>Invert</i>	
5	Light Line		
7	Omission		
9	Large Size		
11	Distortion		
13	Detail	<i>Invert</i>	
14	Line Sketchiness		
16	Diffusion of body boundaries		
	TOTAL		

	EXTERNAL		
1	Shading		
3	Erasure		
4	Reinforcement		
6	Heavy Line		
12	Heavy Line Pressure		
17	Emphasis Line		
	TOTAL		