A Cross-sectional Study of Behavioural Style and Associated Work-related Stress in the South African Context

by

Beryl Ruth P igsley.

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Contents

A Cross-sectional Study of Behavioural Style and Associated Work-related Stress in the South African Context.

Beryl R. Pugsley

Abstract

This study examines the distribution of the behavioural dimensions measured by the Style Analysis Instrument. Research previously conducted in the USA is compared with the South African data collected. The distribution of the dimensions, Dominance, Influence, Steadiness and Compliance (DISC) in the South African genders and the Afrikaans, Black, English and Indian population groups is investigated. Data were collected from three organisations that process the Style Analysis questionnaires, and analysed to ascertain significant differences between the various groups, and correlations between the various behavioural dimensions. Significant differences were found between the USA sample and the SA sample, while lesser differences were found within the SA subgroups. Based on the research of Warburton and Suiter, which established that a disparity between the Adapted Style, i.e. the behavioural style of the individual in the workplace, and the Natural Style, i.e. the inherent behavioural style of the individual, is a predictor of stress in the workplace, an investigation was conducted to discover which South African gender or population group experiences the most stress in the workplace. Overall, the female gender and the Black population group manifest the highest stress indicators within the South African context.

Chapter1

Introduction

1.1 Motivation for the study.

During this time of reconstruction and development in South Africa, the job market has gone through substantial changes. For example, the distribution according to population group in 1994 was, 50,5 % African/Black workers, 11,9% Coloured workers, 4,7 %Indian/Asian workers, 27, 5 % White workers and 5,5% unspecified workers (Manpower survey, 1994). The 2000 statistics for this distribution are 70% African/Black workers, 10% percent Coloured workers, 3% Indian/Asian workers and 17% White workers. (Department of Statistics, SA Government, 2000). In addition to this, unemployment is high with many people taking whatever employment they can obtain. The official unemployment rate is 26,7% (Labour Force Survey, February 2000). This situation of flux, change, uncertainty and insecurity, along with other factors such as crime and violence, has resulted in increased stress and stress related disorders among South Africans.

While psychotherapy, counselling and stress management programmes have developed significantly, primary prevention to reduce stress-provoking factors is a priority. This study investigates a potential stress-provoking factor, namely, poor job fit.

If poor job fit is a predictor of a stress response then this problem can be addressed by improving screening and placement techniques. By identifying whether any particular group, identified by ethnicity, is particularly prone to a stress response, intervention can be targeted at that group. Adequate career counselling can also be provided to those sectors of the population that show

greater potential for stress due to poor job fit. These interventions would contribute on a primary health care level, where "prevention is better than cure". On a secondary level, employees who are prone to stress responses or manifest job dissatisfaction, alcohol abuse or absenteeism can receive counselling to improve this situation.

Psychology theory has shown that people can be classified into behavioural types. Throughout history, scientists and researchers have observed basic behavioural similarities. Hippocrates, 400 BC, identified four types of temperaments, namely, sanguine, choleric, phlegmatic and melancholic. Extending into the 20th century, Jung published *Psychological Types* in 1921. From the work of William Moulton Marston (1893 – 1947), various behavioural styles have been identified. Over the years, various analysis instruments have been developed. The following psychological instruments are well known: Myers -Briggs Type Indicator, Cattell 16 Personality Factor Questionnaire, and the Minnesota Multiphasic Personality Inventory. Based on Marston's theory an instrument, DISC, that analyses behavioural style, was developed. Historically, behavioural characteristics have been grouped together into four quadrants or styles. People with similar styles tend to exhibit specific types of behaviour. The DISC *Style Analysis* Instrument names these four quadrants/dimensions: **D**ominance, **I**nfluence, **S**teadiness, and **C**ompliance.
The *Style Analysis* instrument differentiates between natural (inherent) style and adapted (environmental) style. Natural style remains constant, but adapted style varies considerably, depending on the environment. We tend to adapt our behaviour in order to survive or succeed in a specific environment. The *Style Analysis* instrument identifies both the basic behavioural style (called Natural Style) and the Adapted Style. Each dimension is represented by plot points on two graphs, Graph I and Graph II. The Natural Style dimensions are represented by plot points on Graph II, while the Adapted Style dimensions are represented by plot points on Graph I (see Appendix B). Research done by Warburton and Suiter (1992) using the DISC *Style Analysis* instrument concluded that a large

disparity between the natural and adaptive styles is a predictor of problems such as stress, occupational dissatisfaction, mental and physical illness, alcohol abuse and absenteeism. This research therefore concluded that there is a correlation between job fit and stress. Job fit is measured by the difference between the Adapted Style (Graph I) and the Natural Style (Graph II). The greater the similarity between the two graphs, the better the job fit.

The purpose of this investigation is to investigate the multicultural use of the *Style Analysis* instrument in South Africa, i.e. how the distribution of the four dimensions in the SA subgroups compare with the results obtained by Warburton and Suiter in the USA. Secondly, to compare the incidence of the disparity between Graph I and Graph II in various population groups in South Africa. From the information gleaned recommendations can be made as to how to improve job fit and reduce stress-related problems in the workplace.

1.2 Statement of the problem

Previous research done by Warburton has established a relationship between disparity of style and stress. Using these research results this study will investigate the incidence of style disparity of the employed in the two genders and the Black, Indian, English and Afrikaans population/language groups in South Africa. In other words, the aim is to establish whether or not the different groups exhibit differing degrees of style disparity. If they do, based on Warburton and Suiter's research, it can be concluded that different groups have a greater or lesser potential for stress in the work environment. In other words, this study is exploratory in nature to establish whether or not there is a problem area. The reasons for this do not form part of this study but create a platform for further research. There are many variables that could influence employment stress, such as:

- Formal or informal employment sectors.
- Primary, secondary or tertiary industry.

- Age.
- Tenure.
- Hierarchical level in the organisation.
- Level of responsibility
- Danger factors, etc.

In other words, irrespective of the above, (i.e. educational level, responsibility, hierarchical level, danger, etc,) the question is whether men and women, Black, Indian and White are well suited to the jobs in which they are employed. Poor fit can be used as a predictor of stress.

Some of the benefits of this study could be to improve career counselling, psychometric testing, screening and placement of the vulnerable group/s. It could also indicate those areas when stress management programmes could best be implemented.

1. 3 Aims of the study

- To test the universality of the DISC instrument in the South African context. i.e. to compare the SA statistics with those obtained in the USA.
- To compare the distribution of the dimensions D, I, S and C in the genders and various population groups (population groups) in South Africa
- To investigate style disparity in the work environment of various population groups in South Africa in order to gain information is to which gender or population group experiences the most stress.

1.4 The DISC *Style Analysis* Instrument

The DISC *Style Analysis* Instrument has been extensively used worldwide. Relevant research involves testing of the following:

- Internal reliability
- Face validity.

- ξ Construct validity.
- ξ Predictive validity.
- ξ Universal validity (Watson, 1989).

1.5 Organisation of the Study.

1.5.1 Theoretical Exposition and Literature Search

This research includes a theoretical exposition of personality, behaviour, style, types, traits and other related concepts as well as a theoretical exposition on stress. Also included is an in-depth literature review of personality/temperament/ behavioural types, predisposition to stress and use of the DISC instruments.

1.5.2 Research Design

The research is of a quantitative, post hoc, quasi-experimental nature.

1.5.3 Sample

The study sample consists of men and women of the population groups, Black, English, Afrikaans and Indian, taken at random from an existing database.

1.5.4 Method of Scoring

The DISC Style Analysis Instrument is a computerised instrument and the relevant computer program provides the scoring and graphs. Copies of the questionnaire and of the graphs are attached as Appendix A and Appendix B.

1.5.5 Method of Data Analysis

Descriptive statistics, comparing the results obtained from this research with the research done in the United States, are given.
Inferential statistics: Using an interval scale to measure disparity, 2 way ANOVAs with post hoc tests or MANOVAs with post hoc tests have been done.
Where applicable correlation coefficients have been established, t-tests and chi-square tests have been done.

1.6 Plan of Study

This study is organised as follows:

Chapter 1: Introduction.
Chapter 2:Theoretical Exposition of Behavioural Style
Chapter 3:Theoretical Exposition of Stress
Chapter 4: Research Context.
Chapter 5: Methodology.
Chapter 6: Presentation of Results.
Chapter 7: Discussion and Conclusion.

Chapter 2

A Theoretical Exposition of Behavioural Style.

2.1 Introduction:

In this chapter the definitions, history, and theoretical background to the understanding of behavioural types, personality traits, dispositions and temperaments will be discussed. A comparison will also be made of the different assessment tools that are in use for measuring personality and behaviour.

The purpose of this chapter is, firstly, to be able to distinguish clearly between the terms used by the different theorists, so that the reader may understand exactly what constructs the *Style Analysis* measures, and secondly, to give clarity on the uniqueness of the *Style Analysis* instrument in contrast to other instruments.

2.2 Definitions.

In order to understand the differences between various constructs and to clearly identify which constructs are being used in this research, it is important to define the terms.

In his book, *Personality: A Psychological Interpretation*, Allport (1937), gives clear definitions of various terms. Some of these are:

ξ Individuality:

Individuality is the separateness and uniqueness of each human being. In addition to separateness and uniqueness, a human being displays a psychological individuality, an amazingly complex organisation comprising his

distinctive habits of thought and expression, his attitudes, traits and interests, and his own peculiar philosophy of life. It is this total manifold psychophysical individuality that is commonly referred to as personality (Allport, 1937: 24).

ξ Personality

Allport contends that there is no single correct definition of *personality*. He therefore quotes various definitions. He calls Prince's (1924) definition an *omnibus* definition. "Personality is the sum total of all the biological innate dispositions, impulses, tendencies, appetites, and instincts of the individual and the acquired dispositions and tendencies acquired by experience" (Allport, 1937: 43). He calls Warren and Carmichael's (1930) definition an *integrative* definition. "The entire organisation of a human being at any stage of his development" (Allport, 1937: 44). His own definition is that "personality is the dynamic organisation within the individual of those psychophysical systems that determine his unique adjustment to his environment" (Allport, 1937: 48).

ξ Temperament and disposition:

Temperament refers to the characteristic phenomena of an individual's emotional nature, including his susceptibility to emotional stimulation, his customary strength and speed of response, the quality of his prevailing mood, and all peculiarities of fluctuation and intensity in mood. These phenomena are regarded as dependent upon constitutional make-up and therefore largely hereditary in origin (Allport, 1937: 54).
Closely aligned to this, is the idea of dispositions, which Allport sees as those temperaments that are almost unchanged from infancy throughout life.

ξ Character.

"Character is the moral estimate of the individual"; i.e. it is an evaluation.

(Allport, 1937: 51)

ξ Traits

Allport defines a trait as a biophysical concept. "A trait is a constant directing psychic force which determines the active or reactive behaviour of the individual" (Allport, 1937: 287).

ξ Attitude

Just as a trait is a form of readiness for response, which guides behaviour, so too is an attitude. However, there are three differences. An attitude may be specific or general, whereas, a trait is always general. An attitude has a well-defined object of reference, i.e. it has a point of view, whereas, a trait is a manner of behaving. An attitude implies acceptance or rejection of an object; i.e. it can be favourable or unfavourable, whereas, a trait is neutral (Allport, 1937: 293).

ξ Type

Allport defines this as a biosocial concept. An individual has a trait but fits a type. Types do not exist in people but in the eye of the beholder, whereas, traits are within the individual. "Every typology is based on the abstraction of some segment from the total personality. They placed boundaries were boundaries do not belong. They are artificial categories" (Allport, 1937:297).

ξ Trait-names

Allport estimated that there are 18,000 English terms designating distinctive and personal forms of behaviour. From these, trait-names have been chosen. Consequently, trait-names are symbols that are socially devised (from a mixture of ethical, cultural and psychological interests) for the naming and evaluation of

human qualities. A trait-name is a range name. Although traits are real enough entities, trait-names are essentially blankets, covering one trait in one person and another similar trait in another person. Although perceived as similar and labelled identically, a trait is never, strictly speaking, exactly the same in two different human beings (Allport 1937: 310).

ξ Style

As already mentioned, no two people exhibit precisely the same trait. For example, each of two men may be aggressive, but the style and range of the aggression in each case is noticeably different. In other words, they have a common trait, but a different style. "Style is the particular individualised manner of execution that permeates any highly integrated volitional activity" (Allport, 1937: 494).
Traits therefore, initiated behaviour or create a state of potentiality to activity, whereas style is the manner of execution of behaviour.

Some other definitions may help to elaborate on the above definitions given by Allport:

ξ Personality.

Rorer (1992) defines personality as an individual's enduring, persistent response patterns across a variety of situations. These response patterns are made up of dispositional tendencies, motivations, attitudes, and beliefs all combined into a more or less integrated self-concept (Kragness & Rening, 1996: 13).

Personality refers to all the attributes (such as cognition, values, attitudes, habits, emotions, prejudices and intentions) that determine the person's behaviour in interaction with the environment (Meyer, Moore & Viljoen, 1997).

ξ Emotions.

Smith and Lazarus (1992) define emotions as a complex state involving bodily changes, mental excitement or strong feeling and usually an impulse toward behaviour. By their nature, emotions are not enduring. Emotions are part of personality theory but not the whole of it (Kragness & Rening, 1996:13).

ξ Psychological types

Du Toit (1983) in the manual for the use of the *Jung Personality Questionnaire*, defines *psychological types* as the combination of attitudes and functions. In Jung's typology, extraversion and introversion are attitudes, while thinking, feeling, sensation and intuition are psychological functions (du Toit, 1983).

ξ Behavioural style

Behavioural style is a person's manner of doing things (Bonnstetter, Suiter & Widrick, 1996: 6)

ξ Personality vs. Behaviour

Murray describes the structure of personality as well as the structure of behaviour. Regarding personality, Murray maintains that although it is continually changing and developing, it consists of the relatively permanent regulators of behaviour, which he calls *establishments* of personality. E.g. habits, interests, knowledge, values, goals and needs. On the other hand, he sees behaviour as consisting of internal behaviour, such as thinking, feeling, remembering, evaluating and planning and external behaviour, such as eating food or chopping wood. Internal behaviour is not directly observable whereas external behaviour is (Meyer et al., 1997).

To integrate the above definitions in the light of this research, it is important to note that:

The *Style Analysis* measures **behavioural style** in terms of 4 **dimensions**, namely, *dominance, influence, steadiness and compliance.*

In this regard it is worth repeating that behavioural style is not the same as personality, emotions, traits, temperament and disposition but rather that:

"Style is the particular individualised manner of execution that permeates any highly integrated volitional activity" (Allport, 1937: 494),
and
"Behavioural style is a person's manner of doing things" (Bonnstetter, Suiter & Widrick, 1996: 6) i.e. behavioural style is a much broader term including internal, external and interactive factors.

Similarly, dimensions are not the same as traits, types or personality factors but rather, dimensions are behavioural factors that all people exhibit in varying degrees of intensity.
The following figure illustrates the connection between the various constructs.

Not observable		**Observable**
Collection of **traits** plus other factors* determines **Personality** plus other factors**	determines	**Behaviour** Seen as a **type** Executed as a **style**

* such as attitudes,values, emotions,etc.
**such as environment, health, etc.

Figure 1

2.3 The History of Behavioural Styles.

At a Congress of Swiss psychiatrists in Zurich in 1928, Jung made the following statement:

From earliest times attempts have been made to classify individuals according to types, and so to bring order into the chaos. The oldest attempts known to us were made by oriental astrologers who devised the so-called trigons of the four elements –air, water, earth and fire. The air trigon in the horoscope consists of 3 signs of the zodiac, namely, Aquarius, Gemini and Libra. Water, earth and fire similarly consist of 3 signs. According to this age-old view whoever is born in these trigons will have a corresponding temperament and fate (Jung, 1971: 531).

Pythagoras, in the sixth century BC, is thought to be the earliest practitioner of physiognomy, which attempts to judge a person's character from the external features of the body and face, in relation to the similarity that these features have to animals. It was believed that if there were a similarity between a person and an animal then the person would have similar psychic properties to the animal. E.g. someone who looked like a fox would be sly. Aristotle also supported this belief (Foxcroft & Roodt, 2001).

The idea of the four elements (air, water, earth and fire) being fundamental to everything was continued by Empodocles, 444 BC, the founder of the school of medicine in Sicily. He believed that these four elements could be combined in an infinite number of ways, just as four different colours can create a range of shades.

Hippocrates, 400 BC, noticed the effect of the climate and the terrain on the individual. He defined four types of climates and terrains and four types of people based on the environment in which they were raised. Later, he described

four temperaments (sanguine, melancholic, choleric, and phlegmatic) associated with four bodily fluids (blood, black bile, bile, mucous).

Galen, 130 AD-200 AD, a Roman, also believed that the bodily fluids affected behaviour and temperament and that the climate influences disposition. The bodily fluids he described were blood, yellow bile, black bile and phlegm while the conditions acting on the body were warm, cold, dry and moist (Bonnstetter et al., 1996).

The first theory and of how the brain produces behaviour was the phrenological theory of Franz Josef Gall (1758-1828) and Johann Casper Spurzheim (1776-1832). Gall suggested that different cortical areas have different functions because he noticed that people with bulging eyes had good memories. Spurzheim called the study of the relationship between the skulls superficial features and behaviour, phrenology. A bump on the skull indicated a well-developed cortical gyrus resulting in an enhanced faculty, while a depression on the skull indicated an underdeveloped gyrus and therefore a lesser capacity for some particular behaviour (Kolb & Wishaw, 1996).

In 1921, Jung (1875-1961) published his book *Psychological Types* and in it traced the history of typology. He discusses the classical and medieval typologies of Tertullian of Carthage, 160 AD, Origen, 185 AD, and Schiller, 1795. He discusses Nietzsche, 1871, and his book *The Birth of Tragedy* in which he describes a fundamental pair of opposite dispositions: the *Apollinian* representing the individual with inward vision, and the *Dionysian*, representing the individual who displays the liberation of unfounded instinct and intoxication (Jung, 1971:138). Jordan described two character types, namely, *action* and *reflection* (Jung, 1971: 147). After discussing the "type problem" in poetry, psychopathology, aesthetics and philosophy, Jung outlines William James' (1911) types of temperament. "Just as in the domain of manners and customs we distinguish conventional and easy-going persons, in politics, authoritarians

and anarchists, in literature, purists and realists, in art, classicists and romantics, so in philosophy, according to James, we define two types, the rationalist and the empiricist" (Jung, 1971: 300). James defined the rationalist as "your devotee of abstract and eternal principles", and the empiricist as "the lover of facts in all their crude variety" (Jung, 1971: 300). In other words the rationalist goes by principles while the empiricist goes by facts. The rationalist can be described as tender-minded, idealistic, optimistic, dogmatic and religious while the empiricist can be described as tough-minded, materialistic, pessimistic, sceptical and irreligious.

Jung regards the human being as a complex energy system and uses the term *libido* to refer to physical as well as psychic energy. The libido is channelled largely by means of two processes, namely, *progression* and *regression*. Progression is the daily advance of the process of psychological adaptation to environmental conditions, while regression is directed towards adaptation within the psyche. Parallel to these two processes, Jung distinguishes two types of attitudes depending on the direction in which psychic energy is channelled, namely *introversion* and *extraversion*. Introversion is the inner directedness of psychic energy based on the subjective experience of the ego, while extraversion is directed towards an external reality, i.e. people, objects and events outside the ego. Both attitudes are present in all people although one is usually dominant and conscious and the other subordinate and unconscious. Besides these two attitudes, the psyche has four functions, namely, *sensation, intuition, thinking* and *feeling*. Jung classifies sensation and intuition as irrational functions and thinking and feeling as rational functions. Sensation is the way in which the psyche experiences external impulses through the senses. Intuition refers to unconscious perception on a subliminal level. Thinking is a logical and structuring function directed towards understanding and explaining the world. Feeling is an evaluative function of judging what is good or bad, positive or negative, right or wrong and is the basis for feelings of pleasure, sadness, anger or love (Meyer et al., 1997).

... specific types whose peculiarities are due to the fact that the individual adapts and orients himself chiefly by means of his most differentiated function. The former I would call attitude-types, distinguished by the direction of their interest, or of the movement of libido, the latter I would call function-types. The attitude-types are distinguished by their attitude to the object. The introvert' s attitude is an abstracting one, intent on withdrawing libido from the object. The extrovert's attitude is constantly related to, and oriented by, the object (Jung, 1971: 330).

At a lecture delivered at the International Congress of Education in Switzerland in 1923, Jung explained: "Strictly speaking there are no introverts and extroverts pure and simple, but only introverted and extroverted function-types. Thus there are at least eight clearly distinguishable types, but more if the functions are split into subgroups" (Jung, 1971: 523). On the basis of the dominant attitude and function the eight personality types can be described as the extrovert-thinking type, the extrovert-feeling type, the extrovert-sensing type, the extrovert-intuitive type, the introvert-thinking type, the introvert-sensing type, the introvert-intuitive type and the introvert-feeling type. Jung insists that he does not want to classify people rigidly into the eight types, but rather that all individuals contain elements of each type and can be distinguished from one another based on their preference for channeling psychic energy (Meyer et al., 1997).

In 1928, Marston (1893-1947) published his book *Emotions of Normal People* and although his publication did not receive much attention at the time, it has since been used extensively in the development of instruments for measuring behaviour and personality. Jung's typologies were too limiting and the trait approach provided greater latitude for describing individual differences. An individual could possess many traits and the intensity of the traits within the person could indicate differences in behaviour. However, it was felt that the trait approach was only descriptive and therefore lacking in explanatory power. In his introduction to Marston's book, Geier (1979) highlights the main contributions that

Marston made to understanding human behaviour

- Human behaviour could be studied on a two-axis model according to a person's action in a favourable or an unfavourable environment. This is consistent with Piaget's concept of adaptation, namely, the active and passive components. Piaget called the active component "assimilation", which means that the environment is made to provide the satisfaction the individual wants. The passive component is called "accommodation", which means that the individual learns to accept what the environment has to offer (Geier, 1979:9). By placing the axes at right angles, Marston created a model of four primary emotions, namely, dominance, influence, steadiness and compliance.

Geier's summary of this model, as stated in Marston's book is:
Marston's model of four primary emotions is to be viewed as more than a typology system. Instead, it is dynamic in that it recognises that human beings respond as situations require them to respond; that whatever their biological diversities, they will, if capable of learning, take on the attributes the situations call for (Geier, 1979: 9)

- Marston introduced a hypothetical construct and provided terminology to describe the four emotions. Marston introduced the construct *primary emotion* and then proceeded to define and clarify each of the four emotions. These definitions are:

Primary emotion: An emotion which contains the maximal amount of alliance, antagonism, superiority of strength of the motor self in respect to the motor stimulus, or inferiority of strength of the motor self in respect to the motor stimulus.
Dominance: Characterised by victory of the motor self over an antagonist of inferior intensity.
Inducement: Struggling of the motor self in order to more effectively facilitate the

passage of a weaker motor stimulus.
Submission: Willingness, i.e., the introspective meaning of mutual warmth of feeling between the person submitting and the person submitted to.
Compliance: Subject is moving himself at the dictates of a superior force (Marston, 1979: 13).

ξ Marston clustered traits for each of the four emotions. Marston created lists of adjectives that characterised each of his four emotions. Although his list was a random selection, it was consistent with what Cattell later proposed, namely, that based on a list of the main common traits, a person could be characterised according to a trait profile or psychograph (Marston, 1979).

Psychologists adhering to the person-oriented approach also made a contribution to trait theory, particularly, Murray (1893-1988) and Allport (1897-1967). Phenomenological-existential philosophy influenced person-oriented theory. The focus was on the individual's subjective world of perception and the idea that people attach personal meaning to the things they experience.

Murray's theory places emphasis on the interaction between the person and the environment and, more specifically, on the needs of the person and so-called *press* from the environment. He distinguishes between *alpha press*, which refers to the pressure that actually exists in a given situation, and *beta press, which* refers to the individual's subjective interpretation of the situation. Murray regards behaviour as the result of interaction between the person and the situation and that it is impossible to understand and predict behaviour without taking the situation into account. Identical objects can have varying effects on different people or even the same person at different times. The person's perception must be taken into account (Meyer et al, 1997)

During the 1930s, Allport emphasised that behaviour is goal-directed. To allow

for more successful adaptation and mastery, Allport maintained that an individual's traits must remain flexible, so that the influence of those traits may be changed or eliminated according to the specific demands of the moment. (Kragness & Rening, 1996). Although Allport emphasises the holistic view that the person functions as a whole, his theory has often been referred to as a trait theory and sometimes grouped with the factor analytic theory of Eysenck and Cattell. It is holistic in that each attribute of the person is influenced by all of the others and accentuates the uniqueness of the individual. Allport defines a *psychophysical system* as a disposition to act in certain ways. One of these psychophysical systems is *personality traits*. The main aspects of traits are:

- Traits function in reaction to and in interaction with the environment (adaptive behaviour).
- The behaviour associated with a trait is meaningfully consistent
- Traits are spontaneous and proactive (initiate behaviour).
- Traits have an organised role in the individual's functioning (guide behaviour) (Meyer et al, 1997)

Allport further classifies personality traits in a number of different ways.

As the world approached World War II the focus of research was on job analysis and matching the right person to the job. Raymond Cattell identified broad personality factors using factor analysis and developed a tool for measuring personality, called the *16 PF* in 1943. Other personality measurement tools were developed in an attempt to classify personality characteristics and predict behaviour. Among these was the Minnesota Multiphasic Personality Inventory (MMPI). However, due to measurement problems, lack of construct validity and disappointing results, psychologists lost interest in personality theory by the end of the 1960s. This disinterest continued in the 1970s and 1980s. In the 1990s researchers who identified "five factors" common to most personality measures rekindled interest. With this renewed interest has come a new respect for how difficult it is to obtain meaningful results (Kragness & Rening, 1996).

The five-factor model of personality is a hierarchical organisation of personality traits in terms of five basic dimensions: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. Research using both natural language adjectives and theoretically based personality questionnaires supports the comprehensiveness of the model and its applicability across observers and cultures (McCrae & John, 1992: 175).

Since the 1960s there has been a paradigm shift with psychologists taking a different attitude toward existing paradigms and changing the nature of their research accordingly. Linear, Lockean, scientific tradition, concerned with either/or dichotomies and intrapsychic phenomena was replaced to a large extent by a circular, Kantian, holistic approach that focuses on patterns, relationships and what is observable. Phenomenology, communication theory, systems theory, postmodernism and social constructionism became the order of the day.

General Systems theory studies human functioning in terms of interactional patterns within and between systems. Bateson emphasises the importance of cybernetics in the field of human relationships. This highlights and describes observable patterns of behaviour. Constructivism proposes that people create their own realities through the meaning they ascribe to what they observe. When there is consensus about an observation, Maturana maintains that this has occurred because of a consensual domain in language. Behavioural or personality traits illustrate the existence of a consensual domain within a system (Meyer et al, 1997).

During the last decade, the understanding and practice of psychology from a multicultural prospective has been emphasised. Traditionally, psychology has focused on the Western, middle-class, White male. It has become imperative that all theories and psychometric instruments should be evaluated from a multicultural prospective. So, this historical section will conclude with a brief look at the Eastern and African ideas on personality/behavioural types.

In Eastern thinking the idea of personality types also exists.
Vendanta, an orthodox Indian philosophical tradition divides individuals into three personality types on the basis of the dominant quality.

- A person dominated by tamas is prone to confusion, inattention, depression and languor.
- A person dominated by rajas is aggressive, passionate and very labile.
- A person dominated by sattva is enthusiastic, self-control and resolved.

Similarly, Abhidhamma, the psychological content of the Buddhist writings, lists three main personality types, namely the sensual type, the malicious type, and the deluded type (Meyer et al, 1997).

The African view of humankind is founded on a holistic and anthropocentric ontology, whereby humans form an indivisible whole with the cosmos. Within this indivisible cosmic whole, three orders exist, namely the macro, meso and micro-cosmos. The macro-cosmos is the religious domain, where God and ancestral spirits are encountered. The meso-cosmos is where malignant spirits and sorcerers rule. In understanding the behaviour of Africans the meso-cosmos is an important concept as all conflict, sickness, death and human dynamics are controlled here. Behaviour is not the outcome of intrapsychic or interpersonal dynamics but is attributed to external agents. Thus the individual is not responsible for his behaviour. The micro-cosmos is the domain of the individual person in his everyday, collective life. In this domain there is a big difference between the Western ideas of individual differences, individual rights, autonomy etc. and the African ethos of community survival, unity with nature, collective responsibility and interdependence. However, although there is the emphasis on the collective there is acknowledgement of individual personality traits. This is seen in the practice of the giving of names to an individual to describe his character or behaviour. In Western culture, a name is merely a title whereas in African culture, names are descriptive of the individual.

2.4 A Comparison of Various Assessment Tools for Measuring Personality or Behavioural Types, Traits or Styles.

Personality can be analysed using standardised questionnaires in which the subject selects a reply from various alternatives offered in the scale, thereby reporting the type of behaviour most characteristic of himself. The limitations of these questionnaires is that they are measurements of common traits rather than unique traits and this method lends itself to falsification by the subject if he so chooses or if he is deficient in intelligence, insight or language ability.

Factor analysis attempts to discover non-correlating factors to account for the complex overlapping of scores obtain from a battery of measurements when applied to one and the same population.

Some assessment tools are therefore criterion related, whereas standardised questionnaires are norm related.

Style analysis refers to the study of all types of creative activity of a person.

2.4.1 Jung Personality Questionnaire

The JPQ is a registered psychometric test developed in South Africa for White English and Afrikaans speakers. It is based on the personality types developed by Jung, discussed in the previous section. It was constructed in order to give a delineation of an individual's personality structure in terms of Jung's theory. The aim of the JPQ is not for personality analysis, but for guidance purposes, especially vocational guidance for high school pupils. It is anticipated that the use of the JPQ together with an aptitude test and an interest inventory will facilitate the task of guidance counsellors (du Toit, 1983: 5).

The JPQ is a criterion-referenced test and not a norm-referenced test. In other

words, the person with more extroverted than introverted characteristics, would be classified as an extrovert in any society, irrespective of the distribution of this trait in the population. The JPQ can only be administered by a qualified psychologist or psychometrist, as the scores require conversion to an eleven-point score, interpretation, matching with vocational careers and can be indicative of personality problems (du Toit, 1983).

2.4.2 The Myers-Briggs Type Indicator.

The MBTI was developed in United States by Isabel Briggs Myers and Clarence Myers, in 1962, in an attempt to describe basic human mental processes. It was initially designed for English speakers with a reading level of grade 8 and is appropriate for adults and high school students. Translations of the MBTI have been developed in a number of countries, but until carefully validated translations are available in a particular culture, caution should be used in interpreting the MBTI to non- English speaking people. The use of the MBTI is recommended in counselling couples and family, in education as different types have different learning strategies, and in career counselling and occupational issues and can only be administered by a psychologist or psychometrist.

"The purpose of the MBTI is to make the theory of psychological types described by Jung understandable and useful in people's lives. The aim of the MBTI is to identify the basic preferences of people in regard to perception and judgments, so that the effects of each preference, singly and in combination, can be established by research and put to practical use" (Myers & McCaulley, 1985: 1).

The MBTI contains four separate indices namely, extroversion-introversion (E I), sensing-intuition (SN), thinking-feeling (TF) and judgment-perception (JP). From the four indices, 16 possible combinations called types are created. Each type has its own pattern of dominant and auxiliary processes and the attitudes in which these are habitually used. Attitude refers to extraversion or introversion,

while the processes of perception are sensing and intuition and the processes of judgment are thinking and feeling. Judgment or perception shows the style of dealing with the outside world. "The characteristics of each type follow from the dynamic interplay of the attitudes and processes. The main object of the MBTI is to identify four basic preferences. The indices E SN TF, JP, and I are designed to point in one direction or the other. They are not designed as scales for measurement of traits or behaviours. The intent is to reflect the habitual choice between rival alternatives. Every person is assumed to use both poles of each of the four preferences but to respond first or most often with the preferred functions or attitudes" (Myers & McCaulley, 1985: 3).
The MBTI refers to the 16 combinations by letter designation. For example, the extroverted thinking types are all four types that contain E and T, namely, the ESTP, the ENTP, the ESTJ and the ENTJ. Each group of types has its own characteristics.

2.4.3 The 16 Personality Factor Questionnaire

Using factor analysis, Cattell identified a list of about 20 primary personality traits. From this, he selected 16 and developed a questionnaire for normal adults. The traits in the 16 PF are bipolar, i.e., at the one pole there is a low amount of the traits while at the other pole there is a large amount of the traits. Although Cattell's questionnaire was not guided by any particular psychological theory, Cattell (1943) used the Allport and Odbert word list in his factor-analytic work on dimensions of personality. Allport and Odbert compiled a list of thousands of words that could describe personality.

There are four different versions of the 16 PF that are registered as psychological tests in South Africa, namely, forms A, B, E and SA92. Forms A and B require a reading level of grade 12. Form E has been simplified to lower the reading level of forms A and B. Form SA 92 was developed to eliminate bias in terms of gender and ethnicity and would be the instrument of choice in South Africa.

However, recent research by van Eeden and Prinsloo (1997) concluded that the constructs measured by the 16 PF cannot be generalised unconditionally to the different subgroups in their study, namely, the subgroups using English and Afrikaans as their first language and the subgroups using an African language as their first language (Foxcroft & Roodt, 2001).

The 16PF primary and second order factors are interpreted in terms of a ten-point scale, the resulting scores known as sten scores.

The uses of the 16 PF are: in personnel selection, career counselling, academic counselling, personal development programmes and psychotherapy.

2.4.4 The Minnesota Multiphasic Personality Inventory.

The MMPI was originally developed to assess personality characteristics indicative of psychopathology, using a criterion keying approach. The MMPI items are divided into clinical scales and validity scales. The purpose of the validity scales is to determine whether the person is faking psychopathology. The clinical scales are: Hypochondriases, Depression, Hysteria, Psychopathic Deviate, Masculinity-Femininity Paranoia, Psychasthenia, Schizophrenia, Mania, and Social Introversion.

The MMPI was revised to the MMPI-2 to make it more suitable for "normal" individuals, to update the norms, to make it more contemporaneous and non-sexist and to develop separate forms for adults and adolescents. In South Africa the MMPI has been adapted and translated into Afrikaans and Xhosa and researchers are currently working on adapting and translating the MMPI-2. Besides the form for adolescents, the Personality Inventory for Children has been developed and revised. The revised version has been adapted, translated, and researched in South Africa and indications are that it can be used cross-culturally by qualified psychologists (Foxcroft & Roodt, 2001).

2.4.5 The DISC Instrument.

There are at present many DISC instruments available on the market. Some of these are: the *Style Analysis Instrument*, *Personal Profile System, Personal Profile Analysis* and the *Behavioural Style Analysis*. The instruments mentioned above are not classified at this stage as psychological tests. These instruments have developed from the demand for personality measures that will answer human resource issues.

All of the DISC instruments were developed from the theoretical model of Marston. Different companies competing in the marketplace have developed the various versions and as such have each developed their own particular format, emphasis and analysis. Although some of them are referred to as measures of personality, they differ from other personality assessment tools. Marston's theory had more to do with interpersonal behaviour than with what people are deep down as individuals. Although Marston concentrated on emotions, the modern DISC instruments are measurement of observable traits or behavioural styles. Meehl (1986) describes two kinds of personality traits, namely, *surface traits* that describe observable behaviour and *source traits*, which are those internal characteristics that direct and explain behaviour (Kragness & Rening, 1996). The DISC instruments measure surface traits and the descriptions associated with particular profile patterns reflect behaviours associated with them. In other words, the dimensions D, I, S, and C are not indicative of internal dispositions but are semantic labels for patterns of behaviour that may vary from situation to situation. Originally, Marston labelled the four responses of individuals to features of their environment as:

- The dominant response that acts on an environment perceived as unfavourable to the self.
- The inducement (later called influence) response that acts on an environment perceived as favourable.
- The submissive (later called stability or steadiness) response

accommodates to an environment perceived as favourable.

- The compliance (later called conscientiousness) response accommodates to an environment perceived as unfavourable (Kragness & Rening, 1996: 21)

Most people learn to adapt to different environments and to adjust to different roles and relationships, consequently the DISC instrument will give different results when focusing on different environments.

The DISC response forms are made up of 24 or 28 boxes, depending on the developer of the instrument. In each box there are four rows of adjectives or phrases that describe the person in a particular environment. The individual is required to make one MOST and one LEAST selection from each of the boxes. The responses are plotted onto graphs. The MOST responses are plotted onto Graph I, and the LEAST responses are plotted onto Graph II. Some instruments provide a Graph III, which is the difference between Graph I and Graph II.

The different DISC Instruments have variations in the format of the response form; the interpretation, value and use of the graphs and the computer generated reports. As the instrument used in this research is the *Style Analysis* instrument, the focus from here on will be on this instrument.

The *Style Analysis* instrument measures observable behaviour. It uses only Graph I and Graph II. Graph I is a measurement of *adapted* behaviour, while Graph II to is a measurement of *natural* behaviour. In other words, Graph I generated from the MOST responses, gives the individual's responses to the environment. The focus of this environment could be work, marriage, home or church or any environment to which a person adapts his behaviour. Graph 1 is therefore, the most changeable, since we adapt our behaviour to the environment. It is the " mask" that we put on to cover our true identity and to survive or succeed in a specific environment. It is the behaviour we allow others

to see. Graph II identifies a person's basic behaviour. It is generated from the LEAST responses and is the least changeable, as it represents inherent natural style. Based on the individual's responses to the 24 MOST words, 19,360 different graphs can be plotted. The LEAST responses allow 19,680 different graphs to be plotted. These are computer generated, as are the 384 different reports available. The *Style Analysis* instrument provides computerised and personalised reports on the individual's natural and adapted profile of the four dimensions Dominance, Influence, Steadiness and Compliance. All people exhibit all four behavioural factors in varying degrees of intensity (Bonnstetter et al., 1993).

As an extension of figure 1,the following figure further illustrates the premise on which this research paper is based, namely, that adaptation to an environment that requires a behavioural style significantly different to the person's natural style is stressful. This statement was verified by research done by Warburton and Suiter (1993).

Personality plus other factors*	determines	basic behaviour (Graph II)
Personality plus other factors* plus adaptation to environment	determines	adapted behaviour (Graph I)
*see figure 1		

Figure2

The use of the *Style Analysis* instrument is in personnel issues, career development, team building, communication, management, marketing, sports psychology, conflict management and interpersonal relationships. It is not, at this stage, registered as a psychological test and so can be administered by any trained person, not necessarily a qualified psychologist. Unlike other psychological tests of personality, the *Style Analysis* instrument does not require

interpretation or complicated statistical procedures. The *Style Analysis* instrument was developed in the United States and requires a reading level of grade 9. It claims to be universally applicable and cross- culturally valid. Reports are available in several different languages, but no African languages. Part of this research is to compare the results obtained from the different population groups in South Africa to the results obtained in the United States.

2.4.6 The relationship of DISC to the "Big Five" personality prototypes.

There are only four DISC dimensions whereas there are five of the "Big Five". However, a comparison can be made between the two. Factor I of the Big Five describes Extroversion. Adjectives that measure this factor on DISC correlate with the dimensions D and I. Factor II of the Big Five is generally labelled Agreeableness. Items on the S dimension associate closely with this factor. Across various personality measures, the two factors, extroversion and agreeableness account for most of the measured differences between people. Factor III of the Big Five is often described as an orientation toward work, which is responsible, conscientious and reliable. This is partially overlapped by dimension C. Factor IV on the Big Five list covers stability. The link here with dimension S is obvious. However, at the negative end of Factor IV are items that describe neurosis which DISC instruments do not measure, as DISC instruments were not designed to measure pathology. Factor V is sometimes labelled Openness to Experience and does not seem to be represented on DISC instruments (Kragness & Rening, 1996).

2.5 Conclusion

In this chapter the similarities and differences between various constructs such as personality, behaviour and style have been considered. Similarly, the differences between types and traits and the instruments that measure these constructs have been emphasised. In comparing the different measuring

instruments the focus has been on the aim, purpose, origin, target group, reading level, bias, underlying theory and status of classification of each instrument discussed.

In conclusion, as the *Style Analysis* instrument will be used in this research the following summary can be made. The *Style Analysis* instrument is based primary on Marston's model but is also in harmony with the works of Jung, Murray, Allport, Cattell, and Myers and also with the "Five Factor" theory. For example, compared to the *16 PF*, D and I on the *Style Analysis* can be compared to the extroversion scale on the *16 PF*, S to the feeling scale and C to the items measuring reliability and conscientiousness on the "Superego Strength" scale. However, it must be emphasised that the *Style Analysis* measures observable behaviour (or surface traits) only. A major difference between the *Style Analysis* instrument and instruments such as the MBTI, is that the MBTI allocates individuals to type categories whereas the *Style Analysis* instrument profiles the extent to which the four dimensions, D, I, S, C appear in varying degrees in the individual.

Although the DISC instruments have a lot in common with the broad foundation of personality measurement, particularly with the first three factors of the Big Five prototype, it must be remembered that the DISC instruments are clearly different in method and purpose from instruments used in clinical settings. Most personality instruments used in such settings are designed to distinguish the healthy and unhealthy characteristics of personality. DISC instruments do not intend to do this.

Chapter 3

A Theoretical Exposition of Stress

3.1 Introduction

In this chapter, stress will be defined, the theories around the concept of stress will be outlined and the measurement of stress will be considered. Thereafter, factors relating to coping with stress and the effects of personality and behaviour in dealing with stress will be discussed. In the context of this current research, this chapter should provide an overview of the existing theory showing the connection between stress and personality traits. As personality has a major influence on behaviour, the existing theory regarding stress-prone personality types is relevant to this study. Also, as indicated in figure 2 in the previous chapter and based on the findings of Warburton and Suiter (1993), adaptation to an environment which requires a behavioural style significantly different from the person's natural style is stressful.

3.2 Definitions.

The term stress has been used in conjunction with a wide variety of phenomena and so the term itself is difficult to pin down. Bishop (1994) has suggested that stress can be defined in three ways.

ξ The stimulus view of stress.

According to this view particular events in the environment are likely to produce feelings of tension or upset.

ξ The response view of stress.

This view concentrates on the physiological and psychological effects of a particular event.

ξ The process view of stress.

This approach defines stress as the process that incorporates both the events experienced and the psychological and physiological responses to those events. In other words, the critical dimension of stress is how the person perceives and responds to different events.

"A transaction between a person and the environment that includes the person's appraisal of the challenges posed by the situation as well as available coping resources, along with the psychological and physiological responses to those perceived challenges" (Bishop, 1994: 127).

It can be said that the difference between stress and anxiety can be explained in terms of the physiological and psychological dimensions. Anxiety is the psychological equivalent of stress. It is an individual emotion which when extended to the biological level is stress, i.e. anxiety is the affective equivalent of stress (Lopez-Ibor, 1987). Both phenomena, stress and anxiety refer to the changing environment in which an individual has to maintain a very strict equilibrium or homeostasis. A sudden change in the external environment can put the internal environment at risk. Thus stressful events are changes in the psychosocial situation of the individual. The tension between the external changes and the unspecific response of the individual is stress (at the biological level) and anxiety (at the psychological level). Stress is therefore closely related to adaptation diseases such as, hypertension and autoimmune diseases. (Lopez-Ibor, 1987). Also the idiosyncratic biological reactions of stress are: an increase in perspiration, faster heartbeat and a rise in blood pressure (BP).

Those researchers who have defined stress in terms of stimuli have categorised types of stressors:

ξ Cataclysmic stressors.

Events that have a powerful and lingering negative effect on a whole population,

e.g. wars and natural disasters.

ξ Personal stressors.

Such events as death, divorce and retrenchment.

ξ Background stressors.

Environmental factors such as living in a crime-ridden neighbourhood or working in an unsatisfying job (Comer, 1992).

The definition that conceptualizes stress as a result of cognitive appraisal is given by Lazarus (1966) as "when there are demands on the person which tax or exceed his adjustive resources" (Siddique & D'Arcy, 1984).

3.3 Theories of stress.

Cannon's (1935) Flight-or-Fight Response

As early as 1929 Cannon studied the physiological processes involved in the body's maintenance of homeostasis. When the individual perceives himself to be threatened, there is the physiological stimulation of the sympathetic nervous system (SNS) and the endocrine system. This results in a rise in epinephrine (adrenalin) and norepinephrine (noradrenalin) in the blood which increases the heart rate, BP, blood sugar and respiration, and the movement of the blood toward the muscles preparing the body for flight or fight. This rapid mobilisation disrupts normal functioning and when sustained for long periods of time, can lead to a depletion of the organism's energy reserves and potentially result in health problems. Cannon (1935), in Bishop (1994), described critical stress levels as involving threats of such a magnitude as to disrupt normal homeostasis and create a situation of imbalance (Bishop, 1994:127).

Selye's (1976) General Adaptation Syndrome.

This is a model of the generalised way in which an organism mobilises to protect

itself from harm. The responses fall into three phases:

ξ Alarm.

This is the same as Cannon's (1935) fight-or-flight response during which the sympathetic nervous system is activated.

ξ Resistance.

During this phase the organism continues to fight off the threatening stimuli and in doing so diverts resources from their usual functions, resulting in the depletion of these resources.

ξ Exhaustion.

At this stage the resources for resistance are depleted, and the organism becomes susceptible to physiological damage and diseases, known as diseases of adaptation.

Selye (1976) believed that the reaction to a threat was non-specific and that the physiological changes were the same regardless of the origin of the threat. "Selye defined this non- specific reaction as stress, while he used the term stressors to refer to the stimuli that produced the reaction. In addition, Selye distinguished between harmful stress which he called distress, and positive stress termed eustress" (Bishop, 1994:129). A certain amount of stress, or eustress, is useful as it enhances performance.

Two major criticisms have been level at this General Adaptation Syndrome (GAS) model. Firstly, critics argue that, responses to threats are not non-specific but in fact vary depending on the type of the threat. Mason's (1975) research suggests that there are at least two patterns manifested depending on the different type of stressors. Exposure to stressors does not automatically produce the effects described in the GAS, but rather stressors have the capability of

evoking these responses. The second criticism is directed at the fact that stress in the GAS model is seen as a biological response only and ignores nonbiological aspects of stress (Bishop, 1994).

Lazarus's Psychological Appraisal Model.

According to this model, how events are perceived is more important than the actual events themselves. Stress is seen as a transaction between the person and the environment. The two processes of "appraisal" and "coping" are fundamental to this transaction.

ξ Appraisal.

Appraisal refers to the individual's constant assessment of situations and the resources he/she has for dealing with them. The initial appraisal, known as primary appraisal, is the assessment of the potential danger involved. Secondary appraisal is the assessment of the threat in terms of what the individual believes that he/she can do about it. Although in everyday situations these two types of appraisal are closely integrated, the distinction is made to demonstrate the basic cognitive processes involved. The cognitive process involved in primary appraisal includes the question "Am I in danger?", while in secondary appraisal the question is" What can I do about it?" The individual would consider such things as previous experience, personal capabilities, social support and material resources. The result of these appraisals will determine the level of stress experienced (Bishop, 1994).

ξ Coping

Coping can be defined as the efforts, both cognitive and behavioural, taken to deal with stressful situations. This will be discussed more fully later in this chapter.

3.4 The Assessment of Stress.

Most measures of stress are self-report measures. Depending on the investigator's definition of stress, assessment will focus on the characteristics of the stressors (i.e. influenced by the stimuli-based definition) or on performance, psychophysiological and biochemical responses (i.e. from the response-based viewpoint). A complete analysis requires a combination of measures.

The Social Readjustment Rating Scale (SRRS).

The SRRS was developed by Holmes and Rahe (1967) based on measures of major life events. Holmes and Rahe identified 43 life events that appeared to precede the onset of illness. Ratings from individual subjects were used to obtain a mean value for each event, known as life change units (LCUs). Stress is measured by adding the total LCUs experienced during a specified period (Holmes & Rahe, 1967).

In the light of this present research, it is interesting to note that changes in working conditions feature three times on the SRRS. A change to a different kind of work scores 36 LCUs, while changing responsibilities at work, scores 29 LCUs and a change in working hours or conditions scores 20 LCUs. This goes to show that it is not only job fit that influences stress but also changes in working conditions. These must be regarded as nuisance variables when looking for a relationship between style disparity and stress.

Daily hassles and uplifts.

Lazarus and his colleagues developed two scales, namely, the Hassles Scale and the Uplifts Scale. The Hassles Scale consists of 117 different events generally considered annoying or irritating, while the Uplifts Scale contains 135 positive experiences. A correlation has been established between hassles and

stress (Kanner, Coyne. Schaefer & Lazarus, 1981).

Physiological Measures.

Measures of heart rate, blood pressure (BP), respiration, or glavanic skin response (GSR) are measures of the arousal of the sympathetic nervous system, which is activated by stress.

Biochemical Measures.

As stress has an important impact on the endocrine system, increases in the levels of corticosteroids in the blood or urine can be an indication of stress.

Stress Inventories.

These are self-report measures.
A literature search of recent research on stress related topics reveals that there are many questionnaires and inventories available to measure stress. Some of these are:
Occupational Stress Indicator
Occupational Stress Inventory
Smith Relaxation Inventory
Coping Resources Inventory
Stress Assessment Profile
Coping Inventory for Stressful Situations
Maslach Burnout Inventory
Mainz Coping Inventory

Personality tests.

As already discussed, some personality assessment tools measure types (i.e.

those based on Jung's theory) whereas others measure factors or traits. Using the latter it is possible to pick up underlying stresses or tension.

Using the 16 PF SA 92, depression is indicated if both factor 0 and factor Q4 are high, stress is indicated by a high Q4 score, as well as a combination of low C, high L, high O, low Q3 and high Q4. i.e. the second order factor of *anxiety*. This anxiety factor indicates the individual's emotional adjustment and ability to handle stress.

The first three scales of the MMPI indicate a predisposition to anxiety and depression and the individual scores on these scales can be indicative of stress.

3.5 Stress and Coping

Stress involves a transaction between the person and his environment. People use strategies and resources to determine their adaptations to environmental demands. The coping process includes all of the person's efforts to deal with perceived threats. The stressfulness of a situation depends on the individual's appraisal of the events. What may be stressful to one person may not be to another.

Coping can be defined as the efforts, both cognitive and behavioural, taken to deal with stressful situations. Coping strategies can be either emotion-focused or problem-focused. Emotion-focused coping focuses on controlling the emotional effects of stress, while problem-focused coping is concerned with changing the objective situation. Some researchers have proposed that these two strategies can be seen as a two level process. At the first level is emotion-focused coping, while at the second level the individual examines the possible options and assesses how competent he is to deal with them. Therefore, problem-focused coping occurs on the second level when the individual senses some degree of control (Tomaka, Blascovich, Kelsey & Leitten,1993). These coping efforts can

lead to a reappraisal of the situation and what can be done about it.

Coping is a dynamic process as situations themselves are constantly changing, as are our perceptions of them. Coping is also goal directed, in that it is directed towards managing perceived threats. Coping goals can be accomplished through different strategies. These can be avoidant or nonavoidant strategies. The avoidant strategies have the purpose of directing attention away from the source of stress or the reaction to the stress. Nonavoidant tactics are those in which the person focuses attention on the stressor and its effects. Fletcher (1985) found that avoidant strategies were more effective in the short-term, whereas nonavoidant strategies produced better long-term outcomes (Bishop, 1994).

Lack of control contributes to the experience of stress. Coping strategies provide a sense of gaining control. Behavioural control is the belief that the person has the ability to influence the adversity of the situation. The person does not necessarily have to do anything but must believe that he has the ability to do so. Behavioural control alleviates the negative effects of stress on cognitive performance. Cognitive control is having a cognitive strategy for reducing the effects of stressful situations (e.g. engaging in distractions or focusing on positives).

Of course there are individual differences in perceived control depending on the person's *locus of control.* A *locus of control* refers to the belief that a person has about what determines the outcome of a situation. People with an *internal locus of control* believe that what happens is a result of their own efforts, while people with an *external locus of control* believe that what happens is a result of luck or other people. The locus of control is influenced by other variables such as values (e.g. health is more valuable than career) and context (i.e. the type of situation).

Another factor influencing the person's coping mechanisms is *self-efficacy*. Self-efficacy is the belief that the person has about being able to achieve the desired goals in particular situations. A person with a high self-efficacy is confident in his ability to overcome. A high self-efficacy is generated in situations in which the individual experiences success. Failure leads to a low self-efficacy.

A person's *self-concept* also influences his ability to cope. Two important aspects in this regard are *self-complexity*, which is the ability to make cognitive distinctions between different aspects of life – the higher the self-complexity the greater the buffer against the effects of stress, and *self-esteem* which is the person's sense of self-worth. People who are able to describe themselves in positive terms such as confident, successful or outgoing are better able to handle stressors.

It follows therefore, that certain personality traits act as moderators of stress, whereas other traits are liabilities. Research has been done on the concept of the *disease- prone personality* and the *hardy personality*. Friedman and Booth-Kewley (1987) did a study which showed that people who scored higher on measures of anxiety and depression were at a higher risk for developing diseases such asthma, ulcers, arthritis and headaches while those who scored higher on anger and hostility were at risk for coronary heart disease, asthma and arthritis (Bishop, 1994).

Kobasa (1979) researched the hardy personality concept, suggesting that hardiness serves as a buffer against stress (Bishop, 1994). The three key traits of a hardy personality are *commitment* (a belief in self and what one is doing), *control*, and *challenge* (views stressful events as an opportunity for growth). People with a hardy personality are less likely than others to become ill after stressful events. Another personality style, namely, *the inhibited power motive style,* is believed to contribute to immunological dysfunctioning. People who display this personality style are thought to have a strong need for power but

have been taught to inhibit this need. Instead of seeking powerful positions, dominant relationships or expressions of hostility, they satisfy their need for power in indirect ways by serving people or worthy causes. These people tend to develop physical illnesses more than others do (Comer, 1992).

Behavioural type also influences the experience of stress. For example, Type A behaviour is characterised by excessive time-consciousness, abruptness of speech and gesture, impatience, frustration, hostility, competitiveness and constant striving for control and success. Type A personalities are therefore predisposed to suffering from stress and its physiological consequences, such as high levels of serum cholesterol, hypertension and coronary heart disease (Comer, 1992).

3.6 Conclusion.

The definitions and theories regarding stress emphasise the following:

- Particular events in the environment produce feelings of tension.
- Stress has physiological and psychological effects.
- The individual's appraisal of the situation determines whether it will be regarded as stressful or not.
- Coping involves the individual's efforts to deal with perceived threats and gain a sense of control.
- Coping mechanisms are affected by personal factors such as:
  - locus of control,
  - values,
  - context,
  - self-efficacy,
  - self-concept,
  - self-complexity,
  - self-esteem,
  - personality traits such as commitment, control and challenge,

behavioural style such as Type A behaviour.

The research by Warburton and Suiter (1993) measures stress in terms of job satisfaction, physical and mental health, alcohol abuse and absenteeism (Bonnstetter, Suiter & Widrick, 1993). Job satisfaction is a measure of stress on the emotional level, while physical and mental health are measures of stress on the physiological and psychological levels. Alcohol abuse and absenteeism are examples of coping strategies.

In Warburton & Suiter's (1993) research, the disparity between Graphs I and II, (i.e. between the Adapted Style and the Natural Style), is used as the independent variable and job satisfaction, physical health, mental health, alcohol abuse and absenteeism are the dependent variables. A significant correlation between the independent and dependent variables has been found. The basic premise is that style disparity is indicative of poor job fit, in that the individual has to behave differently in the job situation to what is his natural style. This is a source of stress and so there is a relationship between poor job fit and stress (Bonnstetter et al., 1993).

In terms of the process view of stress presented in this chapter poor job fit is the stimulus producing stress, while job satisfaction and physical and mental health are the psychological and physiological effects of the events. Individual appraisal, coping mechanisms and personality factors will influence the degree of tension experienced by each individual.

However, in the light of all the research done on stress, poor job fit is only one factor influencing stress. Other variables mentioned in this chapter also play a significant role and so it is not a simple matter to make a conclusion concerning which factor is responsible for stress in an individual. Rather, it should be concluded that stress in each individual is associated with numerous factors or events.

Chapter 4

Research Context

4.1 Introduction.

A literature search of the recent research (i.e. research done in the past 10 years) done on behavioural styles and occupational stress was conducted. This revealed a large body of information on one or the other topic. However, a limited amount of research has been done on any combination of the two. Regarding the specific use of the DISC instruments, the research is confined to the work done by the developers and collaborating universities on the various commercial instruments. As the amount of literature on stress, coping, behavioural styles and personality types is so vast, this chapter will only concentrate on the research that is pertinent to the interaction between behavioural style and stress. Thereafter, an overview of the research done by Warburton and Suiter (1993) on disparity in behavioural style as a predictor of stress, as well as a survey of the research into the reliability and validity of the DISC instrument will be given.

4.2 Behavioural Style and Stress.

4.2.1 Jungian Personality Types and Burnout (Stress).

The literature reveals a number of studies done comparing personality types and stress. A number of these use the MBTI as a measure of personality type and the Maslach Burnout Inventory as a measure of stress. In many cases there were mediating factors, which made it difficult to come to decisive conclusions.

In a study using the above-mentioned instruments and examining the relationship among personality types, coping strategies, and burnout in elementary teachers, it was found that coping patterns may be more important than particular coping

resources (Reid, 1999). The three dimensions of burnout are Emotional Exhaustion, Depersonalisation and Personal Accomplishment. In the above-mentioned study significant positive relationships were found between Personal Accomplishment and both Extraversion and Sensing. Several significant relationships were also found between personality type and coping resources (Reid, 1999).

Another study, using the MBTI and Maslach Burnout Inventory, investigated the relationship between leadership styles, personality types and levels of stress in Minnesota school superintendents. The results showed significant relationships between (1) the personality types of Sensing-Intuition and the burnout dimensions Emotional Exhaustion and Personal Accomplishment; (2) the personality types of Thinking-Feeling and Personal Accomplishment. Other variables that influenced burnout were academic preparation, years in current position, multiple individual characteristics, metro or non-metro school districts and the enrollment size of the school districts. This study therefore concluded that the combination of the multiple characteristics of leadership styles, personality types, individual characteristics, and school district characteristics had an effect on the perceived job-related stress of Minnesota school superintendents (Helmstetter, 1999).

Once again, research done by Callison (1995), in the educational field using the above-mentioned instruments, indicated mixed results. Selected findings in his investigation of burnout, personality, and the school administrator, were that: (1) over half of the principals surveyed (of all personality types) experienced high levels of burnout in Personal Accomplishment; (2) principals identified as Extraverts experienced higher level of burnout in Personal Accomplishment than did Introverts; (3) there were no significant differences when comparing selected personal characteristics and burnout or personality types; (4) Introvert-Sensing principals experienced moderate to high levels of burnout in Emotional Exhaustion; (5) principals with less than 20 years experience indicated more

burnout than those with 20 or more years.

In a comparison of intensive-care and non intensive-care registered nurses in primary-care hospital settings it was found that both groups reported higher levels of occupational stress and burnout than reported by the entire sample of nurses, thus suggesting that occupational responsibilities play a major part in stress and burnout. The ICU nurses reported higher levels of Depersonalisation compared with the non-ICU nurses. Analysis of personality types reflected that the ICU nurses were characterised as Sensing, Feeling, and Perceiving and the non-ICU nurses were characterised as Intuitive, Feeling, and Perceiving. This suggests a relationship between choice of job and personality type. All of the nurses employed numerous coping methods to deal with occupational stressors but did not show important differences in coping strategies (Cash, 1997).

In an investigation of the relationships among psychological type, hardiness, coping mechanisms, and burnout in hospital directors, Layman (1996), found that the MBTI personality type of Extrovert was inversely related to high burnout, the MBTI personality type of Intuitive was positively related to Personal Accomplishment (low burnout), the commitment and control components of hardiness were inversely related to burnout as were all of the coping mechanisms selected for this investigation (Layman, 1996).

From these studies using the MBTI and the Maslach Burnout inventory, a relationship is suggested between Extraversion, Intuition and Personal Accomplishment, Introversion and Emotional Exhaustion, and Sensing and Emotional Exhaustion.

4.2.2 Jungian Personality Types and other Stress-related Factors.

The "hardy personality" concept has already been discussed in the theoretical section of this paper. In the light of this discussion the author is of the opinion

that hardiness is a behavioural style that serves as a coping mechanism. This is discussed by Wedderburn (1995) who found that shiftworkers who liked shiftwork have higher scores on hardiness than those who dislike shiftwork. He then discusses whether hardiness is a personality measure, a behavioural style, a coping strategy or a consequence of shiftwork (Wedderburn, 1995).

In studies using the MBTI as a measure of a hardy personality, the following results have been found:

In an investigation of personality hardiness and stress coping in veterinary medical students, it was found that there is no significant difference in personality hardiness and gender, age, year in school, marital status and number of children. Discriminant function analysis revealed escape-avoidance as the only coping style that was significantly predictive of a low hardiness. Use of the MBTI revealed no significant difference in levels of hardiness. However, a chi-square analysis revealed significant gender differences for both the thinking-feeling and judgments-perceiving preferences (Berney, 1998).

In an investigation using the MBTI and the Sense of Coherence Scale, it was found that the prevalence of the thinking function influences significantly the overall sense of coherence and the subjective assessment of comprehensibility and manageability in coping with stressful life situations (Ruiselova & Ruisel, 1994).

In MBTI profiles of Vietnam veterans with Post-traumatic Stress Disorder (PTSD), PTSD inpatients showed a relatively high degree of consistency in personality type, primarily Introversion, Introversion-Thinking and Introversion-Sensing-Thinking. Subjects also revealed an emphasis on impersonal, logical and efficient thinking and an avoidance of emotional ties at the expense of personal interest (Dalton, Aubuchon, Tom & Pederson, 1993).

4.2.3 The Five Factor Model and Stress.

Links have also been found between the personality dimensions of the Five-Factor Model and stress. In their article, *Personality Types and Coping*, Vollrath and Torgersen (1999) summarise the evidence that has accumulated showing that personality is related to both stress and to coping. Neuroticism and Extraversion both turned out to be important predictors of stress and coping. Persons high in Neuroticism experienced more stressful events, whereas persons high in Extraversion experienced both more stressful and more pleasurable events. Moreover, Neuroticism predisposes people to experience negative emotions and distress, regardless of the level of stress, while Extraversion predisposes them to experience positive aspects. Regarding coping, a it has been shown that persons high in Neuroticism engage in passive and maladaptive ways of coping, whereas persons high in Extraversion engage in active coping strategies and seek social supports (Vollrath & Torgersen, 1999). More recently it has been found that the factor, Conscientiousness, is positively related to coping. Conscientiousness assesses the will for achievement, commitment to work, moral scrupulousness, and cautiousness. The remaining two factors, Openness to Experience and Agreeableness are less positively related to coping. Torgersen (1999) created a typology comprising eight types that could represent a unique combination of Extraversion, Neuroticism, and Conscientiousness, namely the *spectator type* (low E, low N, low C), the *insecure type* (low E, high N, low C), the *sceptic type* (low E, low N, high C), the *brooder type* (low E high N high C), the *hedonistic type* (high E, low N, low C), the *impulsive type* (high E, high N, low C), the *entrepreneur type* (high E, low N, high C), and the *complicated type* (high E, high N, high C). Vollrath and Torgersen then investigated the associations of these types with stress and coping. Some types were vulnerable to stress, but effective in coping, whereas other types coupled high vulnerability with poor coping. A MANOVA showed that the personality types differed significantly with regard to levels of stress. The *insecure* and *impulsive types* had the highest number of elevated mean scores

on the stress scales (i.e. the combination of high N with low C). The *brooder type* and the *complicated type* had higher mean scores on one or two stress scales. They share high N and high C, but differ in E. Regarding lower stress scores, the *entrepreneur* and *hedonistic types* had lower mean scores on three stress scales. They share the combination of low N and high E. The two other types, *spectator* and *sceptic types* followed with lower mean scores on two stress scales. They share low N and low E. Taken together, the types combining high N with low C reported the most stress, whereas the types combining low N with high E or high C reported the least stress. Regarding coping, the combination of high E with high C (as in the *entrepreneur and complicated types*) is related to a higher use of problem-focused coping, whereas a combination of high N and low C (as in the *insecure and impulsive types*) is related to reduced use of problem-focused coping. Types combining high E and high C (as in the *entrepreneur type*) showed the most emotion-focused coping, whereas the types combining the low E and low C (as in the *spectator type*) showed the least emotion-focused coping. On the potentially dysfunctional coping scales the *insecure and impulsive types* had the highest scores, i.e. types combining high N with low C (Vollrath & Torgersen, 1999).

Further evidence for Extraversion as an important factor in coping is confirmed by the research of Amirkhan, Risinger and Swickert (1995), who found that extraversion was related to social support seeking, optimism was related to problem solving, and both dispositions were negatively related to avoidance. Extraversion was found to be a significant "behind-the-scenes" factor in determining responses to stressful situations. In this study, self-esteem emerged as a significant predictor of the help-seeking latency (Amirkhan, Risinger & Swickert, 1995).

In a study investigating the association between the major domains of personality and health behaviours, it was found that Conscientiousness and Agreeableness were the strongest personality predictor of health behaviours (Booth-Kewley &

Vickers, 1994). Health behaviours are mediating factors in the experience of stress and so it can be concluded that Conscientiousness and Agreeableness are important dimensions in moderating stress.

A study using the Neuroticism- Extraversion-Openness-Personality-Inventory (NEO-PI) to evaluate the relationship between personality style and the severity of trauma in chronic PTSD victims confirmed that Neuroticism accounted for the majority of the variance in PTSD (Hyer, Braswell, Albrecht & Boyd, 1994).

4.2.4 Type A, B and D Personalities and Stress

Another classification of personality type is that of classifying peoples' behaviour into the so-called Type A personality, which is consistently hostile, cynical, driven, impatient, competitive, and ambitious, and Type B personality, which is more relaxed, less aggressive, and less concerned about time. Research has found a link between Type A behaviour and stress. Once again most research shows that other extenuating factors also play a role. In research done on clergy burnout it was found that internal factors such as high idealism, narcissism, perfectionism, and Type A personality played a role, as did external systemic factors such as bureaucracy, poor administrative support, difficult working conditions, and specific job stressors (Grosch & Olsen, 2000).

In another study involving working mothers, the researchers explored the relationships among work and family conflicts, Type A and Type B behaviour, certain personality variables such as self-observation, self-evaluation, self-reinforcement, self-monitoring and self-efficacy, and well-being. The results indicated that Type A behaviour was significantly related to work-to-family conflict (i.e. conflict due to work interfering with family). The relationship between work-to-family conflicts and stress was moderated by self-efficacy, self-evaluation and self-reinforcement (Block, 1995).

In a study of police personality, subjects who completed the Occupational Stress Indicator were categorised into Type A and Type B personality types with either an internal or external locus of control. Subjects with high levels of Type A behaviour and high perceived internal locus of control expressed the least stress and the most satisfaction, while subjects with high levels of Type A behaviour and high perceived external locus of control felt threatened and unable to control forces detrimental to health and satisfaction. Type B subjects with an internal locus of control were both physically and mentally healthy, while Type B subjects with an external locus of control were tense, overcontrolled, or helpless. However, personality was not clearly linked to physical or psychological health (Kirkcaldy, Furnham & Cooper, 1994).

Another personality type, termed Type D, has been investigated with regards to stress. Type D is a "distressed" personality and is associated with negative affectivity, social inhibition, stress, poor self-esteem and dissatisfaction with life. Besides being associated with stress, there is a link between Type D and coronary heart disease (Denollet, 1997, 1998).

4.2.5 DISC Basic Types and Stress.

In the theory examined and literature search conducted, some of the main behavioural styles associated with stress are Type A behaviour, Extraversion-Introversion, Stability-Neuroticism, and Optimism-Pessimism. Research has shown some significant positive and negative correlations of DISC with these aspects. The Dominant style is positively correlated with Type A behaviour, Extroversion, Optimism and Control Optimism, and negatively correlated with Pessimism. The Influencing Style is positively correlated with Optimism and Extroversion, and negatively correlated with Type A behaviour and Pessimism. The Steadiness style is positively correlated with Introversion and Pessimism and negatively correlated with Type A behaviour and Optimism. The Compliant style is positively correlated with Type A behaviour, Introversion and Pessimism, and

negatively correlated with Optimism (Warburton & Suiter, 1993).

From this it is clear that each behavioural style has a unique pattern of associations.

The Dominant style is characterised by such descriptors as direct, forceful, decisive, competitive, aggressive, impatient, ambitious, independent and challenging. Descriptors of the Influence behavioural style are enthusiastic, trusting, charming, gregarious, and confident, persuasive, expressive, demonstrative, talkative, and stimulating. Descriptors of the Steadiness behavioural style are passive, amiable, predictable, relaxed, patient, nondemonstrative, modest and systematic. Descriptors of the Compliance behavioural style are analytical, perfectionist, conscientious, accurate, restrained, diplomatic, conventional, sensitive, patient, contemplative and deliberate (Bonnstetter et. al., 1993).

In the light of the above information, it would be interesting to see if there is a positive correlation with any of the DISC behavioural styles and stress. In fact, Warburton and Suiter (1993) did conduct a study comparing DISC profiles and occupational stress. The data was collected using the DISC Style Analysis Instrument and the Occupational Stress Indicator. This indicator assesses six different aspects of work. Of relevance to this study was data on pressure at work, job satisfaction and mental health. An initial correlation analysis established that high pressure at work was associated with stress responses, both in terms of job satisfaction and mental health. **However, Basic Style, was not a predictor of either type of stress response.** A second analysis was designed to provide a test of the moderating effect of Basic Style on the relationship between perceived sources of pressure in the job and either job satisfaction or mental health. The analysis of the data gives good evidence of interactions of Basic Style with specific sources of pressure in the job. For example, there was a negative effect of poor personal relationships on stress responses in the entire sample group, but the effect was magnified in High I

individuals. In contrast, there was an overall negative effect of managerial role pressures on job satisfaction and mental health, but this effect was less in High D individuals (Bonnstetter et al., 1993). It therefore follows that the source of stress plays a greater role in the experience of stress than does the Basic Style.

4.2.6 Other Research on Behavioural Style and Stress.

Meijman and Kompier (1998) studied the effective behavioural styles of urban bus drivers in coping with the psychosocial demands of time pressure, passengers and traffic and the relation of these styles with well-being and health (Meijman & Kompier, 1998).

Daftuar and Anjuli (1997) studied the relationship between the Indian personality types; sattvas, rajas and tamas and occupational stress. In the Indian tridimensional view of personality, the sattva type is overpowering, the raja type is active and passionate and the tama type is characterised by inactivity, darkness and delusion. In the case of occupational stress there was no significant positive correlation with rajas, only one positive correlation with sattvas, whereas tamas generated stress in several areas (Daftuar & Anjuli, 1997).

A Chinese study using the Chinese revision of Cooper's Occupational Stress Inventory investigated, amongst other things, the relationship between job stress and environment, and behavioural style and coping strategies. Internal control, expectation, and coping styles as causes of job stress were discussed (Wang & Wang, 1995).

4.3 Other Variables affected by Behavioural Style

Research shows that personality types or behavioural styles affect other stress related behaviours such as the primary appraisal of stressful events (Bishop,

1999); coping styles and health-related behaviours (Ferguson, 1995; Larson, Nordstroem, Ljunggren & Nyberg, 1995); hypochondriasis (Boal, 1994); the severity of trauma (Hyer, Braswell, Albrecht & Boyd, 1994) and depression (McMahon, Schram & Davidson, 1993)

4.4 Other Variables affecting Stress.

From the literature it is evident that the relationship between personality or behavioural type and stress is not a simplistic one and that there are many mediating factors. Some of these have already been mentioned and the literature indicates many more. Besides personality or behavioural style some of the most important internal factors affecting stress are coping strategies, predispositions, awareness, understanding, locus of control, relaxation states, mental health, needs, values, optimism, justice beliefs, etc.

Some of the external factors are gender, race, age, marital status, number of dependents, tenure, experience, education, daily experiences, life events, social support, leadership behaviour, organisational leadership, organisational structure, level in the company, leisure activities, job satisfaction, job demands, family demands, vocational discontent, adjustment reactions, workload, working hours, working conditions, urban/rural environment, etc.

Occupational stress, in particular, is not only associated with behavioural style but also with job/life factors, such as: control (Daniels & Guppy, 1992); organisational climate (Kohlman,1992); leisure congruence (Melamed, Meir & Samson, 1995); age, tenure, hours worked, board members, staff members, the public, enrollment size (Yoder,1995); job satisfaction, lifestyle and social interest (Okorie, 1995); coping mechanisms (Layman,1996); organisational commitment and job involvement (Daftuar & Anjuli, 1997); time pressure and workload (Meijman &Kompier, 1998); organisational leadership (Pirkle,1998); supervisor support, leader's personality and worker's position (Bowles, Ursin & Picano,

2000; Schaefer & Moos, 1993); social support, relationships with colleagues and perceived reciprocity (Buunk, Doosje, Jans & Hopstaken, 1993); job type, and the subjective work environment (Parkes & von Rabenau,1993); role ambiguity (Revicki, Whitley, Gallery & Allison, 1993; Schaefer & Moos,1993); experience (Schaefer & Moos,1993) and justice beliefs (Tomaka & Blascovich, 1994).

As a conclusion to this section of the literature search the following quotation from a dissertation abstract sums up the multifaceted association of the various dimensions of behavioural style and stress. "Thus, psychological and biological predispositions to stress, coping strategies, awareness, understanding, and prevention of stress, opinions of stress and the organisation, stress-related symptoms and/or illnesses, indication of depression, psychodynamic and personality factors, daily experiences, and life events including organisational variations of leadership reflect the impact of stress" (Pirkle, 1998).

4.5 Style Disparity as a Predictor of a Stress Response.

In the research on which this study is based, it was argued that an important aspect of job satisfaction was the match of the person to the demands of the job, with a good match giving higher levels of job satisfaction. It is also believed that lower levels of job satisfaction result in poorer physical and mental health as well as in higher levels of absenteeism. The importance of the disparity between Response to the Environment (Graph 1) and Basic Style (Graph II) as a predictor of job dissatisfaction, poorer physical health, poorer mental health and absenteeism was investigated. When a person masks their true behaviour in order to succeed in their environment, a great amount of energy is expended to "maintain the mask", resulting in the person being under a great deal of stress.

In the research done by Warburton and Suiter (1993), DISC profiling was done for 150 managers. Sub-scales of the Occupational Stress Indicator namely, job satisfaction, health, absenteeism and alcohol use were used as indicators of

stress. In order to calculate style disparity, the only information that was examined was the Primary Behavioural Style disparity. The Primary Behavioural Style is that dimension that is furthest from the midline of the graph. The percentage difference on the Primary Style of Graph I and Graph II was used as the independent variable. The dependent variables were job satisfaction, health, absenteeism and alcohol use.

The association between the independent and the dependent variables was examined with simple bivariate regression analyses. As well as determination of the correlation coefficient, Pearson r, a coefficient of determination, r2, was calculated as a measure of the predictable variability, i.e. the percentage of overall variability in job satisfaction, mental health and absenteeism that is attributable to style disparity.

The bivariate regressions of job satisfaction, mental health, physical health, absenteeism and alcohol use on disparity were all significant. Although style disparity was examined on only one dimension, 15.2 percent of the variance for job satisfaction, 14.4 percent of the variance for mental health, 5.3 percent of the variance for physical health, 9.6 percent of the variance for alcohol use and 7.3 percent of the variance for absenteeism is attributable to variability in style disparity.

The conclusion that can be made from this analysis is that there is significant evidence for DISC disparity as a predictor of job satisfaction, mental health, physical health, alcohol use and absenteeism. In other words DISC disparity can be used as an indication of a stress response (Warburton & Suiter, 1993).

4.6 Reliability and Validity Studies of the DISC Style Analysis Instrument.

4.6.1 Reliability.

Research done by Watson in 1989 included a reliability check for internal consistency of the Style Analysis Instrument using the Spearman-Brown split-half and the Kuder-Richardson Formula 21 reliability coefficients. The mean coefficients for each dimension are: Dominance r= .91, Steadiness r= .92, Influence r= .90, Compliance r= .89. These numbers indicates a high degree of internal consistency in the Style Analysis Instrument (Watson, 1989).

This research was duplicated with another sample in 1993 and the results were as follows: Dominance r= .92, Influence r= .89, Steadiness r= .91, Compliance r= .90 (Warburton & Suiter, 1993).

This means that each dimension, D, I, S, C is reliably measured because the items on each scale contribute to the total score for the scale. Also the descriptions associated with particular profile patterns reflect behaviours associated with them. It is important to remember that these four dimensions describe those categories of behaviour that we can see and label, and therefore they can be called *surface traits.* In other words they are not internal dispositions but patterns of behaviour that may vary from the situation to situation (Kragness & Rening, 1996).

When the reliability of an instrument that measures personality traits is assessed test-retest reliability needs to be measured. When doing this, the repeated measure must replicate the same situation as the original. However, with DISC instruments we cannot conclude that behaviour is consistent from situation to situation and so the testees must focus on one particular situation, such as work, when they respond. Consequently, variability in results should be expected from one kind of situation to another (Kragness & Rening, 1996).

Longitudinal research indicates that the correlation between a personality measure assessed at one time in a person's life and then assessed at a later time decreases as the time interval increases. This can be explained by the fact that most people learn to adapt to different environments without necessarily undergoing fundamental personality changes (i.e. *source traits*). Some source traits are quite consistent over the life span, but surface traits may change as a result of learning to adapt to various situations. Consequently, differences in DISC profiles will change over time (Kragness & Rening, 1996).

4.6.2 Validity.

Some of the methods of test validation are:

Face validity, i.e. the test appears to measure what it claims to measure. Face validity refers to whether the test "looks valid" to the people who take it or to others. It was found that the DISC responses gave an accurate picture of the person's habitual behaviour patterns at work as seen by colleagues. The accuracy of colleague identification in Warburton and Suiter's research was 81, 2 percent (Warburton & Suiter, 1993).

Predictive validity, which compares the test scores with later performance. It was found that a disparity between Basic Style and Adapted Style was predictive of work dissatisfaction (Warburton & Suiter, 1993).

Content validity, in which administered tests include samples of representative job duties. In the above-mentioned research, a random sample of 2771 subjects was selected from the general population of the East-Midwest-Southwest states of the USA (Warburton & Suiter, 1993).

Construct validity, which considers the relationship of the DISC model with related assessments of behavioural style. Watson (1989) investigated this

construct validity when he examined the statistical similarity between the Style Analysis Instrument and another DISC instrument, namely the Personal Profile System, developed by Carlson Learning Company. Watson (1989) found that there was no statistically significant difference between scores obtained on the Style Analysis Instrument versus the Personal Profile System (Watson, 1989). Previously, in a study of validity of the Personal Profile System in 1983 done by Kaplan (19830, the Personal Profile System was compared to the Wechsler Adult Intelligence Scale, the MBTI, the 16PF, the MMPI and the Strong Interest Inventory. This study provides further validity information (Bonnstetter et al., 1993).

The validity of the Personal Profile System was also measured by determining the extent to which the association among scores represents the theory and model on which the instrument is based. In the DISC model, dimensions D and S, and I and C are somewhat opposites. So, we would expect them to be inversely related, i.e. negatively correlated. This was the case in this Personal Profile System research, as the inter-scale correlation between D and S was -.73 and the inter-scale correlation between I and C was -.63 (Carlson Learning Company, 1996).

4.7 Conclusion.

It can be concluded from this literature search that the focus of this current research is unique, in so far as, although the DISC Style Analysis Instrument has been tested and used in many countries around the world, a study based on Warburton and Suiter's (1993) research on disparity of Style as an indicator of stress has not previously been done. Furthermore, at this point in time, there is no published research investigating any differences in the DISC profiles of the various population groups in South Africa, nor has there been any research completed which investigates the differences in work stress among the various South African population groups using Style disparity as a predictor of stress.

Chapter 5

Methodology.

5.1 Introduction.

According to Leedy (1997: 5) research is a "process through which we attempt to achieve systematically and with the support of data the answer to a question, the resolution of a problem, or a greater understanding of a phenomenon" (Leedy, 1997: 5).

This research used a quantitative approach in order to establish relationships between various sets of data. The research design is of quasi-experimental nature, using post-hoc tests. Descriptive statistics are given to compare means and standard deviations, while inferential statistics are used to analyse which gender or population group has the greatest likelihood of stress in the workplace.

In this chapter, the hypotheses will be stated, the operational definitions given, and the subjects, research instrument and methodological procedure will be described. Then, in the next chapter the statistical analysis will be described and the results given. Finally, in chapter 7 the results will be summarised and interpreted, before concluding the outcome of this research.

In this study the data has been organised according to the structure of the research done in the USA, creating three different sections. Section I deals with Basic Style, Response Style and Pure Style. Section II deals with Primary and Secondary Dimensions. Section III deals with Natural Style, Adapted Style and Stress Factors.

5.2 Hypotheses.

The following research hypotheses were formulated:

Section I

5.2.1 Hypothesis 1

Null-hypothesis (1Ho): There is no significant difference in terms of the distribution of the Basic Style dimensions D, I, S, C of those tested in the USA and those tested in SA.

Alternative-hypothesis (1Ha): There is a significant difference in terms of the distribution of the Basic Style dimensions D, I, S, C of those tested in the USA and those tested in SA.

Operational definition:

Basic Style dimensions, D, I, S, C, group the population by plot points above the mid-line on Graph II, indicating the presence of one or more of the four dimensions, D,I,S,C measured by the Style Analysis Instrument. This measures the natural behavioural style of the individual.

5.2.2 Hypothesis 2

Null-hypothesis (2Ho): There is no significant difference in terms of the distribution of the Response Style dimensions D, I, S, C of those tested in the USA and those tested in SA.

Alternative-hypothesis (2Ha): There is a significant difference in terms of the

distribution of the Response Style dimensions D, I, S, C of those tested in the USA and those tested in SA.

Operational definition:

Adapted Style dimensions D, **I**, S, C group the population by plot points above the mid-line on Graph I, indicating the presence of one or more of the four dimensions measured by the Style Analysis Instrument. This measures the behavioural style of the individual in the workplace.

5.2.3 Hypothesis 3

Null-hypothesis (3 Ho): There is no significant difference between the percentages in the Pure Styles of those obtained in the USA sample and those obtained in the South African sample.

Alternative-hypothesis (3 Ha): There is a significant difference between the percentages in the Pure Styles of those obtained in the USA sample and those obtained in the South African sample.

Operational definition:

A Pure Style exists if only one point is above the energy line (mid-line) on Graph II.

5.2.4 Hypothesis 4

Null-hypothesis (4.1 Ho): There is no significant difference between the two SA genders in terms of the Basic Style dimensions, D, I, S, C, i.e. as indicated by plot points above the mid-line on Graph II.

Alternative-hypothesis (4.1 Ha): There is a significant difference between the two SA genders in terms of the Basic Style dimensions, D, I, S, C, i.e. as indicated by plot points above the mid-line on Graph II.

Null-hypothesis (4.2 Ho): There is no significant difference between the four SA population groups defined, in terms of the Basic Style dimensions, D, I, S, C.

Alternative-hypothesis (4.2 Ha): There is a significant difference between the four SA population groups defined, in terms of the Basic Style dimensions, D, I, S, C.

Null-hypothesis (4.3 Ho): There is no significant difference between the eight SA gender*population groups defined, in terms of the Basic Style dimensions, D, I, S, C.

Alternative-hypothesis (4.3 Ha): There is a significant difference between the eight SA gender*population groups defined, in terms of the Basic Style dimensions, D, I, S, C.

Operational definitions:

The four SA population groups defined are:

The South African Afrikaans population group refers to those people whose home language is Afrikaans and who completed the Afrikaans translation of the Style Analysis.

The South African Black population group refers to those people whose home language is one of the South African Black languages.

The South African English population group refers to those people whose home

language is English and who have a western culture.

The South African Indian population group refers to those people of Indian/Pakistani or other Indian origin and who have an eastern culture.

The eight interaction groups of gender and population group (gender*population group) are:

English Male
English Female
Afrikaans Male
Afrikaans Female
Black Male
Black Female
Indian Male
Indian Female

5.2.5 Hypothesis 5

Null-hypothesis (5.1 Ho): There is no significant difference between the two SA genders, in terms of the Response Style dimensions, D, I, S, C, i.e. as indicated by plot points above the mid-line on Graph I.

Alternative-hypothesis (5.1 Ha): There is a significant difference between the two SA genders, in terms of the Response Style dimensions, D, I, S, C, i.e. as indicated by plot points above the mid-line on Graph I.

Null-hypothesis (5.2 Ho): There is no significant difference between the four SA population groups defined, in terms of the Response Style dimensions, D, I, S, C, i.e. as indicated by plot points above the mid-line on Graph I.

Alternative-hypothesis (5.2 Ha): There is a significant difference between the four SA population groups defined, in terms of the Response Style dimensions, D, I, S, C, i.e. as indicated by plot points above the mid-line on Graph I.

Null-hypothesis (5.3 Ho): There is no significant difference between the eight SA gender*population groups defined, in terms of the Response Style dimensions, D, I, S, C, i.e. as indicated by plot points above the mid-line on Graph I.

Alternative-hypothesis (5.3 Ha): There is a significant difference between the eight SA gender*population groups defined, in terms of the Response Style dimensions, D, I, S, C, i.e. as indicated by plot points above the mid-line on Graph I.

Section II

5.2.6 Hypotheses 6

Null-hypothesis (6.1 Ho): There is no significant difference between the USA and the SA general population samples in terms of the distribution of Primary and Secondary dimensions.

Alternative-hypothesis (6.1 Ha): There is a significant difference between the USA and the SA general population samples in terms of the distribution of Primary and Secondary dimensions.

Null-hypothesis (6.2 Ho): There is no significant difference between the USA and the SA male population samples in terms of the distribution of Primary and Secondary dimensions.

Alternative-hypothesis (6.2 Ha): There is a significant difference between the

USA and the SA male population samples in terms of the distribution of Primary and Secondary dimensions.

Null-hypothesis (6.3 Ho): There is no significant difference between the USA and the SA female population samples in terms of the distribution of Primary and Secondary dimensions.

Alternative-hypothesis (6.3 Ha): There is a significant difference between the USA and the SA female population samples in terms of the distribution of Primary and Secondary dimensions.

In the eventuality that there is a significant different difference between the USA and SA in terms of Primary and Secondary dimensions, a further investigation will be done using only Primary dimensions.

Null-hypothesis (6.4 Ho): There is no significant difference between the USA and the SA general population samples in terms of the distribution of the Primary dimensions only.

Alternative-hypothesis (6.4 Ha): There is a significant difference between the USA and the SA general population samples in terms of the distribution of the Primary dimensions only.

Null-hypothesis (6.5 Ho): There is no significant difference between the USA and the SA male population samples in terms of the distribution of the Primary dimensions only.

Alternative-hypothesis (6.5 Ha): There is a significant difference between the USA and the SA male population samples in terms of the distribution of the Primary dimensions only.

Null-hypothesis (6.6 Ho): There is no significant difference between the USA and the SA female population samples in terms of the distribution of the Primary dimensions only.

Alternative-hypothesis (6.6 Ha): There is a significant difference between the USA and the SA female population samples in terms of the distribution of the Primary dimensions only.

Operational definitions:

The Primary dimension is the point furthest from the mid-line. It may be above or below the mid-line.

The Secondary dimension is the point that is in second place when compared to all the factors using the mid-line as the starting point for measuring.

In terms of these definitions the dimensions are described in terms of their position above or below the mid-line as Dominance or Low Dominance, Influence or Low Influence, Steadiness or Low Steadiness, and Compliance or Low Compliance respectively.

5.2.7 Hypothesis 7

Null-hypothesis (7.1 Ho): There is no significant difference between the genders in the SA sample in terms of the distribution of Primary and Secondary dimensions.

Alternative-hypothesis (7.1 Ha): There is a significant difference between the genders in the SA sample in terms of the distribution of Primary and Secondary dimensions.

Null-hypothesis (7.2 Ho): There is no significant difference between the 4 population groups in the SA sample in terms of the distribution of Primary and Secondary dimensions.

Alternative-hypothesis (7.2 Ha): There is a significant difference between the 4 population groups in the SA sample in terms of the distribution of Primary and Secondary dimensions.

Section III

5.2.8 Hypothesis 8

Null-hypothesis (8 Ho): There is no significant difference based on gender or on population group or on gender * population group in the measurement of "Stress Factor 1" in the South African sample.

Alternative-hypothesis (8 Ha): There is a significant difference based on gender or on population group or on gender * population group in the measurement of "Stress Factor 1" in the South African sample.

Operational definition:

"Stress Factor 1" is the difference between the Adapted Style percentage score (given on Graph I) and the Natural Style percentage score (given on Graph II) of the Primary behaviour dimension of each individual, expressed in absolute value terms.

5.2.9 Hypothesis 9

Null-hypothesis (9 Ho): There is no significant difference between the genders, or between the population groups, Afrikaans, Black, English and Indian, or

between the interaction gender * population group, in terms of "Stress Factor 2" in the South African sample.

Alternative-hypothesis (9 Ha): There is a significant difference between the genders, or between the groups, Afrikaans, Black, English and Indian, or between the interaction gender * population group, in terms of "Stress Factor 2" in the South African sample.

Operational definition:

"Stress Factor 2" is the sum of the absolute values of the differences between the Adapted Style percentage scores (given on Graph I) and the Natural Style percentage scores (given on Graph II) of each of the behavioural dimensions.

5.2.10 Hypothesis 10

Null-hypothesis (10.1 Ha): There is no significant difference between the two SA genders in terms of the Adapted Style minus the Natural Style (Adapted Style - Natural Style).

Alternative-hypothesis (10.1 Ho): There is a significant difference between the two South African genders in terms of the Adapted Style minus the Natural Style (Adapted Style - Natural Style).

Null-hypothesis (10.2 Ha): There is no significant difference between the four SA population groups in terms of the Adapted Style minus the Natural Style (Adapted Style - Natural Style).

Alternative-hypothesis (10.2 Ho): There is a significant difference between the four South African population groups in terms of the Adapted Style minus the Natural Style (Adapted Style - Natural Style).

Null-hypothesis (10.3 Ha): There is no significant difference in the interaction of gender and population group (gender*population group) in terms of the Adapted Style minus the Natural Style (Adapted Style - Natural Style).

Alternative-hypothesis (10.3 Ho): There is a significant difference in the interaction of gender and population group (gender*population group) in terms of the Adapted Style minus the Natural Style (Adapted Style - Natural Style).

5.2.11 Hypothesis 11

Null-hypothesis (11 Ha): There is no significant difference between the means of the Adapted dimensions and the Natural dimensions for each of the dimensions D, I, S, C as measured on Graph I and Graph II respectively, for all subjects.

Alternative-hypothesis (11 Ho): There is a significant difference between the means of the Adapted dimensions and the Natural dimensions for each of the dimensions D, I, S, C as measured on Graph I and Graph II respectively, for all subjects.

5.2.12 Hypothesis 12

Null-hypothesis (12 Ha): There is no correlation between each and every Adapted and Natural dimension.

Alternative-hypothesis (12 Ho): There is a correlation between each and every Adapted and Natural dimension.

Further definitions:

The four dimensions, D, I, S, C have been defined and described earlier in this study.

- ξ The Dominant Style is characterised by such descriptors as direct, forceful, decisive, competitive, aggressive, impatient, ambitious, independent and challenging.
- ξ Adjectives describing the Influence Behavioural Style are enthusiastic, trusting, charming, gregarious, and confident, persuasive, expressive, demonstrative, talkative, and stimulating.
- ξ Descriptors of the Steadiness Behavioural Style are passive, amiable, predictable, relaxed, patient, non-demonstrative, modest and systematic.
- ξ Descriptors of the Compliance Behavioural Style are analytical, perfectionist, conscientious, accurate, restrained, diplomatic, conventional, sensitive, patient, contemplative and deliberate.

5.3 Subjects

5.3.1 The USA sample

There are 2 samples with which the South African sample was compared.

The first group consisted of 2771 USA subjects, chosen at random, who had done the Style Analysis Instrument focusing on the work environment. This sample was then grouped according to the presence of one or more of the four dimensions, D, I, S, C above the mid-line for both Graph I and Graph II i.e. Response Style and Basic Style.

The second group consisted of 1028 females and 913 males, (totaling 1941 people), chosen at random from the East-Midwest-Southwest USA's general

population, who had completed the Style Analysis Instrument focusing on the work environment. From these subjects tables were drawn up indicating the occurrence of Primary and Secondary dimensions (Bonnstetter et. al., 1993).

5.3.2 The SA sample

The South African sample was obtained from three different organisations, which specialise in administering the Style Analysis Instrument in the workplace in South Africa. Most of the subjects were from the Gauteng area although some were obtained from the Western Cape, Orange Free State, KwaZulu-Natal and Mpumalanga. Most of the subjects were from urban or industrial areas. The occupations of the subjects differed across the spectrum, and included professional people, tradesmen, technicians, business people, etc. However, there were very few farmers or rural workers. The sample also differed in terms of age, education, work history, etc.

The subjects were chosen from existing databases. In the case of the English and Afrikaans subgroups the subjects were chosen at random from a large number of recorded Style Analysis reports. In the case of the Black and Indian subgroups, nearly all the available recorded Style Analysis reports, as supplied by the three different organisations were used. This accounts for the fewer number of Indians used in this study.

The subjects were chosen from the existing databases in terms of their gender and population group as defined in 5.2.6 above. 100 Afrikaans males, 100 Afrikaans females, 100 Black males, 100 Black females, 100 English males, 100 English females, 50 Indian males and 50 Indian females were selected to form the total sample of 700 South Africans.

5.4 The Research Instrument and procedure.

The Style Analysis Instrument consists of 24 boxes, each with four descriptive statements or adjectives. Each box contains two columns, one headed "most" and the other "least". See Appendix 1.

In this instrument, individuals choose what they are most like and least like in their work environment. They are required to make one MOST and one LEAST selection from each of the 24 boxes. To ensure the highest accuracy, the following instructions are given to the individual completing the instrument.

1. Focus on how you act at work.
2. Take 10 minutes to complete the profile, uninterrupted.
3. There are no right and no wrong answers.

The data are captured on a computer containing the TTI software, the Style Analysis Instrument. The responses are plotted by the computer on two graphs. Graph I is a measurement of *Adapted* behaviour, while Graph II is a measurement of *Natural* behaviour. In other words, Graph I, generated from the MOST responses, gives the individual's responses to the environment (work). It is the " mask" that is put on to cover the true identity and to survive or succeed in a specific environment. It is the behaviour others are allowed to see. Graph II identifies a person's basic behaviour. It is generated from the LEAST responses and is the least changeable, as it represents inherent natural style. Based on the individual's responses to the 24 MOST words, 19,360 different graphs can be plotted. The LEAST responses allow 19,680 different graphs to be plotted. The software provides the graphs as well as the 384 different reports available. The *Style Analysis* instrument provides computerised and personalised reports on the individual's natural and adapted profile of the four dimensions Dominance, Influence, Steadiness and Compliance (Bonnstetter et al., 1993).

5.5 The processing of the data.

The data were sorted according to gender and race. For each individual the following information was identified:

- The dimensions above the mid-line on Graph I and on Graph II
- The Primary dimension on Graph I and on Graph II
- The Secondary dimension on Graph I and on Graph II
- The absolute value of the difference between the Adapted Primary dimension and the Natural Primary dimension
- The sum of the absolute values of the differences between each of the Adapted dimensions and the Natural dimensions

The Statistical Bureau (Statcon) collated and analysed the data at the Rand Afrikaans University.

Chapter 6

The Processing, Tabulation and Results of the Research Statistics.

6.1 Introduction

In this chapter the research results will be presented. The logical order of the results follows the order of the hypotheses in the previous chapter. In each of Sections I and II, the first consideration will be the comparison of the USA and the SA data followed by the comparisons of the genders and population groups within the SA sample.

Section I

6.2 The relationship between the distribution of the Basic Style dimensions, D, I, S, C, defined as plot points above the mid-line on Graph II, of those tested in the USA and those tested in SA.

Table 6.2.1 A comparison table of the distribution of the Basic Style dimensions, D, I, S, C, of the USA and SA subjects as indicated by plot points above the mid-line on Graph II.

Style Analysis Graph II	USA	%	SA	%
Compliance only	8	0.3%	3	0.4%
Dominance and Compliance	71	2.6%	25	3.6%
Dominance and Influence	356	12.8%	50	7.1%
Dominance and Steadiness	87	3.1%	27	3.9%
Dominance only	32	1.2%	12	1.7%
Dominance, Influence and Compliance	97	3.5%	29	4.1%
Dominance, Influence and Steadiness	203	7.3%	64	9.1%
Dominance, Influence, Steadiness and Compliance	24	0.9%	11	1.6%
Dominance, Steadiness and Compliance	178	6.4%	61	8.7%
Influence and Compliance	59	2.1%	20	2.9%
Influence and Steadiness	334	12.1%	55	7.9%
Influence only	28	1.0%	6	0.9%
Influence, Steadiness and Compliance	791	28.5%	191	27.3%
Steadiness and Compliance	477	17.2%	138	19.7%
Steadiness only	26	0.9%	8	1.1%
	2,771	100%	700	100%

A chi-square test was done on the above data to see if there was any significant difference between the USA data and the SA data. Using a confidence level of 95%, a p-value of 0.000 was obtained, showing that there is a significant difference between the two sets of data.

Therefore, we reject 1Ho and accept 1Ha.

Similarly, a chi-square test was done on the Pure Styles from Graph II to determine if there is a statistically significant difference between the Pure Styles. The results confirmed that there is no significant difference between the Pure Styles of the USA and SA samples (p-value = 0.782).

Therefore we accept 3 Ho.

Table 6.2.2 A comparison table of the percentages per population of Pure Styles of the USA and SA samples.

	USA	USA %	SA	SA %
Compliance only	8	0.3%	3	0.4%
Dominance only	32	1.2%	12	1.7%
Influence only	28	1.0%	6	0.9%
Steadiness only	26	0.9%	8	1.1%

6.3 The relationship between the distribution of the Response Style dimensions, D, I, S, C, defined as plot points above the mid-line on Graph I, of those tested in the USA and those tested in SA.

Table 6.3 A comparison table of the distribution of the Response Style dimensions, D, I, S, C of the USA and SA subjects as indicated by plot points above the mid-line on Graph I

Style Analysis Graph 1	USA	%	SA	%
Compliance only	38	1.4%	13	1.9%
Dominance and Compliance	134	4.8%	36	5.1%
Dominance and Influence	224	8.1%	59	8.4%
Dominance and Steadiness	38	1.4%	9	1.3%
Dominance only	87	3.1%	21	3.0%
Dominance, Influence and Compliance	211	7.6%	31	4.4%
Dominance, Influence and Steadiness	36	1.3%	10	1.4%
Dominance, Influence, Steadiness and Compliance	36	1.3%	6	0.9%
Dominance, Steadiness and Compliance	55	2.0%	24	3.4%
Influence and Compliance	246	8.9%	59	8.4%
Influence and Steadiness	194	7.0%	71	10.1%
Influence only	107	3.9%	23	3.3%
Influence, Steadiness and Compliance	678	24.5%	158	22.6%
Steadiness and Compliance	637	23.0%	166	23.7%
Steadiness only	49	1.8%	14	2.0%
	2,770	100%	700	100%

A chi-square test was done on the above data to see if there was any significant difference between the USA and the SA results. Using a 95% confidence level, it was found that there was a significant difference between the two sets of data ($p = 0.042$).

Therefore we reject 2 Ho and accept 2 Ha.

6.4 The investigation as to whether there is any significant difference between the two SA genders, the four South African population groups defined, and the interaction of gender and population group comprising eight groups, in terms of the Basic Style dimensions, D, I, S, C, i.e. as indicated by plot points above the mid-line on Graph II.

Table 6.4 Means and Standard deviations of the Basic Style dimensions in terms of gender, population group and gender*population group.

	Mean				Std. Deviation		
	Gender	Male	Female	Total	Male	Female	Total
D	English	50.960	40.980	45.970	25.617	21.557	24.139
	Afrikaans	50.570	40.020	45.295	21.388	20.501	21.555
	Black	48.680	48.140	48.410	15.786	19.236	17.553
	Indian	44.260	40.000	42.130	21.338	22.978	22.165
	Total	49.240	42.611	45.926	21.343	21.037	21.434
I	English	53.730	62.890	58.310	22.866	22.736	23.203
	Afrikaans	53.120	55.200	54.160	27.175	26.437	26.761
	Black	48.510	58.170	53.340	19.448	18.480	19.532
	Indian	56.120	56.380	56.250	23.677	20.999	22.265
	Total	52.406	58.414	55.410	23.468	22.649	23.241
S	English	61.680	70.190	65.935	21.362	19.538	20.860
	Afrikaans	60.820	69.710	65.265	19.290	21.201	20.702
	Black	60.100	58.230	59.165	18.297	19.516	18.892
	Indian	65.780	69.060	67.420	18.095	22.733	20.508
	Total	61.569	66.474	64.021	19.475	21.066	20.420
C	English	55.180	55.260	55.220	19.792	19.923	19.808
	Afrikaans	56.260	63.150	59.705	22.236	20.502	21.611
	Black	61.150	56.830	58.990	14.111	17.954	16.251
	Indian	59.320	60.500	59.910	19.908	18.021	18.901
	Total	57.786	58.711	58.249	19.228	19.478	19.345

A MANOVA test was done and Hotelling's Trace for gender and Wilks' Lambda for population group and for gender*population group was used. Levene's Test of Equality of Error Variances revealed that there was a significant difference in variance in three of the dimensions, namely, D, I and S, indicating that a post hoc DunnettT3 test must be used for these and a post-hoc Scheffe test for dimension S.

The ANOVA test of Between-Subjects Effects indicated that there was a significant difference between genders on D, I and S but not on C.
Therefore, 4.1 Ho must be rejected and 4.1 Ha accepted.

Regarding population groups, a significant difference was only found on the S dimension. **Therefore, 4.2 Ho must be rejected and 4.2 Ha accepted.** Using a post hoc Scheffe test it can be concluded that Indians, English and

Afrikaans form one homogenous subset and Blacks another homogenous subset in respect of the distribution of the dimension S.

Regarding gender * race, it was found that there is a significant difference between the gender * population groups in the dimensions S and C.
Therefore, 4.3 Ho must be rejected and 4.3 Ha accepted.

6.5 The investigation as to whether there is any significant difference between the two SA genders, the four South African population groups defined, and the interaction of gender and population group comprising eight groups, in terms of the Response Style dimensions, D, I, S, C, i.e. as indicated by plot points above the mid-line on Graph I.

Table 6.5 Means and Standard deviations of the Response Style dimensions in terms of gender, population group and gender*population group.

	Mean				Std. Deviation		
	Gender	Male	Female	Total	Male	Female	Total
D	English	46.150	35.680	40.915	22.205	18.509	21.054
	Afrikaans	46.740	31.030	38.885	23.441	20.703	23.422
	Black	39.000	44.340	41.670	17.763	20.308	19.218
	Indian	40.320	33.680	37.000	20.652	23.841	22.440
	Total	43.443	36.540	39.991	21.387	21.049	21.483
I	English	54.980	56.600	55.790	21.901	23.703	22.777
	Afrikaans	53.340	52.730	53.035	25.783	23.191	24.462
	Black	55.890	58.370	57.130	18.090	19.546	18.826
	Indian	49.680	56.960	53.320	21.322	24.827	23.312
	Total	54.014	56.051	55.033	22.031	22.622	22.336
S	English	55.240	63.000	59.120	22.485	19.106	21.172
	Afrikaans	52.150	67.800	59.975	23.078	21.767	23.711
	Black	56.820	53.960	55.390	16.915	19.145	18.076
	Indian	58.260	61.300	59.780	20.948	20.538	20.695
	Total	55.240	61.546	58.393	21.024	20.723	21.097
C	English	56.040	54.780	55.410	24.701	24.734	24.664
	Afrikaans	54.620	53.540	54.080	24.081	23.748	23.861
	Black	70.930	61.610	66.270	16.887	24.219	21.343
	Indian	65.520	59.740	62.630	22.633	18.615	20.820
	Total	61.243	57.086	59.164	23.243	23.676	23.536

A MANOVA test was done and using Hotelling's Trace for gender and Wilks' Lambda for population group and for gender*population group, a significant difference was found in each category. Levene's Test of Equality of Error Variances revealed that there was a significant difference in variance in all 4 dimensions, indicating that post hoc DunnettT3 tests must be used.

The ANOVA test of Between-Subjects Effects indicated that there was a significant difference between genders on D, S and C, but not on I. **Therefore, 5.1 Ho must be rejected and 5.1 Ha accepted.**

Regarding population groups, a significant difference was only found on the C dimension. **This means that 5.2 Ho must be rejected and 5.2 Ha accepted.** Using a post hoc Scheffe test it can be concluded that English and Afrikaans form one homogenous subset and Blacks and Indians another homogenous subset, in respect of the distribution of the dimension C.

Regarding gender * race, it was found that there is a significant difference between the gender * population groups in the dimensions D and S. **Therefore, 5.3 Ho must be rejected and 5.3 Ha accepted.**

Section II

6.6 The relationship between the USA sample and the SA sample in the distribution of Natural Primary and Secondary dimensions, defined as the first and second plot points furthest from the mid-line of Graph II.

In Tables 6.6.1 to 6.6.3 that follow, a comparison was done for the USA and SA general, male and female populations on each primary and secondary dimension and a chi-square test was run at a 95% confidence level. The p-values are given showing where significant differences exist, i.e. on those dimensions that have a p-value less than 0.05.

Consequently, 6.1 Ho, 6.2 Ho and 6.3 Ho are rejected and 6.1 Ha, 6.2 Ha and 6.3 Ha are accepted.

In Tables 6.6.4 to 6.6.6 that follow, the above test was repeated but this time only with the primary dimensions, in order to simplify the comparison. Using a chi-square test the p-value for the general population was 0.000, for the male population 0.000 and for the female population 0.000.

This means that 6.4Ho, 6.5 Ho and 6.6 Ho are rejected and 6.4 Ha, 6.5 Ha and 6.6 Ha are accepted.

Table 6.6.1 A comparison table of the Natural Primary and Secondary dimensions of the USA and the SA samples.

USA general population N= 1941 and SA general population N= 700

Primary Behaviour	Secondary Behaviour	USA count	USA %	SA count	SA %
Dominance P-Value = 0.004	Influence	66	27.3%	14	15.7%
	Steadiness	9	3.7%	2	2.2%
	Compliance	5	2.1%	9	10.1%
	Low Influence	43	17.8%	24	27.0%
	Low Steadiness	70	28.9%	21	23.6%
	Low Compliance	49	20.2%	19	21.3%
Influence P-Value = 0.129	Dominance	33	7.1%	9	5.6%
	Steadiness	102	22.0%	23	14.3%
	Compliance	15	3.2%	10	6.2%
	Low Dominance	121	26.1%	52	32.3%
	Low Steadiness	79	17.0%	25	15.5%
	Low Compliance	114	24.6%	42	26.1%
Steadiness P-Value = 0.017	Dominance	7	1.3%	8	3.8%
	Influence	63	11.9%	27	12.9%
	Compliance	128	24.2%	29	13.8%
	Low Dominance	223	42.1%	97	46.2%
	Low Influence	85	16.0%	36	17.1%
	Low Compliance	24	4.5%	13	6.2%
Compliance P-Value = 0.165	Dominance	3	1.8%	7	6.4%
	Influence	10	6.1%	6	5.5%
	Steadiness	51	31.1%	27	24.8%
	Low Dominance	52	31.7%	30	27.5%
	Low Influence	44	26.8%	32	29.4%
	Low Steadiness	4	2.4%	7	6.4%
Low Dominance P-Value = 0.544	Influence	61	22.3%	9	26.5%
	Steadiness	163	59.7%	17	50.0%
	Compliance	49	17.9%	8	23.5%
		0	0.0%	0	0.0%
		0	0.0%	0	0.0%
Low Influence P-Value = 0.043	Dominance	48	29.8%	10	19.2%
	Steadiness	66	41.0%	24	46.2%
	Compliance	46	28.6%	15	28.8%
	Low Dominance	0	0.0%	2	3.8%
	Low Steadiness	0	0.0%	1	1.9%
	Low Compliance	1	0.6%	0	0.0%
Low Steadiness P-Value = 0.415	Dominance	25	51.0%	8	44.4%
	Influence	15	30.6%	4	22.2%
	Compliance	9	18.4%	6	33.3%
		0	0.0%	0	0.0%
		0	0.0%	0	0.0%
Low Compliance P-Value = 0.480	Dominance	28	48.3%	11	40.7%
	Influence	17	29.3%	9	33.3%
	Steadiness	13	22.4%	6	22.2%
	Low Dominance	0	0.0%	1	3.7%
		0	0.0%	0	0.0%

Table 6.6.2 A comparison table of the Natural Primary and Secondary dimensions of the USA males and the SA males

USA males N= 913 and SA males N= 350

Primary Behaviour	Secondary Behavior	USA count	USA %	SA count	SA %
	Influence	28	24.6%	4	7.5%
	Steadiness	2	1.8%	1	1.9%
Dominance	Compliance	3	2.6%	7	13.2%
P-Value = 0.020	Low Influence	26	22.8%	15	28.3%
	Low Steadiness	35	30.7%	14	26.4%
	Low Compliance	20	17.5%	12	22.6%
	Dominance	15	7.9%	6	8.7%
	Steadiness	39	20.5%	8	11.6%
Influence	Compliance	6	3.2%	4	5.8%
P-Value = 0.420	Low Dominance	41	21.6%	21	30.4%
	Low Steadiness	36	18.9%	12	17.4%
	Low Compliance	53	27.9%	18	26.1%
	Dominance	2	0.8%	3	3.2%
	Influence	34	13.0%	10	10.5%
Steadiness	Compliance	49	18.8%	15	15.8%
P-Value = 0.595	Low Dominance	113	43.3%	44	46.3%
	Low Influence	50	19.2%	18	18.9%
	Low Compliance	13	5.0%	5	5.3%
	Dominance	3	3.8%	3	4.7%
	Influence	3	3.8%	2	3.1%
Compliance	Steadiness	29	36.7%	10	15.6%
P-Value = 0.060	Low Dominance	20	25.3%	17	26.6%
	Low Influence	22	27.8%	26	40.6%
	Low Steadiness	2	2.5%	6	9.4%
	Influence	21	19.6%	2	22.2%
	Steadiness	65	60.7%	3	33.3%
Low Dominance	Compliance	21	19.6%	4	44.4%
P-Value = 0.177		0	0.0%	0	0.0%
		0	0.0%	0	0.0%
	Dominance	35	33.0%	7	20.0%
	Steadiness	40	37.7%	15	42.9%
Low Influence	Compliance	30	28.3%	11	31.4%
P-Value = 0.148	Low Dominance	0	0.0%	1	2.9%
	Low Steadiness	0	0.0%	1	2.9%
	Low Compliance	1	0.9%	0	0.0%
	Dominance	13	59.1%	6	54.5%
	Influence	6	27.3%	1	9.1%
Low Steadiness	Compliance	3	13.6%	4	36.4%
P-Value = 0.228		0	0.0%	0	0.0%
	Dominance	19	55.9%	6	42.9%
	Influence	6	17.6%	3	21.4%
Low	Steadiness	9	26.5%	4	28.6%
Compliance					
P-Value = 0.416	Low Dominance	0	0.0%	1	7.1%
		0	0.0%	0	0.0%

6.6.3 A comparison table of the Natural Primary and Secondary dimensions of the USA females and the SA females

USA females N= 1028 and SA females N= 350

Primary Behaviour	Secondary Behavior	USA count	USA %	SA count	SA %
	Influence	38	29.7%	10	27.8%
	Steadiness	7	5.5%	1	2.8%
Dominance	Compliance	2	1.6%	2	5.6%
P-Value = 0.354	Low Influence	17	13.3%	9	25.0%
	Low Steadiness	35	27.3%	7	19.4%
	Low Compliance	29	22.7%	7	19.4%
	Dominance	18	6.6%	3	3.3%
	Steadiness	63	23.0%	15	16.3%
Influence	Compliance	9	3.3%	6	6.5%
P-Value = 0.355	Low Dominance	80	29.2%	31	33.7%
	Low Steadiness	43	15.7%	13	14.1%
	Low Compliance	61	22.3%	24	26.1%
	Dominance	5	1.9%	5	4.3%
	Influence	29	10.8%	17	14.8%
Steadiness	Compliance	79	29.4%	14	12.2%
P-Value = 0.010	Low Dominance	110	40.9%	53	46.1%
	Low Influence	35	13.0%	18	15.7%
	Low Compliance	11	4.1%	8	7.0%
	Dominance	0	0.0%	4	8.9%
	Influence	7	8.2%	4	8.9%
Compliance	Steadiness	22	25.9%	17	37.8%
P-Value = 0.038	Low Dominance	32	37.6%	13	28.9%
	Low Influence	22	25.9%	6	13.3%
	Low Steadiness	2	2.4%	1	2.2%
	Influence	40	24.1%	7	28.0%
	Steadiness	98	59.0%	14	56.0%
Low Dominance	Compliance	28	16.9%	4	16.0%
P-Value = 0.915		0	0.0%	0	0.0%
		0	0.0%	0	0.0%
	Dominance	13	23.6%	3	17.6%
	Steadiness	26	47.3%	9	52.9%
Low Influence	Compliance	16	29.1%	4	23.5%
P-Value = 0.299	Low Dominance	0	0.0%	1	5.9%
	Low Steadiness	0	0.0%	0	0.0%
	Low Compliance	0	0.0%	0	0.0%
	Dominance	12	44.4%	2	28.6%
	Influence	9	33.3%	3	42.9%
Low Steadiness	Compliance	6	22.2%	2	28.6%
P-Value = 0.749		0	0.0%	0	0.0%
		0	0.0%	0	0.0%
	Dominance	9	37.5%	5	38.5%
	Influence	11	45.8%	6	46.2%
Low Compliance	Steadiness	4	16.7%	2	15.4%
P-Value = 0.995	Low Dominance	0	0.0%	0	0.0%
		0	0.0%	0	0.0%

Table 6.6.4 A comparison table of the differences between only the primary dimensions of the USA and the SA general populations.

General Pop. Primary Factors	USA	USA %	SA	SA %
Dominance	243	12.5%	89	12.7%
Influence	464	23.9%	161	23.0%
Steadiness	530	27.3%	210	30.0%
Compliance	164	8.4%	109	15.6%
Low Dominance	273	14.1%	34	4.9%
Low Influence	161	8.3%	52	7.4%
Low Steadiness	49	2.5%	18	2.6%
Low Compliance	58	3.0%	27	3.9%
	1942		**700**	

Table 6.6.5 A comparison table of the differences between only the primary dimensions of the USA and the SA males.

Male Pop. Primary Factors	USA	USA %	SA	SA %
Dominance	114	12.5%	53	15.1%
Influence	190	20.8%	69	19.7%
Steadiness	261	28.6%	95	27.1%
Compliance	79	8.7%	64	18.3%
Low Dominance	107	11.7%	9	2.6%
Low Influence	106	11.6%	35	10.0%
Low Steadiness	22	2.4%	11	3.1%
Low Compliance	34	3.7%	14	4.0%
	913		**350**	

Table 6.6.6 A comparison table of the differences between only the primary dimensions of the USA and the SA females.

Female Pop. Primary Factors	USA	USA %	SA	SA %
Dominance	128	12.5%	36	10.3%
Influence	274	26.7%	92	26.3%
Steadiness	269	26.2%	115	32.9%
Compliance	85	8.3%	45	12.9%
Low Dominance	166	16.1%	25	7.1%
Low Influence	55	5.4%	17	4.9%
Low Steadiness	27	2.6%	7	2.0%
Low Compliance	24	2.3%	13	3.7%
	1028		**350**	

6.7 The investigation as to whether there is any significant difference *between the SA male and female genders and the population groups* defined of the South African population, in terms of the Natural primary and Secondary dimensions.

Table 6.7.1 A comparison of the Primary dimensions measured of the SA male and female samples.

			Primary							
			Primary Behaviour Dominance	Primary Behaviour Influence	Primary Behaviour Steadiness	Primary Behaviour Compliance	Primary Behaviour Low Dominance	Primary Behaviour Low Influence	Primary Behaviour Low Steadiness	Primary Behaviour Low Compliance
Gender	Male	Count	53	69	95	64	9	35	11	14
		% within Gender	15.10%	19.70%	27.10%	18.30%	2.60%	10.00%	3.10%	4.00%
		% within Primary	59.60%	42.90%	45.20%	58.70%	26.50%	67.30%	61.10%	51.90%
	Female	Count	36	92	115	45	25	17	7	13
		% within Gender	10.30%	26.30%	32.90%	12.90%	7.10%	4.90%	2.00%	3.70%
		% within Primary	40.40%	57.10%	54.80%	41.30%	73.50%	32.70%	38.90%	48.10%
Total		Count	89	161	210	109	34	52	18	27
		% within Gender	12.70%	23.00%	30.00%	15.60%	4.90%	7.40%	2.60%	3.90%
		% within Primary	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table 6.7.2 A comparison of the Secondary dimensions measured of the SA male and female samples.

			Secondary							
			Secondary Behaviour Dominance	Secondary Behaviour Influence	Secondary Behaviour Steadiness	Secondary Behaviour Compliance	Secondary Behaviour Low Dominance	Secondary Behaviour Low Influence	Secondary Behaviour Low Steadiness	Secondary Behaviour Low Compliance
Gender	Male	Count	31	22	41	45	84	59	33	35
		% within Gender	8.90%	6.30%	11.70%	12.90%	24.00%	16.90%	9.40%	10.00%
		% within Secondary	58.50%	31.90%	41.40%	58.40%	46.20%	64.10%	61.10%	47.30%
	Female	Count	22	47	58	32	98	33	21	39
		% within Gender	6.30%	13.40%	16.60%	9.10%	28.00%	9.40%	6.00%	11.10%
		% within Secondary	41.50%	68.10%	58.60%	41.60%	53.80%	35.90%	38.90%	52.70%
Total		Count	53	69	99	77	182	92	54	74
		% within Gender	7.60%	9.90%	14.10%	11.00%	26.00%	13.10%	7.70%	10.60%
		% within Secondary	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Using a chi-square test, it was found that there was a significant difference between the genders in the SA sample in terms of primary and secondary dimensions (p=0.000). **Therefore 7.1 Ho is rejected and 7.1 Ha is accepted.**

Table 6.7.3 A comparison of the Primary dimensions measured of the *Afrikaans, Black, English and Indian subjects.*

			Primary							
			Primary Behaviour Dominance	Primary Behaviour Influence	Primary Behaviour Steadiness	Primary Behaviour Compliance	Primary Behaviour Low Dominance	Primary Behaviour Low Influence	Primary Behaviour Low Steadiness	Primary Behaviour Low Compliance
Pop	English	Count	30	52	60	19	12	14	4	9
		% within Race	15.00%	26.00%	30.00%	9.50%	6.00%	7.00%	2.00%	4.50%
		% within Primary	33.70%	32.30%	28.60%	17.40%	35.30%	26.90%	22.20%	33.30%
	Afrikaans	Count	19	50	54	34	10	21	5	7
		% within Race	9.50%	25.00%	27.00%	17.00%	5.00%	10.50%	2.50%	3.50%
		% within Primary	21.30%	31.10%	25.70%	31.20%	29.40%	40.40%	27.80%	25.90%
	Black African	Count	28	39	57	40	7	13	8	8
		% within Race	14.00%	19.50%	28.50%	20.00%	3.50%	6.50%	4.00%	4.00%
		% within Primary	31.50%	24.20%	27.10%	36.70%	20.60%	25.00%	44.40%	29.60%
	Indian	Count	12	20	39	16	5	4	1	3
		% within Race	12.00%	20.00%	39.00%	16.00%	5.00%	4.00%	1.00%	3.00%
		% within Primary	13.50%	12.40%	18.60%	14.70%	14.70%	7.70%	5.60%	11.10%
Total		Count	89	161	210	109	34	52	18	27
		% within Race	12.70%	23.00%	30.00%	15.60%	4.90%	7.40%	2.60%	3.90%
		% within Primary	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table 6.7.4 A comparison of the Secondary dimensions measured of the Afrikaans, Black, English and Indian subjects.

			Secondary							
			Secondary Behaviour Dominance	Secondary Behaviour Influence	Secondary Behaviour Steadiness	Secondary Behaviour Compliance	Secondary Behaviour Low Dominance	Secondary Behaviour Low Influence	Secondary Behaviour Low Steadiness	Secondary Behaviour Low Compliance
Pop	English	Count	13	21	30	18	54	22	12	30
		% within Race	6.50%	10.50%	15.00%	9.00%	27.00%	11.00%	6.00%	15.00%
		% within Secondary	24.50%	30.40%	30.30%	23.40%	29.70%	23.90%	22.20%	40.50%
	Afrikaans	Count	11	18	38	23	44	25	15	26
		% within Race	5.50%	9.00%	19.00%	11.50%	22.00%	12.50%	7.50%	13.00%
		% within Secondary	20.80%	26.10%	38.40%	29.90%	24.20%	27.20%	27.80%	35.10%
	Black African	Count	20	20	19	25	52	32	21	11
		% within Race	10.00%	10.00%	9.50%	12.50%	26.00%	16.00%	10.50%	5.50%
		% within Secondary	37.70%	29.00%	19.20%	32.50%	28.60%	34.80%	38.90%	14.90%
	Indian	Count	9	10	12	11	32	13	6	7
		% within Race	9.00%	10.00%	12.00%	11.00%	32.00%	13.00%	6.00%	7.00%
		% within Secondary	17.00%	14.50%	12.10%	14.30%	17.60%	14.10%	11.10%	9.50%
Total		Count	53	69	99	77	182	92	54	74
		% within Race	7.60%	9.90%	14.10%	11.00%	26.00%	13.10%	7.70%	10.60%
		% within Secondary	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

A chi-square test revealed that there was no significant difference between the population groups in terms of the distribution of primary and secondary dimensions.

Therefore 7.2 Ho is accepted.

Section III

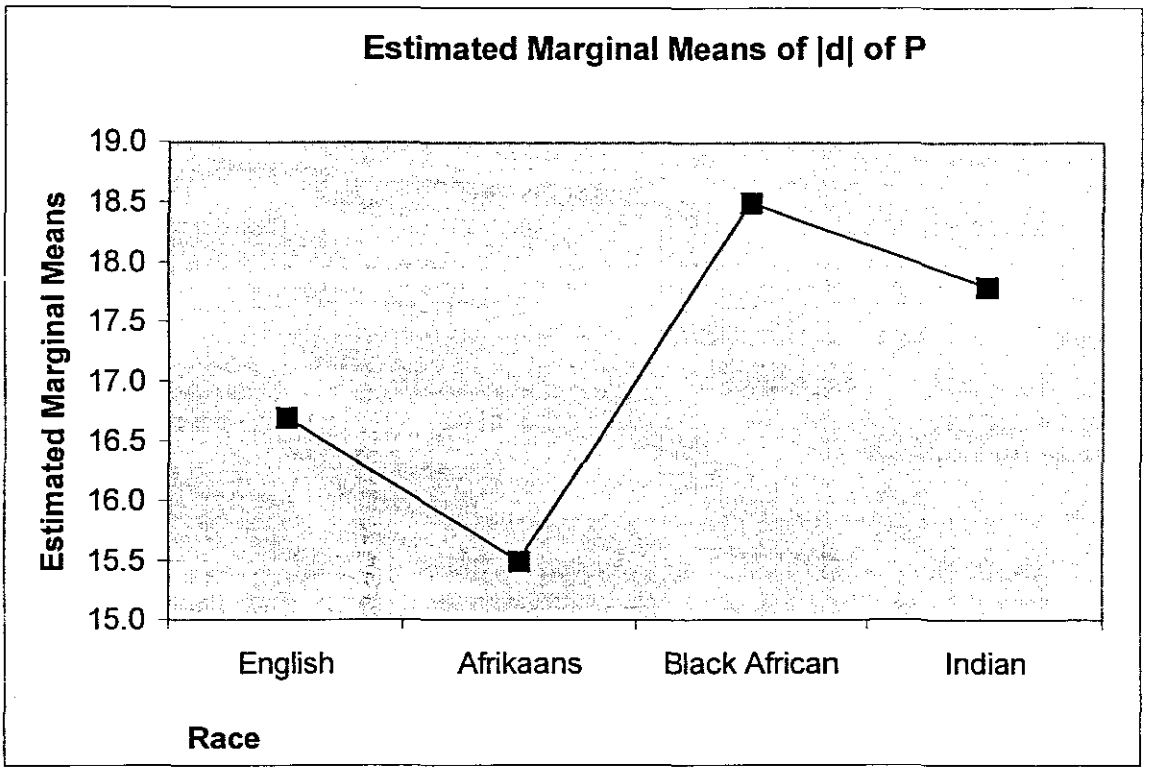
6.8 The investigation as to whether there is any significant difference between the genders or between the South African groups, Afrikaans, Black, English and Indian or between the interaction gender * population groups, in terms of "Stress Factor 1", i.e. |d| of Adapted Behaviour – Natural Behaviour, of the Primary dimension for each individual.

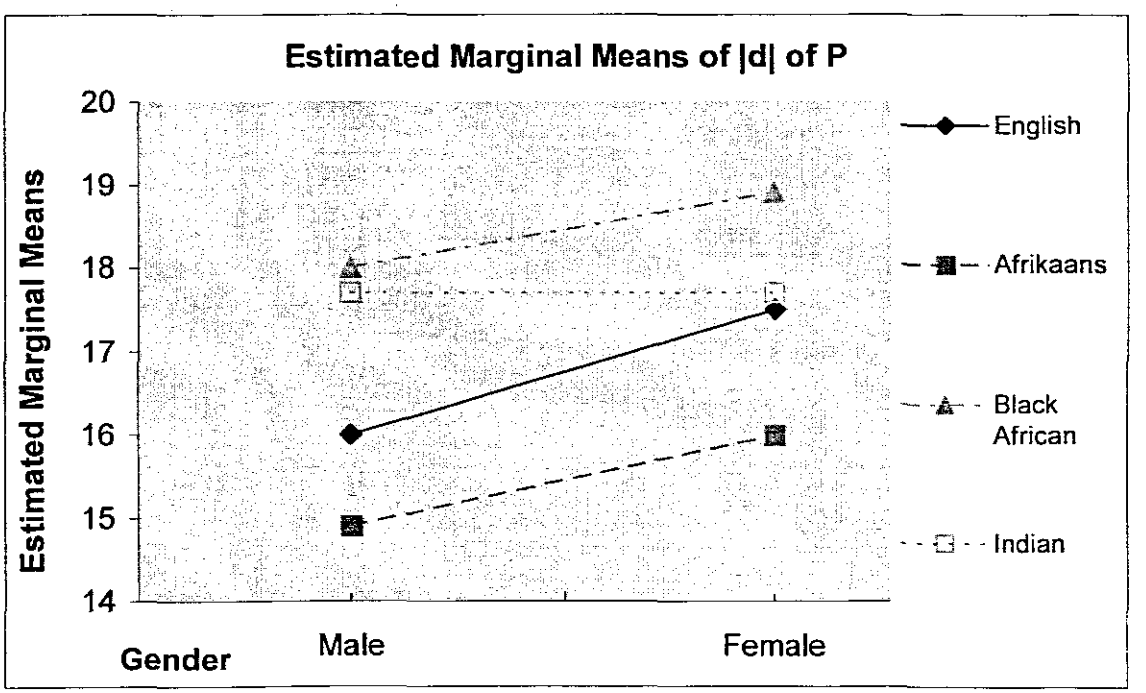
Table 6.8.1 Means and Standard Deviations of Stress Factor 1.

Descriptive Statistics				
Dependent Variable: |d| of P				
Gender	**Pop**	**Mean**	**Std. Deviation**	**N**
Male	**English**	15.97	11.274	100
	Afrikaans	14.78	13.278	100
	Black African	18.04	12.715	100
	Indian	17.74	13.087	50
	Total	16.47	12.562	350
Female	**English**	17.44	13.908	100
	Afrikaans	16.15	15.295	100
	Black African	18.91	13.64	100
	Indian	17.76	13.986	50
	Total	17.54	14.233	350
Total	**English**	16.7	12.649	200
	Afrikaans	15.46	14.303	200
	Black African	18.47	13.16	200
	Indian	17.75	13.475	100
	Total	17.01	13.424	700

A Univariate Analysis of Variance shows that this difference is not statistically significant at the 0.05 level. **Therefore statistically 8 Ho must be accepted.**

Graphs 6.8.1 Profile Plots





6.9 The investigation as to whether there is any significant difference between the genders, or the population groups, or the interaction gender * race, in terms of "Stress Factor 2", i.e. the sum of the absolute values of the differences between each dimension on Graph I and Graph II (SUM|d|).

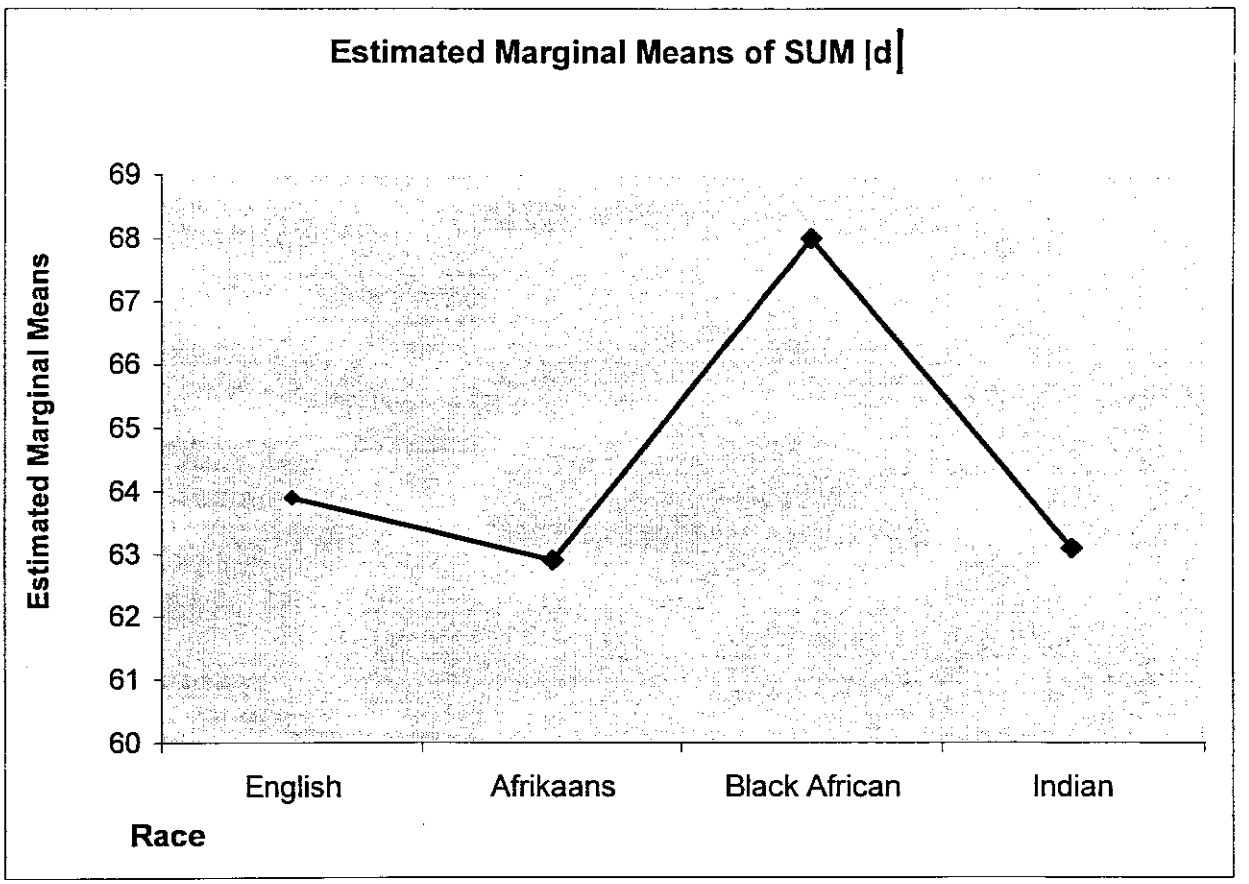
Table 6.9.1 Means and Standard Deviations of Stress Factor 2.

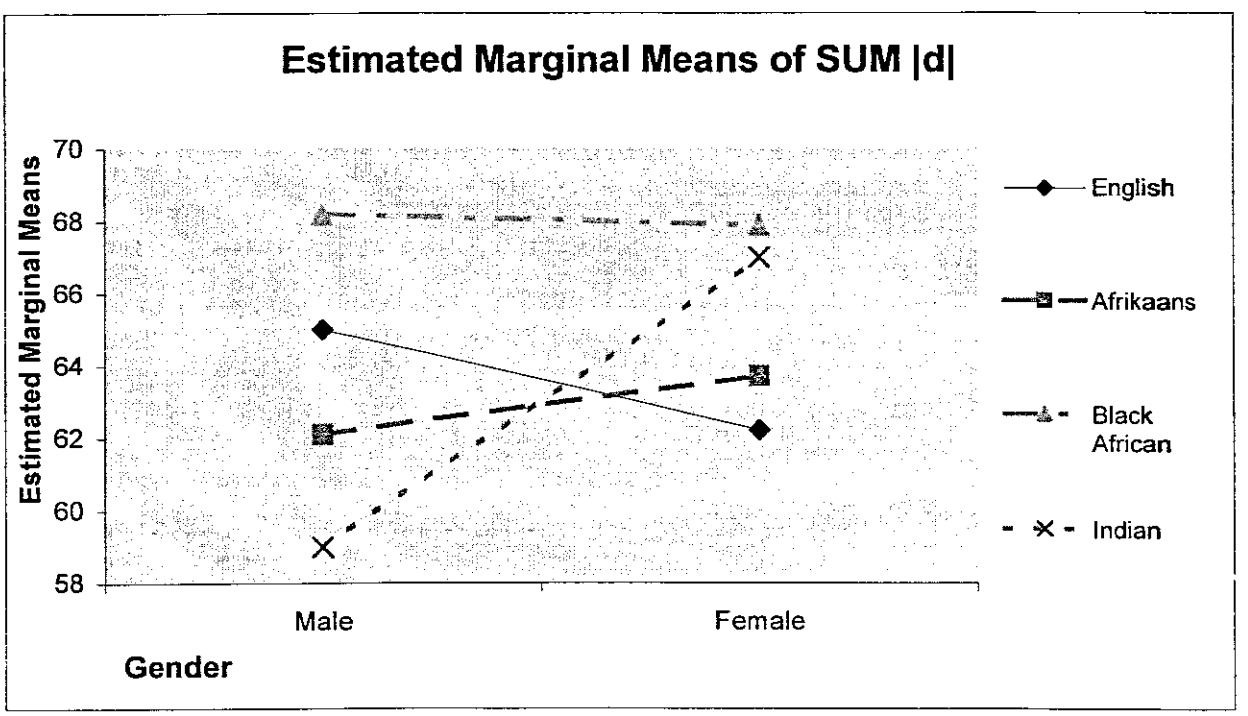
Descriptive Statistics				
Dependent Variable: SUM|d|				
Gender	**Pop**	**Mean**	**Std. Deviation**	**N**
Male	**English**	64.93	25.787	100
	Afrikaans	62.2	24.866	100
	Black African	68.48	24.528	100
	Indian	59	21.802	50
	Total	64.32	24.735	350
Female	**English**	62.65	23.605	100
	Afrikaans	63.55	26.755	100
	Black African	67.66	26.733	100
	Indian	67.12	34.206	50
	Total	64.98	27.073	350
Total	**English**	63.79	24.684	200
	Afrikaans	62.87	25.772	200
	Black African	68.07	25.593	200
	Indian	63.06	28.828	100
	Total	64.65	25.914	700

A *Univariate Analysis of Variance shows that this difference is not statistically* significant at the 0.05 level.

Therefore, 9 Ho must be accepted.

Graphs 6.9.2 Profile Plots





6.10 The difference between the genders, population groups and gender*population group, in terms of the disparity between Adapted Behaviour and Natural Behaviour in each of the dimensions D, I, S and C.

Multivariate tests were run to investigate the differences between the genders and between the population groups and the interaction of gender * population group for the disparities in each dimension.

Table 6.10 Means and Standard Deviations of Adapted - Natural D, I, S, C.

	Gender	Pop	Mean	Std. Deviation	N
Adapted - Natural: Dominance	Male	English	-4.8100	15.07536	100
		Afrikaans	-3.8300	12.37875	100
		Black African	-9.6800	17.63083	100
		Indian	-3.9400	14.60697	50
		Total	-5.7971	15.24044	350
	Female	English	-5.3000	14.95211	100
		Afrikaans	-8.9900	13.87280	100
		Black African	-3.8000	15.29970	100
		Indian	-6.3200	13.87325	50
		Total	-6.0714	14.68106	350
	Total	English	-5.0550	14.97811	200
		Afrikaans	-6.4100	13.36657	200
		Black African	-6.7400	16.72666	200
		Indian	-5.1300	14.22308	100
		Total	-5.9343	14.95329	700
Adapted - Natural: Influence	Male	English	1.2500	22.25716	100
		Afrikaans	.2200	22.68074	100
		Black African	7.3800	19.66527	100
		Indian	-6.4400	19.45918	50
		Total	1.6086	21.65008	350
	Female	English	-6.2900	20.55851	100
		Afrikaans	-2.4700	21.50239	100
		Black African	.2000	22.95934	100
		Indian	.5800	21.57672	50
		Total	-2.3629	21.75975	350
	Total	English	-2.5200	21.70241	200
		Afrikaans	-1.1250	22.08502	200
		Black African	3.7900	21.62369	200
		Indian	-2.9300	20.74338	100
		Total	-.3771	21.78029	700

Table 6.10 cont.

Adapted - Natural: Steadiness	Male	English	-6.4400	18.73975	100
		Afrikaans	-8.6700	18.14535	100
		Black African	-3.2800	20.09678	100
		Indian	-7.5200	14.88355	50
		Total	-6.3286	18.52368	350
	Female	**English**	-7.1900	15.64034	100
		Afrikaans	-1.9100	16.15274	100
		Black African	-4.2700	19.52354	100
		Indian	-7.7600	20.71139	50
		Total	-4.9286	17.80741	350
	Total	**English**	-6.8150	17.22044	200
		Afrikaans	-5.2900	17.46658	200
		Black African	-3.7750	19.76862	200
		Indian	-7.6400	17.94353	100
		Total	-5.6286	18.16958	700
Adapted - Natural: Compliance	**Male**	**English**	.8600	22.21157	100
		Afrikaans	-1.6400	22.76694	100
		Black African	9.7800	20.08949	100
		Indian	6.2000	23.40068	50
		Total	3.4571	22.36650	350
	Female	**English**	-.4800	24.47529	100
		Afrikaans	-9.6100	24.49362	100
		Black African	4.7800	24.39017	100
		Indian	-.7600	21.82543	50
		Total	-1.6257	24.62207	350
	Total	**English**	.1900	23.32174	200
		Afrikaans	-5.6250	23.92250	200
		Black African	7.2800	22.42781	200
		Indian	2.7200	22.78227	100
		Total	.9157	23.64170	700

A MANOVA test was done and using Hotelling's Trace for gender and Wilks' Lambda for population group and for gender*population group, a significant difference was found in each category. Levene's Test of Equality of Error Variances revealed that there was a significant difference in variance in Dominance and Steadiness, indicating that a post hoc DunnettT3 test must be used for these two dimensions, while post hoc Scheffe tests must be used for *Influence and Compliance.*

The ANOVA test of Between-Subjects Effects indicated that there was a

significant difference between genders on Adapted - Natural Compliance.

Therefore, 10.1 Ho must be rejected and 10.1 Ha accepted.

Regarding population groups, a significant difference was found on Adapted - Natural Influence and Adapted - Natural Compliance.

Therefore, 10.2 Ho must be rejected and 10.2 Ha accepted.

Regarding gender * race, it was found that there is a significant difference between the gender * population groups in Adapted - Natural Dominance and Adapted - Natural Influence.

Therefore 10.3 ho must be rejected and 10.3 Ha accepted.

Using the post hoc tests a significant difference was found between English and Blacks in Adapted - Natural Influence and between English and Blacks, Afrikaans and Blacks, and Afrikaans and Indians in Adapted - Natural Compliance. Two homogenous subsets were found for Adapted - Natural Compliance, namely, English and Afrikaans forming one subset and Black and Indian forming another subset.

6.11 The investigation as to whether there is any difference between the Adapted score and the Natural score in each of the dimensions D, I, S and C, as measured on Graph I and Graph II respectively, for each subject.

Table 6.11 Paired Samples Test

		Paired Differences					t	df	Sig. (tailed
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the difference				
					Lower	Upper			
Pair 1	Adapted: Dominance - Natural: Dominance	-5.9343	14.9533	0.56518	-7.0439	-4.8246	-10.5	699	
Pair 2	Adapted: Influence - Natural: Influence	-0.3771	21.7803	0.82322	-1.9934	1.2391	-0.46	699	0.6
Pair 3	Adapted: Steadiness - Natural: Steadiness	-5.6286	18.1696	0.68675	-6.9769	-4.2802	-8.2	699	
Pair 4	Adapted: Compliance - Natural: Compliance	0.9157	23.6417	0.89357	-0.8387	2.6701	1.025	699	0.3

A paired sample t-test was done to investigate whether there was any significant difference between the means of the paired samples. It was found that there is a significant difference in the pairs Adapted Dominance - Natural Dominance and Adapted Steadiness - Natural Steadiness at the 95% confidence level.
Therefore 11 Ho must be rejected and 11 Ha accepted.

6.12 Correlation Results

Using Pearson's Correlation Coefficient (r), the correlation between the Natural and Adapted dimensions was analysed. At the 99% confidence level the following correlations were found:

6.12.1 Positive Correlations (In decreasing order of correlation strength)

Natural Dominance and Adapted Dominance: r = 0,757
Natural Steadiness and Adapted Steadiness: r = 0, 617
Natural Influence and Adapted Influence: r = 0,544
Natural Compliance and Adapted Steadiness: r = 0,461
Natural Compliance and Adapted Compliance: r = 0,405
Natural Steadiness and Natural Compliance: r = 0,385
Natural Steadiness and Adapted Compliance: r = 0,248
Adapted Steadiness and Adapted Compliance: r = 0,190

6.12.2 Negative Correlations (In decreasing order of correlation strength)

Adapted Dominance and Adapted Steadiness: r = -0,713
Natural Dominance and Natural Steadiness: r = -0,678
Natural Dominance and Adapted Steadiness: r = -0, 644
Adapted Dominance and Natural Steadiness: r = -0, 605
Natural Compliance and Natural Dominance: r = -0,554
Natural Compliance and Adapted Dominance: r = -0, 464

Natural Compliance and Adapted Influence: r = -0,440

Natural Compliance and Natural Influence: r = -0,415

Adapted Compliance and Adapted Dominance: r = -0,371

Adapted Influence and Adapted Compliance: r = -0, 367

Adapted Compliance and Natural Dominance: r = -0,335

Adapted Compliance and Natural Influence: r = -0, 333

Adapted Influence and Adapted Steadiness: r = -0,316

Adapted Influence and Natural Steadiness: r = -0,248

Natural Steadiness and Natural Influence: r = -0, 239

Natural Dominance and Natural Influence: r = -0,157

Adapted Steadiness and Natural Influence: r = -0,116

6.12.3 No correlation

Adapted Dominance and Adapted Influence

Adapted Dominance and Natural Influence

Natural Dominance and Adapted Influence

Therefore, 12 Ho must be rejected and 12 Ha accepted.

6.13 Conclusion

In this chapter the empirical data have been tabulated and analysed with regard to the specific hypotheses formulated.

Chapter 7

Discussion and Conclusion

7.1 Introduction

The aim of this study was:

- To test the universality of the DISC instrument in the South African context, i.e. to compare the SA statistics with those obtained in the USA.
- To compare the distribution of the dimensions D, I, S and C in the genders and various population groups (population groups) in South Africa
- To investigate style disparity in the work environment of various population groups in South Africa in order to gain information as to which gender or population group experiences the most stress.

Taking the results of chapter 6 into account, a summary of findings can be made and the results discussed. Criticisms of this study and recommendations for further studies will also be made.

7.2 Summary and Discussion of Results

The main results of this research are:

Section I Basic Style and Response Style

USA versus SA

Using the classification of Basic Style to define the dimensions above the mid-line on Graph II, and Response Style to define the dimensions above the mid-line on Graph I, the results indicate that there is a statistically significant difference

between the distribution of the dimensions of the USA and the SA subjects. However, when only Pure Styles are considered, there is no significant difference between the scores of the USA and the SA subjects. These results suggest that the universality of the DISC Style Analysis Instrument applies at a very basic level only, i.e. when Pure Styles are compared, but when combinations of dimensions are considered each country shows a different pattern. For example, in Basic Style, the combinations Dominance and Influence, and Influence and Steadiness are both considerably higher in the USA than in SA, while the combination Influence, Steadiness and Compliance are also slightly higher in the USA. The common factor here seems to be Influence. The South African percentages are higher for the combinations Dominance, Influence and Steadiness, and Dominance, Steadiness and Compliance, and Steadiness and Compliance. The common factor here seems to be Steadiness. Similarly, in the Response Styles, there are differences, although less marked.

Within SA

Using the Basic and Response Style classification again, there is a significant difference between the genders on D, I and S but not on C in the Basic Style. For the D dimension, the mean for males is significantly higher than the mean for females. For the I dimension, the mean for females is significantly higher than the mean for males. For the S dimension, the mean for females is significantly higher than the mean for males. This implies that SA men show more dominant characteristics in their natural behaviour, while SA women generally display more of the characteristics of Influence and Steadiness. However, in the workplace (Response Style), there is a significant difference between genders on D, S and C, but not on I. For the D dimension, the mean for males is significantly higher than the mean for females. For the S dimension, the mean for females is significantly higher than the mean for males. For the C dimension, the mean for males is significantly higher than the mean for females. Once again, in the workplace, SA men display more Dominant behaviour than SA women do, while

women still display more Steadiness characteristics than men do. However, what is different in the workplace is that men exhibit more Compliance than women do, whereas, in inherent behaviour, there is no significant difference.

Regarding the Basic behavioural styles of the various population groups, a significant difference was only found in the S dimension. The mean for Indians is the highest, followed by the mean for English, then Afrikaans and then Blacks. There is a significant difference between the groups Indians, English and Afrikaans on the one hand, and Blacks on the other hand. The former group demonstrates higher natural Steadiness.

Regarding the Response Style of the population groups, a significant difference was only found in the C dimension. The mean for Blacks is the highest, followed by the mean for Indians, then English and then Afrikaans. There is a significant difference between the 2 groups Blacks and Indians, and English and Afrikaans, the former group demonstrating higher compliance in the workplace. The division of the 4 population groups into these two groups resembles the former Apartheid division between people of colour and Whites. This could be a legacy of those days when people of colour had subservient jobs to Whites, which necessitated more compliance.

Regarding gender * population group, it was found that there is a significant difference between the gender * population groups in the dimensions S and C of the Basic Style. In the S dimension, it was ascertained that there is a difference between the genders and between the population groups. Therefore, the significant difference in gender * population group can be seen to result from the fact that although females display more Steadiness than males generally speaking, Black females show the least Steadiness of the female groups. In the dimension C, it was ascertained that there is no difference between the genders or between the population groups. However there is a gender * population group significant difference. This is due to the fact that that Black males score the

highest in this dimension, while Black females score the lowest. In dimensions D and I there is no effect of the interaction of gender and population group (gender * population group).

Comparing this to the Response Styles, regarding gender * population group, it was found that there is a significant difference between the gender * population groups in the dimensions D and S. In the D dimension it was ascertained that there is a difference between genders but not between population groups. However, when examining the means it can be seen that although males are more Dominant than females generally speaking, Black females are more Dominant than the other female groups, while Black males are the least Dominant of the male groups. In the dimension S, it was ascertained that there is a difference between genders but not between population groups. However there is a gender * population group significant difference. Although females are stronger on this dimension than males, Indian females have the lowest mean of the female groups, while Indian males have the highest mean of the male groups. In the dimension I, there was no gender difference and no population group difference and no gender * population group difference. In the dimension C, there was a gender difference, namely, that males are higher than females and there was a population group difference, namely, that the Black/Indian subset is higher than the English/Afrikaans subset, but there was no gender * population group difference which means that the population groups differ proportionally to the genders.

Section II Primary and Secondary dimensions (Natural Behaviour only).

USA versus SA

It was found that there is a significant difference between the distribution of the Primary and Secondary dimensions of the USA and the SA samples. To compare these it is useful to examine the simplified tables 6.6.4, 6.6.5 and 6.6.6,

which only compare the Primary dimensions. In the general population significant differences can be seen in Primary Compliance with a figure of 15.6% in the South African population and 8.4 % in the USA population. Another statistic showing a large discrepancy in the general population is that of Low Dominance with the USA sample measuring 14.1 % and the SA sample measuring 4.9%. From the comparison of the USA and the SA males (Table 6.6.5), it can be seen that the SA males show more Dominance and more Compliance than the USA males. The SA females have higher Steadiness (32.9% compared to 26.2 percent) and Compliance (12. 9% compared to 8.3%) scores than their USA counterparts.

Some interesting observations are that while SA males are more Dominant than USA males, SA females are less Dominant than USA females. Also, all the USA samples show more Influence than the South Africans, while all the SA samples show more Compliance than the Americans do.

These results can be compared with those in Section I, which involved a different way of defining the dimensions, namely, Basic Style and Response Style. From this comparison it can be confirmed that the Americans behave naturally in a more influential way than the South Africans. In Section I, the implication was that South Africans are naturally more likely to show Steadiness characteristics than the Americans, while Section II indicates that the South Africans are also more likely to show Compliance than their American counterparts.

Within the SA sample.

It was found that there was a significant difference between the genders in the SA sample in the distribution of Primary and Secondary dimensions. From Table 6.7.1 it can be seen that males are higher on dimensions D and C, while females are higher on I and S.

No significant difference was found in terms of population group. From Table 6.7.3 interesting observations can be made, namely that, English are highest on D and I, Indians are highest on S and Blacks are highest on C.
As one would expect, these results compare favourably with the results on Basic Styles in Section I. Although in this section, no significant difference was found between the population groups, the mean for Blacks is the highest for Compliance. From Section I, one can conclude that the other three population groups form a homogenous subset, particularly high in dimension S.

An interesting observation is that the difference in the distribution of the dimensions in the USA and the SA samples was more widespread than the differences within the SA sample based on population group. Environmental factors, rather than population group, must therefore play a greater role in the formation of natural behaviour.

Section III. Stress Factors

Stress Factor 1

Although it was established that the differences in means were not statistically significant, some interesting observations can be made. From Table 6.8.1 and Graphs 6.8.1, the differences in the means of Stress Factor 1 in the two genders and four population groups can be seen. According to these results females have a higher mean than males, thus indicating higher scores on Stress Factor 1 than males. Blacks have the highest mean of the population groups, indicating that they have the highest score on Stress Factor 1. Interestingly, the order of the levels of stress is the same in the male and female groups, i.e. Blacks then Indians, followed by English and finally Afrikaans.

What is of significance in the SA context, is that all population groups experience stress in the workplace as a result of having to adjust their Primary behavioural

dimension an average of 17%. Hence, it is an issue that needs to be addressed nationally.

Stress Factor 2.

Once again, although not statistically significant, the differences in the means of Stress Factor 2 can be seen from Table 6.9.1 and Graphs 6.9.1. Once again Blacks scored the highest on this stress factor followed by English, Indians and Afrikaans.

From these results the indications are that the Black population experiences the most stress in the workplace due to having to adapt their natural behaviour the most. However, further research is needed to verify this statistically.

Adapted-Natural D, I, S and C

A significant difference was found in each category in Table 6.10.

In Table 6.10 a "plus" indicates that the Adapted behaviour is higher than the Natural behaviour, (i.e. indicative of **forced adaptation**), while a "minus" indicates that the Natural behaviour is higher than the Adapted behaviour, (i.e. indicative of **suppressed natural behaviour**), in the workplace.

It is interesting to note that in the workplace, all subjects suppress Dominance, particularly Black males. With the exception of Indian males, all other males, especially Blacks, force Influence in the workplace. Steadiness is generally suppressed, while, with the exception of the Afrikaans group, Compliance is generally forced.

The ANOVA test of Between-Subjects Effects indicated that there was a significant difference between genders on Adapted - Natural Compliance. Males

show forced Compliance whereas females show suppressed Compliance.

Regarding population groups, a significant difference was found on Adapted - Natural Influence and Adapted - Natural Compliance. The Blacks showed considerable forced Influence while the English and the Indians showed considerable suppressed Influence. The Blacks showed the highest forced Compliance while the Afrikaans showed the highest suppressed Compliance.

Regarding gender * race, it was found that there is a significant difference between the gender * population groups in Adapted - Natural Dominance and Adapted - Natural Influence. The Black females do not suppress Dominance to the extent that the Black males do. The interaction between genders * population group in Adapted - Natural Influence shows that the English and Afrikaans females have to suppress Influence far more than their male counterparts, whereas the Black males force Influence to a greater extent than Black females. However, the greatest distinction is in the Indian group where the males have to suppress Influence and the females have to force Influence.

Using the post hoc tests a significant difference was found between the English and the Blacks in Adapted - Natural Influence and between the English and the Blacks, the Afrikaans and the Blacks, and the Afrikaans and the Indians in Adapted - Natural Compliance. Two homogenous subsets were found for Adapted - Natural Compliance, namely, English and Afrikaans forming one subset and Black and Indian forming another subset. The English/Afrikaans group has to force Compliance, whereas the Black/Indian group has to suppress Compliance.

It is interesting to note that in the workplace, all subjects suppress Dominance, particularly Black males. With the exception of Indian males, all other males especially Blacks force Influence in the workplace. Steadiness is generally suppressed, while, with the exception of the Afrikaans group, Compliance is

generally forced.

The Paired Samples Test

It was found that there is a significant difference in the pairs Adapted Dominance - Natural Dominance and Adapted Steadiness - Natural Steadiness at the 95% confidence level.

From Table 6.11, it can be seen that the mean for Natural Dominance is significantly higher than the mean for Adapted Dominance and also that the mean for Natural Steadiness is significantly higher than the mean for Adapted Steadiness (i.e. the difference of means is negative). In other words, the general tendency is for South Africans to suppress both Natural Dominance and Natural Steadiness in the workplace.

In the South African context, this implies that for some the suppression of ambitious, independent, forceful behaviour is a source of stress, whereas for others the suppression of relaxed behaviour, i.e. having to work quickly under time pressure, is a source of stress.

Correlation results

From the correlation results it can be seen that as the Natural dimension increases or decreases so the counterpart Adapted dimension increases or decreases. E.g. an increase in Natural Dominance is accompanied by an increase in Adapted Dominance.

Another significant correlation is that between Steadiness and Compliance. This implies that if a person is high on one of these dimensions he/she will tend to be high on the other.

Regarding the negative correlations, it can be seen from 6.12.2 that Dominance and Steadiness are strongly negatively correlated. In other words as Dominance increases, Steadiness decreases and vice versa.

7.3 Critical Analysis of Research

The following main points of criticism need to be taken into account:

The question as to whether the sample used in this research is representative of the South African population. The sample was taken from 3 organisations based in the Johannesburg and Cape Town areas. One of the organisations works predominantly in the area of the Christian religion and consequently the number of Christians in the sample may be in excess of the proportion of Christians in the country. It was also difficult to find a large number of Indian reports and hence only 50 males and 50 females were included in the sample. This sample may be too small to give an accurate reflection of this population group.

The questionnaire was only available in English and Afrikaans. This meant that the Black sample could not complete it in their native languages. Furthermore, the Afrikaans version is a translated version, without proof of reliability or validity.

Culturally, the Black population group is not as familiar with questionnaires and psychometric testing as are the other population groups.

With the exception of the Indian group, the sample consisted of equal numbers of males and females from the population groups. This is not proportionally representative of the South African population, where the vast majority of people belong to the Black population group.

The sample may not have been representative in many other areas such as age groups, education, work tenure, socio-economic factors, level of responsibility,

urban/rural environment etc.

7.4 Further Research

Further research could include:

- ξ A repeat of this research using a stratified random sample from the South African population, to ensure that the above weaknesses are reduced.
- ξ Translations of the Style Analysis Instrument into the South African languages, which are then tested for validity and reliability.
- ξ Further research to investigate the magnitude of the stress caused by poor job fit in comparison to other stressors, such as working conditions, working hours, level of responsibility etc.
- ξ Regression analysis on the existing data to establish the predictors of Adapted Behaviour.
- ξ Complementary methods of research, such as qualitative research to investigate the work stress experienced by the South African population.

7.5 Conclusion and Recommendations

In terms of the aims of this research, it can be concluded that:

- ξ Regarding the comparison between the USA data and the SA data:

There is a significant difference between the USA sample and the SA sample in terms of the distribution of Basic and Response Styles. There is not a significant difference between the USA sample and the SA sample in terms of Pure Styles. There is a significant difference between the USA sample and the SA sample in terms of Primary and Secondary dimensions. Consequently, it can be concluded that the DISC language is only "universal" in terms of Pure Styles.

- Regarding the comparison between the genders and the population groups in SA:

There is a significant difference between the genders in SA in the distribution of the various dimensions. With the exception of Basic S, there is no significant difference between the population groups in SA in the distribution of the various natural dimensions.

- Regarding the comparison in job fit, and hence the experience of stress in the workplace, of the different genders and population groups in SA:

There is no significant difference in Stress Factor 1 or in Stress Factor 2 between the genders or the population groups in SA. However, the Black group had the highest mean. Comparatively speaking, we can conclude that the Black group has the poorest job fit and hence the greatest job stress.

It can be recommended, therefore, that all population groups receive counselling to facilitate correct job fit and to address the occurrence of stress in the workplace.

In the South African context this implies that a greater emphasis on career assessment and guidance is needed. At present this facility is usually only available to the privileged few who can afford private assessment. However, in Richards Bay in KwaZulu-Natal, there is an excellent facility, The Zululand Career Centre, which is a community project, sponsored by business organisations, that enables thousands of school pupils to be exposed to career assessment and guidance. This centre also has a mobile unit that takes career guidance into the rural areas of northern KwaZulu-Natal. I recommend that this model be replicated in as many different areas as possible throughout South Africa.

Appendix A

STYLE ANALYSIS

Name _____ Company _____ Male ☐

FOCUS: Work ☐ Home ☐ Female ☐

M	L			M	L		
☐	☐	Gentle, kindly	1	☐	☐	Aggressive, challenger, takes action	13
☐	☐	Persuasive, convincing		☐	☐	Life of the party, outgoing, entertaining	
☐	☐	Humble, reserved, modest		☐	☐	Easy mark, easily taken advantage of	
☐	☐	Original, inventive, individualistic		☐	☐	Fearful, afraid	
☐	☐	Attractive, charming, attracts others	2	☐	☐	Cautious, wary, careful	14
☐	☐	Cooperative, agreeable		☐	☐	Determined, decided, unwavering, stand firm	
☐	☐	Stubborn, unyielding		☐	☐	Convincing, assuring	
☐	☐	Sweet, pleasing		☐	☐	Good-natured, pleasant	
☐	☐	Easily led, follower	3	☐	☐	Willing, go along with	15
☐	☐	Bold, daring		☐	☐	Eager, anxious	
☐	☐	Loyal, faithful, devoted		☐	☐	Agreeable, consenting	
☐	☐	Charming, delightful		☐	☐	High-spirited, lively, enthusiastic	
☐	☐	Open-minded, receptive	4	☐	☐	Confident, believes in self, assured	16
☐	☐	Obliging, helpful		☐	☐	Sympathetic, compassionate, understanding	
☐	☐	Willpower, strong-willed		☐	☐	Tolerant	
☐	☐	Cheerful, joyful		☐	☐	Assertive, aggressive	
☐	☐	Jovial, joking	5	☐	☐	Well-disciplined, self-controlled	17
☐	☐	Precise, exact		☐	☐	Generous, willing to share	
☐	☐	Nervy, gutsy, brazen		☐	☐	Animated, uses gestures for expression	
☐	☐	Even-tempered, calm, not easily excited		☐	☐	Persistent, unrelenting, refuses to quit	
☐	☐	Competitive, seeking to win	6	☐	☐	Admirable, deserving of praise	18
☐	☐	Considerate, caring, thoughtful		☐	☐	Kind, willing to give or help	
☐	☐	Outgoing, fun loving, socially striving		☐	☐	Resigned, gives in	
☐	☐	Harmonious, agreeable		☐	☐	Force of character, powerful	
☐	☐	Fussy, hard to please	7	☐	☐	Respectful, shows respect	19
☐	☐	Obedient, will do as told, dutiful		☐	☐	Pioneering, exploring, enterprising	
☐	☐	Unconquerable, determined		☐	☐	Optimistic, positive view	
☐	☐	Playful, frisky, full of fun		☐	☐	Accommodating, willing to please, ready to help	
☐	☐	Brave, unafraid, courageous	8	☐	☐	Argumentative, confronting	20
☐	☐	Inspiring, stimulating, motivating		☐	☐	Adaptable, flexible	
☐	☐	Submissive, yielding, gives in		☐	☐	Nonchalant, casually indifferent	
☐	☐	Timid, shy, quiet		☐	☐	Lighthearted, carefree	
☐	☐	Sociable, enjoys company of others	9	☐	☐	Trusting, faith in others	21
☐	☐	Patient, steady, tolerant		☐	☐	Contented, satisfied	
☐	☐	Self-reliant, independent		☐	☐	Positive, admitting no doubt	
☐	☐	Soft-spoken, mild, reserved		☐	☐	Peaceful, tranquil	
☐	☐	Adventurous, willing to take chances	10	☐	☐	Good mixer, likes being with others	22
☐	☐	Receptive, open to suggestions		☐	☐	Cultured, educated, knowledgeable	
☐	☐	Cordial, warm, friendly		☐	☐	Vigorous, energetic	
☐	☐	Moderate, avoids extremes		☐	☐	Lenient, not overly strict, tolerant of others' actions	
☐	☐	Talkative, chatty	11	☐	☐	Companionable, easy to be with	23
☐	☐	Controlled, restrained		☐	☐	Accurate, correct	
☐	☐	Conventional, doing it the usual way, customary		☐	☐	Outspoken, speaks freely and boldly	
☐	☐	Decisive, certain, firm in making a decision		☐	☐	Restrained, reserved, controlled	
☐	☐	Polished, smooth talker	12	☐	☐	Restless, unable to rest or relax	24
☐	☐	Daring, risk-taker		☐	☐	Neighborly, friendly	
☐	☐	Diplomatic, tactful to people		☐	☐	Popular, liked by many or most people	
☐	☐	Satisfied, content, pleased		☐	☐	Orderly, neat, organized	

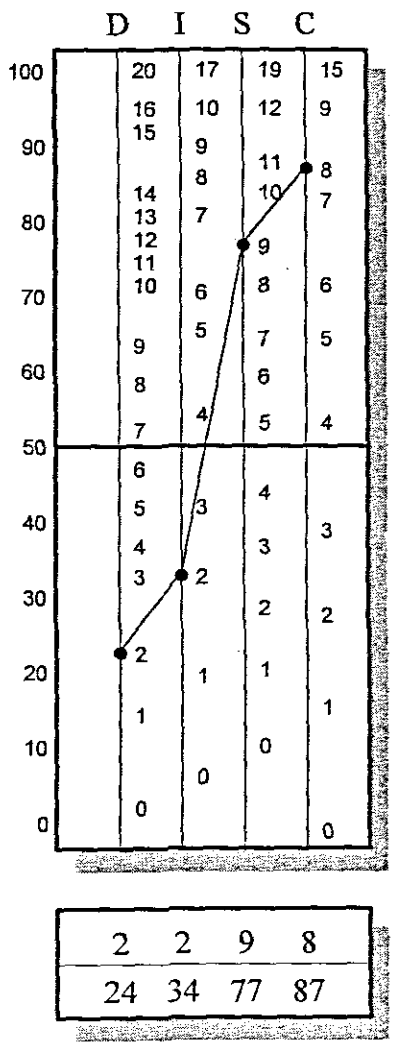
Afrikaans Translation of the Style Analysis

☐☐	Saggeaard / Goedhartig (Gentle)	1	☐☐	Aggressief / Uitdagend (Aggressive)	13
☐☐	Oorredend / Oortuigend (Persuasive)		☐☐	Dryfkrag van die partytjie / Uitgaande (Entertaining)	
☐☐	Beskeie (Humble)		☐☐	Word maklik misbruik / Slagoffer (Easy mark)	
☐☐	Oorspronklik / Individualisties (Original)		☐☐	Bevrees / Bang (Fearful)	
☐☐	Innemend / (Charming)	2	☐☐	Versigtig / Sorgvuldig (Cautious)	14
☐☐	Samewerkend / Gewillig (Cooperative)		☐☐	Vasbeslote (Decided)	
☐☐	Ontoegeeflik / Koppig (Stubborn)		☐☐	Oortuigend (Convincing)	
☐☐	Aangenaam / Vredeliewend (Sweet)		☐☐	Goedgeaard / Aangenaam (Pleasant)	
☐☐	Volgeling / Maklik gelei (Easily led)	3	☐☐	Gewillig / Bereidwillig (Willing)	15
☐☐	Dapper / Moedig (Bold)		☐☐	Gretig / Kan nie wag nie (Eager)	
☐☐	Lojaal / Toegewyd / Getrou (Loyal)		☐☐	Instemmend / Toelatend (Agreeable)	
☐☐	Prettig (Delightful / Charming)		☐☐	Vurig / Lewendig (Enthusiastic)	
☐☐	Onbevooroordeeld / Ontvangklik (Open-minded)	4	☐☐	Selfversekerd (Confident)	16
☐☐	Tegemoetkomend / Behulpsaam (Helpful)		☐☐	Medelyend / Simpatiek (Compassionate)	
☐☐	Wilskrag / Sterk eie wil (Strong-willed)		☐☐	Verdraagsaam (Tolerant)	
☐☐	Opgeruimd / Plesierig (Cheerful)		☐☐	Self-geldend / Aggresief (Assertive)	
☐☐	Joviaal / Grappig (Jovial))	5	☐☐	Gedissiplineerd / (Well-disciplined)	17
☐☐	Korrek / Presies / Noukeurig (Precise)		☐☐	Vrygewig / Ruimhartig (Generous)	
☐☐	Waaghalsig (Gutsy)		☐☐	Ekspressief / Geanimeerd (Animated)	
☐☐	Gelykmatig / Bedaard (Calm)		☐☐	Volhardend / Gee nie op nie (Persistent)	
☐☐	Mededingend / Wil wen (Competitive)	6	☐☐	Bewonderingswaardig (Admirable)	18
☐☐	Bedagsaam / Gee om (Considerate)		☐☐	Goedhartig / Welwillend (Kind)	
☐☐	Sosiaal / Pret-liewend (Outgoing)		☐☐	Inskiklik / Gee maklik in (Resigned)	
☐☐	Eensgesind / Instemmend (Agreeable)		☐☐	Kragdadig (Force of character)	
☐☐	Puntenerig (Fussy)	7	☐☐	Eerbiedig / Beleefd (Respectful)	19
☐☐	Gehoorsaam / Pligsgetrou (Obedient)		☐☐	Ondernemend / 'n Pionier (Enterprising)	
☐☐	Gedetermineer / Onoorwinbaar (Determined)		☐☐	Optimisties / Positief (Optimistic)	
☐☐	Speels / Uitgelate (Playful)		☐☐	Akkomoderend / Help graag (Willing to please)	
☐☐	Dapper / Onverskrokke (Brave)	8	☐☐	Stryerig / Konfronterend (Argumentative)	20
☐☐	Motiverend / Inspirerend (Inspiring)		☐☐	Aanpasbaar / Plooibaar (Flexible)	
☐☐	Onderdanig / Inskiklik (Submissive)		☐☐	Ongeërg / Onbetrokke (Nonchalant)	
☐☐	Beskeie / Skaam / Stil (Timid)		☐☐	Lighartig / Sorgvry (Carefree)	
☐☐	Gesellig / Geniet geselskap (Sociable)	9	☐☐	Glo / Vertrou andere maklik (Trusting)	21
☐☐	Geduldig / Verdraagsaam (Patient)		☐☐	Tevrede (Contented)	
☐☐	Selfstandig / Onafhanklik (Independent)		☐☐	Positief / Sonder enige voorbehoud (Positive)	
☐☐	Sagsprekend / Teruggetrokke (Soft-spoken)		☐☐	Rustig / Kalm (Peaceful)	
☐☐	Ondernemend / Avontuurlik (Adventurous)	10	☐☐	Gesellig / Wil met ander meng (Good mixer)	22
☐☐	Toeganklik / Oop vir nuwe idees (Receptive)		☐☐	Gekultiveerd / Opgevoed (Cultured)	
☐☐	Hartlik / Warm / Vriendelik (Warm)		☐☐	Lewenskragtig / Energiek (Vigorous)	
☐☐	Matig / Vermy uiterstes (Moderate)		☐☐	Toegewend / Nie te streng nie (Lenient)	
☐☐	Spraaksaam / Praterig (Talkative)	11	☐☐	Gemoedelik / Gemakllik (Companionable)	23
☐☐	Beheersd (Controlled)		☐☐	Akkuraat / Korrek (Accurate)	
☐☐	Konvensioneel / Tradisioneel (Customavy)		☐☐	Uitgesproke / Reguit (Outspoken)	
☐☐	Beslissend / Ferm in optrede (Decisive)		☐☐	Ingetoë / Gereserveerd / Beheersd (Restrained)	
☐☐	Afgerond / Welsprekend (Polished)	12	☐☐	Rusteloos / Ontspan Moeilik (Restless)	24
☐☐	Waaghalsig (Daring)		☐☐	Medemenslik / Vriendelik (Neighborly)	
☐☐	Diplomaties / Taktvol (Diplomatic)		☐☐	Populêr / Gewild (Popular)	
☐☐	Tevrede / Voldaan (Satisfied)		☐☐	Netjies / Georganiseerd (Orderly)	

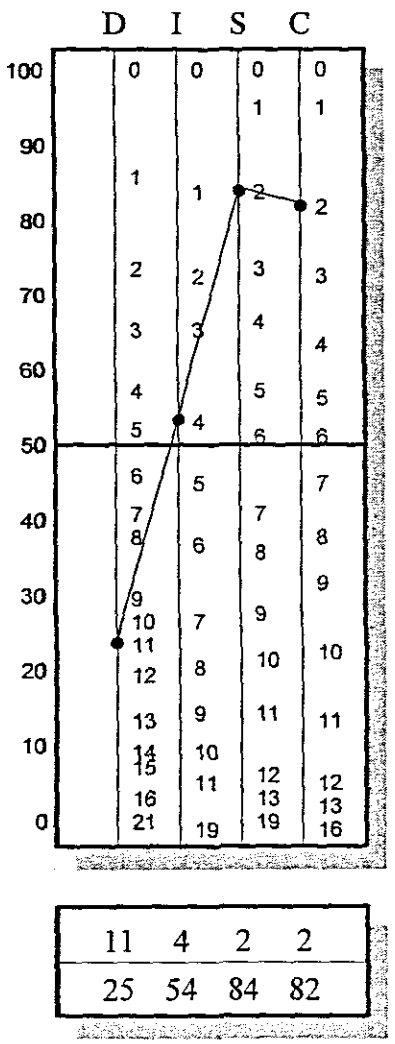
Appendix B

STYLE ANALYSIS™ GRAPHS

MOST
Graph I
Adapted Style



LEAST
Graph II
Natural Style



	D	I	S	C
Score	2	2	9	8
%	24	34	77	87

	D	I	S	C
	11	4	2	2
	25	54	84	82

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