

CHAPTER 9

9.0 METHODOLOGY

9.1 Phase 1

9.1.1 Methods and materials

9.1.1.1 The subjects used

Oncology patients, assessed by the senior oncology consultants of the Medical Oncology Department of the Johannesburg Hospital to have a good prognosis were invited to take part in this research. Many refused and many did not have sufficient language ability to be able to fill in the questionnaires, even with the aid of a translator. One hundred and forty seven patients were suitable, eligible, and willing to complete the Questionnaires.

Compliance was defined on the basis of attendance or non- attendance for Chemotherapy sessions (i.e. completing the course or courses of chemotherapy, or non attendance at follow up appointments).

The patients were divided into 2 groups, viz., a compliant group which comprised 114 patients, and a non- compliant group comprising 33 patients.

Data on the subjects (patients) is as follows:

TABLE 1

AGE RANGES OF THE COMPLIANT AND NON- COMPLIANT GROUPS

AGE RANGE	COMPLIANT GROUP	NON- COMPLIANT GROUP
15 – 20	11%	9%
21 – 30	9%	14%
31 – 40	16%	29%
41 – 50	14%	17%
51 – 60	28%	11%
61 – 70	11%	11%
71 – 80	9%	9%
80+	2%	0%

It is interesting to note that the patients in the non- compliant group cluster around the age range 31-40 whereas compliant patients cluster around 51-60. Sixty nine percent of non-compliant patients were below age 50 years whereas 50% of the compliant patients were below age 50 years.

Fifty- two percent of non-compliant patients were below age 40 years, whereas 36% of compliant patients were below age 40 years.

It is interesting to find, however that both groups had 11% of patients between the ages of 61-70 years and 9% of patients between the ages of 71-80 years.

TABLE 2

GENDER DISTRIBUTION OF THE COMPLIANT AND NON -COMPLIANT GROUPS

GENDER	COMPLIANT GROUP	NON- COMPLIANT GROUP
MALES	50%	60%
FEMALES	50%	40%

The compliant group is divided equally between males and females whereas the non-compliant group has more males than females.

TABLE 3

DISTRIBUTION OF SUBJECTS ACCORDING TO CANCER TYPE

CANCER TYPE	COMPLIANT GROUP	NON- COMPLIANT GROUP
Hodgkins Disease	14%	12%
Lymphoma (Non-Hodgkins)	33%	49%
Leukaemia	28%	18%
Ovarian Cancer	8%	6%
Testicular Cancer	6%	6%
Multiple Myeloma	6%	0%
Other Cancers	5%	9%

Most of the patients were suffering from lymphoma, and it appears that there is a high rate of non- compliance among these patients.

9.1.1.2 Procedure

Ethics clearance was obtained for this study. (See Appendix 11)

Oncology patients, who were assessed by the senior oncology consultants of the Oncology Department of the Johannesburg Hospital to have a good prognosis were invited to take part in this research. At least 500 patients were approached. Many refused for various

reasons and many did not have sufficient language ability to be able to fill in the questionnaires, even with the aid of a translator.

One hundred and forty seven patients were suitable, eligible, and willing and able to complete the Questionnaires.

Once subjects consented to participate in the study, they completed the subject information and consent form. (See Appendix 1). It was made clear that participation in the study was entirely voluntary and refusal to do so would in no way influence their treatment. Subjects were required to be proficient in English. Confidentiality was assured.

The subjects were then required to complete a number of questionnaires, namely:

- a) The General Information Questionnaire;
- b) The Millon Clinical Multiaxial Inventory- II (MCMI-II);
- c) The Beck Hopelessness Scale (BHS);
- d) The Social Readjustment Rating Scale. (Life Change Stress Index);
- e) The Buss-Durkee Scale of Aggression (BDHI);

f) The Rotter Internal-External Locus of Control Scale;

g) The Dysfunctional Attitudes Scale (DAS).

This could be done in whichever place was conducive to concentration, whether in their hospital ward, or at home, or in a fairly quiet area while they waited the many hours for their treatment as out patients in the Oncology Department.

Compliance was assessed by the senior oncologists and defined on the basis of attendance or non attendance for chemotherapy sessions (i.e. completing the course / courses of chemotherapy, or non- attendance at follow up appointments).

The patients were divided into 2 groups, viz., a compliant group which comprised 114 patients, and a non- compliant group comprising 33 patients.

The results of the questionnaires were analysed and compared, the tests were scored and the appropriate statistical procedures applied.

9.1.2 The materials used

9.1.2.1 Subject information and consent form (see appendix 1)

This gave the subjects a realistic picture of what would be expected of them if they were

to take part in the study, and requested their signed consent.

9.1.2.2 The general information questionnaire (see appendix 2)

This was created for this study by the author.

This covered such things as information about the patient's family , working conditions, support systems, attitudes towards cancer , attitudes towards medicine and attitudes toward treatment compliance.

9.1.2.3 MCMI -II (Millon Clinical Multiaxial Inventory -11) (see appendix 3)

The MCMI - II is used primarily in clinical settings with individuals who require mental health services for emotional, social, or interpersonal difficulties. It was designed to measure fairly covert personality traits or symptoms but not aetiology. The strength of the MCMI is that it provides a measure of the personality style. It has been used, however, in non psychiatric populations and this is considered acceptable as long as cognisance is taken of the original population of standardization on this test (Craig and Olson , 1992, Choca, Shanley and van Densburg , 1992). The test is based on Millon's theory of personality and psychopathology. (Millon 1969)

The MCMI - II is a 175 item, true/false self-report psychological inventory and was intended to assist with psychiatric screening. There are 22 clinical scales divided into:

1. 'personality styles/traits'
2. 'severe personality patterns'
3. 'clinical syndromes.'
4. 'severe clinical syndromes'

Though the MCMI generally has a high sensitivity and specificity, the scales themselves vary in regard to this.

The scale is reliably scored with accompanying software based on De Beer (1995) MCMI-11 Computer Scoring Programme.

The CPS Testing Library (2004) gives details on the reliability and validity of the Millon Clinical Multiaxial Inventory II:

Reliability:

The reliability of the MCMI II generally has been sound, with the Axis II scales showing the highest stability as predicted by Millon (Choca et.al.1992). Normal subjects also had noticeably higher stability coefficients than clinical subjects. Millon also tested the stability of high point and double-high-point configurations. He reports that high point

codes are fairly stable over a month, with nearly two thirds of 168 subjects achieving the same scale high point. For double-high-point configurations, 25% achieve the same high scores with another 19% achieving the same two scales but in reverse order. Based on part of his normative sample, Millon reports quite high internal consistencies. The average of 22 clinical scales is .89, and the range is from .81 to .95 (CPS Testing Library, 2004).

Validity:

There is considerable overlap in this test, making the factor structure of this instrument difficult to discern. However, this is in part due to the overlap of the constructs; that is, the personality disorders are by no means distinct entities, themselves (CPS Testing Library, 2004).

Norms:

Norms for the MCMI-II instrument are based on a national sample of 1,292 male and female clinical subjects representing a variety of DSM-III and DSM-III-R diagnoses. The subjects included inpatients and outpatients in clinics, hospitals, and private practices. The MCMI-II manual describes the distribution of gender, age, marital status, religion, and other factors within the sample (CPS Testing Library, 2004).

The followings issues are important in the results:-

9.1.2.3.1 The modifier scales

1. Validity

This scale refers to the validity of the subject's responses. The validity scale contains four absurd items that should be marked false by any individual who is able to read and understand the items appropriately. (De Beer, 1995; Choca, et.al., 1992)

The scale can be invalid for several reasons and it is important to determine this reason. For example, the questionnaire can be filled in randomly on purpose; or the person could be too ill/disturbed/ intellectually or cognitively challenged to complete it correctly. In many instances, especially in the South African context, it could be a language difficulty.

2. Disclosure Scale (X)

This is a modifier index, being not a scale in the usual sense of the word but a composite score computed from the personality scales. (Choca et.al., 1992). A high score on this scale is often indicative of a person feeling they have more psychological symptomatology than they actually do have (De Beer, 1995).

3. Desirability Scale (Y)

This measures the tendency to portray oneself in a positive light (Choca, et.al., 1992).

4. Debasement Scale (Z)

This taps an attempt to exaggerate negative traits on the inventory. The most prominent items are about feeling physically and emotionally empty, having low self esteem and becoming angry or tearful at little provocation. (De Beer,1995; Choca, et.al.,1992).

The MCMI-11 divides into three four main clusters, namely, personality styles/traits, severe personality disturbances, and severe clinical syndromes.

9.1.2.3.2 Personality traits

1. Schizoid Personality Trait

The schizoid personality trait is indicative of asocial behaviour, social isolation, emotional and emotional blandness, the suppression of the person's own feelings, passivity, apathy and sexual inhibition. It also indicates self doubt, a lack of recognition, a tendency to be unadventurous, resistance to guidance from others and perfectionism. There can also be somatic complaints. (De Beer,1995; Choca, et.al., 1992).

2. Avoidant Personality Trait

The avoidant personality trait is indicative of social detachment, approach-avoidance conflict and social apprehension so that the person avoids interpersonal contact in order to

reduce anxiety. The person tends to mistrust others and has feelings of worthlessness, the desire to isolate him/herself, low self esteem, suppression of his/her own feelings and sexual inhibition. (De Beer,1995; Choca, et.al.,1992).

3. Dependent Personality Trait

The dependant personality trait indicates a strong need for reassuring/supportive relationships. The person has low self-confidence, a submissive attitude and desires to obtain nurturance and protection from others. He/she has a high regard for authority, is socially passive, and suppresses anger and other 'bad' feelings. (De Beer,1995; Choca, et.al., 1992).

4. Histrionic Personality Trait

The histrionic personality trait also indicates a need for supportive relationships, but this person is, by nature, gregarious . He/she searches for attention, has impulsive inclinations, and a need for nurturance. He/she tends to easily become frustrated and bored. He/she also has mood swings and guilt feelings and experiences feelings of guilt .(De Beer,1995; Choca, et.al., 1992).

5. Narcissistic Personality Trait

The narcissistic personality trait indicates a dislike of being externally controlled and a

tendency to have overly self-sufficient relationships. The person feels superior, has a strong belief in him/her self, and a lack of empathy with others. Though he/she appears to be sociable and outgoing, he/she tends towards defensive/self-protection presentations, and easily shows anger and disappointment. (De Beer, 1995; Choca, et.al., 1992).

6a) Antisocial Personality Trait

The antisocial personality is indicative of a person who has resentment of authority, the dislike of being controlled, a need for self-confidence and a lack of reliance on others. The person is impulsive and distrustful, avoids emotional involvement, has a competitive nature, has a lack of empathy for others and tends to use others for his/her own purposes. (De Beer, 1995; Choca, et.al., 1992).

6b) Aggressive/Sadistic Personality Trait

The aggressive/sadistic personality trait is a more severe form of the antisocial personality trait. The person is hostile, and is usually aggressive in interaction with others. He/she tends to remain independent, does not do what others tell him/her to do, and can make callous manoeuvres to get ahead of others. He/she has distrustful and hyper-vigilant defences, typically using projection defensively to blame others. Interpersonally, he/she is touchy, excitable, irritable, 'flies off the handle' and has aggressive outbursts when confronted or challenged. (De Beer, 1995; Choca, et.al., 1992).

7) Compulsive Personality Trait

The compulsive personality style is indicative of an individual who is compliant to authority, has a tendency to be controlling with everyone else, has a moralistic attitude, a belief in following the rules, and keeps his/her emotions in check. He/she is orderly and meticulous, and feels that his/her way is the only way. The emphasis is on predictability, a tendency to social anxiety, self-righteousness and sexual inhibition. (De Beer,1995; Choca, et.al.,1992).

8a) Passive-Aggressive Personality Trait

The passive aggressive individual has an intense dislike of being controlled, has a resentful attitude towards authority, has and has moodiness, guilt and remorse. He/she has a mistrust of others and a desire to hurt him/herself and others. , as well as a desire to receive more appreciation and recognition. (De Beer,1995; Choca, et.al., 1992).

8b) Self-Defeating Personality Trait

The self defeating personality style is a more pathological form of the passive-aggressive style. The person has a very poor self-image, needs the help of others to make ends meet, is uncomfortable when treated well and seeks rejecting and defeating situations and relationships. He/she seeks out mistreating interaction and harbours a great deal of resentment. He/she devalues both him/herself and others, frustrates and angers others, and

tends to activate a person's anger and frustration. (De Beer,1995; Choca, et.al.,1992).

9.1.2.3.3 Severe Personality Disturbance

These items of the MCMI-II indicate more severe personality disturbances.

Schizotypal (S)

This is a pathological combination of the schizoid and the avoidant personality styles. The Schizotypal individual has a fear of human contact, suspicion and mistrust of others, preference for a life of passive isolation and has very few real relationships. He/she has features of eccentricity, has peculiar habits, and mixes fantasy with reality. He/she is anxious and apprehensive, has flattened affect, and often depersonalises, with feelings of emptiness and ideas of reference. (De Beer,1995; Choca, et.al.1992).

Borderline (C)

The borderline personality includes pervasive unstable moods, relationships and self-image. He/she responds to the environment in an extremely impulsive and over-emotional way, which results in emotional lability, that can range from apathy and numbness to intense, over-involved reactions. Underlying this is a sadness, hopelessness and aimlessness. He/she resents control and authority, and this leads to anger, aggression and destructive feelings and actions towards others and him/herself. There are also feelings of

guilt and remorse. He/she has an unstable self-image, has feelings of worthlessness, has self-doubt and feelings that he/she has been used by others and is 'second-hand'. (De Beer, 1995; Choca, et.al., 1992).

Paranoid (P)

The person with a paranoid personality style resents authority and criticism, is insensitive to others and feels emotionally and physically disconnected. He/she has a fear of losing autonomy, resists all attempts by others to have an influence on him/her or have elements of control in his/her life. He/she also tends to be perfectionistic and well-organised, moralistic, impatient and irritable, short-tempered and competitive. (De Beer, 1995; Choca, et.al., 1992).

9.1.2.3.4 Clinical syndromes

The MCMI-11 also has particular clinical syndromes, of which there are six:

Anxiety (A)

The person with the trait of anxiety can show apprehension, phobic reactions, indecision, tension and restlessness. He/she might experience associated physical discomfort. He/she has poor confidence in his/her abilities, has low self-esteem and feels unwanted and unappreciated and prone to sudden tears and anger. He/she is dependent and despondent.

Generally this scale is a very sensitive indicator of psychological distress and disturbance.

(De Beer,1995; Choca, et.al.,1992)

Somatoform (H)

This clinical syndrome is characterised by fatigue, weakness, tension, jumpiness, sweating, aches and pains and physical discomforts. The person might also show low self-esteem, dependence, mental confusion, be easily provoked to tears, have difficulty sleeping, and need to be the centre of attention. (De Beer,1995; Choca, et.al., 1992).

Bipolar Manic (N)

The clinical syndrome of bipolar manic is characterised by restlessness, over-activity, elevated moods, pressured speech, impulsivity and irritability. The person might be gregarious, attention-seeking, have intense affect and feelings of grandiosity. He/she can have erratic moods or behaviours, feel superior, be super sensitive to sounds and have a tendency to alcohol abuse. (De Beer, 1995; Choca,et.al., 1992).

Dysthymia (D)

The dysthymic person is apathetic, has a dejected mood, feels discouraged, guilty and hopeless and has lack of personal initiative. He/she suffers from physical and emotional exhaustion and has difficulty sleeping. He/she has low self-esteem and self-destructive

thoughts and acts. This person is easily provoked to tears or aggressive outbursts. He/she distrusts others and is somewhat perfectionistic. (De Beer,1995; Choca,et.al., 1992).

Alcohol Dependence (B)

The alcohol dependant person has a history of excessive drinking that causes problems at work and in the home. He/she tends to be impulsive, have low self-esteem, an aversion to being controlled, and often feels tense, tired, lonely, and irritable. (De Beer,1995; Choca,et.al., 1992)

Drug Dependence (7)

The drug dependant person has a history of pronounced drug use that causes problems at work and in the home. He/she shows impulsive behaviour, has a desire to hurt him/herself and others and resents authority or being controlled. He/she is generally suspicious, has mood swings, feels both guilt and remorse and has a sense of aimlessness. He/she can show competitive behaviours. (De Beer,1995; Choca, et.al., 1992).

9.1.2.3.5 Severe clinical syndrome pathology

The MCMI-11 also tests for some of the severe, pathological clinical syndromes.

Thought Disorder (SS)

The thought disordered person is confused and disorganised thought processes, and may have delusions or hallucinations which are unsystematised. He/she is suspicious, distrustful, isolated and is afraid of being used by others. He/she has both physical and mental imbalances. This person has lowered self-esteem, the desire to hurt him/herself and others and feels unwanted and disliked. He/she has affectual constriction, ideas of reference, and rigid thinking .(De Beer,1995; Choca, et.al., 1992).

Major Depression (CC)

The person suffering from major depression has severe depressive mood disturbances that prevents the person functioning. He/she has difficulty sleeping and has a sense of hopelessness and a fear of the future. The person tends to be agitated, has psychomotor retardation and feels physically drained. He/she is moved to anger or tears at little provocation, feels unworthy and undeserving and engages in self-destructive behaviours. He/she is socially withdrawn, sexually inhibited, feels tense and confused and has low self-esteem. (De Beer,1995; Choca,et.al., 1992).

Delusional Disorder (PP)

The delusional disorder signifies a person who has irrational ideas, specifically persecutory and/or grandiose. He/she has feelings of superiority and fears of being used by others. He/she can be moralistic, believing that an unknown entity is capable of interfering with his/her life. He/she feels emotionally detached, is rigid, confused and

somewhat perfectionistic. (De Beer,1995; Choca, et.al., 1992).

9.1.2.4 THE DYSFUNCTIONAL ATTITUDES SCALE (DAS)(Form A)

(see appendix 4)

The Dysfunctional Attitudes Scale (DAS) , developed by Weissman and Beck (1978), is a self-report measure designed to assess the extent to which an individual endorses general attitudes and underlying assumptions hypothesized by cognitive theory to be associated with depression, a set of constructs similar to Albert Ellis's concept of irrational beliefs (Seligman, Kaslow, Alloy, Peterson, Tanenbaum and Abramson.1984).

The items have to be checked 'True or 'False'.

e.g. It is difficult to be happy unless one is good-looking, intelligent, rich and creative.

[True] [False]

The scores were divided into the following four categories (with an umbrella category of General Self Esteem):

1. Approval Need - This describes a need for approval and support.

2. Tentativeness - This describes a concern about making mistakes,
being criticized or taking risks.

3. Anaclitic self-esteem - This characterises an individual who leans on others for love, approval and happiness.
4. External self-esteem - This describes an individual who perceived his self-esteem as being dependent on judgement made by others.
5. General Self Esteem - This is a score incorporating the other scores (Parker, Bradshaw and Blignault, 1984).

Parker, Bradshaw and Blignault's (1984) results suggest that dysfunctional attitudes, or at least those measured by the Dysfunctional Attitudes Scale, are more a consequence of depressed mood, rather than an antecedent attributional style placing the individual at risk to depression. They comment that they prefer to use Form A (as used in this study) due to the fact that the factor analysis studies suggest Form A to have more coherent constructs. Carro, Bernal and Veal (1998) evaluated the reliability and construct validity of the Beck Depression Inventory (BDI) and the Dysfunctional Attitudes Scale (DAS-A), originally translated and adapted to Spanish language and validated in Puerto Rico. The DAS-A test-retest reliability was .89 and internal consistency was .89. The test of differences between groups shows that the DAS-A can differentiate depressed and non-depressed groups.

Olinger, Kuiper and Shaw (1987) found that subjects scoring high on the DAS displayed

more frequent thoughts about past, present, or expected future life difficulties than those scoring low on this measure, and that they also rated these events as having a greater degree of importance and emotional impact. Subjects with high DAS scores were also found to display increased levels of perceived stress, relative to individuals with low DAS scores.

9.1.2.5 Beck hopelessness scale

The Beck Hopelessness Scale (BHS) (see appendix 5)

This test, designed by Aaron T. Beck, (Beck and Weissman 1974) and published by The Psychological Corporation, is a 20-item true-false self report scale for measuring negative attitudes about the future. Beck originally developed this scale in order to predict who would commit suicide and who would not. (CPS Testing Library, 2004). It also measures degrees of general pessimism (Seligman, et.al., 1984).

e.g. I look forward to the future with hope and enthusiasm. (True) (False)

Reliability:

The manual reports KR-20 coefficients (measures of the scale's internal consistency) ranging from .82 to .93. One of the studies cited in the manual, in a sample of patients from the Centre for Cognitive Therapy (N = 99), the test-retest reliability over a 6-week

span was .66. Both of these test-retest coefficients are statistically significant (CPS Testing Library, 2004).

Validity:

To determine the scales concurrent validity. Beck examined the relationship between clinical ratings of hopelessness and BHS scores in two samples: a) 23 outpatients in a general medical practice and b) 62 hospitalized patients who had recently attempted suicide. In the general practice sample, the correlation between the BHS and the ratings of hopelessness was .74; in the suicide-attempt sample, it was .62 (CPS Testing Library, 2004).

Norms:

The normative sample consisted of 294 psychiatric inpatients who had made recent suicide attempts. (CPS Testing Library, 2004).

9.1.2.6 The social readjustment rating scale (life change stress index)(see appendix 6)

This was included to establish the occurrence of traumatic or significant events and to elaborate on the history given in the General Information Questionnaire.

The Social Readjustment Rating Scale was formulated by Holmes and Rahe in 1967.

The person is asked to complete the Questionnaire and to tick only those events that have affected him/her personally in the past 12 months, and to ignore the others.

e.g. ☐ Death of a spouse.

☐ Divorce

There are 2 categories of items: those indicative of the lifestyle of the individual; , and those indicative of occurrences involving the individual. "These include family constellation, marriage, occupation, economics, residence, group and peer relationships , education, religion, recreation and health."(Holmes and Rahe , 1967, p.216)

Gerst, Grant, Yager, and Sweetwood (1978) did research on the temporal stability of the Social Readjustment Rating Scale as was determined during 3 sampling periods over 2 yrs in groups of male psychiatric outpatients and male normal controls. The rank ordering of the amount of readjustment required by life events remained extremely consistent both for controls and patients. Controls also demonstrated considerable consistency in the absolute weights assigned to various events over time . Patients showed great variability in weighting . Their results suggest that whereas "normals" maintain temporally stable perceptions of the impactfulness of life change, the same may not be true for psychiatric patients.

9.1.2.7 Buss-Durkee Aggression Scale (Hostility Inventory (Bdhi) (see appendix 7)

This scale was formulated by Buss and Durkee in 1961, and is a questionnaire type test of 74 items where the person has to answer 'True' or 'False'. It is a self-rated multidimensional scale of hostility.

e.g. Once in a while I cannot control my urge to harm others. (True) (False)

Rather than being an 'Omnibus Instrument' that taps a variety of hostile attitudes and aggressive behaviours and combines all of these into a single score. Buss (1961) felt it was necessary and useful to divide hostile-aggressive behaviour into sub- classes. These included the following:

1) ASSAULT: Physical violence against others. This includes getting into fights with others but not destroying objects.

2) INDIRECT AGGRESSION: Both roundabout and undirected aggression. Roundabout behaviour like malicious gossip or practical jokes is indirect in the sense that the hated person is not attacked directly but by devious means. Undirected aggression, such as temper tantrums and slamming doors, consists of a discharge of negative affect against no one in particular.

3) IRRITABILITY: A readiness to explode at the slightest provocation. This includes

quick temper, grouchiness, exasperation and rudeness.

4) NEGATIVISM: Oppositional behaviour , usually directed against authority. This involves a refusal to cooperate that may vary from passive non-compliance to open rebellion against rules and convention.

5) RESENTMENT: Jealousy and hatred of others. This refers to a feeling of anger at the world over real or imagined mistreatment.

6) SUSPICION: Projection of hostility onto others. This varies from merely being distrustful and wary of people to beliefs that others are being derogatory or are planning harm.

7) VERBAL AGGRESSION: Negative affect expressed in both the style and content of speech. Style indicates arguing, shouting and screaming. Content includes threats, curses, and being over-critical.

8) A GUILT category was added because of interest in observing the inhibiting influence of guilt to the expression of behaviours that are often inhibited.

Guilt was defined in terms of feelings of being bad , having done wrong and suffering pangs of conscience.

Buss (1961) comments on the reliability of the test, as he did more testing and retesting of

college students. He found that correlations indicated moderate reliability for most of the scales and poor reliability for negativism. He found that the item analysis tended to reduce reliability because some scores had very few items. He makes the following comment, however, : "In order to add items and thereby increase reliability of the scales, it would be necessary to adopt less stringent criteria for item analysis. It was felt that allowing some unreliability was the lesser of the two evils" (Buss, 1961, pg. 175).

"The items were selected on the basis of a rationale, which consisted of a classification of the varieties of aggressive behaviour. In constructing items, several different item-writing techniques were used in an attempt to minimize artifacts in the subjects' responding. The inventory was developed along standard test construction lines, with the use of item analysis factor analysis , and the collection of norms." (Buss 1961, pg.181)

Despite Buss' comment about reliability being sacrificed to some extent the Hamilton Fish Institute on School and Community Violence USA (Hamilton Fish, 2003) sees the inventory as one of the earliest reliable and valid scales to measure hostility and has been widely used in research studies. For example, the U.S. Army Physical Fitness School, Ft. Harrison, Indiana used the Buss-Durkee to assess physiological and psychological states accompanying anabolic-androgenic steroid use in male weight lifters. (Bahrke, Wright, Strauss and Catlin, 1992). Even today despite the fact that since 2000 there has been a revised version of the scale, (The Aggression Questionnaire: Buss & Warren, 2000; Lambert, 2001), the Hamilton Fish Institute is still using the original scale.

9.1.2.8 THE ROTTER INTERNAL-EXTERNAL LOCUS OF CONTROL

(see appendix 8)

Locus of control refers to the person's perceptions of control and it might be predicted that perceptions of control are most adaptive in situations where control can actually be exercised. (Joseph, Williams and Yule , 1997).

A high score indicates external locus of control. Rotter reported satisfactory reliability and validity for this scale (Rotter 1966, Dimitrovsky, Schapira-Beck, Itskowitz, 1994).

Dag, (1991) investigated the reliability, validity, and factor structure of Rotter's Internal-External Locus of Control Scale in a Turkish sample. The Rotter Scale was administered to 2 groups of university students . Their findings indicated that the Rotter Scale had adequate internal consistency and test-retest reliability.

Layton (1985),Ludtke and Schneider,(1996) and Lange and Tiggemann (1981) found that test-retest correlations revealed Rotter's Internal-External Locus of Control Scale to be stable over time.

Mitchell (1997) comments on the established reliability and validity of the Rotter Scale.

This is a questionnaire of 29 items testing internal or external locus of control.

The person is asked to make a choice between two statements.

e.g. (Select and cross that alternative which you PERSONALLY BELIEVE TO BE

MORE TRUE.)

I MORE STRONGLY BELIEVE THAT :-

- a) Children get into trouble because their parents punish them too much.
- b) The trouble with most children nowadays is that their parents are too easy with them.

9.1.3 Scoring of data

The biographical data in the General Information Questionnaire and the Readjustment Rating Scale could be objectively scored.

The MCMI-11 was scored using a computer program provided for this purpose (de Beer, 1995)

The Buss-Durkee Scale of Aggression was scored according to the given norms in the manual (Buss, 1961)

The Beck Hopelessness scale was scored according to given norms (Beck and Weissman, 1974).

The Rotter Internal-External Locus of Control Scale was scored according to the norms

given. (Rotter, 1966).

The Dysfunctional Attitudes Scale was scored according to the norms given in the journal article. (Parker, et. al., 1984).

9.1.4 Statistical procedures

9.1.4.1 Explanation of statistical terms used in this study

Probability:

Probability lies between 1 and 0

Probability runs from Absolute Certainty (At value of 1) to

Chance 50-50 (At value .5) to Absolute Impossibility (At value 0)

Therefore $p=1$ is certainty.

$p=.5$ is Chance 50-50

$p=0$ is absolute impossibility (Moroney, 1952)

The Chi Squared Distribution tests essentially whether the observed frequencies in a distribution differ significantly from the frequencies which might be expected according

to some assumed hypothesis (Moroney, 1952).

The Null hypothesis that the observed discrepancy between the frequency of , for example, head and tail on throwing a coin, could have arisen by chance (Moroney, 1952).

Degrees of freedom represent the number of classes whose frequency may be assigned arbitrarily. The number of degrees of freedom is equal to the number of frequencies which could arbitrarily be entered into the table,. without disturbing the totals (Moroney, 1952).

The lower the level of significance, the more significant the statistical results. For instance, the .0.1% level of confidence would demand a value of X^2 so large that it would be exceeded by chance only once in a thousand similar experiments (Moroney, 1952).

9.1.4.2 The Kruskal Wallis median test

Non- parametric test

"The Median test is a version of the Kruskal-Wallis ANOVA in that it frames the computation in terms of a contingency table. Specifically, the number of cases in each sample will be counted that fall below the common median, the Chi-square value is computed for the resulting 2 x k samples contingency table. Under the null hypothesis (all samples come from populations with identical medians), we expect approximately 50% of all cases in each sample to fall above or below) the common median. The Median test is

particularly useful when the scale contains artificial limits, and many cases fall at either extreme of the scale ('off the scale'). In this case the Median test is in fact the only appropriate method for comparing samples" (STATISTICA for Windows Release 4.5 1993; Help Section on "Nonparametrics - Kruskal-Wallis ANOVA and Median test.)

9.1.4.3 Statistical analysis

The Kruskal-Wallis ANOVA and Median test was used as a statistical measure on the following tests:

9.1.4.3.1 MCMI- II (Millon Clinical Multiaxial Inventory-II)

On the MCMI-II where the compliance factor was the independent variable and the traits (i.e. of Disclosure, Desirability, Debasement, Schizoid, Avoidant, Dependant, Histrionic, Narcissistic, Antisocial, Aggressive-Sadistic, Compulsive, Passive-Aggressive, Self-Defeating, Schizotypal, Borderline, and Paranoid) and Clinical Syndromes, (i.e. Anxiety, Somatoform, Bipolar Manic, Dysthymia, Alcohol Dependence, Drug Dependence, Thought Disorder, Major Depression and Delusional Disorder) were the dependant variables.

9.1.4.3.2 The Dysfunctional Attitudes Scale (DAS)

On the DAS where the compliance factor was the independent variable and Approval

need, Tenativeness, Anaclitic Self esteem, External self esteem and general self esteem were dependent variables.

9.1.4.3.3 The Beck Hopelessness Scale (BHS)

On the BHS where compliance was the independent variable and Hopelessness was the dependent variable.

9.1.4.3.4 The Buss-Durkee Scale of Aggression (BDHI)

On the BDHI where the compliance factor was the independent variable and Assault, Indirect Aggression, Irritability, Negativity, Resentment, Suspicion, Verbal aggression and Guilt are the dependent variables.

9.1.4.3.5 The Rotter Internal-External Locus of Control

On the Rotter Internal-External Locus of Control where the compliance factor was the independent variable and Locus of control was the dependent variable.

9.1.5 Construction of a prediction model for the present study

9.1.5.1 Introduction

Discriminant Analysis is a very useful tool 1) for detecting the variables that allow the researcher to discriminate between different (naturally occurring) groups and 2) for classifying cases into different groups with a better than chance accuracy (STATISTICA for Windows Release 4.5 1993; Help Section on Discriminant Function Analysis.)

Discriminant Analysis performs the analysis in two parts. First the program will compute for all selected variables the total variance/covariance matrix. In the actual analysis the program uses a sweeping algorithm...to invert the two matrices. In backward stepwise discriminant analysis (as was used here), the program will choose at each step the variable for exclusion from the model that shows the smallest F value (less than the respective F to remove value) (STATISTICA for Windows Release 4.5 1993; Help Section on Discriminant Function Analysis.)

Stepwise Discriminant Analysis is probably the most common application of discriminant function analysis to include many measures in the study, in order to determine the ones that discriminate between groups. The purpose is to build a 'model ' of how it can best be predicted to which group a case belongs.

In backward stepwise analysis the program will first include all variables in the model and then, at each step, eliminate the variable that contributes least to the prediction of

group membership. Thus as a result of a successful discriminant function analysis , one would only keep the 'important ' variables in the model , that is, those variables that contribute the most to the discrimination between groups... In general the program will continue to exclude variables from the model if their significance is less than the user-specified F to remove (STATISTICA for Windows 4.5 ,1993)

It is important to note that "A acommon misinterpretation of the results of stepwise discriminant analysis is to take statistical significance levels at face value. "

(STATISTICA for Windows 4.5 ,1993) When the program, STATISTICA, decides which variable to include or exclude in the next step of the analysis, it will actually compute the significance of the contribution of each variable under consideration. Therefore, by nature, the stepwise procedures will capitalize on chance because they 'pick and choose' the variables to be included in the model so as to yield maximum discrimination. Thus when using the stepwise approach the researcher should be aware that the significance levels do not reflect the true alpha error rate, that is, the probability of erroneously rejecting HO (the null hypothesis that there is no discrimination between groups .) (from STATISTICA (1993) Help, Discriminant Function Analysis - Notes and Technical Information).

General Notes

In this study, therefore, other traits which were significant at the 5% and 10% level were not excluded from the general interpretation of results and the interpretation was not exclusive to the traits of debasement and schizotypal chosen by the discriminant model

For instance, the trait of depression was the most significant of all the factors and yet was not included in the model.

9.1.5.2 Construction of the Model

In this procedure we determine the variables that normally lead to compliance and construct the associated prediction model via a linear discriminant function analysis.

The variable that is predicted in the model building process is compliance, termed 'COMPLIANT' in this model.

For the purposes of this study the following terms are representative:

Compliant =2 indicates compliance, and

Compliant =1 indicates non compliance.

9.1.5.3 Theoretical background

The Linear Discriminant Function Analysis

This is a classification model based on a multivariate normal distribution assumption of the observations. The model computes the posterior probability of a compliance as:

$$Pr(Compliant_x) = \frac{p_2 f_2(x)}{p_1 f_1(x) + p_2 f_2(x)} \quad (1.1)$$

and that of a of noncompliance as:

$$Pr(Noncompliant_x) = \frac{p_1 f_1(x)}{p_1 f_1(x) + p_2 f_2(x)} \quad (1.2)$$

where p_i ($i=0,1$) is the prior probability of compliance and

$$f_i(x) = \frac{e^{-0.5(x-\bar{x}_i)^T S^{-1}(x-\bar{x}_i)}}{(2\pi)^{p/2} |S|^{1/2}}, \quad i=0,1 \quad (1.3)$$

is the probability density function.

On the basis of (1.1) an individual is classified as non-compliant if:

$$y = (\bar{x}_1 \bar{x}_2)^T S^{-1} [x - 0.5(\bar{x}_1 + \bar{x}_2)] > \log\left(\frac{p_0}{p_2}\right) \quad (1.4)$$

and as compliant otherwise, where $\bar{x}_2$ and $\bar{x}_1$ are the mean vectors of compliant and non-compliant and S is the pooled covariance matrix.

9.1.5.4 Model fitting

Since the discriminant function analysis is based on the assumption of normal distribution of the variables, a logarithm transformation was first applied to all the variables.

The stepwise procedure of the discriminant function analysis was applied, placing as variables all the traits of the MCMI2 i.e. Disclosure, Desirability, Debasement, Schizoid, Avoidant, Dependant, Histrionic, Narcissistic, Antisocial, Aggressive-Sadistic, Compulsive, Passive-Aggressive, Self-Defeating, Schizotypal, borderline, Paranoid, Anxiety, Somatoform, Bipolar Manic, Dysthymia, Alcohol Dependence, Drug Dependence, Thought Disorder, Major Depression and Delusional Disorder.