THE RELATIONSHIP BETWEEN PERSONALITY TRAITS AND TEAM CULTURE

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DECLARATION

I, Fahrial Desai, student number 35118059, declare that

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is my own work, and that all the sources that I have used or have quoted from have been indicated and acknowledged by means of complete references.

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SUMMARY

The general aim of this study was to investigate the relationship between personality traits and team culture, establish whether this relationship changed over time and determine if there were significant differences between the research groups in their personalities and team cultures from a before to an after assessment.

The study was conducted on a sample from the South African Police Services and assessments utilising the Basic Traits Inventory (BTI) and the Team Emotional and Social Intelligence survey (TESI) were analysed at the onset and completion of the participants' training. The results indicated a slight relationship between personality and team culture and significant differences were detected from the before to after phases of the study. The findings of the study contribute to an understanding of personality as amenable to a specific occupational setting and of team culture as a more stable variable, which is established early in the team's development.

KEY TERMS

Basic traits inventory, five-factor model, personality, team culture, team development, team emotional and social intelligence survey, trait theory, organisational culture.

CHAPTER 1
SCIENTIFIC ORIENTATION TO THE RESEARCH

This dissertation focussed on the relationship between personality traits and team culture. Personality traits and elements of team culture were analysed in order to determine whether there is a significant relationship between these two variables. Chapter 1 contains the background and motivation, the problem statement, the aims, paradigm perspective, research design and method, as well as the chapter layout.

1.1 BACKGROUND AND MOTIVATION

The study of personality is older than the field of psychology itself. Early Greek and Roman philosophers theorised famously about the nature of human nature (Eysenck, 1992; McAdams & Pals, 2007; Crowne, 2007) and today, there is an abundance of literature on personality. Trait theory in particular has seen a large growth in acceptance of research on trait concepts (Robertz & Pomerantz, 2004). In the South African context, personality assessment remains a contentious topic as gradual attempts are made to make it inclusive of the multi-lingual society we live in (Meiring, 2007).

Team culture is a relatively untouched subject. Apart from a few organisational development models at the team level and Schein's (2004) discussions on the development of team culture, the concept has been sparsely researched, specifically in South Africa.

Team culture is a relevant subject and point of interest because of the impact it has on the way a team functions and the quality of interaction between members. Furthermore, organisations are increasingly dependent on high-performance teams, cross-functional teams and self-managed teams in response to the demand for organisational decentralisation and flexibility (French & Bell, 2005).

The process of arriving at an optimal, stable team culture, however, requires the

assertion and acceptance of individual contributions as members attempt to establish themselves within the team (Schein, 2004). This dissertation aims to contribute to the understanding of team culture by looking at the role of personality within a team and its implications for the culture yielded in a small group. The focal point of the study is the translation of personalities in the team into a sustainable culture, or vice versa, as may be the case. The current standing of the constructs according to research is briefly discussed under the subheadings that follow, with a more comprehensive explanation provided in the literature review of the subsequent chapters.

1.1.1 Recent research on personality and team culture

In the organisational context, the personality of the individual has long been accepted as a valuable indicator of work performance (Schneider & Smith, 2004). Although successful teams have also shared in contributing to organisational productivity (Hughes & Terrell, 2007a; Lumsden & Lumsden, 2004), personality and teams have mostly been studied as separate entities. This is improbable in reality, since teams do not function without the contributions of individual members and each member brings with him/her knowledge, skills and personal personality attributes (Lumsden & Lumsden, 2004; Moreland & Levine, 2003).

Teams, at the most basic level, consist of individuals who contribute by providing functional expertise as well as interacting as cooperative members (Manning, Parker & Pogson, 2006). The way in which teams and individual members participate can be traced to their personalities. However, it is difficult to disentwine individuals and personality from cultural aspects when attempting to explain team behaviour (Manning et al., 2006). The day-to-day interactions and the shared emotional reactions that occur in a group are what launch a sense of belonging or sharedness between members (Schein, 2004).

Cultural elements are consequently reflected as team identity, with boundaries and norms being generated as a result of the underlying assumptions of team members.

In fact, everything about the way a team operates reflects its culture (Schein, 2004). The concept of culture within the work context is more often than not studied at the organisational level. More recently, however, attention has been shifted to the sub-units or sub-cultures of the organisation where the members may have specific shared experiences or problems that may differ from those of other members of the organisation (Martins & Von der Ohe, 2006; Werner, 2003). The behaviour of these smaller groups or teams is strongly linked to the culture that prescribes the norms for acceptable behaviour, as mutually understood by its members (Lumsden & Lumsden, 2004).

Organisational culture has been a popular concept because of its association with organisational performance (Martins & Von de Ohe, 2006) but both its definition and measurement have proven difficult. It is commonly described as the symbols, norms and shared assumptions (Werner, 2003) that have an influence on the feelings, thoughts and behaviour of employees (Manetje, 2005) and has been linked to personality in some research (Schneider, Smith, Taylor & Fleenor, 1998).

Organisational culture is measured on dimensions such as external environment, management processes and vision/mission (Nkosi, 2003). This view of organisational culture is appropriate where an integrative culture exists; the culture is homogeneous, unitary, strong and organisation-wide (Nkosi, 2003; Palthe & Kossek, 2003). However, this perspective oversimplifies the nature of organisational culture and may not be appropriate to all employees (Palthe & Kossek, 2003; Sackmann, 1992).

In 1958 Argyris asserted that an organisation is constituted of many levels of analysis, to which research methodology should adjust in order to represent reality (Schneider, Smith, Taylor & Fleenor, 1998). It is unfortunate that it has taken almost 40 years for researchers to consider his advice, considering the complexity of today's organisational functioning and the need for comprehensive organisational theory. This research attempts to show that this connection is indeed likely, if assessed at the meso-level, which is the group level.

1.1.2 The relationship between team culture and personality

Team culture serves to govern the transactions that take place in the team and regulate how members behave and complete their tasks. A relationship between personality and team culture is presumed, since the nature of the culture would be tied to the personalities of group members. This would have specific effects on the processes and ultimately the performance of the team (Moynihan & Peterson, 2004). A dominance of either extroverts or introverts on a team, for example, may result in significant differences in how the members communicate with and understand one another (Hughes & Terrell, 2007a). More importantly, however, personality provides significant indicators on how individual differences in thought, feeling and behaviour affect teamwork skills and intra-group relations (Moynihan & Peterson, 2004).

Studying personality in relation to the culture within groups provides an opportunity to investigate the relationship between the variables and the possible indirect influence of personality on team effectiveness. The configuration of personality traits has been speculated to influence organisational structures, processes and culture, but the different individual and organisational levels of analysis have made this possible connection conceptually difficult in previous research (Schaubroeck, Ganster & Jones, 1998; Schneider et al., 1998).

This research is therefore in keeping with the differentiated approach, which promotes the existence of multiple cultures of various sub-groups (Palthe & Kossek, 2003) in the organisation. While behavioural norms and practices may vary across subcultures, subcultures themselves are considered stable, consistent and coherent (Palthe & Kossek, 2003). Many groups in organisations can therefore be regarded as sub-groups with specific cultures determined by the characteristics of the members contained within each sub-grouping.

The contributions of this dissertation are meant to address the lack of knowledge regarding personality at group level and the possible adaptations that may occur at this level. A further contribution may include the reintroduction of the Attraction-

Selection-Attrition (ASA) model, which explains the impact of personality within the organisational context (Schaubroeck et al., 1998). According to this model the organisation perpetuates specific personality traits by attracting and selecting employees who already have personality traits similar to the organisation (Schneider, et al., 1998).

Previous research into the effects of personality at a group level, within the South African context, is minimal. This is largely due to the multilevel approach being discouraged previously; until recently, the general preference was for personality and social psychology remaining independent (Schneider & Smith, 2004). Some research has considered group composition influences on performance, but the focus has been on the impact of variables such as age, sex and race (Schneider & Smith, 2004). This research therefore addresses the need to understand team functioning better by investigating the role played by team member personality.

A second intention of this research is to investigate possible changes in the personalities of group members and their team's culture before and after assessments. It is expected that some changes in either or both variables may occur over time as the teams progress through the stages of development (Cilliers & Koortzen, 2003). The findings of Schaubroeck et al. (1998) from their study on the ASA model (Schneider & Smith, 2004) indicated that homogenisation of personality in organisational sub-units occurred, but occupational and organisational factors were not significant contributors and therefore underscored the need for assessing the influence of specific cultures in the organisation.

The implications of the ASA model in the context of this study would be that the personality traits of groups would determine their individual cultures, which in turn could influence the homogenisation of traits in the respective sub-groups and attrition of those members whose personalities are incompatible with the conditions or culture of their teams. The personality profiles of the teams will be analysed to determine a causal relationship between personality traits and team culture. A pre- and post-analysis will also serve to identify any significant changes in these variables

and their relationship over time.

1.2 PROBLEM STATEMENT

As explained in the previous paragraphs, little evidence exists on the role of personality in the formation of the culture of a team; this dissertation was an attempt to address this gap in knowledge about group life. It is therefore postulated that personality plays a key role in influencing the teams' respective cultures. It was further hypothesised that the relationship between personality and the team culture will change across time, as indicated by before and after assessments.

To address the above issues, this research was designed to answer the following literature and empirical questions:

- How are the personality traits represented in the research groups?
- How are the cultures of the research groups represented?
- What is the correlation between the personality profiles and team cultures of the research groups?
- Have there been significant changes between the before and after correlations of personality and team culture?
- What differences in personality or team culture can be distinguished between the research groups?
- What are the implications of the results for the organisation?

1.3 AIMS

The following general and specific aims were formulated.

The general aim of this research was to describe the relationship between personality and team culture and to indicate possible changes in this relationship across time.

Specific theoretical aims included to

- conceptualise personality according to the trait approaches;
- conceptualise team culture and its dimensions;
- integrate culture and personality theoretically; and
- indicate possible changes in this relationship across time.

The specific aims relating to the empirical study were to

- determine the existing team cultures in the research groups;
- determine the existing personality profiles in the research groups;
- determine the cultures of the research groups three months later;
- determine the personality profiles within the research groups three months later;
- determine the empirical correlation between personality and team culture;
- indicate possible changes in the relationship between personality and team culture;
- determine whether significant differences in personality and team culture can be established between the research groups using analysis of variance (ANOVA);
- integrate the results; and
- formulate recommendations regarding personality and team culture in organisations.

1.4 THE PARADIGM PERSPECTIVE

This study forms part of and aims to contribute to the discipline of Industrial and Organisational Psychology, which strives to enhance the effectiveness of people in the workplace by applying the principles of psychology (Aamodt, 2004). A paradigm refers to a set of ideas or a model of behavioural phenomena and in psychology, for example, includes the psychodynamic, learning, phenomenology, existentialism and trait theories, among others (Crowne, 2007). In order to understand the relationship between personality and organisational team culture the study is approached from

the multilevel theory perspective and integrates the trait and interactionist approaches to personality. Of these the interactionist theory is a complex one, comprising three alternate views, which are described below.

1.4.1 Multilevel theory

Multilevel theory, also known as cross-level theory, aims to link different disciplines of psychology. Organisations are multilevel systems but are mostly studied at the levels of individual, group and organisation as separate entities (Kozlowski & Klein, 2000). Research attempts at integration across levels of perceived organisational behaviour have been rare until the last decade (Kozlowski & Klein, 2000; Schneider & Smith, 2004). Personality has traditionally been regarded as an individual-level variable and team culture as a group-level variable. The implied relationship between the two is a point of focus with the aggregate personality being reflected in the team's culture (Schneider & Smith, 2004).

1.4.2 The trait approach

The trait approach describes personality as an enduring pattern of dispositions and internal processes that translates into an observed tendency to behave in a specific manner (McCrae, 2000). Trait theories were derived from the words people used in their daily lives to describe themselves and others, describing emotional, behavioural and cognitive tendencies. Various trait approaches exist, the most popular being the Five-factor Model (FFM), which consists of five broad traits (openness, conscientiousness, extraversion, agreeableness and neuroticism), which can be assessed, although the expressions of these traits may vary cross-culturally (Meiring, 2007; Gregory, 2004).

1.4.3 The interactionist approach

The interactionist approach to personality is a complex multidirectional model, which integrates the mutual influences of personality, culture and economic forces that

influence individual behaviour (Westen, 1999). Individuals are assumed to be born with latent traits, shaped by economic and cultural influences that give rise to individual needs, which in turn contribute to new economic and cultural forces (Westen, 1999). Reciprocal interactionist approaches in particular propose that individuals appraise and *choose* situations consistent with their personalities (Rhodewalt, 2008). Personality traits, and more specifically temperament, therefore tend to show stronger levels of consistency from childhood through adulthood (Gregory, 2004; McCrae, 2000) owing to this tendency.

The interactionist approach consists of a continuum of three views, labelled as person x environment, systemic and constructivist (Chartrand, Strong & Weitzman, 1995). Each view describes the degree to which a person and his immediate situation or environment are interdependent. In the person x environment view both the person and environment are regarded as being completely independent from each other. In the second systemic view, the person and environment are regarded as interdependent entities, which interact dynamically as part of a reciprocal system. The last, the constructionist point of view, proposes that in reality person and environment are indistinguishable and that any divisions that have been constructed are superficial and exist mainly for pragmatic reasons (Chartrand, Strong & Weitzman, 1995).

Both the person x environment and systemic views are derived from the logical positivist philosophy of science, whereas the constructionist view is underlined by the post-positivistic and postmodern philosophy (Chartrand, Strong & Weitzman, 1995). In logical positivism it is posited that there is a reality outside ourselves which can be accessed through objective observation. In addition, logical positivism supports the use of operational definitions and statements that convey the underlying laws of individual events (Chartrand, Strong & Weitzman, 1995). The post-positivistic view rejects these premises on the basis that people are unable to evaluate their environment without being part of it and are somewhat dependent on their perceptions of what is observed rather than the observation of an objective reality (Chartrand, Strong & Weitzman, 1995).

This research leans towards the aspirations of the systemic aspect of interactionist theory. The systemic perspective has as its goal the identification of a core set of principles or patterns according to which a system functions by analysing the patterns that are observed (Chartrand, Strong & Weitzman, 1995). This view is that the whole is greater than the sum of its parts and the elements must therefore be studied in relation to one another and the larger system. It strives to achieve the scientific aims of reliability, objectivity and replicability and to identify patterns (Chartrand, Strong & Weitzman, 1995).

Regarding research design, the systemic view recommends a longitudinal approach of repeated measurements and analyses to establish conceptual consistency (Chartrand, Strong & Weitzman, 1995). The use of quantitative methods is supported within the systemic view and the research should aim to include multivariate, multidimensional and multi-levels of measurement of individuals and their environment (Chartrand, Strong & Weitzman, 1995).

The paradigm perspective discussed forms the basis of the literature review content on personality and team culture, and guides the quantitative study. This research derives its paradigm perspective from three inter-related approaches; multilevel, trait and interactionist theory. It is the systemic aspect of interactionist theory, specifically, which has a bearing on the research methodology based on its goals.

1.5 RESEARCH DESIGN

A descriptive, quantitative research design has been used for the purpose of this research project. This is a study where the relationship between two variables, personality traits and team culture in this case, is sought to be understood and described in light of interesting or significant patterns being found (Mouton, 2006).

This research project has been approached from a quantitative standpoint in keeping with the tradition of the interactionist paradigm previously discussed. Quantitative research involves the measurement and quantification of data in order to make

deductions about observed events (Brewerton & Millward, 2006; Kerlinger & Lee, 2000). Psychometric instruments were used to assess the degree of the relationship between the variables of personality and team culture across eight research groups within the South African Police Service (SAPS).

In terms of validity and reliability of the research project, specific efforts were made to source reliable and valid psychometric instruments and ensure consistency in the administration of these instruments to the participants (Brewerton & Millward, 2006).

The ethical considerations applied to this research project included the following:

- The research aims and process were explained to participants.
- Informed consent was obtained from the research participants.
- Confidentiality was ensured by an undertaking to report on the results without identifying individuals.
- The security of the data was maintained throughout the project.

In this study, personality served as the independent variable and team culture as the dependent variable. The unit of analysis used in this research project was SAPS platoons as the research groups.

1.6 RESEARCH METHOD

The research was presented in two phases, the literature review and the empirical study.

The literature review was dealt with in Chapters 2 and 3 and consisted of

1 the conceptualisation of personality traits;
2 the conceptualisation of team culture; and
3 the theoretical integration of personality and team culture.

The empirical study contained the following steps:

1 Choosing the organisation and participants
2 Choosing the measuring instruments
3 Administering the research procedure

4 Performing the statistical analysis
5 Formulating the statistical hypotheses
6 Reporting and interpreting the results
7 Integrating the results
8 Formulating the conclusions
9 Formulating the limitations
10 Formulating the recommendations.

Steps 1 to 5 are discussed below. Steps 6 and 7 are attended to in Chapter 4. Steps 8 to 10 follow in Chapter 5, after the article.

1.6.1 Choosing the organisation and participants

The research groups consisted of eight SAPS platoons. These were newly recruited SAPS trainee officers who were attending the SAPS College for Basic Training. Participants resided at the college for six months in bungalows with their fellow platoon members. They attended basic training, which required the trainee officers to attend and successfully complete formal classes, street survival modules, drilling and physical training. They were subjected to regular performance assessments and final examinations. During this time all trainees remained in their randomly allocated platoons until the end of their training.

Four of the participating platoons were male and four were female, with each platoon consisting of a maximum of 35 members. The eight participating platoons were randomly selected from a total of 60 platoons, depending on their availability for assessment, the only criterion being an equal number of male and female groups. Four groups of males and four groups of females were consequently selected. The research groups consisted predominantly of black participants who showed representivity across black ethnic sub-groups.

1.6.2 Choosing the measurement instruments

The independent variable of personality was assessed using the Basic Traits Inventory (BTI), a five-factor personality measurement instrument. Team culture was assessed using the Team Emotional and Social Intelligence survey (TESI). Biographical data were indicated on answer sheets of the psychometric instruments and included age, gender, ethnicity and platoon of membership. Participants were issued with consent forms, which explained the research process and maintenance of confidentiality.

1.6.2.1 Basic Traits Inventory

An overview of the BTI and its psychometric properties will be given in this section.

The BTI by Taylor and De Bruin was developed in South Africa to assess the big five factors of personality (Jopie van Rooyen Catalogue, 2008-9). The instrument was developed for the multicultural South African context to measure five personality factors.

The inventory consists of 193 items and makes use of a five-point Likert scale to rate responses ranging from *strongly disagree* to *strongly agree* (Taylor & De Bruin, 2006). The factors are each made up of four to five facets, which measure different aspects of a factor. The factors measured by the BTI include extraversion, neuroticism, conscientiousness, openness to experience and agreeableness. A detailed description of each is provided in the next chapter.

Reliability coefficients for the five factors measured range between 0.88 and 0.94 (Taylor, 2004). The instrument is reported to have shown good construct validity with African participants compared to other instruments, with Tucker coefficients of congruence of above 0.90 for all factors (Meiring, 2007). The BTI is a fairly new instrument but studies thus far have provided evidence of predictive validity and measurement invariance across the language groups (Taylor, 2008).

1.6.2.2 Team Emotional and Social Intelligence survey (TESI)

The TESI will be discussed in terms of the rationale for its use, a description of the factors measured and its psychometric properties.

Developed by Hughes and Terrell (Jopie van Rooyen Catalogue, 2008-9), the TESI is aimed at improving team interaction and productivity by bringing forward the levels of communication, team identity, conflict resolution, emotional awareness, motivation, stress tolerance and positive mood (Jopie van Rooyen Catalogue, 2008-9). It measures the responses of individual team members on a five-point Likert scale for each of the seven dimensions (Hughes & Terrell, 2007b). The dimensions measured by the TESI are described as follows:

Team identity There are two aspects to this dimension; the association of individual members as part of the team and the whole team as a distinct unit with its own personality (Hughes & Terrell, 2007a).The qualities that contribute to this dimension include a sense of purpose, acceptance of one another, perceiving the team as a 'unit', commitment, pride, clarity about roles and resilience to change.

Motivation This refers to the team's commitment to mobilise its resources of time, energy and intelligence. It also implies the willingness of team members to move forward with other team members towards goals (Hughes & Terrell, 2007a). The components included in motivation are peoples' needs, desires, goals, accountability, persistence and reinforcement.

Emotional awareness This measures the sensitivity and responsiveness of team members to one another's feelings and because it translates into trust, is a critical factor in motivation, productivity and collaboration (Hughes & Terrell, 2007a). Components of personality, such as introversion/extroversion, often play a significant role in influencing emotional awareness.

Communication As the means by which people connect with one another, communication is regarded as central to every interaction. It indicates the extent to

which members contribute and receive information among one another (Hughes & Terrell, 2007a).

Stress tolerance This reflects the level of work/life balance that the team achieves as it manages work load expectations. This requires members to understand what stress is and recognise it in their team, providing support where appropriate (Hughes & Terrell, 2007a).

Conflict resolution This scale measures disagreement, which is likely in teams as members differ in their perspectives, values and priorities. Conflict can be productive in a team when resolved effectively and can contribute to the team's growth and resilience (Hughes & Terrell, 2007a).

Positive mood This reflects the attitude of a team's members and centres on the level of optimism experienced. Optimistic members display more persistence in adversity and contribute to the flexibility and resilience of the team as a whole (Hughes & Terrell, 2007a).

The reliability coefficients of the TESI range between 0.81 and 0.97. Validity was provided by factor analysis results which confirmed that loadings of the instrument's items tended to occur on their intended factors. In addition, the instrument includes a response inconsistency measure, which checks that a team's responses are consistent by indicating the percentage of inconsistency as deviant if it exceeds 20%. A response conformity scale also allows for the tester to identify average response style by indicating percentages over 15% as worth investigation (Hughes, Thomson & Terrell, 2008).

1.6.3 Administering the research procedure

The research project consisted of a before and an after assessment phase. The before phase refers to the initial phase where the newly selected trainee officers began with basic training in February. The after phase occurred fairly close to the completion of basic training in June.

1.6.3.1 Before phase

A sample of 270 newly recruited platoon members were used in the first phase of the study. Each of the research participants had completed the BTI upon selection in January 2009 and the TESI survey in their platoons in February 2009. However, only 130 of the BTI answer sheets had been correctly completed and could subsequently be included in this study.

1.6.3.2 After phase

A second phase of assessment using the same instruments from the first phase was repeated after four months in June 2009. The participants totalled 243 for the BTI and 235 for the TESI. Apart from gender, there were no obvious differences between the platoons. They were representative of age and black sub-ethnic groups.

1.6.4 Performing the statistical analysis

Correlational analyses were conducted using Statistical Package for Social Sciences (SPSS) 17 to examine the following:

- The relationship between personality and team culture (before phase)
- The relationship between personality and team culture (after phase)
- The change in the relationship between personality and team culture from the before and after phases
- The difference in personality scores from the before and after phases
- The difference in team culture scores from the before and after phases
- Possible differences in personality traits and team culture as per gender, platoon and ethnicity.

Differences between groups were analysed using ANOVA to establish whether significant differences were attributed to membership to a specific platoon with regard to ethnicity or gender.

1.6.5 Formulating the statistical hypotheses

The research hypotheses as set out previously were as follows:

- H1: There is a statistically significant positive relationship between personality traits and team culture in the research group.
- H01: There is no relationship between personality traits and team culture in the research group.

- H2: There is a statistically significant change in the relationship between personality and team culture from the before assessment to the after assessment.
- H02: There is no change in the relationship between personality and team culture from the before assessment to the after assessment.

- H3: There are statistically significant changes in personality and team culture from the before assessment to the after assessment.
- H03: There are no changes in personality and team culture from the before assessment to the after assessment.

- H4: There are statistically significant differences between males and females in personality traits and team culture.
- H04: There are no significant differences between males and females in personality traits and team culture.

- H5: There are statistically significant differences between the research groups (platoons) in personality traits and team culture.
- H05: There are no differences between the research groups (platoons) in personality traits and team culture.

- H6: There are statistically significant differences between ethnic groups in personality traits and team culture.

- H06: There are no differences between ethnic groups in personality and team culture.

1.7 CHAPTER LAYOUT

The chapters were presented in the following manner.

Chapter 1 Scientific orientation to the research
Chapter 2 Literature review (Personality according to trait theory)
Chapter 3 Literature review (Team culture)
Chapter 4 Article
Chapter 5 Conclusions, limitations and recommendations

1.8 CHAPTER SUMMARY

In this chapter the scientific orientation to the research was discussed. This contained the background and motivation, the research problem, aims, the paradigm perspective, the research design and method. The chapter ended with the chapter layout.

CHAPTER 2 PERSONALITY TRAIT THEORY

2.1 INTRODUCTION

In accordance with the research aims, this chapter aims to explore the concept of personality as explained by trait theory. Sections to be covered relate to the meaning of personality, approaches to studying personality and the trait models that have influenced trait psychology as it is known today. The FFM will be discussed in terms of its construction and usefulness. Descriptions of some popular measurement instruments of traits are illustrated, including the BTI which was developed for the South African context. Finally, the application of personality in the workplace is considered with regard to the impact it may have on organisational processes.

2.2 AN OVERVIEW OF PERSONALITY PSYCHOLOGY

Personality psychology is a sub-field of psychology that aims to understand human nature (Crowne, 2007). Personality theorists focus on three areas in particular, namely individual differences, motivation and holism (McAdams & Pals, 2007), as the major aspects that constitute personality. Many theorists converge on the idea that personality is inferred by the stable characteristics of individuals (Juang & Matsumoto, 2004; Gregory, 2004), which are a result of two separate but not exclusive processes - genetic predispositions to certain traits and environmental conditioning (Pervin, 2001; Juang & Matsumoto, 2004).

Various definitions of personality exist, some of which include the following:

“Personality is the unique, relatively enduring internal and external aspects of a person’s character that influence behaviour in different situations” (Schultz & Schultz, 2005, p. 9).

“Personality is the set of psychological traits and mechanisms within the individual that are organised and relatively enduring and that influence his or her interactions

with, and adaptations to, the intra-psychic, physical and social environments" (Larsen & Buss, 2008, p. 1).

McCrae and John (1992, p. 175) refer to personality as "the most important ways in which individuals differ in their enduring emotional, interpersonal, experiential, attitudinal and emotional styles".

These definitions and others have the common feature of describing the enduring and stable human attributes which provide insight in how people may typically behave(Gregory, 2004; Cervone & Pervin, 2008). Some theorists prefer not to specify a definition for fear of excluding a vital component of the term (Larsen & Buss, 2008).

Personality theories evolved as researchers attempted to address the nature of personality, beginning with the earliest Greek and Roman references to personality. From a scientific point of view the function of personality theories is to provide a description of personality, predict future behaviour and explain how personality translates into behaviour (Flett, 2007; Cervone & Pervin, 2008).

The dominant theory of personality during the first half of this century had been Freud's theory of psychoanalysis. The theory emphasised inferred drives, conflicts and inhibitions as the components of personality, which resided at an unconscious level and served as the major force behind behaviour (Crowne, 2007). Accessing the unconscious was possible using indirect means, such as projective inkblot tests. Furthermore, the adult personality was believed to have developed as a result of interaction with parents and others over various stages (McCrae, 2000).

Although a very comprehensive personality theory, criticism of the Freudian approach largely stemmed from the over-emphasis on the psycho-sexual stages of development and difficulty when attempting to evaluate the theory. Many personality theories developed post-Freud, including social cognitive theory, learning theories, Roger's theory of self-actualisation and Kelly's constructionist theory (Cervone &

Pervin, 2008). It was these alternate avenues for describing personality which eventually led to the development of trait psychology (McCrae, 2000; Crowne, 2007).

Trait psychology is concerned with the differences between individuals' ways of thinking, feeling and acting (McCrae, 2000). In comparison to the importance that psychoanalysis gave to the unconscious, trait theory promotes people as rational beings who can be reasonably relied on to provide information about their personalities (McCrae, 2000). Self-report inventories are therefore considered capable of measuring individual differences and validly so, if the scales are carefully constructed (McCrae, 2000).

Researching individual differences from different theoretical approaches has implications for the way in which personality is researched, specifically the level at which personality is analysed and the methods enabling its measurement.

2.2.1 Levels of personality construct analysis

There are three conceptual levels from which to view the constructs of personality. At the first level it is personality structure, which entails basic dispositions, for example traits that indicate what personality is made of and distinguishes individuals. At the second level are personal concerns related to motivation, ambition and coping strategies associated with the given time, place, or role that the individual is occupied with (McAdams in Taylor, 2004). The third level has to do with people's actual identity and how they subjectively construct their life story. Ideally, there should be a comprehensive system for integrating all valid personality constructs but this is a difficult feat that has yet to be established (McAdams in Taylor, 2004), though the FFM is a good effort in this direction.

McAdams and Pals (2007) regard individual differences as the most important of these levels and there are a wide range of definitions that refer to how people are alike in some way and different in others. The emphasis on differences between people relating to traits in particular, led to the development of many assessment

tools to assess these dimensions evident in trait frameworks such as the FFM, Eysenck's model and Cattell's taxonomy (McAdams & Pals, 2007). The method of correlation is commonly used to ascertain basic, stable personality dimensions in relation to corresponding variations in behaviours (McAdams & Pals, 2007).

Motivation, the second emphasis, is an underlying component also termed *characteristic adaptations* whereby people progress towards desired goals and select the means by which to achieve what they want. These adaptations are, for example, approached in Freud's explanation of drives and Roger's account of self-actualisation (McAdams & Pals, 2007). As the dynamic force behind behavioural action, motivation is often explored from an experimental stance. This means that controlled conditions are used to provoke motivational responses and observe how internal forces direct behaviour (McAdams & Pals, 2007). In this way more detailed explanations are provided by using experimental analyses at the second level, compared to the level of traits when discerning individual differences (McAdams & Pals, 2007).

Personality psychologists' emphasis on the whole person, in the third emphasis, implies that unlike other psychologists, they attempt to account for the broad range and levels of factors that constitute a complex explanation of an individual's life. Personality psychologists also focus on the integrated aspects of human nature, which function together purposefully as referred to in the examples of Erikson's ego identity or Ryan and Deci's authentic self, which integrate the needs of autonomy, competence and relatedness (McAdams & Pals, 2007). This level typically examines life stories that individuals construct and narrate, which provide meaning and purpose in addition to the individual characteristics and motives offered at the first two levels of analysis (McAdams & Pals, 2007).

To summarise the implications for research methodology, given the explanations of the levels for personality analysis, when the emphasis is on individual differences the structure of personality is analysed in terms of temperament, traits or types and correlational studies are appropriately referred to (McAdams & Pals, 2007). When

the researcher into psychology seeks to understand the dynamics of the what, how and why of goal-directed behaviour, then experimental designs are more capable of clarifying needs, values, goals, defences or self-actualising tendencies (McAdams & Pals, 2007). Case studies are useful for understanding the individual's life as a whole and understanding the concepts of ego, identity or life structure for the person concerned (McAdams & Pals, 2007).

The focus of this study is at the level of individual differences, as it is the pattern of traits in the sample that is sought to be understood. Personality research can also be approached from either an in-depth understanding of a personality aspect or generalisable aspects.

2.2.2 Personality research approaches

Researchers in personality theories attempt to satisfy scientific requirements by approaching research into personality in one of the two ways (Flett, 2007) described below. When personality is viewed with the aim of understanding the patterns that constitute an individual's personality, this is referred to as the *idiographic* stance (Crowne, 2007).

Idiographic research looks at an individual or small number of individuals in depth to gain insight into personality (Schultz & Schultz, 2005; Flett, 2007).

Nomothetic research, on the other hand, involves the use of large numbers of research participants. Differences between people are analysed statistically so that general laws can be derived from the results that have been observed (Schultz & Schultz, 2005; Crowne, 2007).

Attempting to capture as many of the events that holistically influence the course of an individual's behaviour has implications for research methodology. Nomothetic research, which looks at personality principles that apply to large numbers or groups of people, often uses correlational or experimental research designs. Idiographic

studies, which focus on specific individuals, however, typically make use of case studies (Flett, 2007; McAdams & Pals, 2007). Given the level of analysis and the use of a large number of participants, this study can be considered to use the nomothetic approach.

2.2.3 Personality trait theory

Traits were described as early as the fourth century BC by Aristotle (Matthews & Dreary, 1998) in his writings on ethics. As mentioned earlier, traits are used to describe personality and summarise behaviour as information about how someone typically behaves (Gregory, 2004, Cervone & Pervin, 2008). Traits are adjectives about human characteristics and are represented on a continuum, with every individual measuring somewhere between the low and high end of each trait (Crowne, 2007).

Traits are also organised into a hierarchy of specific responses to general styles of psychological functioning, or habits (Pervin & John, 2001; Cervone & Pervin, 2008). Trait hierarchy will be discussed in more detail when the work of Eysenck (2008), Cattell (Cervone & Pervin, 2008) and others is discussed in the following sections.

2.2.3.1 Principles of trait theory

There are underlying principles of trait theory that most researchers in the field agree with. Most researchers converge on the idea that personality traits are influenced by genetic and biological elements and secondly, that they are relatively stable (Boyle, Matthews & Saklofske, 2008; Matthews & Dreary, 1998). Stability of traits refers to characteristics being consistent and prevailing over time, as well as from one situation to the next (McCrae, 2000; Cervone & Pervin, 2008).

The biologically derived nature or heritability of traits has been established by behaviour genetic studies, which revealed the particular resilience of temperament as genetically passed on (Zuckerman, 2005). Genetic influences were seen to carry more weight in determining personality when compared to other factors such as

child-rearing style, socio-economic class or diet (McCrae, 2000).

Trait stability in adults has become an accepted assumption (Boyle et al., 2008). Confidence in personality traits as stable conditions of personality is due to longitudinal research that shows consistency of traits over time, specifically after the age of 30 (McCrae, 2000; Cervone & Pervin, 2008) for both males and females (Costa & McCrae, 1988; Costa, Terraciano & McCrae, 2001).

Traits are evident in everyday functioning, with specific traits leading to similar expressions in different situations that are 'functionally equivalent'. People have broad predispositions that cause them to behave in a particular way (Cervone & Pervin, 2008). For example, people high on the trait of extroversion can be expected to prefer the company of larger groups of people.

Interactionism implies that situations can moderate in the expression of traits. As the personality of an individual develops, both behaviour and the ability to interpret the surroundings are influenced by traits (Boyle et al., 2008). Similar behaviour can therefore be expected across several contexts. Although behaviour will vary, there is a level of consistency in the characteristics of the individual. Traits can therefore also be inferred by the behaviour that they cause (Matthews & Dreary, 1998).

2.2.3.2 Evaluation of trait theory

Although trait theory is well established, there are still some disagreements about some of its aspects, as well as recognition for some of its strengths. These are discussed below.

The debate over whether behaviour is influenced by traits or by the environment continually recurs, even after having endured controversy for around 50 years (Roberts & Pomerantz, 2004). The developmental approach offers a view of person-situation integration as individuals are influenced by age and time. Trait inconsistency is often recorded from children to students and greater consistency is

achieved with participants between the ages of 22 and 80 (Roberts & Pomerantz, 2004). The impact of a new situation also seems to have a larger impact on young people who are at a life stage where they encounter different situations more frequently than older people may (Costa, Terraciano & McCrae, 2001).

Trait theorists may differ in their approach regarding the explanation of trait constructs (Cervone & Pervin, 2008). Some believe that behaviour is explained by the existence of a particular trait, while other approaches are limited to the scientific functions of description and prediction. Trait taxonomy serves as a map of individuals' personality but does not provide any information on the reasons for their existence (Cervone & Pervin, 2008).

Some trait theorists who attempt to explain behaviour by relating the biological origin of personality factors believe that personality differences are attributed to individual differences in neural and biochemical systems. Some antecedents or causes of traits have been identified in biological theories (Zuckermann, 2005). It can therefore be seen that although trait theorists share common basic assumptions, they differ when it comes to explaining how traits are responsible for behaviour (Cervone & Pervin, 2008).

Trait theory has proven useful in providing a framework with which to measure traits, help determine causal mechanisms of traits on behaviour and identify moderating cultural and social factors (Boyle et al., 2008). Trait theory can be applied to both Western and non-Western societies and cultures. Instead of culture being the independent variable influencing variances in personality traits, personality is seen as indicative of values, beliefs and identities created in the cultural system (McCrae, 2000). Humans share the same basic dispositions, such as nervousness, enthusiasm or carefulness, but the way in which these are expressed may vary according to situation and culture (McCrae, 2000).

Trait theory meets the requirements of a scientific theory as trait constructs provide a summarised description of an individual's characteristics, enabling one to predict

expected behaviour based on the notion that traits are stable and explaining personality to some extent (Schultz & Schultz, 2005). Although trait theory provides a valuable tool in measuring and describing personality, it cannot be used to explain it or remedy pathologies that may be identified (Pervin & John, 2001).

2.3 PERSONALITY TRAIT MODELS

Modern trait theory has been built upon the early work of three founding fathers; Gordon Allport, Raymond Cattell and Hans Eysenck (Boyle et al., 2008).

2.3.1 Gordon Allport's model of personality

Gordon Allport (1961) regarded it as important to consider personality in the individual as well as in the greater population and to be able to transfer conceptually from one to the other (Cervone & Pervin, 2008). Allport believed personality to be a dynamic and developing internal part of the person that comprised both cognitive and physiological aspects (Crowne, 2007). Traits were seen as guides of consistent behaviour that could be perceived to exist by their frequency, intensity and range of experience (Cervone & Pervin, 2008; Boyle et al., 2008).

In one of the earliest forms of formal trait theory, Allport and Odbert (in Cervone & Pervin, 2008) differentiated traits as stable and enduring. They described traits as being person-specific and inferred from a 'neuropsychic structure', which served two functions: filtering information from individual experiences and influencing the way in which the individual structured perceptions of the world outside himself (Boyle et al., 2008). Traits were regarded as different from temporary aspects of personality such as 'states' or 'activities', which were short-lived expressions of traits (Cervone & Pervin, 2008).

Allport and Odbert adopted the lexical hypothesis in their search for personality descriptors (Crowne, 2007). This was an approach used as early as the first

analyses of personality by the Greeks, based on the assumption that descriptors for human characteristics and behaviour were to be found in the language that was spoken (Crowne, 2007). Although trait descriptors for personality can be found in common language, they can, in a subjective sense, explain personality in a circular way by referring back to behaviour. These explanations cannot be regarded as scientific and predictive of future behaviour (Crowne, 2007).

Allport identified three types of traits (Cervone & Pervin, 2008). A 'cardinal' trait, possessed by few individuals, was seen as one that evaded every aspect of a person's behaviour, an example being a highly autocratic person (Allport, 1961).

Less pervasive but generalised 'central traits' were attributes used to characterise people and usually ranged between three and ten characteristics, such as honesty, friendliness, intelligence or aggressiveness. The least obvious, consistent and generalisable of traits were referred to as 'secondary dispositions', which were attitudes or characteristics that were elicited in specific settings (Allport, 1961), such as nervous behaviour in a restaurant.

Allport viewed people as having a set of traits that varied in degrees of significance and generality (Cervone & Pervin, 2008); very few people had cardinal traits and most had a combination of a few central traits and no more than a dozen secondary dispositions (Allport, 1961). Some situations provoked the expression of a trait and therefore both trait and situation had to be considered when trying to understand behaviour. Traits served as predictors of how people would behave in most situations but did not prevent them from sometimes behaving in a completely different manner (Cervone & Pervin, 2008).

Alongside traits, Allport also considered motivational processes, somewhat in contrast with Freud's ideas (Cervone & Pervin, 2008). Freud believed that motivation emanated from childhood tension-reducing drives (Cervone & Pervin, 2008). Allport added to Freud's idea by suggesting that adults could also find a source of pleasure in something that originally induced tension. For example, individuals may travel regularly because they enjoy experiencing new places rather

than because they feel a need to escape people who may previously have been a source of anxiety or pain. By using the concept of 'functional autonomy' Allport suggested that a mature adult was able to move from serving an external need to becoming intrinsically focussed on meeting the needs of the self-image (Cervone & Pervin, 2008).

In comparison with other trait theorists who searched for universal traits common to all individuals, Allport adopted an idiographic stance by emphasising the uniqueness of the individual (Cervone & Pervin, 2008). He preferred an in-depth study of individuals rather that trying to retrieve common traits from large numbers of people (Cervone & Pervin, 2008). Although Allport was comfortable with nomothetic research and conducted it himself quite widely, he felt that it missed the depth and specificity found in the idiographic approach (Crowne, 2007).

A benefit of Allport's idiographic approach was the discovery of a patterned organisation of multiple traits (Cervone & Pervin, 2008). The contribution of Allport to the discipline of personality psychology was the clarification of the trait concept but he lacked research to substantiate the heritability and utility of specific trait concepts. Although he documented that people displayed unique and consistent patterns of trait-related behaviour, he did not accompany this with any model to explain how the behaviour came to be (Cervone & Pervin, 2008). Allport was not a major contributor to the trait theories that followed but he was a key figure in introducing and motivating trait study (Crowne, 2007).

2.3.2 Raymond Cattell's 16-factor theory

Apart from Allport, trait theorists generally focus on a universal set of traits (Cervone & Pervin, 2008) and depend on factor analysis to help identify the structure of personality, as revealed by the representative factors yielded (Cervone & Pervin, 2008).

Factor analysis is a statistical technique that uses mathematical principles to determine which factors co-occur, or correlate (Cervone & Pervin, 2008; Crowne,

2007). It serves as an objective means of identifying patterns of correlation in large sets of correlational trait data and summarises these into fewer broad dimensions (Lee & Ashton, 2007). Costa and McCrae (1992) found that factor analysis provided useful insights into the conceptual nature of factors, bringing forward the convergence between observers and instruments, as well as predicting psychological outcomes.

As one of the most influential psychological scientists of the 20th century, Raymond Cattell capitalised on the factor analysis technique early in his career. He made use of factor analysis to build a taxonomy of basic traits (Cattell, 1979), similar to the periodic table of elements found in chemistry (Cervone & Pervin, 2008).

Cattell (1979) used the concepts of 'source' and 'surface' traits to distinguish between multiple traits. He initially made use of Allport and Odbert's list of traits and reduced it by integrating synonymous words and then factor-analysing them to produce a list of about 40 groups of 'surface traits' (Crowne, 2007; Cervone & Pervin, 2008). In order to locate the underlying causes or 'psychological structures' of these surface traits, Cattell again made use of factor analysis. The results identified 16 'source traits' as first order factors which were then considered to be the core 'personality structures' in Cattell's theory of personality (16PF South African accreditation manual; Cervone & Pervin, 2008). Further correlation studies on the first order factors showed five major second order factors named as extraversion, independence, tough-mindedness, self-control and anxiety (16PF South African accreditation manual, 2009).

Cattell further divided the 16 traits into three categories, namely ability traits, temperamental traits and dynamic traits. Ability traits include those which enable individuals to be effective, such as intelligence. Temperament traits refer to emotional tendencies and dynamic traits involve the motivational aspect of personality. Together, these three types of traits are thought to represent the major, stable aspects of personality (Cervone & Pervin, 2008).

In addition to traits, Cattell emphasised the influence of ‘states’ and ‘roles’ in shaping observed social behaviour (Cattell, 1979; Cervone & Pervin, 2008). ‘States’ referred to the mood and emotion influenced by the situation and could be seen in aspects such as anxiety, depression, fatigue, arousal or curiosity. ‘Roles’, on the other hand, were socially determined and had associated behaviours not necessarily linked to traits (Cervone & Pervin, 2008).

An important feature of Cattell’s Sixteen Personality Factor Questionnaire (16PF) was the fact that Cattell made use of various types of sources. The first, life record data (L-data) referred to everyday behaviour with others and daily situations (Cattell, 1979). Q-data, or self-report questionnaire data, were derived from the responses to personality questionnaires and included the Q1 to Q2 factors in Table 2.1. Lastly, objective-test data (OT-data) involved small behaviour observations in which the person being observed was unaware of the relationship between the response and the personality characteristic being measured (Cattell, 1979).

Cattell generated a classification scheme from which to look at traits but the source traits derived from his analysis of the three types of data do not completely explain his notion of the structure of personality (Cervone & Pervin, 2008). He did, however, provide evidence to support the existence of his traits (Cattell, 1979). These were in the following four aspects:

- similar results from the factor analysis of different kinds of data,
- similar results obtained across cultures and age groups,
- utility in the prediction of behaviour in the natural environment, and
- evidence of significant genetic influences on traits.

Table 2.1 Cattell's primary personality factors

16PF Primary Factors	
Low range descriptor	*High range descriptor*
Factor A: Warmth	
Cool, detached, impersonal, aloof, formal	Warm, outgoing, kindly, easy-going, participating, likes people
Factor B: Reasoning	
Concrete-thinking, lower general mental capacity, less intelligent, unable to handle abstract problems	Abstract-thinking, more intelligent, bright, higher mental capacity, fast learner
Factor C: Emotional stability	
Affected by feelings, emotionally less stable, easily upset, changeable	Emotionally stable, mature, faces reality, calm
Factor E: Dominance	
Submissive, humble, obedient, easily led, docile, accommodating	Dominant, assertive, aggressive, competitive, stubborn, bossy
Factor F: Liveliness	
Sober, serious, restrained, prudent, introspective, silent	Enthusiastic, spontaneous, cheerful, expressive, impulsive, talkative
Factor G: Rule-consciousness	
Expedient, disregards rules, self-indulgent	Conscientious, conforming, moralistic, rule-bound
Factor H: Social boldness	
Shy, threat-sensitive, timid, hesitant, intimidated	Bold, adventuresome, uninhibited, can take stress, thick-skinned
Factor I: Sensitivity	
Tough-minded, self-reliant, no-nonsense, rough, realistic, unsentimental	Tender-minded, sensitive, intuitive, refined, dependent
Factor L: Vigilance	
Trusting, accepting conditions, easy to get on with	Suspicious, hard-to-fool, sceptical, distrustful, oppositional
Factor M: Abstractness	
Practical, concerned with down-to-earth issues, steady, prosaic, conventional	Imaginative, absent-minded, absorbed in ideas, impractical
Factor N: Privateness	
Forthright, genuine, artless, open, unpretentious, naïve, warmly emotionally involved	Shrewd, polished, socially aware, worldly astute, diplomatic, calculating, emotionally detached, wears a social mask
Factor O: Apprehension	
Self-assured, untroubled, secure, feels free of guilt, self-satisfied, confident	Apprehensive, self-blaming, guilt-prone, insecure, worrying
Factor Q1: Openness to change	
Conservative, respecting traditional ideas	Experimenting, liberal, analytical, critical, free-thinking, open to change
Factor Q2: Self-reliance	
Group-oriented, a joiner and sound follower, group-dependent	Self-sufficient, resourceful, prefers own decisions
Factor Q3: Perfectionism	
Undisciplined, self-conflict, lax, follows own urges, uncontrolled, careless of social rules, low self-sentiment integration	Following self-image, socially precise, self-disciplined, compulsive, exacting will-power, control, high strength of self-sentiment
Factor Q4: Tension	
Relaxed, tranquil, composed, has low drive, not frustrated, patient	Tense, driven, frustrated, over-wrought, has high drive

Source: 16 PF5 South African Accreditation Training Manual (2009, Jopie van Rooyen & Partners SA).

Cattell's approach was nomothetic and linked to quantitative measurement models. He postulated that the main attributes of personality could be described by several discrete dimensions which translated into the 16PF Questionnaire (Boyle et al., 2008). However, he also identified traits that could not be measured in a quantitative assessment.

Cattellian trait models are characterised by the following: a distinction between source traits and surface traits, traits being structured within a hierarchy, personality as differentiated from other areas of individual differences (such as ability) and lastly, the influence of personality traits on behaviour being mediated by situational factors (Boyle et al., 2008).

In an evaluation, Cervone & Pervin (2008) consider Cattell's contribution as important for trait psychology. He was responsible for many psychometric advances by refining factor-analytic methodology, which led to the development of an array of factor-analytic tests and statistical techniques (Boyle, 2008; Cervone & Pervin, 2008).

Criticism of Cattell's theory is that it has a large number of factors compared to other theorists, which makes it difficult to process when assessing an individual's behaviour (Cervone & Pervin, 2008). Although a practical problem, there is also concern that Cattell's focus on adequate measurement, though recommended for establishing scientific thoroughness, leads to a secondary purpose of theorising. Cattell's structure of personality is thus built entirely on the results of factor analyses of surface traits (Cervone & Pervin, 2008). This implies that important factors could have been overlooked by the measurement system (Cervone & Pervin, 2008).

2.3.3 Hans Eysenck's three-factor model

Eysenck (1982) is popularly known for his three-factor model of personality, which answered the scientific call for a simpler trait model with fewer factors to improve the practical measurement of traits (Cervone & Pervin, 2008). He developed a

theoretical model to describe traits and made use of psychometric methods to construct his personality scales (Zuckerman, 2005). Eysenck was influenced by the psychobiological theory of the 1950s, as well as the learning theories of Pavlov and Hull, factor analytic theory and psychologists in the sub-fields of personality type (Zuckerman, 2005; McAdams & Pals, 2007; Cervone & Pervin, 2008).

Eysenck developed a trait hierarchy that built on behaviour to habits to first-order traits and then finally to three super-traits (Zuckerman, 2005). The scales included introversion-extraversion (E), neuroticism versus emotional stability (N) and psychoticism (P) as the opposite of 'socialised humaneness' (Eysenck, 1982; Zuckerman, 2005).

These super-factors were derived when Eysenck conducted secondary factor analyses and identified a small set of independent traits. The secondary factors depicted consistent styles of emotion or behaviour as continuous dimensions with a high and low end and most people falling in the middle. These factors are termed super-factors because they are at the highest level of a hierarchy of traits (Cervone & Pervin, 2008).

Loadings on the super-factor extraversion included sociability, frivolity, impulsiveness, general activity, social conversation and sex and superego. Loadings on neuroticism were mood swings, inferiority, adjustment (poor), social responsibility, trust versus suspicion, low persistence, social shyness, hypochondria and unrelaxed composure. The third super-factor, psychoticism, had loadings on dominance-leadership, optimal arousal, dominance-submission and low superego (Eysenck, 1982).

Eysenck's conceptualisation of the three traits according to his work in 1985 is given in table 2.2 (Zuckerman, 2005). Eysenck had a rather broad definition of the extroversion factor, which was assessed on the items of sociability, interpersonal affiliation and surgency, which subsumed dominance, exhibitionism and achievement (Zuckerman, 2005).

Table 2.2 Descriptions of Eysenck's three super-factors

Extroversion (E):	Sociable, lively, active, assertive, sensation-seeking, carefree, dominant, surgent, venturesome.
Neuroticism (N):	Anxious, depressed, feelings of guilt, low self-esteem, tense, irrational, shy, moody, emotional.
Psychoticism (P):	Aggressive, cold, egocentric, impersonal, impulsive, antisocial, unempathetic, creative, tough-minded.

Source: Zuckerman (2005, p. 16)

The factor of neuroticism was seen to be based on low self-esteem and negative emotions, including depression, anxiety, guilt and hostility (Zuckerman, 2005). Zuckerman (2005) comments on the difficulty of distinguishing neuroticism from anxiety and depressive traits, while hostility is described as more closely linked to aggressive factors.

The psychoticism factor includes a few items on mild paranoia and others related to sadism, apathy, aggressiveness, sensation-seeking, lack of conscientiousness and unconventional social attitudes (Zuckerman, 2005). All of these traits are common to the psychopath and some of them are shared with schizophrenia (Zuckerman, 2005).

Eysenck initially identified the two traits of introversion-extroversion and neuroticism (Cervone & Pervin, 2008). He later added on to the factor of psychoticism (Cervone & Pervin, 2008) and went on to develop a questionnaire to assess the three super-factors on a 'yes or no' scale, which did not depend on subjective ratings (Cervone & Pervin, 2008). Eysenck focussed on constructing a theory of personality that was precise and reliable and because his factors had been scientifically validated as independent, he felt it appropriate that the three basic elements of personality were each rooted in the human biological system (Cervone & Pervin, 2008; Eysenck, 2008).

Eysenck emphasised the role of biological influences on the expression of factors in

order to limit the conceptual circles that often arose out of trying to explain behaviour. For example, instead of describing people as sociable because they display sociable behaviour, they are rather regarded as sociable owing to biological processes that encourage them to seek stimulation through association with others (Cervone & Pervin, 2008).

In his nervous system-based theory of personality Eysenck (2008) proposed that extraverts had a lower level of brain arousal than introverts. This, in effect, meant that extroverts were more inclined to seek stimulation and be aroused, compared to introverts who are more easily aroused and therefore avoid overly stimulating situations (Eysenck, 2008).

Of the three factors proposed by Eysenck, extroversion has had the best research support for an underlying biological theory. This is based on correlating measures for biological functioning (brain's cortex) with extroversion scores on questionnaires. The trait has been identified cross-culturally and has shown stability over time (Cervone & Pervin, 2008). Eysenck explained that introverts were far more sensitive and susceptible to arousal than extraverts, who seek and require more stimulation (McAdams & Pals, 2007).

The traits of neuroticism and psychoticism have enjoyed less consistency in terms of their biological association and it is difficult to conclude on their origin from a biological perspective (Cervone & Pervin, 2008).

Cervone and Pervin's (2008) evaluation of Eysenck's work commends his ability to hold up scientific standards and be creative in his theorising and highlighting of the role of the brain in understanding traits and behaviour (Boyle et al., 2008).

Despite this, psychologists have moved away from Eysenck's theory because firstly, competing two-factor and three-factor models have been developed, which have a greater accountability to biology; secondly, there is inconsistent support for the biological bases of neuroticism and psychoticism and lastly there are other traits that

do not fit easily into the three determined traits and perhaps more traits would be more practical (Cervone & Pervin, 2008).

Eysenck differed from Cattell on the number of assessable factors, promoting the three broad dimensions of extraversion, neuroticism and psychoticism compared to the 16 in Cattell's 16PF. Although both were working within a hierarchical trait model, each had his focus at a different but mutually supportive level (Boyle et al., 2008).

A quarter of the last century has seen preoccupation with an attempt to organise the many traits into a simple taxonomy and the FFM is the result of this effort (Cervone & Pervin, 2008). Similar to Cattell's and Eysenck's models, the FFM is derived from the factor-analytical technique but has a more practical number of characteristics with which to work (Cervone & Pervin, 2008).

2.4 THE FIVE-FACTOR MODEL

The FFM of personality is often the default model used because of its application in describing personality in an efficient way while being comprehensive enough not to miss important personality descriptives (McCrae & Costa, 2008). Initially constructed by Tupes and Christal in the 1960s, the model in its earlier form was a product of the lexical approach (McCrae & John, 1992; McCrae & Costa, 2008). Allport and Odbert in McCrae and John (1992) extracted trait terms from the dictionary, after which Cattell grouped them into synonym clusters with rating scales that contrasted groups of adjectives. Tupes, Christal and Norman factored and refined the rating scales to a set of 20 and discovered a repetition of five factors across their different samples (McCrae & John, 1992).

The importance of this, however, had not been realised for close to two decades because of the prevailing controversy over implicit personality theory, which had eroded faith in personality psychology in the 1970s (McCrae & Costa, 2008; McCrae & John, 1992). Interest in the FFM was renewed with the lexical analyses conducted

by Goldberg and reanalyses of earlier sets of data (McCrae & John, 1992).

The acceptance of the FFM increased in the 1990s as the constructs were proved to be reliable and valid, supported by heritability evidence in twin studies and stability indicators from longitudinal studies (McCrae & Costa, 2008). The FFM provides a structure of personality traits but does not theorise about the functioning of the traits (McCrae & Costa, 2008). McCrae and Costa (2008) proposed that human nature is genetically based, as all humans share the same genome, and it is this that accounts for the cross-cultural utility of the five factors across so many countries and languages.

The following discussion of the FFM will continue to look at the development of the model (McCrae & Costa, 1992), provide a description of the five factors and evaluate the utility of the FFM in relation to its predecessor models.

2.4.1 The development of the Five-factor Model

The identification and naming of factors transpired from the results of the lexical and questionnaire traditions (McCrae & John, 1992). Early on, extraversion and neuroticism were regarded as the two central aspects of personality and were widely assessed across a variety of questionnaire scales. They served as useful indicators of interpersonal activity and chronic negative emotions (McCrae & John, 1992).

Subsequent independent studies by Tellegen and Atkinson, as well as Costa and McCrae (in McCrae & John, 1992) yielded openness/absorption and openness to experience, respectively. Both sets of researchers ascribed to Eysenck's approach of grouping similar sub-traits and extending this to new dimensions (McCrae & John, 1992). This mapping of personality traits resulted at the same time in the merging of the lexical and questionnaire traditions and led to the commonly known FFM (McCrae & John, 1992).

The researchers Fiske, Tupes, Christal and Norman analysed the adjectives collected by Cattell in order to formulate a structure of personality (Zuckerman,

2005). Norman, in McCrae and John (1992) declared the taxonomy generated by Cattell adequate for capturing personality traits. Goldberg later extended this by doing analyses on even broader samples of trait-based adjectives and generated the broad traits of extraversion or surgency, agreeableness, conscientiousness, emotional stability and intelligence/openness (McCrae & John, 1992; Zuckerman, 2005). These traits were derived from *lexical analyses* of the words used in common everyday language by people to describe themselves and others (Zuckerman, 2005). Trait research therefore required of the researcher to be familiar with the language of research participants who provided data (McCrae & John, 1992).

McCrae and John (1992) assumed that terms describing individual differences would be evident in language and that the same factors would be identified in any language. They also acknowledged, however, that traits may lie in the adjectives of many languages, or not all, such as in the case of Chinese people.

The questionnaire tradition derives considerably from the work of Eysenck who found that the two factors extraversion (E) and neuroticism (N) were dominant elements in psychological tests (McCrae & John, 1992). These were initially referred to as the Big Two. Thereafter Goldberg assigned the Big Five to the model's title. The dimension of openness to experience (O) had been introduced shortly after the Big Two by Costa and McCrae who later continued to add on scales for the measurement of agreeableness (A) and conscientiousness (C) (McCrae & John, 1992).

It is therefore obvious that questionnaire theorists found it difficult to reach consensus between themselves and factor analyses of all the personality scales and constructing inventories would have been a formidable task because there were hundreds available at the time. It would have taken less effort to develop new scales rather than organise those that already existed (McCrae & John, 1992). The easier option for the lexical researchers was to identify and present a list of a few hundred adjectives that could be rated by subjects, with the resulting factors being intuitively appealing (McCrae & John, 1992).

The inter-correlations between large samples of adjective and scales data yielded five recurring factors, the first four being extraversion, agreeableness, conscientiousness and neuroticism, which are similar in both traditions. Whereas trait adjectives portrayed the fifth factor as intellect, psychological construct data yielded openness to experience (McCrae, 1994). McCrae (1994) subsequently provided support for the openness factor because it was broader and more easily applicable across geographical and language barriers than the more narrowly defined factor of intelligence.

2.4.2 Descriptions of the five factors

McCrae and Costa (Zuckerman, 2005) initially focussed on the three-factor questionnaire, which measured Eysenck's neuroticism-extraversion-openness but then moved from a three-factor to a five-factor model based on certain 'rational criteria' (Zuckerman, 2005). When they added the factors of conscientiousness (C) and agreeableness (A), their model became popular. It described each of the factors according to six underlying 'facets', which all contribute equally to the overarching factor (Zuckerman, 2005).

Factor analysis of the five factors in the personality questionnaire, known as the NEO Personality Inventory -Revised (NEO PI-R), showed that the 30 facets mostly loaded on the factors they were intended to, based on a sample of 411 men and women, representative of age (Costa & McCrae, 1992). The factor analysis results are depicted in table 2.3. These results are somewhat different from those in the earlier version of the instrument. Factor analysis on the NEO PI revealed a divergence of some facets which were rationally assigned to a factor but loaded on another factor (Zuckerman, 2005).

Table 2.3 Factor analysis of computer-administered Revised NEO Personality Inventory (NEO PI-R) facets

NEO-PI-R		Varimax-rotated principal component				
Facet scale		N	E	O	A	C
Neuroticism facets						
N1	Anxiety	**0.80**	-0.09	0.05	-0.01	-0.03
N2	Angry hostility	**0.64**	0.02	-0.04	**-0.49**	-0.02
N3	Depression	**0.77**	-0.25	0.00	-0.04	-0.20
N4	Self-consciousness	**0.75**	-0.22	-0.08	0.04	-0.07
N5	Impulsiveness	**0.48**	**0.47**	0.11	-0.25	-0.15
N6	Vulnerability	**0.67**	-0.14	-0.16	0.11	**-0.40**
Extraversion facets						
E1	Warmth	-0.21	**0.57**	0.26	**0.46**	0.09
E2	Gregariousness	-0.22	**0.69**	-0.01	0.19	0.01
E3	Assertiveness	-0.27	**0.52**	0.17	-0.31	**0.43**
E4	Activity	0.00	**0.49**	0.18	-0.20	**0.58**
E5	Excitement seeking	-0.12	**0.63**	0.10	-0.22	-0.05
E6	Positive emotions	-0.12	**0.58**	0.37	0.23	0.17
Openness to facets						
O1	Fantasy	0.0	0.13	**0.66**	-0.24	-0.12
O2	Aesthetics	0.08	-0.08	**0.68**	0.23	0.02
O3	Feelings	0.21	0.18	**0.68**	0.01	0.26
O4	Actions	-0.13	0.28	**0.57**	0.17	-0.07
O5	Ideas	-0.17	0.01	**0.69**	-0.13	0.08
O6	Values	-0,06	0.08	**0.63**	-0.03	-0.10
Agreeableness facets						
A1	Trust	-0.27	0.25	0.10	**0.57**	0.14
A2	Straightforwardness	-0.03	-0.11	-0.15	**0.68**	0.02
A3	Altruism	-0.14	0.26	0.06	**0.63**	0.34
A4	Compliance	-0.13	-0.20	-0.02	**0.77**	0.00
A5	Modesty	0.15	-0.23	-0.12	**0.56**	-0.13
A6	Tender-mindedness	0.17	0.11	0.18	**0.66**	0.08
Conscientiousness facets						
C1	Competence	**-0.41**	0.01	0.17	0.03	**0.67**
C2	Order	0.11	-0.09	-0.16	0.11	**0.66**
C3	Dutifulness	-0.17	-0.06	-0.14	0.32	**0.67**
C4	Achievement striving	-0.05	0.14	0.07	-0.09	**0.77**
C5	Self-discipline	-0.33	-0.07	-0.02	0.11	**0.75**
C6	Deliberation	-0.19	**-0.48**	-0.01	0.21	**0.40**
N = 411 men and women.		Loadings greater than +-0.40 in bold				

Source: Costa & McCrae, 1992, p. 654

Costa and McCrae (1992) claimed that the five factors represented in their model of personality are basic elements of personality, based on the following reasons and evidence:

- All five factors show endurance over time and are observable in behaviour.
- The traits that belong to umbrella factors are evident in natural language and various personality theories.
- Although the expression of traits may vary from one culture to the next, they are found in groups of people with different constitutions in age, sex, race and language.
- All traits have some biological basis.

A description of the each of the five factors is provided next, with an indication of related behaviour for individuals who score towards the lower or higher ends.

2.4.2.1 Extroversion (E)

This trait refers to the extent to which individuals are uninhibited and comfortable in social situations as opposed to a preference for introversion, where individuals are uncomfortable and inhibited (Manning et al., 2006). Extroversion denotes warmth, an outgoing disposition and cheerfulness in contrast to being reserved, solitary and sombre (McCrae & Costa, 2008).

Characteristics of the high scorer	Trait scales EXTROVERSION (E)	Characteristics of the low scorer
Sociable, active, talkative, person-oriented, optimistic, fun-loving, affectionate	Assesses quantity and intensity of interpersonal interaction, activity level, need for stimulation and capacity for joy.	Reserved, sober, not exuberant, aloof, task-oriented, retiring, quiet

Source: Costa and McCrae, cited in Cervone and Pervin (2008)

2.4.2.2 Agreeableness (A)

Also referred to as tender-mindedness, agreeableness describes the tendency to operate at a feeling level and display sensitivity and responsiveness. In contrast, tough-minded individuals tend to operate at a thinking level and display less sensitivity (Manning et al., 2006). Agreeableness also compares generosity, honesty and modesty to being selfish, aggressive and arrogant (McCrae & Costa, 2008).

Characteristics of the high scorer	Trait scales AGREEABLENESS (A)	Characteristics of the low scorer
Soft-hearted, good-natured, trusting, helpful, forgiving, gullible, straightforward	Assesses the quality of one's interpersonal orientation along a continuum from compassion to antagonism in thoughts, feelings and actions.	Cynical, rude, suspicious, uncooperative, vengeful, ruthless, irritable, manipulative

Source: Costa and McCrae cited in Cervone and Pervin (2008)

2.4.2.3 Conscientiousness (C)

This factor refers to how many goals an individual has and how they are pursued. Where the spontaneous individual may have many goals and pursue them in an unfocussed way, the conscientious individual is likely to have fewer goals and exercise more control and structure in their execution (Manning et al., 2006). People high on conscientiousness are seen to be hard-working, purposeful and disciplined compared to lower scorers who may appear laid back, unambitious and lacking in will-power (McCrae & Costa, 2008).

Characteristics of the high scorer	Trait scales CONSCIENTIOUSNESS (C)	Characteristics of the low scorer
Organised, reliable, hard-working, self-disciplined, punctual, scrupulous, neat, ambitious, persevering	Assesses the individual's degree of organisation, persistence and motivation in goal-directed behaviour. Contrasts dependable, fastidious people with those who are lackadaisical and sloppy.	Aimless, unreliable, lazy, careless, lax, negligent, weak-willed, hedonistic

Source: Costa and McCrae cited in Cervone and Pervin (2008)

2.4.2.4 Neuroticism (N)

This trait factor describes how an individual responds to stress and pressure. Individuals may display stability and emotional resilience at the one end, and anxiousness and reactivity on the other (Manning et al., 2006). Costa and McCrae (2001) describe neuroticism as a negative trait that denotes anxiety, anger, depression and other distress-related emotions.

Characteristics of the high scorer	Trait scales NEUROTICISM (N)	Characteristics of the low scorer
Worrying, nervous, emotional, insecure, inadequate, hypochondriacal	Assesses adjustment versus Emotional instability, identifies individuals prone to psychological distress, unrealistic ideas, excessive cravings or urges and maladaptive coping responses	Calm, relaxed, unemotional, hardy, secure, self-satisfied.

Source: Costa and McCrae cited in Cervone and Pervin (2008)

2.4.2.5 Openness (O)

This trait refers to how receptive individuals are to new experiences, as well as their level of intellect and creativity. Whereas a conventional individual is not open to such experiences, the open individual will be more inclined to be (Manning et al., 2006). Where openness implies the tendency to be imaginative, curious and explanatory, a low score implies rigidity, practicality a preference for traditionalism (McCrae & Costa, 2008).

Characteristics of the high scorer	Trait scales OPENNESS (O)	Characteristics of the low scorer
Curious, broad interests, creative, original imaginative, not traditional	Assesses proactive seeking and appreciation of experience for its own sake, toleration for and exploration of the unfamiliar.	Conventional, down to earth, narrow interests, unartistic, unanalytical

Source: Costa and McCrae cited in Cervone and Pervin (2008)

2.4.3 Evaluation of the Five-factor model

To summarise the features of the FFM, it is an instrument that measures five dominant traits, which in the opinion of Costa and McCrae (1992), every person has to varying degrees. These traits are thought to be based on brain structure and chemistry, but the expression of traits in different situations may vary. Traits are also stable features that encounter little change once the individual has reached the age of 30 (Cervone & Pervin, 2008).

The five-factor traits, in particular, can be regarded as valid as they are true to everyday realities. The factors neuroticism and extroversion are well established and stable (Costa & McCrae, 1992). Agreement between observers on factor ratings was validated and the factors are commonly used in everyday life. Conscientiousness is a predictor of academic achievement and the strongest

predictor of work performance, while openness relates to occupational interests and agreeableness is necessary to understanding coronary-prone behaviour (Costa & McCrae, 1992). There is evidence of universality of the basic factors, though the possibility of additional factors in specialised populations (Costa & McCrae, 1992) cannot be ruled out.

The FFM is a factor-analytic trait theory similar to the theories of Cattell and Eysenck, with the exception of being based on evidence for five factors (Cervone & Pervin, 2008). Supporting data for the five factors come from the analysis of data on natural language terms for traits, universality of traits and comparative trait systems, as discussed below (Cervone & Pervin, 2008).

2.4.3.1 Natural language term

Unlike other personality theories, which made use of psychological terms to describe psychological constructs, the five-factor theory uses common words regularly found in the languages of people (Cervone & Pervin, 2008). These words, often adjectives that describe people, are drawn from the dictionary and used so people can rate themselves or others.

2.4.3.2 Cross-cultural research

The FFM has been shown to exist trans-culturally, therefore the idea is propagated that personality structure is indeed universal (McCrae, 2000) from country to country and culture to culture, as some studies have already shown (Church, Anderson-Harumi, Prado, Matsumi, Mastor, Curtis, Miramontes, Katigbak, Medina & White, 2008).This also promotes the applicability of the model in the multicultural South African context (McCrae, 2000; Manning et al., 2006; Taylor, 2008).

South African legislation requires that psychometric instruments be reliable and valid without discriminating unfairly. Psychological practitioners have not adhered to these guidelines strictly, as they continue to make use of imported or locally developed

instruments that have not been cross-culturally validated (Foxcroft & Roodt, 2005). De Bruin (in Meiring, 2007) found that trying to isolate the five factors often had disappointing results when common imported instruments, such as the NEO PI-R, were used. Taylor (in Meiring, 2007) found that results looked different for blacks compared to whites in a comparability study in a South African work setting. Taylor and De Bruin (2006) subsequently developed the BTI, which has a structure similar to that of the NEO PI-R but can be used with all ethnic groups in South Africa.

In Cervone and Pervin (2008), De Raad and Peabody reported support for the three factors conscientiousness, extroversion and agreeableness in 11 different languages, while Somer and Goldberg found evidence of all five factors in the Turkish language. In Asian cultures, however, the idea of personality traits is foreign, as people are seen in relation to their families and social groups. Descriptions and evaluations of people are therefore informed by their social roles and it is information like this that can be missed when attempting to replicate the five-factor structure in other cultures (Cervone & Pervin, 2008).

The universality of the five-factor theory does pose some problems and is being explored continuously. Some methodological issues arise, one of the most difficult being conceptualising a trait across different cultures. Research has shown that translating from one language to another can be problematic, as a concept in one language may have a different meaning when translated into another language (Cervone & Pervin, 2008). Translating a five-factor instrument and administering it into another language can also force the assessment of constructs that do not naturally occur in the culture of the population being used. An answer to this is for trait questionnaires to be developed from the trait descriptors of the natural language concerned (Cervone & Pervin, 2008).

2.4.3.3 Criticism of the Five-factor Model

A prominent positive quality of the FFM is the fact that its factors coincide with those of other trait theories. But there are also concerns about some of the assumptions

upon which the FFM is based.

The five-factor theory developed by McCrae and Costa (in Cervone & Pervin, 2008) asserts that each of the five traits manifests in every person, in varying degrees. However, there is no descriptive link between personality structures and personality processes; that is, there is no causal mechanism or model in the FFM theory that explains how traits as tendencies are tied to dynamic neural processes (Cervone & Pervin, 2008).

A second concern centres on the personality of the individual having a biological basis in brain structure and chemistry, therefore making five-factor theory a strong supporter of the nature component in the nature-nurture debate (Cervone & Pervin, 2008). This implies that traits are not under the influence of social factors, while there are contending research findings, such as those of Twenge in Cervone and Pervin, (2008) who found changes in Americans' personality over the decades in response to cultural changes in the population.

Finally, with regard to the claim that all five factors may manifest in all individuals, research has indicated the existence of all five dimensions in populations, but has not established them in every individual included in such research (Cervone & Pervin, 2008).

2.4.3.4 Comparing the Five-factor Model with other trait systems

Costa and McCrae (1992) sought to unearth the basic dimensions of personality, claiming that the five factors are at the top of a hierarchy of sub-factors, rather than being the only factors of personality that exist. The aim of the five traits is also to reduce the potentially impractical, vast amounts of trait adjectives to an easier number of traits that can serve as a common language for psychologists (McCrae & Costa, 1992).

McCrae and John (1992) believed that they had successfully identified the structure and essential elements of personality. They envisioned an integration of literature

across the many instruments rather than the practice of labelling the same construct with many adjectives. Conversely, a trait with the same name could in fact be measuring different constructs (Zuckerman, 2005).

All five factors in the FFM have displayed convergent and discriminant validity across instruments and observers. They have also remained relatively stable over the decades (McCrae & Costa 1982; McCrae & John, 1992). Furthermore, five-factor theorists believe that the factors can be found in all personality instruments (Zuckerman, 2005).

Zuckerman (2005) compared traits across different systems, including those of Eysenck, Tellegan, Gray, Costa and McCrae, Zuckerman and Kuhlman and Cloninger. He came to the conclusion that there are four obvious major traits across these systems: extraversion/sociability; neuroticism/anxiety; constraint versus impulsive sensation-seeking and aggression/hostility versus agreeableness. The Five Factor Modelfive-factor model has successfully related to other instruments, such as the California Psychological Inventory (CPI) (McCrae, Costa & Piedmont, 1993) and more specifically, both Eysenck's inventories, as well as Cattell's 16PF (Cervone & Pervin, 2008). This is an important indicator that the measurement of the five factors relates to alternate factorial instruments (Cervone & Pervin, 2008).

Furthermore, measurement of the five factors within the NEO-PI-R can be integrated with measurements from other theoretical backgrounds, such as biological measurements of temperament or Q-sort ratings (McCrae, Costa & Busch, 1986; Cervone & Pervin, 2008). There is also evidence for consensus on ratings between self-report data and observer data, to warrant the use of self-report inventories. This applies to all five factors, according to Kenny, McCrae and Costa in Cervone and Pervin (2008).

With regard to five-factor instruments specifically, there are a number of questionnaires that assess the Big Five, apart from the NEO-PI-R (Cervone & Pervin, 2008). When comparing the dimensions in five-factor tests, the dimension

warmth is placed within extroversion in Costa and McCrae's NEO PI-R and other researchers associate it with the dimension agreeableness (Cervone & Pervin, 2008). The openness factor has allowed for some disagreement between researchers, as Goldberg relates it to intellect but McCrae and Costa disagree, considering this as too narrow a definition (Cervone & Pervin, 2008).

2.5 THE MEASUREMENT OF PERSONALITY TRAITS

Some of the popular trait-based personality instruments will be discussed in this section. The Sixteen Personality Factor Questionnaire (16 PF) is introduced as a commonly used instrument in South Africa. This is followed by a description of the NEO Personality Inventory- Revised (NEO PI-R) which was referred to in the development of a South African five factor instrument, The Basic Traits Inventory (BTI).

2.5.1 The Sixteen Personality Factor Questionnaire (16 PF)

Cattell reviewed the trait lexicon generated by Allport and Odbert (McRae & John, 1992) and generated a subset, which was subjected to observer ratings and then factor-analysed (16PF Manual, 2006). The analyses of the observer data revealed what was termed life data or L-data of 12 factors representative of the descriptors in the lexicon or everyday language use.

The rated adjectives were then converted to questionnaire data, or Q-data, and these, when factor-analysed, produced 16 'primary scales'. Twelve of the scales correspond with the L-data while the remaining four are labelled as Q-data, from which they originated (16PF Manual, 2006). The 16 factors can also be clustered as 'global factors' of extraversion, anxiety, tough-mindedness, independence and self-control (16PF Manual, 2006).

The 16PF was adapted as a South African version, which can be used to measure

behaviour in a wide range of settings. Grammatical changes were made to render the instrument more user-friendly. The instrument shows acceptable internal consistency and distinctly assesses 16 different factors (16PF Manual, 2006).

2.5.2 The NEO Personality Inventory-Revised (NEO PI-R)

The development of the NEO PI began in the 1980s, based on factor analyses of the 16PF (Taylor, 2004). Three factors, extraversion, neuroticism and openness, were identified, similar to Goldberg's Big Five factors. The factors of agreeableness and conscientiousness were later included in the revised edition of the NEO PI-R (Taylor, 2004).

The previous version NEO Personality Inventory (NEO PI) was designed to measure the factors of neuroticism, extraversion and openness (Weiner & Greene, 2008) and the recent NEO PI-R was designed to measure the additional factors of Costa and McCrae's personality model (Weiner & Greene, 2008). Six facets are measured per factor in order to provide a comprehensive measurement of the five factors of personality (Costa, Terraciano & McCrae, 2001; Weiner & Greene, 2008).

The NEO PI-R is characterised by a grade six reading level, hand- or computer-scoring and transparent items. Responses can, however, be distorted and the instrument therefore has three validity checks to counter this (Weiner & Greene, 2008). Preparing individuals by creating the appropriate mindset is also an important aspect in the administration of the instrument, which can offset negative effects on the reliability and validity of the results (Weiner & Greene, 2008).

Applications of the NEO PI-R are varied across settings and are indicated as useful in educational, clinical, medical and occupational contexts (Weiner & Greene, 2008). The fact that people being assessed may distort responses to comply with occupational requirements must be considered and the 'three validity check' must be adhered to in this regard (Weiner & Greene, 2008).

2.5.3 The Basic Traits Inventory (BTI)

The Basic Traits Inventory (BTI) is a five-factor measurement instrument of personality developed by Taylor and de Bruin (2006). The South African-developed instrument is based upon and measures the Big Five factors. A multicultural sample of 6 112 participants yielded results that were reliable and a regular pattern for factor loadings (Taylor, 2008). The BTI is a successful example of international personality theory being incorporated in the South African context (Taylor, 2008).

2.6 PERSONALITY TRAITS IN THE WORK CONTEXT

Personality variables have enjoyed increased attention as team processes increase in prominence. Personality effects contribute significantly to how employees behave in terms of groups and organisations, career choice and leadership (Moynihan & Peterson, 2004). Previous literature focussed more on observable demographic variables (Moynihan & Peterson, 2004).

The assessment of individual differences is applied in various settings, including the workplace. The assessment of personality traits provides valuable information when deciding on a career path (Cervone & Pervin, 2008) and research has often found that the factor of conscientiousness is related to increased job performance (Furnham, Petrides, Jackson & Cotter, 2002).

Personality has found a legitimate place in organisations by serving as a contributing factor to well-being at work, as well as helping to understand micro- and meso-organisational processes. With regard to well-being, personality is a key feature in vocational choice and satisfaction and is related to how employees deal with stress (Schneider & Smith, 2004). Personality has an impact on organisations at the micro-level by influencing leadership styles (Spangler, House & Palrecha, 2004) as well as organisational citizenship behaviour (Organ & McFall, 2004).

At a larger, meso-level concerning organisational groups and divisions, personality

aggregates within an organisation can provide meaningful clues about how the organisation functions (Schneider & Smith, 2004). Furthermore, Schneider's Attraction-Selection-Attrition (ASA) model (Schneider & Smith, 2004) explains the process by which employees become part of the organisation and contribute to its culture and climate. Moynihan and Peterson (2004) describe the role of personality within group processes at the universal, cultural and team levels within organisations. The theories associated with these levels are described below to facilitate an understanding of how individual personalities influence larger groups.

2.6.1 The Attraction-Selection-Attrition (ASA) model

In 1987 Schneider hypothesised that people are attracted to and remain with organisations that match their personalities (Schneider & Smith, 2004). As a result a modal personality is generated in the organisation as a representation by the most commonly occurring personality traits, which eventually characterises the culture of the organisation (Schneider & Smith, 2004). This view is consistent with Holland's (1997) theory of person-environment fit, where for example an individual who has a realistic personality orientation would best suited to a realistic environment where other realistic types are likely to be found.

Attraction often results where job seekers identify organisations with values similar to their own, while selection of workplaces ensue based on job applicants' perception of person-organisation fit. Cable and Parson's (2001) study, among others, of the ASA model found support for the notion of attrition being related to employees who objectively and subjectively perceive a poor person-organisation fit. Homogeneity tests by Schneider and Smith (2004) of managers revealed industry and organisational differences in personality. It therefore appears that there is support for the homogeneity hypothesis as organisations come to contain employees with similar personalities over time owing to the ASA cycle (Schneider & Smith, 2004).

It appears from Schneider, Smith, Taylor and Fleenor (1998) that the personalities of an organisation's employees 'make the place', rather than the organisation shaping

the personalities of its people, as an understanding of how personality relates to the organisational context. The ASA model states that the leader initiates the type of personality to be attracted into the organisation based on his/her own personality and the strategy, structure and culture generated. These attract people with similar preferences, who are also more likely to be selected into the organisation and the organisation has, therefore, a covert modal personality preference early on. Argyris, in 1958, suggested that organisations exert a pull on people who are appropriate for that organisation (Schneider et al., 1998).

There is a commonly held notion that newcomers into an organisation are socialised in adopt the prevailing values of the organisation but this idea is not supported by Schneider et al (1998). Rather, it is proposed that socialisation serves to polish the fit of individuals who already have some dispositions in common with the organisation that they enter (Schneider, et al., 1998).

Schaubroeck, Ganster and Jones's (1998) study on the predictive value of the ASA model yielded support for the theory but also highlighted that occupational sub-groups within the organisation encouraged differentiated personality homogenisation. Variations in personality profiles could be found across occupational sub-groups within the organisation. A specific set of traits can therefore not be generalised across an organisation.

Individual characteristics and organisational situations are not independent. Insufficient recognition has been given to this fact, with the personality effects on individual output remaining outside acknowledgement (Schaubroeck et al., 1998).

2.6.2 Personality and group processes

Three systems' perspectives presented to explain the interaction between personality and group processes include the universal, contingent and configurational approaches.

2.6.2.1 The universal approach

The universal level places personality as the key input in a systems model, as it influences individual behaviour and consequently interpersonal process behaviour. Individual cognition, motivation and affective states are able to influence the extent and quality of interpersonal involvement with positive cohesive effects dependent on traits such as extraversion and agreeableness, emotional stability and some field dependence (Moynihan & Peterson, 2004).

2.6.2.2 The contingent approach

The contingent perspective is more complex than the universal approach, focussing on both personality traits and organisational culture aspects as they interact and interrelate. Personality characteristics will therefore interact with the social context to predict how people think, feel and behave (Moynihan & Peterson, 2004).

2.6.2.3 The configuration approach

An even more complex perspective, the configuration perspective, focusses on the variety of traits present within the group in conjunction with the situational context. Harmonious relationships within groups are thus dependent on interaction between complementary personalities (Moynihan & Peterson, 2004).

For the purpose of this study, trait theory presents better utility by providing a means to profile the personalities of the platoons assessed and extract the similarities and differences across the groups. The BTI developed by Taylor (2004) is a South

African-developed instrument based on cross-cultural research. Cross-cultural research on personality has relied heavily on the universality of the FFM and continues in South Africa to reduce bias in local personality measures and refine their cross-cultural applicability (Meiring, 2007).

2.7 CHAPTER SUMMARY

This chapter served to provide a background to personality trait theory. General issues pertaining to personality research were briefly discussed, followed by the progressive explanation of how trait models evolved to lead to the FFM. The five factors are then described and some examples of factor measurements of personality are overviewed. The relevance of personality within the work context is the last issue discussed, with specific reference to the group and organisational contexts. The value of this chapter for this research was to outline the fundamental properties of trait theory and the FFM in particular, as these form the basis for the measurement and understanding of the personalities that manifest in the research groups.

In the next chapter of the literature review, various aspects of team culture are explored and the chapter concludes with an explanation of how the two variables, personality traits and team culture, are related.

CHAPTER 3 TEAM CULTURE

3.1 INTRODUCTION

The concept of culture in the group and organisational context has been somewhat indistinct when trying to define and measure it. In this chapter the definition of team culture is unpacked and described with the aid of group models. Team development is also discussed to facilitate an understanding of the emergence of group processes and thereafter, measures for assessing team culture are evaluated. Finally, the concept of team culture is discussed as it is related to the variable of personality traits in the preceding chapter.

3.2 DEFINING TEAM CULTURE

In order to explain culture, the concept of a team first needs to be defined. Sundstrom, McIntyre, Halfhill and Richards (2000) use the terms ‘work group’ and ‘work team’ interchangeably, to describe the interdependent collection of individuals who are jointly responsible for some organisational outcome.

Hughes and Terrell (2007a), however, differentiate between a ‘group’ and a ‘team’. A group consists of a collection of people with some common interest, whereas a team possesses the following clearly defined characteristics: purpose, productivity, longevity and a structure of two or more people. Unless there is an end goal, actual output and a length of existence as deemed necessary, the collection of individuals is regarded as a group or at best, a partly dysfunctional team (Hughes & Terrell, 2007a).

Similar to Sundstrom et al. (2000), this study will use the terms ‘groups’ and ‘teams’ interchangeably, since the existence of a group is a prerequisite to a team. Furthermore, teams tend to have a functional structure in place, which may differ from one team to another, depending on the purpose of each team (Hughes & Terrell, 2007a). This does not mean that they do not still function as a group where being a team is the desired state.

With regard to the culture of a group, it can be defined as the values, beliefs, customs, traditions and preferred way of doing things. Deeply held assumptions and beliefs are observable in the interactions between the members over time (Garvin, Guiterrez & Galinsky, 2004; Toseland & Rivas, 2001). Schein (1992) regards culture as a phenomenon that constantly surrounds group members, as it is, continuously created and enacted by members' interactions with one another. He goes on to describe group culture as the "accumulated shared learning of a given group, covering behavioural, emotional and cognitive elements of the group members' total psychological functioning"(Schein, 1992, p. 10).

3.3 CHARACTERISTICS OF CULTURE

Culture within an organisation is characterised by the following elements: structural stability, depth, breadth and patterning (Schein, 2004).

Structural stability refers to the identity of the group, as something shared and stable that the members hold on to as they provide meaning and predictability (Schein, 2004).

Depth refers to mostly unconscious aspects of the group that are more deeply embedded and as a result become ingrained (Schein, 2004). *Breadth* encompasses the functions and tasks of the group as it engages in its activities.

Patterning, also referred to as integration, links together the different elements of the culture in the form of values, rituals, behaviours and climate so that they converge into a meaningful whole (Schein, 2004).

The above-mentioned characteristics are fairly abstract conceptions of culture that are better understood if the dynamic process of culture formation is unpacked (Schein, 2004) according to the stages as discussed in section 3.8. Current theory, as discussed next, will provide clarity on the formation of team culture.

3.4 THEORIES OF WORK CULTURE

Research aimed at understanding culture in the work context has yielded variations of information on a very broad construct. Many researchers have made attempts at mapping the culture construct and some useful theories have been generated as a result. The earliest of these were the Hawthorne studies in the 1920s, which focussed on the culture of work groups (Franck, 2005). Describing and understanding organisational culture can be directly linked to the Hawthorne studies (Franck, 2005) and interest in the subject has continued over the decades but attention has since been concentrated on the effect of combined groups at the organisational level rather than at the individual group level.

Some well-known theories of work culture include, but are not limited to, Hofstede's five dimensions of power distance, individualism, masculinity, avoidance of uncertainty and long-term orientation (Juang & Matsumoto, 2004). Cornwell and Perlman (1990) suggested that culture is dependent on leaders who embed culture based on what they focus on, measure, control and reward. A South African model developed by Martins (Martins & Von der Ohe, 2006) emphasises vision, mission, leadership and diversity strategy. Its construction is based on the work of Schein (Martins & Von de Ohe, 2006).

Understanding team culture can be simplified by considering the models proposed by Schein (2004) and Sundstrom et al. (2000). Schein's (1990) model describes the content of culture and how it develops in small groups. Sundstrom's model overlaps with Schein's model in certain aspects, but is an approach that describes the factors contributing to team effectiveness. Three of the five factors are, however, considered to be cultural factors within Schein's model. Both Schein's (2004) and Sundstrom's et al. (2000) models will subsequently be described and their common features will be discussed to provide a comprehensive account of team culture.

3.5 SCHEIN'S THEORY OF TEAMS

To date, Schein (1999) has offered one of the most comprehensive approaches to understanding culture as it exists in an organisation. His model suggests that culture can be assumed to exist when a group responds to *external survival issues* by adjusting *internal integration issues* as depicted in Figure 3.1. The culture that arises at the team level is tied to the development of the team. Team culture is also dependent on the interpersonal relationships between the team's members (Schein, 2004).

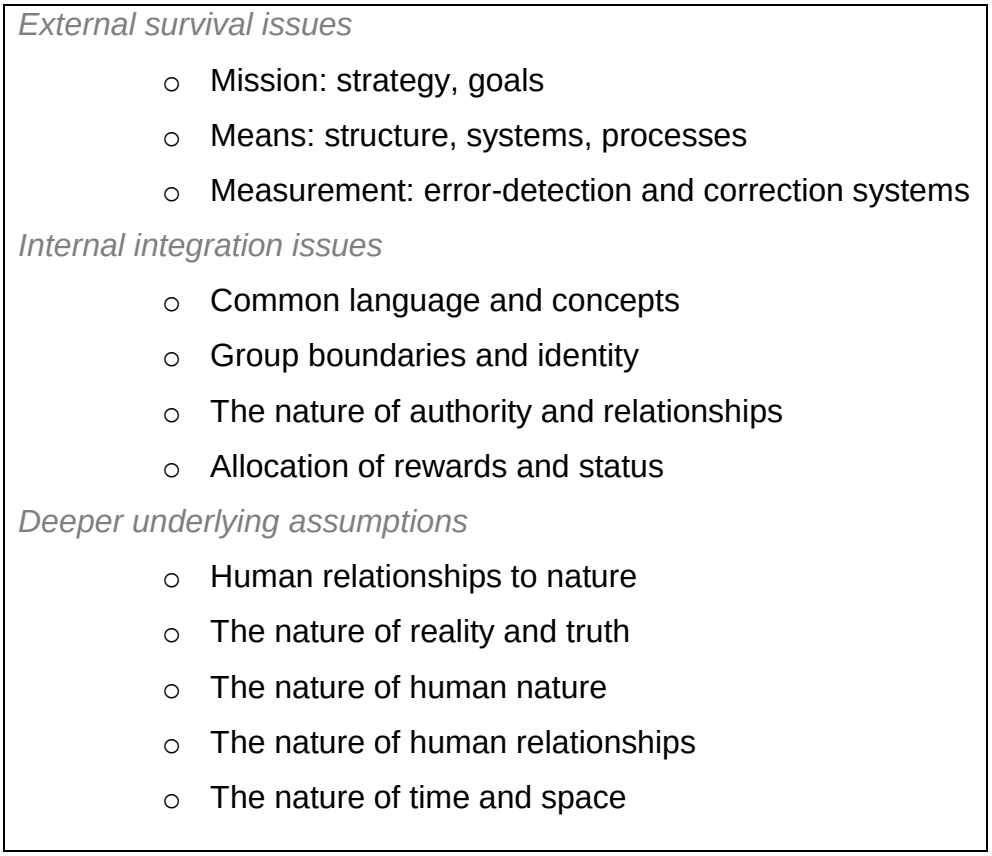

Figure 3.1 Culture is about... Source: Schein (1999, p. 30)

Schein (1990) explains that culture develops as the team solves its problems of internal and external integration, with basic assumptions being shared as a result, setting 'ground rules' for the way the team behaves, thinks and feels about things. He recommended studying a culture below the level of behaviour in order to gain a clearer understanding of it. This has been largely neglected by much of the research

in favour of the survival and integration issues, which are more tenable to behavioural measurement (Schein, 2004).

A further distinction of Schein's theory is the recognition of smaller groups or teams, which create their own culture and collectively, co-create the organisational culture (Schein, 2004). It is from this bottom-up perspective that this study is approached and the focus on culture is reserved at the group or team level, as well as the deeper underlying assumptions in relation to the internal integration issues of Schein's (1999) model.

Schein's (1990, 2004) conceptualisation of culture comprises three levels - *artefacts, espoused values* and *tacit assumptions,* as depicted in Figure 3.2. The level of *artefacts* represents the physical symbols that represent a group culture, such as dress code and office décor (Schein, 1999). The deeper, *espoused values* level refers to the basic values of a group, such as integrity, teamwork or customer orientation, and is displayed in the way group members interact with each other (Garvin et al., 2004; Schein, 2004). The deepest level of shared *tacit assumptions* is responsible for the thoughts and perceptions that drive overt behaviour (Garvin et al., 2004; Schein, 2004). Real understanding of a group's culture requires an understanding of these assumptions, according to Schein (1999).

Garvin et al. (2004) assert that once a culture has been established the members who continue to endorse it tend to feel comfortable and remain in the group, whereas those who disagree with it tend to remove themselves because their socio-emotional needs are not met. It is therefore important for values that transcend individual differences to be included in the culture to encourage the participation and integration of all the members of the group (Garvin et al., 2004).

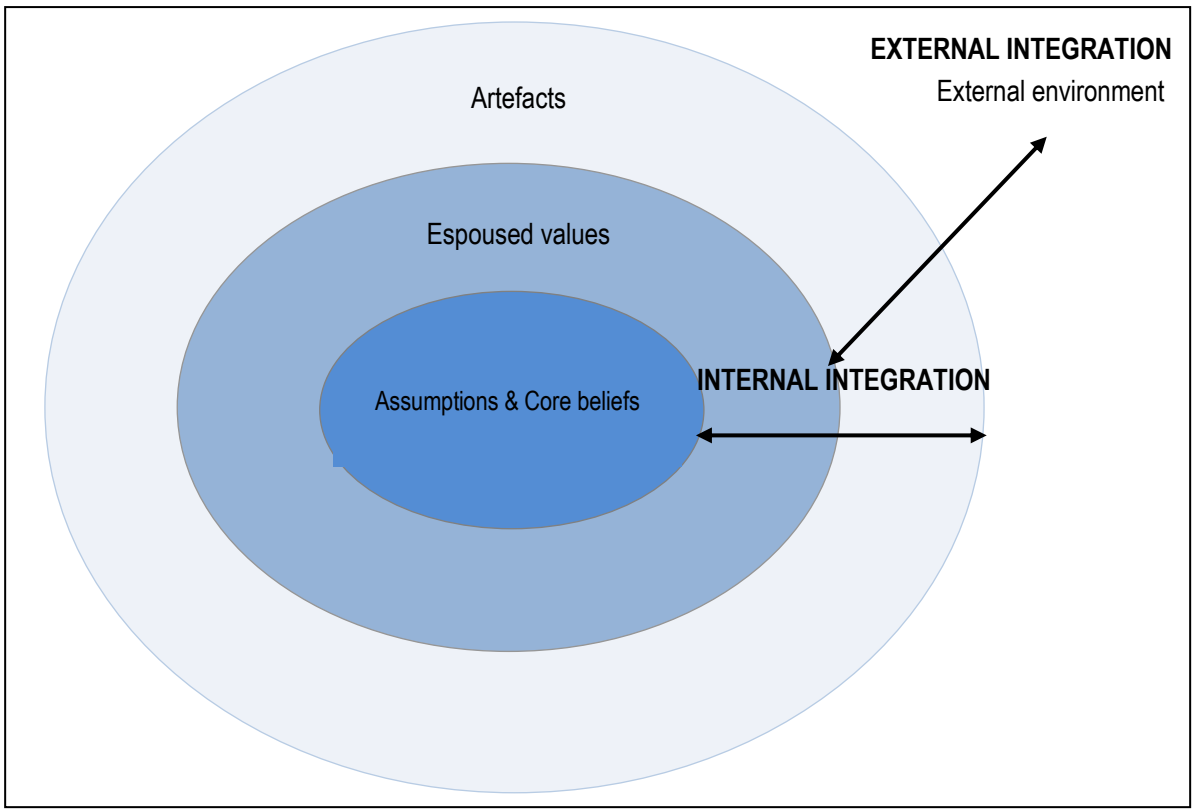

Figure 3.2 Adaptation of Schein's three-level culture model (1990)

3.6 TEAM EFFECTIVENESS MODEL

The way in which a team functions has an impact on how effective it will be and the extent to which it is productive. In order to understand the role of team culture in relation to the general functioning of the team, the model of effectiveness developed by Sundstrom et al. (2000) is described.

Sundstrom et al. (2000) identified five broad factors of team effectiveness common to many of the effectiveness theories developed in the 1970s and 1980s, which have since been refined. Converging factors across the theories included organisational context, group composition, group work design, intra-group processes and external group processes.

Organisational context refers to the features and systems of the host organisation and includes aspects such as training, reward and management systems, as well as

the industry in which the organisation operates (Sundstrom et al., 2000).

Group composition refers to the nature of the members of the group and the size of the group. Personality, ability, demographic differences and collective expertise are some common variables that differentiate members from one another (Robbins, 2001; Sundstrom et al., 2000).

Work group design is related to the nature of the work to be done and includes the activities, equipment and decision-making capabilities (Sundstrom et al., 2000) of the group. Team members need to take collective responsibility for the achievement of tasks and work design characteristics can improve motivation by providing a sense of ownership and responsibility over tasks (Robbins, 2001).

Intra-group processes include the inter-relationships between group members; their communication, coordination and conflict, as well as group characteristics such as cohesion, social integration and group norms (Sundstrom et al., 2000).

External group processes are the interactions of a group's members with colleagues, supervisors and clients outside the group and include the associated variables of external integration, coordination and communication (Sundstrom et al., 2000).

Sundstrom et al. (2000) also mention that previous studies have found a significant impact of personality traits on team performance. Team performance is regarded as a result of intra-group cohesiveness and a positive perception of effectiveness by the members. Both have been found to have a positive impact on the performance of a team, but little is understood about the way in which the factor of personality influences the processes or culture within the team. This research will attempt to address this gap in understanding team effectiveness.

3.7 RELATING TEAM CULTURE TO TEAM EFFECTIVENESS

Both team culture as described by Schein (2004) and team effectiveness as described by Sundstrom et al. (2000) have been explained in the previous sections. Although it is not the purpose of this study to investigate the effectiveness of teams, the information derived from understanding team culture will obviously contribute to the understanding of effectively functioning teams. It can be seen from theory description that there are overlapping concepts, as well as concepts that are relevant but have been overlooked by each model, which the other compensates for.

The Team Effectiveness Model (in Figure 3.3) depicts the five factors, of which 'external environment' and 'external integration' fall within the definition of Schein's (Figure 3.2) concept of the external integration task of group culture.

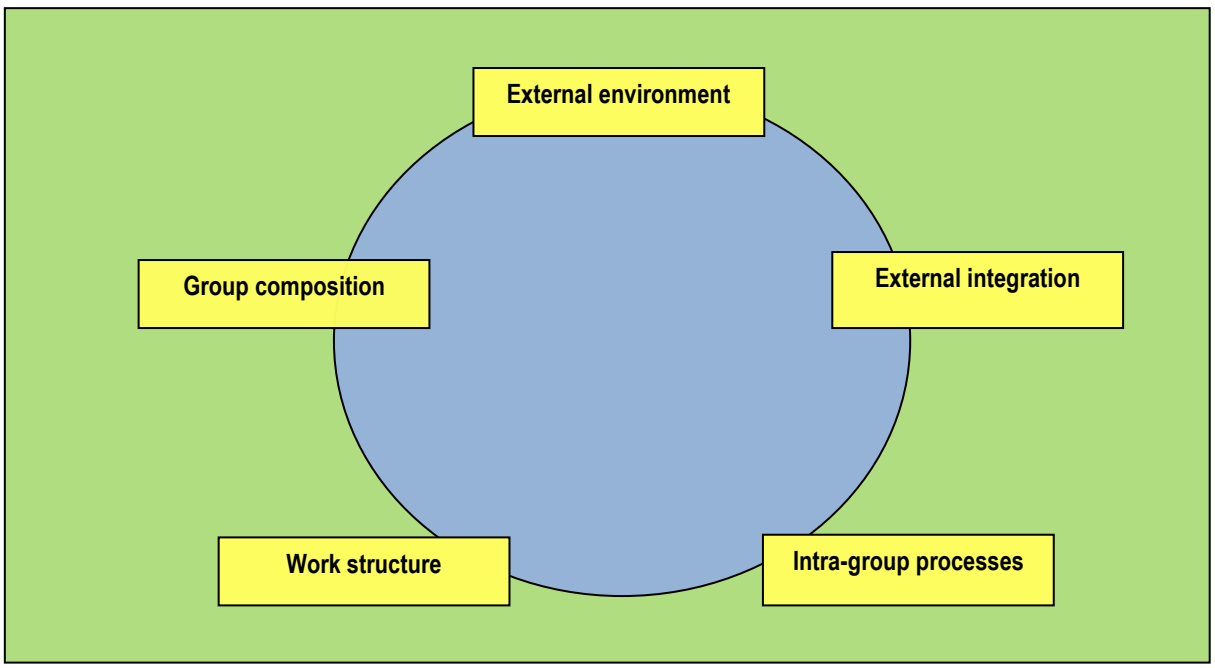

Figure 3.3 Team Effectiveness Model (Sundstrom et al., 2000)

'Intra-group processes' are synonymous with the internal integration task of group culture. 'Work structure' would be considered an aspect of the external environment. 'Group composition' is a focal point of this study, with the emphasis on personality, but is lacking in Schein's theory, even though the implications of personality are latent within the two deeper levels of Schein's (2004) model. The Team

Effectiveness Model does, however, suggest interaction between the different factors, including between the factors of group composition and intra-group processes.

3.8 THE DEVELOPMENT OF A TEAM

Since the 1950s various models of team development have attempted to explain the stages through which teams progress (Cilliers & Koortzen, 2003). Probably the most popular model of group development is that of Tuckman (Cilliers & Koortzen, 2003) who came up with an integrative model based on the available research and theories up to the early 1960s. More recent models are also depicted, including those of Wheelan (1994) and Schein (2004).

3.8.1 Tuckman's group development model

Tuckman maintained that groups go through identifiable stages, which he labelled forming, norming, storming, performing and adjourning (Smith, 2005). His descriptions of the stages of group development are as follows:

3.8.1.1 Forming

The first stage of forming finds members preoccupied with issues of inclusion and dependency. They orientate themselves within the group and begin testing for interpersonal barriers (Cilliers & Koortzen, 2003; Smith, 2005).

3.8.1.2 Storming

This stage usually involves the surfacing and resolution of conflict (Cilliers & Koortzen, 2003) related to interpersonal and task issues (Smith, 2005).

3.8.1.3 Norming

At this stage the group dynamic begins stabilising and its members start to settle into their roles, structures and rules (Cilliers & Koortzen, 2003; Smith, 2005).

3.8.1.4 Performing

This stage finds group members active at their tasks and accomplishing their goals within defined norms and standards until the stage of adjourning (Cilliers & Koortzen, 2003; Smith, 2005).

3.8.1.5 Adjourning

Adjourning occurs when the group members are no longer dependent on one another and the group dissolves on the conclusion of the task (Cilliers & Koortzen, 2003; Smith, 2005).

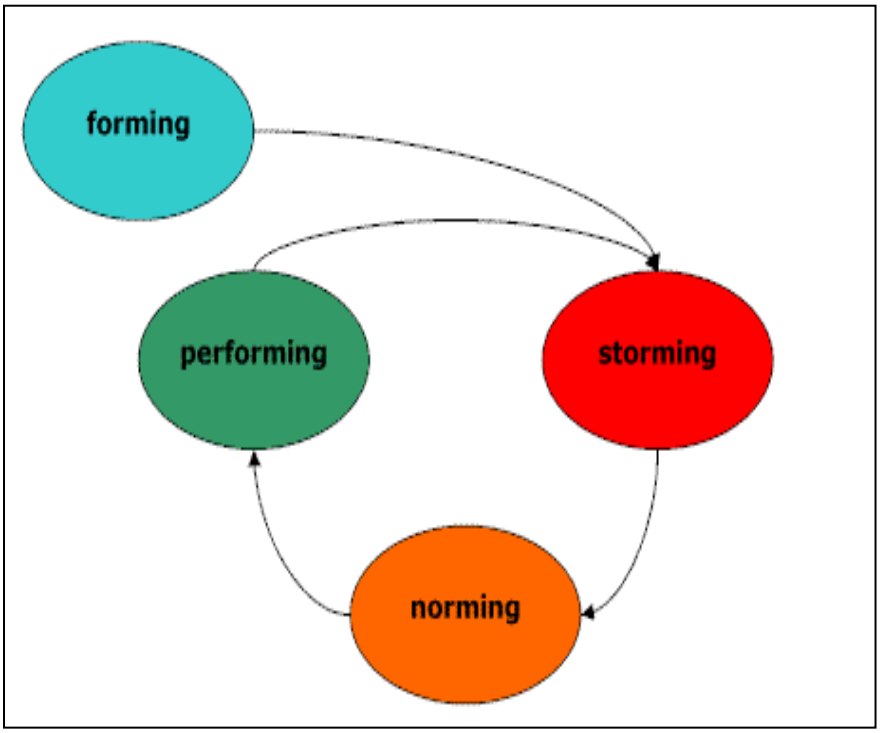

Figure 3.4 Group development stages (Smith, 2005)

More recent models have since been developed, which describe in more detail the movement of groups between the different stages. The process of group development as described by Wheelan (1994) and Schein (2004) consist of many overlaps and comprehensively explain development as applicable to all types of groups.

3.8.2 Wheelan's model of group development

The more integrative model by Wheelan (1994) builds on Tuckman's (Smith, 2005) earlier model and also consists of five stages.

3.8.2.1 Stage one: Dependency and inclusion

Group members are significantly dependent on the establishment of a leader to provide structure and support. They behave more tentatively as they try to determine what the rules and structures of the group will be. Members tend to be more anxious in this initial stage, reluctant to initiate independent action and focussed on identifying the direction of the group (Cilliers & Koortzen, 2003; Schein, 2004).

3.8.2.2 Stage two: Counter-dependency and fight

Conflict is evident within the group at the second stage, and includes task avoidance or tension avoidance. The group struggles with the manner in which it will operate and the roles of the group members. Although a difficult stage in the development of a group, it enables the members to clarify roles and psychological boundaries and leads up to cohesion. In contrast to the earlier stage of dependency, members begin to articulate their views and form coalitions to shape the structure of the group in line with its goals (Cilliers & Koortzen, 2003).

3.8.2.3 Stage Three: Task and structure

On the resolution of the conflict stage, norms and rules of conduct can be decided on, based upon the structure, goals and roles of the group and its members. It is now that

the group designs the way in which it will function. Communication is more open, relationships are better defined and the group begins to prepare for work as it begins to assign roles based on competence (Cilliers & Koortzen, 2003).

3.8.2.4 Stage Four: Work

With the ground work in place, the group is able to function effectively and has developed an awareness of time. Work is evident when the group begins with an idea and provides an outcome that it gives back to its environment (Cilliers & Koortzen, 2003).

3.8.2.5 Stage Five: Termination

Temporary groups have a point of ending and it is beneficial for the group to evaluate its work, provide feedback and discuss its feelings about its progress, especially where future involvement in work groups is required (Cilliers & Koortzen, 2003). It is possible for the group to regress to an earlier stage and it is not necessary for the group to develop according to the stages in the given sequence. Some groups become 'stuck' at a particular stage and are therefore incapable of performing optimally.

3.8.3 Schein's model of group culture

Schein's (2004) formulation of a group's culture includes an in-depth analysis of the cognitive and affective components and tasks of each stage, often overlapping with the tasks mentioned in Tuckman's model (Cilliers & Koortzen, 2003). Schein's (2004) experience with groups led him to believe that removal of the resources or 'crutches', such as established leadership, agenda or procedural rules, forces members into using their own resources and generating a culture of their own to achieve their goals. The four stages of Schein's group culture model include formation, fusion, being functional and finally, group maturity, as discussed below (Schein, 2004).

3.8.3.1 Group formation

At this initial, coming-together stage the members are a number of individuals in a state of dependence. They seek to understand their purpose in the group and require guidance and leadership. Individual actions contribute to a ‘group product’. At a cognitive level, working procedures are sought and at the affective level, authority and influence are considered important and are what the initial norms are based upon. The task of the group at this stage is to move from the need for dependence towards responsibility for the group’s outcomes (Schein, 2004).

3.8.3.2 Fusion

Members begin feeling positively about themselves as a group and the need for intimacy develops. Positive overt behaviour re expressed and negative feelings is suppressed, as solidarity is emphasised. Norms centred on group learning are reinforced and anxiety-invoking issues are avoided as disagreements and conflict begin to surface (Schein, 2004).

3.8.3.3 Functional familiarity

There is mutual acceptance between the members of the group as they move from issues concerning intimacy and authority towards focussing on the work to be done. The group members continue to learn and adapt (Schein, 2004).

3.8.3.4 Group maturity

The history and shared emotional experiences of the group reinforce its sense of identity and strengthen the culture (norms, assumptions and behaviour) that has formed. The group has a better understanding of its role, as well as how to accomplish its mission and conduct its affairs (Schein, 2004).

The stages of a group’s development were discussed according to the theories of

Tuckman (Smith, 2005) and Wheelan (1994), as well as how the culture of a group forms during the course of its development (Schein, 2004). The next section discusses methods for measuring the culture that manifests within a group or team setting.

3.9 MEASURING TEAM CULTURE

Measuring team culture can be approached from either a quantitative or qualitative stance. Where quantitative measures usually include questionnaires or surveys, qualitative methods tend to utilise interviews. The quantitative measurement of culture within the organisational context typically makes use of 'typing' or 'profiling' surveys.

3.9.1 Typing surveys

Typing surveys yield discrete sets of characteristics belonging to mutually exclusive types (Nkosi, 2003), so that a group or organisation can be said to have a specific type of culture, e.g. achievement culture (Manetje, 2005) and provide a detailed explanation of the type. Examples of typing surveys include the Organisational Team Culture Indicator (OTCI) and Harrison's Culture Survey.

3.9.1.1 The Organisational Team Culture Indicator (OTCI)

The OTCI, developed by Pearson, is a tool for understanding group and organisational behaviour by identifying motivational factors, deeply held values and brand identities (Pearson & Hammer, 2004). The OTCI measures the manifestation of specific archetypes that characterise the culture of the groups in an organisation. The OTCI is currently available in South Africa but only as an online, organisation-wide version of the instrument (Jopie van Rooyen Catalogue, 2008-9).

3.9.1.2 Harrison's culture survey

Harrison and Stokes (1993) developed a cultural framework for conceptualising culture according to four orientations. These included person, power, role and achievement orientations, which if measured indicate whether the emphasis of an organisation's functioning is on its employees' well-being, on domination, roles and structures or on attaining results, respectively (Franck, 2005).

3.9.2 Profiling surveys

Profiling surveys provide measurements that describe the different dimensions measured by the survey, according to the beliefs and values of the participants. Unlike type surveys, however, the dimensions or categories measured are not mutually exclusive in describing the existing culture (Nkosi, 2003).

Profiling surveys can be further categorised as effectiveness surveys, descriptive surveys or fit profiles. These measure the effectiveness of culture in promoting performance, the cultural values and the 'fit' between individuals and organisations, respectively. However, effectiveness surveys have been the prevalent approach for the value of understanding organisational effectiveness (Nkosi, 2003).

3.9.2.1 The Denison organisational survey (DOCS)

The Denison Organisational Culture Survey (DOCS) developed by Denison (1996) is a profiling instrument that assesses 12 dimensions, which cluster into four traits, namely involvement, consistency, adaptability and mission. The four traits are considered to assist in understanding organisational culture in order to develop performance.

3.9.2.2. The Culture Assessment Instrument (CAI)

The Culture Assessment Instrument (CAI) by Martins (1989) assesses six

dimensions pertaining to the internal and external aspects of an organisation's culture, including mission/vision, management processes, employee needs and objectives, external environment, means to achieve objectives and interpersonal relations. Although highly reliable, the instrument is better at assessing culture at the level of artefacts, in accordance with Schein's (1999) model. The instrument has highlighted surface-level commonalities between organisations but has difficulty in distinguishing between cultural aspects at deeper levels (Du Toit, 2002).

3.9.2.3 The Team Emotional and Social Intelligence survey (TESI)

Another profiling survey, the TESI (Hughes & Terrell, 2007b), has been used to assess team culture in this study, based on the descriptive nature of its dimensions and the ease of correlating the results with the descriptive results of the personality assessment. Developed by Hughes and Terrell (2007a), the TESI measures the intra-group processes from the perspectives of the members of a team on the seven dimensions of team identity, motivation, communication, stress tolerance, conflict resolution, positive mood and emotional awareness.

Each dimension is assessed by a Likert type rating of one to five on statements as assumptions regarding how team members perceive the functioning of the team. For example, statements in the TESI such as "the image of our team matters to us" and "we are proud to belong to this team" are rated as indicators of the team identity dimension (Hughes & Terrell, 2007b).

The seven dimensions collectively contribute to the development of team relationships (Hughes & Terrell, 2007a) and intra-group processes, including the ability to integrate into a functional team with a common language, boundaries regulating inclusion, criteria for authority, level of intimacy and the ability to manage the 'unmanageable' (Schein, 1999). The dimensions are also evident in the dynamics that unfold at every phase of a team's development and its culture.

3.10 RESEARCH ON THE RELATIONSHIP BETWEEN PERSONALITY TRAITS AND TEAM CULTURE

Personality has a significant influence on both individual and team behaviour (Robbins, 2001). Team culture and team effectiveness therefore depend on what the individual members bring with them. Petkoon and Roodt (2004) even postulate that personality is to the individual what culture is to the group. Individuals have unique sets of personal characteristics (Lumsden & Lumsden, 2004) and behaviour, including social behaviour. These are linked to the cognitions and affects that constitute an individual's personality (Rhodewalt, 2008).

Allport in Oishi (2004) saw personality as a product of biology and environment. He asserted that regardless of the strength of a personality, it is amenable to roles, situations and culture. In addition, the degree to which individuals internalise social and cultural demands depends on their likes and dislikes. These preferences, in turn, are influenced by the individuals' personalities.

As the 'nature of human nature' (Hogan, 2004) personality has been included by Schein (1999) as a component of the underlying assumptions level in his model in Figure 3.1. Neuman and Wright (in Sundstrom et al., 2000) emphasise the strong influence of personality, coupled with ability, in predicting performance and highlight the need for studying group composition with specific reference to the personality traits of conscientiousness and agreeableness.

The dynamics of the team are therefore inextricably tied to the combination of individual personalities found within it. Regardless of the type of team, effectiveness relies on the communication and cooperation between team members (Lumsden & Lumsden, 2004). Interaction with others is a key component that provokes the expression of traits by individuals (Rhodewalt, 2008). Team roles, or patterns of behaviour in which individuals contribute in a team context, are themselves clusters of personality characteristics that translate into related behaviour (Manning et al., 2006).

Ultimately, individuals' personalities can have a positive or negative impact on group processes. Whereas the presence of some personalities results in an optimal working environment, others can lead to pathological or dysfunctional subcultures, as determined in earlier studies in the 1980s (De Vries & Miller, 1984).

Some personality attributes may contribute to a team's effectiveness while others may contribute to conflict (Lumsden & Lumsden, 2004). For example, if a single team member definitely lacks the trait of agreeableness or conscientiousness, this can affect the internal processes of the group negatively and result in decreased team performance (Robbins, 2001). Dominance of introversion can result in a group that is formal and sedate, compared to a group with an extrovert majority (McCrae, 2000).

In a study by Steyn (2006) that looked at the entrance of recruits into the police force, it was reported that those candidates who already had characteristics and traits similar to those of existing officers were more readily employed. In addition, many police officers' views already existed early on in their employment and changed very little over the span of their careers.

Steyn (2006) found that attitudes of solidarity between fellow trainees, isolation from previous personal relationships and cynicism regarding external bodies such as the legal system and media existed to some degree in newly recruited trainee officers. In addition, these attitudes were slightly stronger in female recruits compared to male recruits. Steyn's (2006) study supported the predispositional school of thought, which explains police behaviour based on the personality, values and attitudes that officers already possessed at recruitment. Formal contact with the police environment, when successful recruits begin their education at a training college, is marked by a need for individuals to reform to the organisation's culture. Trainee officers may join the police force with positive attitudes and high expectations, but many graduate from college with disillusionment and cynicism about the organisation and police work, even if their dedication to their vocation and peers remains intact (Steyn, 2006).

Social interaction between people is possible because humans have the cognitive capacity to perceive and evaluate others, infer their intentions and adapt appropriate interpersonal strategies (Forgas, 2006). The ongoing cognitive and interpersonal exchanges within and between members eventually stabilise into recurring patterns that constitute a collective self-concept (Hogg & Williams, 2000) and norms of social behaviour. This has an impact on the team's functioning and decision-making process as elements of the team's developing culture as it reaches internal integration (Schein, 2004).

The FFM of personality has previously been used for providing a framework to explore the relationship between personality and behaviour observed in teams. Supporters of the model have argued that individual differences in the five dimensions assist in identifying complementary team roles best suited to a particular individual (Manning et al., 2006). The impact on cultural aspects, however, has not been determined.

Additional research on personality and organisational culture was carried out by Schaubroek, Ganster and Jones (1998) and Schneider, Smith, Taylor and Fleenor (1998). Schneider et al. (1998) found significant differences in the personalities of leaders across organisations and industries. Schaubroek et al. (1998) found correlations between facets of personality and cultural elements.

Schneider and Smith (2004) refer to the scarcity of research on the cross-level relationship between personality and organisational culture. Traditionally, personality has been studied at the individual level while culture has been studied at the group level and the two have rarely been connected in previous studies because they have been refined in separate domains - psychology and anthropology. Personality had been linked to culture, in general, in the first half of the 20th century, but had been abandoned by the 1960s (Oishi, 2004).

Although there is little recent literature, Williams in Schneider et al. (1998) commented more than 30 years ago on the most comprehensive of sources on

personality and organisational behaviour originating from literature on cross-cultural anthropology and personality. Culture, central to anthropology (Borofsky, Barth, Shweder, Rodseth & Stolzenberg, 2001) is centred on entitative groups where the members have a sense of identity and shared beliefs, values and norms (Schneider & Smith, 2004). However, these sources are often overlooked when attempting to look at personality within the organisational context.

3.11 CHAPTER SUMMARY

This chapter has attempted to provide a background to the concept of team culture by giving a definition thereof and relating the relevant theory behind the variable. Following this, the integration of the variables of personality and team culture are discussed as studied in this research. The value of this chapter lies in the provision of a descriptive summary on the concept of team culture, how it is operationalised in the work context, as well as the various ways in which culture in an organisation, and specifically teams, may be measured. Furthermore, the link between personality and team culture is explored by examining the cross-level relationship and previous findings.

The next chapter comprises the article, which will focus on the methodology of the study, the results obtained and the implications for the organisation and future research.

CHAPTER 4 ARTICLE

THE RELATIONSHIP BETWEEN PERSONALITY AND TEAM CULTURE

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ABSTRACT

The relationship between the personalities and the cultures of teams is the focus of this article. The responses of eight platoons of new recruits from the South African Police Service were analysed at the onset and at the end of their training in order to determine this relationship. The instruments administered to the sample included the Basic Traits Inventory (BTI) and the Team Social and Emotional Intelligence survey (TESI). Although only a minor relationship between personality and team culture was found, significant differences were detected from the before to the after phases of the study. Differences in personality were observed across gender, ethnic groups and platoons, while differences in team culture occurred predominantly between platoons. The findings of the study contribute to an understanding of personality as amenable to a specific occupational setting and of team culture as a more stable variable, which is established early in the team's development.

There is continued interest on the side of companies in making use of work teams, especially where contractual or project work is concerned. Sometimes these teams function effectively and are successful in the achievement of their set goals. Sometimes they are not, often because of dysfunctional group dynamics such as unclear communication or disharmony between members. The South African Police Service (SAPS) requires newly recruited, potential officers to function effectively within teams as part of their basic training for a period of six months. It is during this

time that trainee officers are inducted within the police force and exposed to the organisation's culture. Investigating the manifestation of personality and team culture within this context can serve to predict expected behaviour from future officers, as well as provide clues on the sub-cultures that contribute to the overall organisational culture of the police force. Furthermore, it is the aim of this study to determine whether the personality profiles of the trainee officers possibly relate to the types of team cultures created within their allocated platoons and understand the implications of this relationship for the wider organisation.

Personality traits

Personality trait measurements are popularly used to distinguish between individual differences in thought, feelings and behaviour.The Five-factor Model (FFM) often serves as the default framework for understanding personality according to its five scales. The construction of the FFM is derived from the work of earlier trait theorists, predominantly Hans Eysenck and Raymond Cattell, who respectively developed three-factor and 16-factor personality scales for the measurement of personality (Cervone & Pervin, 2008). Factor analysis was used by these theorists as well as by McCrae and Costa (2008) who later came to develop the FFM and its more recent instrument, the NEO Personality Inventory-Revised (NEO PI-R). The five factors measured by the NEO PI-R, as well as subsequent five-factor-based instruments include extraversion (E), conscientiousness (C), openness (O), agreeableness (A) and neuroticism (N).

Personality traits are regarded as relatively stable components of personality, which begin to crystallise in adults at around the age of 30. They are also considered to have a biological basis for their existence as a result of neuro-chemical structures and processes, but environmental influences are also considered important to understanding how the inherited personality is shaped. The five factors in McCrae and Costa's (2008) model are observable in everyday life situations, with examples being conscientiousness as a predictor of work performance or agreeableness as an indicator of coronary health (Costa & McCrae, 1992).

The FFM has been applauded for its cross-cultural utility when trying to assess personality in people from diverse backgrounds (Cervone & Pervin, 2008). Every human being is considered to possess all five factors, regardless of cultural learning, which may influence the expression of these traits. The traits have proven to be transferable in the South African context (Taylor, 2008), which makes the model a suitable framework for looking at South African personalities. Compared to other trait models, the five factors are practical enough for the psychologist applying them to remember them all, while still maintaining a comprehensive description of an individual's personality.

Team culture

Culture within the team context refers to the values, beliefs, customs, traditions and deeply held assumptions that are observable in the interactions between the team's members over time (Garvin, Guiterrez & Galinsky, 2004). Schein (1992) described culture as a phenomenon that constantly surrounds the members of a group as it is created and recreated by the accumulated experiences of the group. The behaviour, emotions and thoughts of the group's members are an interwoven part of the learning that takes place in the group and influence how its members see and do things (Schein, 1992). The terms 'team' and 'group' are used interchangeably in this study, since the existence of a group is a prerequisite for a team. Although teams tend to have specific goals and a functional structure in place (Hughes & Terrell, 2007a) they still function as a group even if their performance is not at an optimal state.

Culture is an abstract concept and theories have been developed to understand its nature, specifically in the organisational context. Some of these include Hofstede's popular dimensions of culture, measured by power distance, individualism, masculinity, uncertainty avoidance and long-term orientation (Juang & Matsumoto, 2004). Cornwall and Perlman (1990) suggest that culture is dependent on leaders who embed culture based on what they focus on, measure, control and reward. A South African model (Martins, 1989; Martins & Von der Ohe, 2006) is based on the work of Schein and emphasises vision, mission, leadership and diversity strategy.

Although many of these theories provide valuable information about culture in the work context, they are structured to understand culture at the organisational level rather than at the team or sub-group level, the latter having shown specific characteristics that may not be shared by the rest of the organisation (Martins & Von der Ohe, 2006).

Team culture is an aspect of team life that develops as the group develops and interacts with one another and can therefore not be understood as an independent concept. Models that explain team development are many, the most well known being Tuckman's stages of forming, storming, norming, performing and adjourning (Smith, 2005). Tuckman's model describes how members initially orientate themselves to being part of the group, deal with conflict as it arises, accept one another's differences and adopt rules for determining how the group functions. As the group settles into its roles and structures, members work actively at their tasks and achieve their goals until completion and the dissolution of the group. More comprehensive models have since been developed, such as those of Wheelan (1994) and Schein (2004), which describe the movement of groups between the stages in more detail. Schein's model in particular provides an in-depth analysis of the cognitive and affective components of the stages and tasks of the team's cultural development, which often overlap with the tasks mentioned in Tuckman's model.

The measurement of team culture is limited to a few instruments actually developed for the purpose. Most culture assessment instruments are developed to be used at the organisational level, such as the Denison Organisational Culture survey (DOCS) developed by Denison (1996) which profiles an organisation's culture according to 12 dimensions, clustered under the four categories of involvement, consistency, adaptability and mission. The Organisational Team Culture Indicator (OTCI) developed by Pearson is a tool for understanding group and organisational behaviour by identifying motivational factors, deeply held values and brand identities in the form of archetypes that characterise group cultures (Pearson & Hammer, 2004). The tool is only available as an on-line application in South Africa and is therefore not accessible to employees with restricted internet access. An alternate

instrument, the Team Emotional and Social Intelligence survey (TESI) (Hughes, Thompson & Terrell, 2008), measures seven dimensions of intra-group processes from the perspectives of the team's members. The dimensions measured include team identity, motivation, emotional awareness, communication, stress tolerance, conflict resolution and positive mood.

Team culture and team effectiveness are reliant on what individual members bring with them to the group. The cognitions and affects that constitute individual personalities (Lumsden & Lumsden, 2004) have a significant influence on individual behaviour and social behaviour in a team (Robbins, 2001). Petkoon and Roodt (2004) even postulate that personality is to the individual what culture is to the group. The combination of the members' personalities can result in optimal or dysfunctional group processes. For example, if introversion is a dominant trait in a group, it can result in a group that is formal and hesitant, or if a single member clearly lacks agreeableness or conscientiousness, it can have a negative impact on the group's processes and lead to decreased team performance (Robbins, 2001).

The scarcity of research on the cross-level relationship between personality and team culture is referred to by Schneider and Smith (2004). Personality has traditionally been studied at the individual level while culture has been studied at the group level and the two have seldom been connected in previous studies because they have been refined in the separate domains of psychology and anthropology. Although personality had been linked to culture in general in the first half of the 20th century, this had been abandoned by the 1960s (Oishi, 2004).

Against the foregoing background, the objective of this study was to determine the relationship between personality traits and team culture. Since team culture develops as the team develops over stages, this study has employed a before and after approach, to assess this potential relationship over a period of time. The specific empirical goals were thus to determine whether

- personality and team culture shared a significant relationship;
- this relationship changed over time;

- personality and team culture changed over time; and
- the research groups differed substantially in their personality profiles and team cultures.

RESEARCH DESIGN

Research approach

A descriptive, quantitative research design was employed to study the relationship between the variables of personality traits and team culture (Brewerton & Millward, 2006; Kerlinger & Lee, 2000).

Participants

The research groups consisted of eight SAPS platoons. These were newly recruited SAPS trainee officers who were attending the SAPS College for Basic Training. Participants resided at the college for six months in bungalows with their fellow platoon members. Each platoon participated in a six-month programme which consisted of formal learning classes as well as physical training, with regular performance assessments and final examinations.

Four of the participating platoons were male and four were female, with each platoon consisting of a maximum of 35 members. The eight participating platoons were selected from a total of 60 platoons, depending on their availability for assessment, the only criterion being an equal number of male and female groups. Four groups of males and four groups of females were consequently selected. The research groups consisted predominantly of black participants and were representative across black ethnic sub-groups.

Measuring instruments

Two instruments were used in this study; the Basic Traits Inventory (Taylor & De Bruin, 2006) and the Team Emotional and Social Intelligence survey (TESI) (Hughes, Thompson & Terrell, 2008). The independent variable of personality was assessed using the BTI, a five-factor measurement instrument. Team culture was

assessed using the TESI. Biographical data were indicated on answer sheets of the psychometric instruments and included age, gender, ethnicity and platoon of membership. Participants were issued with consent forms, which explained the research process and maintenance of confidentiality.

Basic Traits Inventory (BTI)

The BTI by Taylor and De Bruin was developed in South Africa to assess the big five factors of personality (Jopie van Rooyen Catalogue, 2008-9). The inventory consists of 193 items and makes use of a five-point Likert scale to rate responses ranging from *strongly disagree* to *strongly agree* (Taylor & De Bruin, 2006). The factors are each made up of four to five facets, which measure different aspects of the particular factor. The factors measured by the BTI are extraversion, neuroticism, conscientiousness, openness to experience and agreeableness.

Openness (O) refers to the individual's willingness to engage in new experiences. The factor infers intelligence and creativity, while a low score indicates rigidity and narrowly defined interests (McCrae & Costa, 2008).

Conscientiousness (C) relates to an individual's preference for fewer goals, which are pursued in an organised, focussed way. This is in contrast to being spontaneous, unfocussed and hedonistic (McCrae & Costa, 2008).

Extraversion (E) refers to the extent to which individuals prefer being in social situations as compared to being on their own. This is evident in people who present as warm and outgoing compared to others who appear quiet and reserved (Manning et al., 2006; McCrae & Costa, 2008).

Agreeableness (A) indicates someone who is feeling oriented, sensitive and soft-natured. The opposite interpersonal tendency would appear as uncooperative and antagonistic (McCrae & Costa, 2008).

Neuroticism (N) describes the individual's response to stress, with emotional resilience at one end and emotional distress at the other. Some people can remain calm and secure when under stress while others may develop maladaptive coping strategies and become preoccupied with negative emotions (Cervone & Pervin, 2008).

Reliability coefficients for the five factors measured range between 0.88 and 0.94 (Taylor, 2004). The instrument is reported to have shown good construct validity with African participants compared to other instruments, with Tucker coefficients of congruence of above 0.90 for all factors (Meiring, 2007). The BTI is a fairly new instrument but studies thus far have provided evidence of predictive validity and measurement invariance across the language groups (Taylor, 2008). In this research the Cronbach alpha coefficients for the five BTI factors ranged between 0,79 and 0,92.

Team Emotional and Social Intelligence survey (TESI)

Developed by Hughes and Terrell (2007b), the TESI is aimed at improving team interaction and productivity by bringing forward the levels of communication, team identity, conflict resolution, emotional awareness, motivation, stress tolerance and positive mood (Jopie van Rooyen Catalogue, 2008-9). Indicators for team effectiveness are included in the instrument, with each dimension being assessed by a Likert type rating of one to five on statements as assumptions regarding how team members perceive the functioning of the team.

The dimensions measured by the TESI are described as follows:

Team identity measures the level of pride each member feels for the team as a whole and how much connection members feel to the team (Hughes & Terrell, 2007a).The qualities that contribute to this dimension include a sense of purpose, acceptance of one another, perceiving the team as a 'unit', commitment, pride, clarity about roles and resilience to change.

Motivation refers to the team's commitment to mobilise its resources of time, energy and intelligence. It also implies the willingness of team members to move forward with other team members to achieve goals (Hughes & Terrell, 2007a). The components included in motivation are peoples' needs, desires, goals, accountability, persistence and reinforcement

Emotional awareness measures the sensitivity and responsiveness of team members to one another's feelings and because it translates into trust, is a critical factor in motivation, productivity and collaboration (Hughes & Terrell, 2007a). Components of personality, such as introversion/extroversion, often play a significant role in influencing emotional awareness.

Communication serves as the means by which people connect with one another and is regarded as central to every interaction. It indicates the extent to which members contribute and receive information among one another (Hughes & Terrell, 2007a).

Stress tolerance reflects the level of work/life balance that the team achieves as it manages work load expectations. This requires members to understand what stress is and recognise it in their team, providing support where appropriate (Hughes & Terrell, 2007a).

Conflict resolution Disagreement is likely in teams as members differ in their perspectives, values and priorities. Conflict can be productive in a team when resolved effectively and can contribute to the team's growth and resilience (Hughes & Terrell, 2007a).

Positive mood reflects the attitude of a team's members and centres on the level of optimism experienced. Optimistic members display more persistence in adversity and contribute to the flexibility and resilience of the team as a whole (Hughes & Terrell, 2007a).

The reliability coefficients of the TESI range between 0.81 and 0.97 (Hughes et al.,

2008). Validity is confirmed by factor analysis results, which confirm that loadings of the instrument's items tended to occur on their intended factors. In addition the instrument has a response inconsistency measure which checks that a team's responses are consistent by indicating the percentage of inconsistency as deviant if it exceeds 20%. A response conformity scale also allows for the tester to identify average response style by indicating percentages over 15% as worth investigation (Hughes et al., 2008). In this research the Cronbach alpha coefficients the TESI dimensions ranged from 0,81 to 0,93.

Procedure

The research project consisted of a before and an after assessment phase. The before and after phases refer to the psychometric assessment of police trainees prior to, and after basic training. Successful recruits entered training in February and left the college in July. During this time the police trainees resided at the college in demarcated groups and attended formal classes, physical training, street survival modules and regular sessions of drilling, on which they were examined at the end of the training course.

Before phase

A sample of 270 newly recruited platoon members was used in the first phase of the study. All the research participants completed the TESI survey within their platoons in February 2009. The BTI had been completed upon selection in January 2009 but only 130 of the candidates from the research group completed the answer forms of the assessment correctly and these responses were included in the study.

After phase

Both the BTI and TESI were administered again on completion of the basic training programme in June. The participants totalled 243 for the BTI and 235 for the TESI.

The sample distribution is illustrated in table 4.1. The total number of candidates are illustrated for the before and after assessment phases according to gender, the platoons to which they belonged and the ethnic groups that were included in the

study. It should be noted that platoons A to D were female and E to H were male; their actual platoon names have been replaced with alphabetical letters to ensure anonymity. Apart from gender there were no obvious differences between the platoons. They were representative of age and black sub-ethnic groups.

Table 4.1 Sample sizes at before and after phases of assessment

	BTI				TESI			
	Before N	%	After N	%	Before N	%	After N	%
Gender								
Male	58	44.6	126	52.9	133	49.3	120	51.3
Female	72	55.4	112	47.1	137	50.7	114	48.7
TOTAL	130	100	238	100	270	100	234	100
Platoon								
A	18	13.8	29	12.2	32	11.9	30	12.8
B	19	14.6	31	13.0	35	13.0	31	13.2
C	18	13.8	23	9.7	35	13.0	22	9.4
D	17	13.0	29	12.2	35	13.0	31	13.2
E	15	11.5	33	13.9	34	12.6	34	14.5
F	16	12.3	31	13.0	33	12.2	31	13.2
G	13	10.0	31	13.0	34	12.6	30	12.8
H	14	10.8	31	13.0	32	12.0	25	11.0
TOTAL	130	100	238	100	270	100	234	100
Ethnicity								
Afrikaans	1	0.8	1	0.4	1	0.4	0	0.0
Coloured	0	0.0	5	2.1	5	1.9	5	2.1
English	1	0.8	1	0.4	1	0.4	1	0.4
Indian	1	0.8	1	0.4	1	0.4	1	0.4
Ndebele	3	2.3	2	0.8	4	1.5	3	1.3
Pedi	21	16.2	56	23.5	65	24.1	54	23.0
Sotho	30	23.1	33	13.9	37	13.7	33	14.0
Swazi	1	0.8	3	1.2	5	1.9	5	2.1
Tsonga	28	21.5	54	22.7	53	19.6	51	21.7
Tswana	11	8.5	33	13.9	36	13.3	33	14.0
Venda	13	10.0	21	8.8	27	10.0	22	9.4
Xhosa	7	5.4	10	4.2	13	4.8	10	4.3
Zulu	12	9.2	15	6.3	16	5.9	12	5.1
None	1	0.8	3	1.2	6	2.2	5	2.1
TOTAL	130	100	238	100	270	100	235	100

Table 4.1 shows an almost even representation of males and females in the research sample. Platoon C showed considerably fewer responses than the other platoons at the after phase of testing. The Pedi and Tsonga groups consisted of

approximately 21,7% and 21,4% of the research sample group, respectively, and were followed by the Sotho, Tswana and Venda groups, which collectively made up approximately 38.2% of the total research group. The descriptive statistics of the sample are provided in Table 4.3 on page 102.

Statistical analysis

Statistical analysis was conducted using SPSS, Version 17.

Item analysis

Item reliability and internal consistency of the BTI and TESI were tested using item analysis to check whether similar items of a construct grouped together. The Cronbach alpha coefficients for both instruments were calculated and showed acceptable values. The Cronbach alpha coefficients for both instruments are indicated in Table 4.2 (see page 101), with the BTI factors ranging from 0,79 to 0,92 and the TESI dimensions ranging from 0,81 to 0,93.

Pearson product-moment correlation coefficients

Correlation refers to the shared relationship between two variables and the Pearson product-moment correlation coefficient is a measure that is frequently used for determining multivariate association (Tabachnick & Fidell, 2007). Both the variables in this study are classified as interval variables and their correlations were determined as Pearson product-moment correlation coefficients in Table 4.4 (see page 103). This assisted in investigating the relationship between the BTI and TESI scores (Brewerton & Millward, 2006) at both phases of assessment. Correlation coefficients or an *r* value of less than 0,2 indicates almost no relationship, a value of between 0,2 and 0,4 shows a definite but small relationship and an *r* higher than 0,7 indicates a substantial relationship (Kerlinger & Lee, 2000). A level of 0,05 was chosen as the level of significance.

Z-test for determining the difference between correlation coefficients

The differences between the correlation coefficients at the before and after phases were calculated using the corresponding Z-test (refer to Table 4.5 on page 104). The

Z-test indicates whether the relationship between the variables varied significantly over time. The Z-test investigates the significance of the difference between the correlation coefficients for a pair of variables (Kanji, 1993). A Z-value of over 1.96 indicates a positive significant difference between the correlation coefficients.

T-tests

T-tests are used to assess the difference between the means of two groups in a pre- and post-study (Brewerton & Millward, 2006). A 0,05 level of significance is used to identify significant differences when comparing means from before and after phases. Table 4.6 compares the before and after means for each of the BTI and TESI constructs and Table 4.7 compares the means of males and females. Tables 4.8 and 4.9 compare the before and after means for platoons and ethnicity, respectively (refer to tables in attachments on pages 105 to 110).

Analysis of Variance

Differences between the means of the research groups according to the platoons and ethnicity are analysed using ANOVA in tables 4.10 and 4.11 (see pages 111 and 112). The significance level is set at 0,05 and the effect sizes of these scores represent the degree to which the variables are related, since statistical significance does not necessarily imply practical usefulness (Tabachnick & Fidell, 2007). The effect sizes of these values indicate the practical significance of the finding and are considered small if between 0.01 and 0.05; medium effect sizes are indicated by 0.06 to 0.14 and a value larger than 0.15 indicates a large effect size (Tabachnick & Fidell, 2007).

RESULTS

The objective of this study was to investigate the relationship between the five personality constructs of the BTI and the seven TESI constructs. The first step in the analysis of the data was to ascertain whether there were statistically significant associations between the constructs of the BTI and TESI. The Pearson product-moment correlation coefficients show that there are some correlations between

agreeableness of the BTI and team identity, motivation, emotional awareness, stress tolerance, conflict resolution and positive mood of the TESI. A correlation between extraversion and conflict resolution and a correlation between conscientiousness and team identity was also found. All of the positive correlations occurred only at the after phase of assessment. Although the correlations are significant at the 0,05 level, they remain far lower than 0,5 to be considered strong relationships.

The Z-test results are meant to illustrate statistically significant differences between the correlations of the BTI and TESI constructs to establish whether the changes in these relationships are significantly different over time. A Z-value of over 1.96 indicates a significant change but it is evident that none of the changes observed from the first correlation to the second, in each case, was of a significant nature.

The results for significant differences in personality revealed an increase on the construct of neuroticism and significant decreases in openness and agreeableness. Of the TESI constructs, only communication showed a significant decrease.

When differences in personality and team culture were analysed according to gender, both males and females showed significant increases in neuroticism and a significant decrease in openness and agreeableness was noted for males.

Comparisons of BTI means in for the eight platoons showed significant increases in neuroticism for platoons C, F and G. Only platoon E showed a significant decrease in agreeableness. For the TESI there were significant increases for platoons C and D on team identity while platoon B showed a decrease in the construct. Significant decreases in motivation were noted for platoons A and B but platoons C and D showed increases in the construct. Emotional awareness had a significant decrease in platoon B. Communication increased significantly for platoon C but decreased significantly for platoons A and B. Stress tolerance decreased significantly for platoon B but increased for platoon C. Conflict resolution decreased significantly for platoons B and H but increased for platoons C and D. Positive mood showed a significant decrease for platoon B.

The comparisons of the BTI constructs across ethnic groups showed significant increases in neuroticism for the Pedi, Sotho, Tsonga and Tswana groups and a significant decrease in openness in Sothos. The results for ethnic differences on team culture factors showed the Venda group having significant decreases in emotional awareness, communication and stress tolerance. The Pedis showed a significant increase in conflict resolution.

The ANOVAS for the platoons reflect the significant differences between the platoons on each of the BTI factors and TESI dimensions. The significant p-values for differences between platoons on the BTI were none at the before phase but the after phase showed differences on neuroticism and agreeableness, with both having a medium effect. The TESI dimensions all showed significant p-values, with large effect sizes for all of the after dimensions and all of the before dimensions, except for emotional awareness, which was medium.

The ANOVAs calculated for the ethnicity variable only show significant differences between ethnic groups at the before round of assessment. These included the extraversion personality factor with a medium effect size and the TESI dimensions of emotional awareness, communication, stress tolerance and conflict resolution, for all of which the effect sizes were small.

DISCUSSION

It was pointed out in the introduction that limited research is available on personality in the team context. The general aim of this research was to describe the relationship between personality and team culture and to indicate possible changes in this relationship, as well as for personality and team culture independently across time, since team culture develops over various stages (Schein, 2004).

The first step in the analysis of the data was to determine whether a significant relationship existed between the personality traits and team culture dimensions. The results indicated that although some correlations were found at the 0.05 level of

significance, these correlations were still below the recommended $r = 0.5$ to be considered as practically significant. It was also noted that all of these significant correlations only occurred after three months at the after phase of assessment, indicating that although minor, there had been an overall increase in the relationship between agreeableness and the TESI dimensions, except for communication.

According to the literature, some correlations have previously been found between personality and organisational cultural elements (Schaubroek, Ganster & Jones, 1998). In a team context, higher scores on agreeableness relate to roles of supportiveness, organising and implementing tasks and being a 'team player' (Manning, Parker & Pogson, 2006). As agreeableness decreased significantly, so did the TESI constructs, with some dimensions showing more significant decreases than others, except for conflict resolution, which did not indicate any significant change. It is posited that a repetition of the psychometric assessment after yet another few months would have allowed for the further development of the relationship and may have revealed slightly stronger correlation coefficients, following this pattern.

The Z-test values that were shown lacked any positive indication of a change in the relationship between the variables over time. This is an anticipated result, considering that no significant correlations were evident at the before phase, and the few observed at the after phase of assessment were only slightly significant.

The second step in the analysis of the data was to determine whether each of the BTI factors and TESI dimensions had changed significantly from the before to the after assessment. The results have shown that although there had been an overall decrease on the TESI scores, the only significant decrease was in the communication dimension. The BTI factors showed a significant increase in neuroticism and decreases in agreeableness and openness. These results would not seem so surprising, considering Steyn's (2006) study, which reported that successful socialisation of police trainees often required a 'stripping' of certain personal characteristics in order to develop a strong sense of discipline and suspicion as they are exposed to potential threats of imminent danger and uncertainty (Steyn, 2006).

Overall increases in neuroticism and decreases in agreeableness and openness would therefore appear consistent with the socialisation of new trainees into the police force culture. From a team role perspective this would imply that resultant behaviour would not be in favour of team cohesiveness. The significant increase in the trait neuroticism is related to team behaviour where innovation and changing the status quo are expected, as opposed to the teamwork, support and implementation roles encouraged by agreeableness and openness (Manning, Parker & Pogson, 2006).

The total research sample scored means for the TESI dimensions in the range of average effectiveness, except for conflict management, which was rated as below average. Team culture appears to be established very early on in the development of the team, as very little significant change is perceived from the before to the after measurements, except for the factor of communication. The early establishment of team cultures is also supported by the ANOVA results which show significant distinctions between platoons in the extent to which each of them displays the TESI dimensions from the before assessment. These trends need to be understood alongside the development of each group as indicated by group development theories such as those of Tuckman (Smith, 2005), Wheelan (1994) and Schein (2004), since the TESI cannot provide information on how the teams' cultures developed.

When differences between before and after assessments were broken down by gender, the results revealed significant increases in neuroticism for both males and females and decreases in openness and agreeableness for males only. Research generally provides similar results for both males and females (McCrae & John, 1992) on the five traits and further research would be needed to explain the differences noted on agreeableness and openness for gender. There were no significant differences between males and females on team cultural dimensions, except that despite overall decreases on the TESI dimensions, the females consistently produced higher means than the males in the after assessment.

Comparisons of platoon results on the BTI factors found increased neuroticism for three of the platoons. A significant decrease in agreeableness for platoon E was the only other personality factor change indicated for the platoon variable. Significant before and after differences were observed mainly between female platoons A, B, C and D for each of the TESI dimensions. According to the results, while platoons C and D consistently displayed increases for the TESI dimensions from the before to the after assessment, platoon B consistently achieved lower scores. Platoon B's mean scores declined from the average to below average range, compared to the mean scores of platoons C and D, which increased significantly from below average to an average level of team effectiveness. The platoons E, F, G and H which were also male, showed more stable scores according to statistical analysis, on the TESI dimensions. Since the TESI dimensions show a weak correlation with the BTI factors, it would seem that differences in team culture observed in the platoons could be due to team dimensions unaccounted for, such as the leadership style (Schein, 2004) or differences in group dynamics in exclusively male or female teams. The tendency for male trainees to display reduced agreeableness and openness but remain stable on the team culture measures appears rather contrary to the observations found in the female research groups, where personality remained more stable except for neuroticism, probably owing to the socialisation process into the organisation's culture. ANOVA results indicated that platoons differed significantly from each other on their team culture profiles early on in their training, as well as toward the end of it. The personality traits showed a different pattern, with no significant differences between platoons at the beginning of training but significant differences on neuroticism and agreeableness towards the end.

T-tests comparing ethnic groups on their before and after scores on the BTI and TESI were calculated for those ethnic groups with a sample size large enough to allow for pair-wise comparisons. The Pedi, Sotho, Tswana, Tsonga and Venda groups collectively constituted about 81% of the total sample and were the groups included in the T-test for ethnicity. The results for the BTI factors showed a significant increase in Pedis and Tsongas on neuroticism and a significant decrease for Sothos on openness. Differences on TESI scores were significant decreases in

communication, emotional awareness and stress tolerance for the Venda candidates and a significant increase in conflict resolution for the Pedi candidates. Personality stability and differences between ethnic groups need to be understood in the context of the specific ethnic culture concerned (Taylor, 2008) in order to understand why some ethnic groups are socialised more readily than others. The ANOVA results indicate that although ethnicity as an independent variable may have had some bearing on extraversion and aspects of team culture at the beginning of training, these interrelationships appeared to have weakened significantly by the end of the training course as no significant differences are reported when ethnic groups were compared at the after assessment.

An overview of the objectives of this study in light of the results shows the lack of a relationship between personality and team culture at the beginning of training and a slight relationship between the variables towards the end. The relationship between the variables over time did not show a significant change, since correlations were either absent or very weak. Aspects of personality had shown significant change and previous research shows a link to the influence of police culture, which has a conforming effect on personality (Steyn, 2006). Shifts in personality traits were specific to males for agreeableness and openness. Furthermore, males tended to score lower on team cultural dimensions than females. This finding is in common with that of Steyn's (2006), where female trainees showed more positive attitudes than males while being socialised. Some of the ethnic groups experienced significant increases and decreases on the personality traits and culture dimensions, but when ethnic groups were compared to one another, their initial differences on extroversion and TESI scores had dissipated by the end of the training period. It appears from the results of this study that personality can be influenced by environmental factors and that team culture is a product of the interaction of the members in individual platoons. Furthermore, males and the ethnic groups of Tsonga, Pedi and Sotho were more likely to experience changes in personality traits. It is therefore posited that the socialisation of trainee police officers into the organisational culture has an impact on their personality traits, but the result is that these adapted traits are not in support of maintaining team effectiveness or solidarity between platoon members (Steyn,

2006). Studies by Schneider, Smith, Taylor and Fleenor (1998) and Steyn (2006) offer an alternate viewpoint by positing that instead of new entrants adopting the prevailing values of an organisation, socialisation serves to polish the fit of individuals who already have some dispositions in common with the organisation.

Regarding the limitations of the study, the instrument used to measure personality traits, the BTI, had a considerably lower response rate at the before assessment with 130 responses compared to the after assessment of 238 responses. This was due to BTI answer sheets being incorrectly completed at the time of their administration for the purpose of trainee officers' selection. This imposed a limitation on the number of pair-wise comparisons that could be made for the statistical T-tests but the available responses were sufficient to confirm the reliability of the BTI and provided sufficient data for statistical analysis.

The TESI serves as a useful tool for outlining the extent to which a group perceives itself as having team cultural dimensions, but is limited in terms of the number of cultural dimensions assessed. Even at the team level, culture is a complex concept and therefore requires a comprehensive approach for its assessment. Additional quantitative instruments or qualitative data could have assisted in this regard.

It is recommended that future research on personality in a team setting make use of more than one team culture instrument or be supplemented with qualitative data to provide more information on the experiences of individual teams. There should be sufficient information available on the culture of the wider organisation that the team is exposed to and the study should be extended over a greater length of time to ascertain the strength of the relationship between personality traits and team culture. The proposal of the ASA model that the personalities of a group's members come to characterise its culture (Schneider & Smith, 2004) may not be widely applicable, as in this case, where personality may be amended in specialised settings. Social identity theory (Hogg, 2008) may offer an alternate framework for understanding how specific group membership is experienced by its members and results in collective group behaviour. Before a cross-level relationship between personality and team

culture can be explored further, the intricacies of each variable should be subjected to analyses of greater depth alongside other contextual variables, such as leadership and the greater organisational culture.

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ATTACHMENTS

TABLE 4.2

ITEM ANALYSIS RESULTS: CRONBACH ALPHA COEFFICIENTS FOR BTI AND TESI

Construct	Cronbach Alpha Coefficient
BTI	
Extraversion	0.86
Neuroticism	0.79
Conscientiousness	0.92
Openness to experience	0.87
Agreeableness	0.92
TESI	
Team identity	0.93
Motivation	0.91
Emotional awareness	0.82
Communication	0.91
Stress tolerance	0.91
Conflict resolution	0.81
Positive mood	0.92

TABLE 4.3
DESCRIPTIVE STATISTICS

	N	Mean	Std. Deviation
	Statistic	Statistic	Statistic
Team Identity 1	270	54.11	27.453
Motivation 1	270	54.92	26.07
Emotional awareness 1	270	53.52	23.533
Communication 1	270	52.51	25.788
Stress tolerance 1	270	52.49	24.575
Conflict resolution 1	270	44.84	20.853
Positive mood 1	270	56.49	25.14
Team identity 2	234	53.47	25.463
Motivation 2	234	54.15	24.332
Emotional awareness 2	234	51.22	24.958
Communication 2	234	50.05	24.815
Stress tolerance 2	234	52.97	24.312
Conflict resolution 2	234	47.68	22.466
Positive mood 2	234	55.62	24.151
extra1	130	118.95	18.203
neuro1	130	61.98	12.501
consci1	130	171.16	17.738
open1	130	119.02	16.891
agree1	130	137.46	19.13
extra2	235	119.96	17.859
neuro2	235	70.79	16.862
consci2	235	170	21.143
open2	235	114.98	15.082
agree2	234	134.8	18.972

TABLE 4.4

PEARSON PRODUCT MOMENT CORRELATIONS: BTI & TESI AT BEFORE & AFTER ASSESSMENT PHASES

		Team Identity		Motivation		Emotional awareness		Communication		Stress tolerance		Conflict resolution		Positive mood	
		Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Extraversion	Before	-0.111		-0.098		-0.061		-0.131		-0.113		-0.071		-0.116	
	After		0.124		0.108		0.091		0.059		0.103		0.130*		0.091
Neuroticism	Before	0.034		0.020		-0.008		0.001		0.001		-0.005		-0.014	
	After		-0.114		-0.066		-0.076		-0.094		-0.107		-0.088		-0.079
Conscientiousness	Before	0.020		0.080		0.083		0.048		0.026		0.039		0.057	
	After		0.139*		0.101		0.106		0.065		0.096		0.123		0.095
Openness	Before	-0.021		-0.015		0.002		-0.007		-0.015		0.039		-0.021	
	After		0.118		0.092		0.090		0.083		0.089		0.140*		0.104
Agreeableness	Before	-0.020		-0.001		-0.025		-0.036		-0.050		-0.070		-0.043	
	After		0.204**		0.143*		0.154*		0.119		0.157*		0.169*		0.174**

*. Correlation is significant at the 0.05 level (2-tailed).

TABLE 4.5

Z-TEST: DIFFERENCES BETWEEN BEFORE & AFTER CORRELATIONS

	Team identity	Motivation	Emotional awareness	Communi-cation	Stress tolerance	Conflict resolution	Positive mood
Extraversion	-1.854	-1.515	-1.373	-1.717	-1.952	-1.247	-1.871
Neuroticism	1.163	0.780	0.610	0.860	0.973	0.756	0.581
Conscien-tiousness	-0.941	-0.187	-0.214	-0.150	-0.633	-0.763	-0.347
Openness	-36.101	-0.968	-0.792	-0.812	-0.935	-0.921	-1.137
Agreeable-ness	-1.779	-1097.115	-1.620	-1.396	-1.874	-2.172	-1.975

TABLE 4.6

PAIRED SAMPLES TEST: COMPARISON OF BEFORE & AFTER ASSESSMENT MEANS

	After			Before			Correlation	Sig.	Paired Difference		
	Mean	N	Std. Deviation	Mean	N	Std. Deviation			(After-Before)	Std. Deviation	P-Value
Extraversion	118.059	119	17.052	119.454	119	17.718	0.404	0.000	-1.395	18.991	0.425
Neuroticism	71.160	119	17.975	61.630	119	12.249	0.314	0.001	9.529	18.302	0.000
Conscientiousness	170.387	119	21.386	172.647	119	16.735	0.350	0.000	-2.261	22.063	0.266
Openness	113.101	119	14.797	119.135	119	17.164	0.262	0.004	-6.034	19.501	0.001
Agreeableness	134.059	119	18.837	138.135	119	19.629	0.553	0.000	-4.076	18.207	0.016
Team Identity	53.470	234	25.463	55.013	234	27.593	0.534	0.000	-1.543	25.684	0.360
Motivation	54.150	234	24.332	56.667	234	25.411	0.417	0.000	-2.517	26.873	0.154
Emotional awareness	51.220	234	24.958	54.192	234	23.749	0.442	0.000	-2.972	25.755	0.079
Communication	50.050	234	24.815	53.603	234	25.056	0.409	0.000	-3.553	27.116	0.046
Stress tolerance	52.970	234	24.312	53.654	234	24.396	0.489	0.000	-0.684	24.622	0.673
Conflict resolution	47.680	234	22.466	45.513	234	20.807	0.358	0.000	2.167	24.556	0.178
Positive mood	55.620	234	24.151	57.436	234	24.992	0.435	0.000	-1.816	26.124	0.288

TABLE 4.7

PAIRED SAMPLES TEST: COMPARISON OF MALE & FEMALE MEANS

		After			Before			Paired Difference		P-
		Mean	N	Std. Deviation	Mean	N	Std. Deviation	(After-Before)	Std. Deviation	Value
Extra	Male	119.404	57	15.164	120.632	57	14.718	-1.228	15.340	0.548
	Female	116.823	62	18.659	118.371	62	20.147	-1.548	21.945	0.581
Neuro	Male	70.404	57	13.631	61.491	57	10.707	8.912	14.051	0.000
	Female	71.855	62	21.293	61.758	62	13.599	10.097	21.587	0.000
Consci	Male	172.947	57	17.956	173.368	57	16.461	-0.421	16.435	0.847
	Female	168.032	62	24.020	171.984	62	17.089	-3.952	26.222	0.240
Open	Male	115.474	57	13.077	122.246	57	15.790	-6.772	16.604	0.003
	Female	110.919	62	16.014	116.274	62	17.990	-5.355	21.944	0.059
Agree	Male	134.895	57	17.812	141.597	57	16.941	-6.702	14.171	0.001
	Female	133.290	62	19.846	134.952	62	21.456	-1.661	21.084	0.537
Team	Male	52.400	120	28.507	52.825	120	28.068	-0.425	24.230	0.848
Ident.	Female	54.610	114	21.876	57.316	114	27.016	-2.711	27.190	0.289
Motivation	Male	53.730	120	26.552	57.225	120	25.377	-3.500	24.522	0.121
	Female	54.610	114	21.861	56.079	114	25.545	-1.474	29.218	0.591
Emotio. Aware	Male	51.070	120	27.415	52.414	133	23.856	-1.325	25.609	0.572
	Female	51.370	114	22.201	56.079	114	23.036	-4.711	25.905	0.055
Comm.	Male	50.580	120	27.721	53.564	133	24.989	-3.225	26.387	0.183
	Female	49.500	114	21.444	53.395	114	25.146	-3.895	27.975	0.14
Stress Tol.	Male	52.420	120	27.284	50.654	133	24.535	1.600	23.880	0.464
	Female	53.550	114	20.837	56.632	114	23.808	-3.079	25.263	0.196
Conflict Res.	Male	47.400	120	25.337	46.030	133	20.516	1.450	24.450	0.517
	Female	47.970	114	19.093	45.053	114	20.769	2.921	24.753	0.21
Positive Mood	Male	55.100	120	25.932	55.571	133	25.472	-0.750	23.893	0.732
	Female	56.160	114	22.225	59.105	114	24.215	-2.947	28.345	0.269

TABLE 4.8

PAIRED SAMPLES TEST: COMPARISON OF PLATOON MEANS

		After			Before			Paired Difference		P-
		Mean	N	Std. Deviation	Mean	N	Std. Deviation	(After-Before)	Std. Deviation	Value
Extra	a	117.000	16	17.637	119.625	16	16.788	-2.625	22.393	0.646
	b	114.706	17	19.700	109.941	17	23.363	4.765	24.768	0.439
	c	113.385	13	20.148	123.000	13	21.668	-9.615	24.281	0.179
	d	121.688	16	18.040	122.313	16	17.138	-0.625	15.077	0.871
	e	115.400	15	18.193	118.800	15	15.626	-3.400	14.277	0.372
	f	118.313	16	16.532	122.188	16	16.302	-3.875	14.189	0.292
	g	121.154	13	12.219	120.692	13	12.925	0.462	16.323	0.920
	h	123.615	13	12.326	120.769	13	14.811	2.846	17.492	0.568
Neuro	a	74.438	16	25.073	63.813	16	15.189	10.625	28.563	0.157
	b	63.588	17	16.405	55.824	17	9.275	7.765	14.877	0.047
	c	83.462	13	20.827	68.462	13	17.242	15.000	23.392	0.039
	d	68.625	16	19.200	60.563	16	10.341	8.063	19.330	0.116
	e	69.733	15	16.799	64.400	15	12.299	5.333	12.659	0.125
	f	68.063	16	10.109	59.313	16	10.892	8.750	11.688	0.009
	g	76.846	13	13.837	63.923	13	9.456	12.923	17.119	0.019
	h	67.615	13	12.547	58.385	13	9.332	9.231	15.396	0.052
Consci	a	168.500	16	15.457	168.438	16	19.367	0.063	14.978	0.987
	b	167.529	17	12.001	170.588	17	16.971	-3.059	19.725	0.532
	c	163.000	13	39.937	172.846	13	17.435	-9.846	43.050	0.426
	d	172.188	16	25.238	176.313	16	15.032	-4.125	25.020	0.520
	e	168.200	15	22.419	172.133	15	18.837	-3.933	18.614	0.427
	f	174.563	16	18.327	173.813	16	16.441	0.750	17.024	0.862
	g	172.769	13	12.350	173.692	13	15.510	-0.923	15.708	0.836
	h	176.615	13	17.309	173.923	13	16.414	2.692	14.806	0.524
Open	a	114.188	16	11.850	120.063	16	16.442	-5.875	14.904	0.136
	b	114.294	17	9.758	111.177	17	23.375	3.118	27.955	0.652
	c	104.539	13	24.189	117.769	13	15.949	-13.231	25.587	0.087
	d	109.250	16	16.438	116.688	16	14.582	-7.438	15.453	0.073
	e	113.467	15	14.774	121.533	15	18.051	-8.067	20.091	0.142
	f	117.500	16	13.755	122.313	16	18.180	-4.813	16.742	0.268
	g	116.692	13	10.586	125.000	13	12.767	-8.308	17.356	0.110
	h	114.077	13	13.438	120.231	13	13.929	-6.154	12.402	0.099
Agree	a	137.438	16	15.815	136.188	16	18.418	1.250	19.147	0.798
	b	128.647	17	18.980	126.706	17	29.975	1.941	22.382	0.725
	c	126.385	13	27.470	137.154	13	18.316	-10.769	27.523	0.184
	d	139.688	16	15.357	140.688	16	13.715	-1.000	14.311	0.784
	e	125.600	15	19.708	135.600	15	19.145	-10.000	13.580	0.013
	f	139.938	16	17.872	144.875	16	18.195	-4.938	15.605	0.225
	g	135.692	13	15.840	142.154	13	15.459	-6.462	15.300	0.154
	h	138.615	13	14.824	143.923	13	13.907	-5.308	12.789	0.160
Team	a	62.41	29	15.583	71.310	29	23.229	-8.897	24.758	0.063
Ident	b	41.090	32	23.244	61.531	32	28.604	-20.438	21.315	0.000
	c	57.640	22	19.568	44.546	22	25.365	13.091	21.959	0.011
	d	59.100	31	21.640	48.936	31	23.438	10.161	26.058	0.038
	e	63.320	34	28.309	67.471	34	23.079	-4.147	21.646	0.272
	f	65.190	31	20.856	64.903	31	22.880	0.290	21.886	0.942

	g	45.200	30	26.397	35.800	30	26.058	9.400	27.717	0.073
	h	30.320	25	24.265	38.360	25	25.030	-8.040	23.201	0.096
Motivation	a	60.45	29	19.186	70.172	29	20.643	-9.724	23.039	0.031
	b	40.720	32	22.142	63.125	32	23.272	-22.406	21.498	0.000
	c	61.860	22	19.867	38.955	22	23.647	22.909	22.403	0.000
	d	58.320	31	19.545	47.774	31	24.037	10.548	27.798	0.043
	e	62.350	34	27.543	70.029	34	20.689	-7.676	21.711	0.047
	f	64.810	31	18.782	67.613	31	18.277	-2.806	21.113	0.465
	g	50.100	30	26.804	43.600	30	24.458	6.500	26.402	0.188
	h	32.600	25	19.956	43.280	25	25.651	-10.680	27.015	0.060
Emotio.	a	58.28	29	14.245	64.172	29	18.264	-5.897	20.449	0.132
aware	b	37.720	32	23.725	61.063	32	25.969	-23.344	20.500	0.000
	c	55.590	22	19.798	49.864	22	21.484	5.727	22.102	0.238
	d	56.000	31	23.043	47.774	31	21.867	8.226	27.144	0.102
	e	60.410	34	30.201	63.853	34	22.812	-3.441	24.047	0.410
	f	61.610	31	19.143	58.613	31	20.431	3.000	23.082	0.475
	g	45.800	30	25.378	46.000	30	25.178	-0.200	28.175	0.969
	h	31.640	25	23.259	36.800	25	20.013	-5.160	28.003	0.366
Comm.	a	53.410	29	14.537	66.552	29	18.400	-13.138	17.129	0.000
	b	38.840	32	22.736	58.906	32	25.654	-20.063	22.764	0.000
	c	57.360	22	19.546	39.364	22	24.438	18.000	24.355	0.002
	d	51.260	31	23.428	45.355	31	23.595	5.903	30.184	0.285
	e	61.740	34	29.127	68.441	34	19.792	-6.706	26.588	0.151
	f	61.610	31	20.269	61.226	31	17.320	0.387	18.874	0.910
	g	43.300	30	27.140	40.700	30	27.239	2.600	31.511	0.655
	h	30.440	25	20.441	40.400	25	23.043	-9.960	26.675	0.074
Stress	a	58.070	29	14.589	66.138	29	21.460	-13.138	17.129	0.054
tol.	b	41.090	32	21.559	60.781	32	24.311	-19.688	21.846	0.000
	c	58.860	22	19.075	44.682	22	24.927	14.182	16.332	0.001
	d	58.420	31	21.708	51.936	31	20.648	6.484	25.633	0.169
	e	63.150	34	27.860	63.765	34	22.317	-0.618	22.203	0.872
	f	64.900	31	19.388	61.807	31	18.395	3.097	18.775	0.366
	g	45.700	30	25.121	36.800	30	22.417	8.900	28.748	0.101
	h	30.440	25	21.618	36.440	25	21.391	-6.000	23.953	0.222
Conflict	a	51.550	29	12.819	55.586	29	17.634	-4.034	17.987	0.237
res.	b	36.590	32	19.679	50.844	32	21.636	-14.250	20.261	0.000
	c	55.860	22	16.780	34.182	22	18.474	21.682	19.219	0.000
	d	50.770	31	20.449	36.936	31	17.724	13.839	24.096	0.003
	e	57.500	34	26.642	57.765	34	17.463	-0.265	21.321	0.943
	f	58.610	31	17.693	52.613	31	16.500	6.000	20.494	0.114
	g	41.700	30	23.644	32.900	30	19.204	8.800	28.720	0.104
	h	26.600	25	18.493	37.280	25	20.462	-10.680	23.782	0.034
Positive	a	64.070	29	17.732	69.035	29	20.049	-4.966	23.734	0.269
mood	b	41.940	32	22.623	65.469	32	23.819	-23.531	22.257	0.000
	c	59.000	22	18.563	49.182	22	25.593	9.818	21.755	0.046
	d	61.420	31	22.051	50.290	31	22.307	11.129	29.620	0.045
	e	65.710	34	24.551	69.765	34	20.295	-4.059	20.901	0.266
	f	66.260	31	19.221	68.968	31	16.014	-2.710	18.039	0.410
	g	50.000	30	23.909	39.800	30	22.950	10.200	28.467	0.059
	h	32.960	25	22.126	39.920	25	25.907	-6.960	25.170	0.180

TABLE 4.9

PAIRED SAMPLES TEST: COMPARISON OF ETHNIC GROUP MEANS

Paired Samples Test: Ethnicity

		After			Before			Paired Difference		P-
		Mean	N	Std. Deviation	Mean	N	Std. Deviation	(After-Before)	Std. Deviation	Value
Extra	Pedi	109.333	18	12.462	112.222	18	15.059	-2.889	19.201	0.532
	Sotho	119.679	28	16.971	120.357	28	14.546	-0.679	15.070	0.813
	Tsonga	120.607	28	16.317	115.286	28	18.493	5.321	18.892	0.148
	Tswana	113.273	11	16.626	120.182	11	16.272	-6.909	24.267	0.367
	Venda	125.167	12	15.538	127.417	12	18.841	-2.250	15.702	0.629
Neuro	Pedi	73.056	18	12.716	61.167	18	11.511	11.889	15.744	0.005
	Sotho	68.357	28	12.362	64.429	28	11.006	3.929	10.452	0.057
	Tsonga	71.536	28	16.834	59.821	28	10.712	11.714	15.946	0.001
	Tswana	70.546	11	28.250	54.909	11	9.772	15.636	27.097	0.085
	Venda	70.917	12	18.431	62.500	12	15.565	8.417	18.372	0.141
Consci	Pedi	167.000	18	24.295	173.278	18	11.671	-6.278	22.281	0.248
	Sotho	169.036	28	15.737	168.571	28	16.208	0.464	12.854	0.850
	Tsonga	174.357	28	14.918	174.321	28	16.676	0.036	15.678	0.990
	Tswana	168.909	11	25.253	174.909	11	16.127	-6.000	22.557	0.398
	Venda	179.500	12	17.334	180.250	12	21.512	-0.750	24.042	0.916
Open	Pedi	107.500	18	17.718	114.500	18	15.066	-7.000	17.170	0.102
	Sotho	114.250	28	11.034	120.750	28	13.088	-6.500	12.261	0.009
	Tsonga	117.821	28	10.656	120.464	28	22.360	-2.643	24.200	0.568
	Tswana	112.000	11	15.981	115.455	11	17.885	-3.455	22.589	0.623
	Venda	120.417	12	12.340	127.333	12	17.855	-6.917	20.930	0.277
Agree	Pedi	132.722	18	16.388	138.833	18	14.987	-6.111	15.922	0.122
	Sotho	133.536	28	16.105	133.464	28	15.695	0.071	15.386	0.981
	Tsonga	136.679	28	20.868	139.929	28	25.360	-3.250	18.100	0.350
	Tswana	130.727	11	25.008	135.091	11	23.889	-4.364	16.323	0.396
	Venda	141.083	12	14.731	152.333	12	18.082	-11.250	20.658	0.086
Team ident	Pedi	56.440	54	25.318	56.500	54	26.768	-0.056	26.351	0.988
	Sotho	46.640	33	27.018	44.727	33	27.942	1.909	21.118	0.607
	Tsonga	55.350	51	23.655	56.588	51	28.245	-1.235	28.386	0.757
	Tswana	57.870	32	25.074	57.594	32	27.390	0.281	31.375	0.960
	Venda	54.090	22	24.311	60.773	22	22.878	-6.682	25.013	0.224
Motivation	Pedi	57.330	54	22.823	56.167	54	21.471	1.167	23.452	0.716
	Sotho	47.360	33	24.861	46.636	33	28.948	0.727	26.602	0.876
	Tsonga	57.880	51	23.484	60.412	51	25.705	-2.529	29.384	0.542
	Tswana	55.910	32	25.722	62.094	32	25.071	-6.188	33.363	0.302
	Venda	52.730	22	24.754	61.046	22	21.916	-8.318	23.144	0.107
Emotio. aware	Pedi	54.780	54	24.159	52.278	54	22.720	2.500	26.230	0.487
	Sotho	44.180	33	24.221	45.909	33	22.857	-1.727	16.921	0.562
	Tsonga	55.180	51	23.812	58.294	51	24.924	-3.118	28.078	0.432
	Tswana	53.380	32	27.249	56.094	32	23.344	-2.719	31.329	0.627
	Venda	47.550	22	23.850	63.773	22	19.302	-16.227	27.161	0.011

Comm.	Pedi	52.720	54	23.853	53.056	54	21.527	-0.333	26.894	0.928
	Sotho	44.550	33	24.169	43.091	33	26.309	1.455	23.167	0.721
	Tsonga	55.000	51	24.627	57.353	51	26.667	-2.353	28.475	0.558
	Tswana	51.690	32	25.191	54.969	32	25.791	-3.281	32.972	0.578
	Venda	46.050	22	24.043	62.682	22	20.742	-16.636	28.994	0.014
Stress tolerance	Pedi	55.610	54	24.890	53.722	54	22.757	1.889	25.736	0.592
	Sotho	47.730	33	22.287	44.000	33	25.577	3.727	19.673	0.285
	Tsonga	54.760	51	23.707	55.177	51	26.523	-0.412	27.364	0.915
	Tswana	56.190	32	26.495	59.000	32	22.006	-2.813	27.037	0.560
	Venda	50.000	22	22.065	61.046	22	22.169	-11.045	27.703	0.075
Conflict resolution	Pedi	49.720	54	20.631	42.722	54	19.794	7.000	23.355	0.032
	Sotho	39.910	33	22.132	36.546	33	19.153	3.364	17.981	0.291
	Tsonga	50.290	51	20.994	48.647	51	21.088	1.647	26.531	0.659
	Tswana	51.780	32	24.239	50.281	32	22.915	1.500	30.000	0.779
	Venda	47.820	22	22.681	53.273	22	21.671	-5.455	28.243	0.375
Positive mood	Pedi	58.940	54	22.821	57.111	54	22.125	1.833	22.910	0.559
	Sotho	49.910	33	24.366	48.818	33	25.466	1.091	24.126	0.797
	Tsonga	58.290	51	22.678	59.765	51	26.731	-1.471	30.062	0.728
	Tswana	59.750	32	25.422	61.156	32	24.387	-1.406	31.529	0.802
	Venda	52.590	22	23.718	61.727	22	20.176	-9.136	24.608	0.096

TABLE 4.10
ANOVA: PLATOONS

	After		Before	
	p-value	Partial Eta Squared	p- value	Partial Eta Squared
BTI				
Extraversion	0.103	0.051	0.892	0.023
Neuroticism	0.004	0.088	0.499	0.050
Conscientiousness	0.345	0.034	0.866	0.025
Openness	0.283	0.037	0.604	0.043
Agreeableness	0.004	0.087	0.189	0.077
TESI				
Team Identity	0.000	0.209	0.000	0.223
Motivation	0.000	0.193	0.000	0.260
Emotional Awareness	0.000	0.173	0.000	0.133
Communication	0.000	0.177	0.000	0.225
Stress Tolerance	0.000	0.212	0.000	0.228
Conflict Resolution	0.000	0.215	0.000	0.230
Positive Mood	0.000	0.222	0.000	0.239

TABLE 4.11

ANOVA: ETHNICITY

ANOVA: Ethnicity

	After		Before	
	p-value	Partial Eta Squared	p- value	Partial Eta Squared
BTI				
Extraversion	0.259	0.028	0.046	0.093
Neuroticism	0.673	0.012	0.145	0.067
Conscientiousness	0.404	0.021	0.285	0.049
Openness	0.765	0.010	0.408	0.039
Agreeableness	0.957	0.003	0.085	0.079
TESI				
Team identity	0.379	0.022	0.116	0.034
Motivation	0.312	0.025	0.064	0.041
Emotional awareness	0.227	0.030	0.019	0.054
Communication	0.302	0.026	0.021	0.052
Stress tolerance	0.510	0.017	0.038	0.046
Conflict resolution	0.180	0.033	0.023	0.052
Positive mood	0.329	0.024	0.147	0.031

CHAPTER 5
CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter provides the conclusions arrived at from the study and the limitations encountered in the previous chapters. Recommendations are lastly presented to guide future research.

5.1 CONCLUSIONS

The conclusions arrived at for both the literature review and empirical study are discussed in this section

5.1.1 Conclusions regarding the literature review

The general aim of this research was to investigate and describe the relationship between personality traits and team culture and to indicate possible changes in this relationship over time. In order to do this, both concepts and their theoretical relationship were discussed in chapters 2 and 3. The following conclusions regarding the literature review are provided below.

Personality traits are characteristics which measure individual differences in thought, feelings and behaviour. They are constructs grounded in personality trait theory and measured by a number of personality factor scales, depending on which trait theory they are based on. This study makes use of the FFM, which explains the structure of personality based on the traits of extraversion, neuroticism, openness, agreeableness and conscientiousness (McCrae & Costa, 2008). Personality traits are relatively stable components of personality, which are primarily biologically determined but amenable to environmental influences and are practically observable in everyday situations (McCrae & Costa, 2008). In addition, the five-factor theory serves as a useful model for assessing personality in the South African context because of its cross-cultural utility and application to people from diverse backgrounds (Cervone & Pervin, 2008; Taylor, 2008).

Team culture refers to the values, beliefs, customs, traditions and deeply held assumptions that are observable in the interactions between the team's members over time (Garvin, Guiterrez & Galinsky, 2004). Team culture is an aspect of team life that develops as the group develops and the members interact with one another and can therefore not be understood as an independent concept. Team or group development models provide explanations of how a team progresses from one developmental stage to the next and Shein's (2004) model, in particular, provides an in-depth analysis of the cognitive and affective components of the stages and tasks of the team's cultural development. Team culture is not a concept that is commonly referred to, but research has made reference to culture within sub-groups of organisations (Martins, 1989) and the impact of group composition on effectiveness (Manning et al., 2006). The value of studying culture at a team level lies in being able to predict the team's achievement of specified outcomes and understanding the factors responsible for the specific culture created by the team.

Personality has traditionally been studied at the individual level, while culture has been studied at group level and the two have seldom been connected in previous studies because they have been refined in the separate domains of psychology and anthropology. This study attempted to address the scarcity of research on the cross-level relationship between personality and team culture (Schneider & Smith, 2004).

5.1.2 Conclusions regarding the empirical study

Specific empirical objectives, indicated as the research hypotheses in Table 5.1, were investigated in order to address the general aim of the research. These objectives are given below, together with the findings and conclusions arrived at for each of them. The study was conducted with a sample drawn from the trainee platoons of the SAPS training college.

The first objective was to determine the relationship between personality traits and team culture. The results indicated only a slight relationship between personality and team culture after three months at the after phase of assessment, indicating a minor,

increase in the relationship between agreeableness and the TESI dimensions, except for communication. This concurs with previous findings in a team context, where higher scores on agreeableness related to roles of supportiveness, organising and implementing tasks and being a 'team player' (Manning et al., 2006).

The second objective was to determine whether the relationship between personality traits and team culture had changed over time. The results lacked any positive indication of a change in the relationship between the variables; this was anticipated, since the correlations from the before and after assessments were either absent or very weak.

The third objective was to determine whether each of the BTI factors and TESI dimensions had changed significantly from the before to the after assessment. The personality traits of neuroticism, agreeableness and openness had shown significant changes and previous research shows a link to the influence of police culture, which has a conforming effect on personality (Steyn, 2006). Although there was an overall decrease on the TESI scores, the only significant decrease occurred in the communication dimension.

The fourth objective was to investigate the differences between before and after assessments according to gender. Although significant increases in neuroticism occurred in both males and females, decreased levels of agreeableness and openness were specific to males and they also tended to score lower on team cultural dimensions than the females. Research generally reflects similar results for both males and females (McCrae & John, 1992) on the five traits and further research would be needed to explain the differences noted in agreeableness and openness.

The fifth objective considered the differences between before and after assessments of personality and team culture according to the platoons. Comparisons of platoon results on the personality factors found increased neuroticism for three of them. Significant differences were noted on all of the team cultural dimensions research

sample, with patterns of increased or decreased means being platoon-specific. No significant differences in personality traits between the platoons were noted at the before phase, but the platoons showed significant differences in the traits of neuroticism and agreeableness, with both having a medium effect at the after phase. Significant differences on the team culture dimensions were evident at both the before and after phases of assessment.

Objective 6 enquired whether differences between before and after assessments of personality traits and team culture varied across ethnic groups. Some of the ethnic groups experienced significant changes in the personality traits and culture dimensions, but when ethnic groups were compared to one another, they initially showed differences on extroversion and team culture scores but these had all disappeared by the after phase of assessment.

Table 5.1 Decisions on research hypotheses

	RESEARCH HYPOTHESES	DECISION
H01	There is no relationship between personality traits and team culture in the research group.	REJECTED
H02	There is no change in the relationship between personality and team culture from the first assessment to the second assessment.	ACCEPTED
H03	There are no changes in personality and team culture from the first assessment to the second assessment.	REJECTED
H04	There are no significant differences between males and females in personality traits and team culture.	REJECTED
H05	There are no differences between the research groups (platoons) in personality traits and team culture.	REJECTED
H06	There are no differences between ethnic groups in personality and team culture.	REJECTED

5.1.3 Conclusions regarding the central hypothesis

With regard to the central hypothesis, it can be concluded that personality can be influenced in specialised settings and that team culture is a product of the interaction of the members of individual platoons. The relationship between these variables is statistically significant but not yet strong enough to be regarded of practical value. Furthermore and according to this study, males and the ethnic groups of Tsonga, Pedi and Sotho were more likely to experience changes in personality traits.

5.2 LIMITATIONS

The following limitations of the research were identified.

The instrument used to measure personality traits in the study, the BTI, had a considerably lower response rate at the before assessment (130 responses) compared to the after assessment (238 responses). This was due to BTI answer sheets being incorrectly completed at the time of their administration for the purpose of trainee officers' selection. This imposed a limitation on the number of pair-wise comparisons that could be made for the statistical T-tests, but the 130 responses that were still usable confirmed the reliability of the BTI and provided sufficient statistical data.

Slight correlations were reported between the TESI and BTI at the after phase, compared to the lack of any relationship at the before phase. The second phase of assessment was conducted just four months after the first and it is possible that the relationship between the variables could have increased, given more time. Additional assessment of the sample was not possible, however, because the teams disbanded on completion of the training programme, soon after their participation in the after phase of the assessment.

The TESI serves as a useful tool for outlining the extent to which a group perceives itself as having team cultural dimensions, but is limited in terms of the number of

cultural dimensions assessed. Even at team level, culture is a complex concept, especially when viewed from Schein's model (2004), and therefore requires more comprehensive methods for its assessment. This could be in the form of additional quantitative instruments or qualitative data. The measurement of additional team cultural dimensions may also have provided a clearer picture of the extent of the relationship with personality traits.

5.3 RECOMMENDATIONS FOR FURTHER RESEARCH AND THE PRACTICE OF INDUSTRIAL AND ORGANISATIONAL PSYCHOLOGY

5.3.1 Recommendations for further research

Based on the findings, conclusions and limitations of this study, the following recommendations are made to enhance future research.

Intended research on team culture should carefully consider the many contributing factors of this concept and attempt to measure as many of them as possible, using multiple sources of data if necessary, in order to provide a clear and comprehensive account of the culture that exists in a given team.

Changes in neuroticism, agreeableness and openness appear to be linked to the socialisation process of new recruits into the SAPS. Differences in personality stability across gender and ethnic groups require further investigation. The implications of these changes in behaviour is worthy of consideration, specifically with regard to officer performance and interpersonal relationships. Researchers should aim to understand why some ethnic groups are socialised more readily than others. Differences observed in how ethnic groups interact in their teams may require an analysis of team roles to explain these behavioural patterns. Research on the stability of the adapted traits is encouraged to determine whether these are temporary 'states' or become crystallised as trainees become permanent members of the police force.

5.3.2 Recommendations for the practice of Industrial and Organisational Psychology in South Africa

There are some assumptions about personality traits that need to be carefully reconsidered when being worked with in organisational settings. This research has shown that in specialised organisational contexts, personality can be adaptive. Industrial and organisational psychology practitioners also need to be aware of possible norm differences for gender and ethnic groups when assessing personality traits. There appears to be a need for South African psychologists to be more aware of the cultural differences between different local ethnic groups to improve their understanding of variations observed in personality trait assessment.

The assessment of organisational culture needs to include specific teams or sub-cultures which may differ somewhat to the overall cultural profile of the larger organisation in order to gain a more accurate profile of how an organisation's people view things and behave. Assessing organisational culture must therefore be approached from different levels and make use of comprehensive instruments for each level.

5.4 CHAPTER SUMMARY

This chapter discussed the conclusions and limitations of the research and made recommendations for future similar studies and to practitioners of industrial and organisational psychology.

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