DETERMINING THE BEST FACTORIAL FIT FOR THE SOUTH AFRICAN PERSONALITY INVENTORY: COMPARISON OF BLOCK- AND RANDOM-ITEM FORMATIONS

by

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ABSTRACT

A limited number of culturally appropriate personality assessments are currently available in South Africa due to the mass importation of psychometric assessments in the past. The South African Personality Inventory (SAPI) project was initiated as a result of the growing demand for culturally appropriate assessment instruments as well as the change in South African legislation regarding psychometric testing (Section 8 of the Employment Equity Act, No. 47 of 2013). The SAPI project aims to identify universal and culture-specific personality traits for all 11 language groups in South Africa. The project's central research objectives are to develop a personality instrument that complies with South African legislation, meets all the regular criteria for adequate assessment as formulated in psychology, and is relevant for South-African institutions. The SAPI project consists of multiple studies that are aimed at enabling the use of the SAPI within the open market in order to allow practitioners to validly assess personality within the South African context. This study forms part of the quantitative body of work within the SAPI project and builds on the literature of the SAPI, resulting in a more acceptable instrument.

The primary objective of this study was to determine whether block– or random-item sequencing provides the best factorial replication within the framework of the SAPI. This was investigated by comparing the results obtained by administering both block- and random versions of the SAPI to a total sample of N=429 respondents at multiple private nursing education institutions. Both the block– and random-SAPI versions consisted of 262 closed-ended questions that were administered using a pen-and-paper methodology.

The data preparation indicated that four block- and 19 random-items were problematic and could not be included in the analysis. After removing the problematic items, a strategy was used to formulate a conclusion pertaining to the superior item sequence. This strategy included performing an exploratory factor analysis on each of the nine factors for both the random- and block-response sets. The factor loadings were analyzed, interpreted and presented separately. The researcher looked at the most plausible sub-cluster structure for each of the nine factors, followed by assessing the structural similarity between the two response sets by comparing them to the conceptual qualitative personality structure to identify which response set was more closely related. The reliability of all the factors and

sub-clusters for both response sets were also analysed and reported. The final conclusion was derived from an overall comparison made between the block- and random response sets.

By utilizing the strategy it was determined that the block response set provided for a better structurally and factorially valid framework when applied to the conceptual personality structure of the SAPI. However, upon closer inspection, the differences between the block- and random response sets seem to be trivial. The findings therefore indicate that the random response set can also be used as only minor differences were noticed when compared to the block response set.

Keywords: *block item order, factor analysis, factorial fit, personality, personality assessment, random item order, reliability, response set, South African Personality Inventory (SAPI), structural fit.*

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CHAPTER 1:

1.1 INTRODUCTION TO THE STUDY

The attention paid to psychological assessment has increased within South Africa over the last few decades due to the Employment Equity Act (No. 47 of 2013) [1] being implemented in after the start of the democratic era in 1994. This increased attention has resulted in the expansion and development of newer and more valid measurement instruments that specifically target a cross-cultural society such as South Africa. This study is motivated by the need to create a South African personality inventory that accommodates all South African cultures on a proven scientific basis to ensure that accurate decisions can be made based on the findings of the assessment tool.

It is important that the South African Personality Inventory (SAPI) generate valid outcomes across all cultures found in South Africa. The SAPI is currently in the phase of being quantitatively validated and was created to accommodate the 11 official languages and cultures found in South Africa. The SAPI framework has recently been revised and shortened to 158 items and six constructs. However, the old questionnaire was used for this study and consists of 37 sub-clusters and nine main clusters including: Extraversion, Soft-Heartedness, Conscientiousness, Emotional Stability, Intellect, Openness, Integrity, Relationship Harmony, and Facilitating. Research needs to be conducted and scientific steps need to be taken to prove the instrument's validity and reliability to guarantee an accurate assessment tool. Therefore this study investigated the item sequence of the SAPI in order to determine whether the items should be placed in a random sequence or in a block order grouping in order to best facilitate the validity process. The researcher's objective was to establish which of the two item formats delivers the best factorial structure replica of the SAPI model.

Two formats of the SAPI were created in order to compare the results of the random format with the block format. These inventories were administered to approximately 400 nursing as well as administrative personnel from private nursing education institutions

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[1] This act was recently amended and was previously known as the Employment Equity Act No. 55 of 1998 (Section 8).

within Gauteng. The sample typically included personnel from all the wards at the hospitals, students, reception, finance and even the maintenance departments. The data was analysed using an exploratory factor analysis to establish the factorial validity of the SAPI. Following the analysis the results were discussed and conclusions were drawn.

1.2   BACKGROUND

South Africa is a very diverse country with 11 official languages that each represents a unique culture. Nine of these South African languages are usually referred to as Bantu or African languages, namely isiZulu, isiXhosa, Sepedi, Setswana, Sesotho, Xitsonga, Siswati, Tshivenda and Ndibele (Nel, 2008). The remaining two languages, Afrikaans and English, are not Bantu languages as they originated in Europe; however they are included among the 11 official languages in South Africa because large sectors of the population speak these languages. The reason for focusing on South Africa's unique population is to create awareness surrounding the challenges of designing fair and valid psychological measurement instruments in such a diverse nation. What works for one culture within South Africa might not lead to valid results for another, resulting in South Africans receiving invalid psychological test results and ultimately being subjected to unfair practices. The validation process involves the overall accumulation of evidence to provide a sound scientific basis for projected score interpretations of psychological assessments (SIOPSA, 2005). In order to accumulate evidence, the purpose of the study was to determine whether block- or random-item order generates the best factorial construct fit within the framework of the SAPI. The SAPI is a new personality inventory aiming to represent all cultures and languages found within South Africa and provide fair and valid personality interpretations.

The SAPI was inspired by research conducted in China on cross-cultural personality testing (Nel, 2008). According to Fan, Cheung, Zhang, and Cheung (2011), western personality assessments have been translated and applied to the Chinese population since the 1970s. Although the imported assessment instruments claimed to be reliable and valid "cultural differences were found at the item, scale and factor level" when applied to the Chinese population (p. 1418). This resulted in the development of an indigenous Chinese questionnaire, referred to as the Chinese Personality Assessment Inventory

(CPAI), in the 1980s to accurately measure personality within Chinese culture (Fan, et al., 2011).

South Africa faces similar validity and reliability issues to those experienced by China. Many imported tests have not been standardised for the South African context where the majority of the population does not use English as their mother tongue. According to Ramaahlo (2011, p. 9), "imported assessments pose various biases to South Africa's multilingual and multicultural situations" therefore expressing the need to adapt these assessment tools or create culturally appropriate assessment instruments for South African citizens (Laher, 2011; Markus & Kitayama, 1998; McCrae & Costa, 2008; Ng, Fan, Cheung, Leong & Cheung, 2012; Swanson, 2007; Yang & Bond, 1990).

The SAPI is based on the same principle as the CPAI and is designed to provide an indigenous perspective to represent the hidden personalities of all the major culture groups within South Africa. Since the end of the Apartheid era in 1994 South Africa has been placed under a magnifying glass to ensure equal treatment of all South Africans. According to the recently amended Employment Equity Act (No 47 of 2013) standardised western assessments are not sufficient in terms of fairness and unbiased results for all the South African cultures (Ramaahlo, 2011). Section 8 of the Employee Equity Act (No. 47 of 2013) stipulated the following:

> Psychological testing and other similar assessments of an employee are prohibited unless the test or assessment being used:
>> (a) has been scientifically shown to be valid and reliable,
>> (b) can be applied fairly to all employees; and
>> (c) is not biased against any employee or group; and
>> (d) has been certified by the Health Professions Council of South Africa established in terms of the Health Professions Act, 1974 (Act No. 56 of 1974), or any other body which may be authorised by law to certify those tests or assessments (Government Gazette, 2014).

The above clauses (a), (b), (c) and (d) place the responsibility of cultural appropriateness of psychological testing on the psychological practitioner or on any practitioner authorised

by law to adhere to fair and valid testing instruments. This emphasises the importance of the development of the SAPI (Bester, 2008).

Imported tests could provide results that are not valid or reliable within the South African context (Ramaahlo, 2011). The Professional Board for Psychology of the Health Professionals Council of South Africa (HPCSA) and the legislation (as discussed above) necessitates assessments that meet the psychometric criteria of reliability and validity (clause (a) of Section 8 of the Employment Equity Act (No. 47 of 2013) and are culturally and linguistically fair to all people from different backgrounds (clause (b); Foxcroft & Roodt, 2001). Developing a personality measurement tool that is validated across multi-cultural groups should provide for equal opportunity as well as a culture of acceptance (Laher, 2011).

Limited literature is available in South Africa regarding validation studies using block- and random-item formatting by means of statistical analysis. Therefore this study aimed to address the limitation in South African literature and to make a contribution to understanding the functioning of the SAPI within the psychological testing framework in South Africa.

1.3 PROBLEM STATEMENT

A single personality assessment has not been normed and successfully made available in all of the 11 South African languages; presenting challenges when personality assessments need to take place within the more isolated rural settings of South Africa as English has not been adopted and therefore cultural barriers exist as culturally unique descriptive terms and usages are still being implemented.. Thus language and culture present the two main challenges in South Africa when using adapted western tests.

This study specifically addressed two main challenges:

1. There is currently no personality measurement tool that targets all cultural and language groups in the South African context and this study made a contribution toward the development of such a measure.

2. Which of the two formats (namely, random or block) yields a better factorial structure to support the SAPI's underling factor structure (which was conceptualized in the first qualitative phase of the SAPI project), which will ultimately lead to increasing the structural validity of the inventory.

1.4   PURPOSE STATEMENT

This dissertation assessed which format (random or block item) provides the best evidence of structural construct validity of the nine factor model that was conceptualised in the first qualitative stage of the SAPI project.

The ultimate goal of the SAPI project is to develop a personality assessment tool that ensures a unified and valid personality inventory for all major language and cultural groups in South Africa (Bester, 2008). Although validity studies are not a new concept (Laher, 2011) all measurement tools need to be proven valid and reliable and demonstrate compliance to the criteria of the Employment Equity Act (No. 47 of 2013). The SAPI has been developed over the past nine years and the first experimental SAPI, which consists of 262 items, is currently available and was utilised in this study. Although this study made use of the first experimental SAPI, the SAPI was shortened by performing an Exploratory Factor Analysis and by looking at the reliability of the items and eliminating unwanted items. The SAPI researchers were able to reduce the items from 262 to 158 items, as well as from nine constructs to only six (Valchev, Meiring, Van de Vijver, Nel, & Hill, 2014).

The SAPI project was launched in 2005 and consists of two main phases, a qualitative and a quantitative phase. The first phase (qualitative) included the collection of as many personality descriptive terms as possible in order to gain an understanding of the personality structures embedded within the 11 official languages of South Africa. The descriptive terms were gathered by conducting interviews with respondents from the representative cultures of South Africa (Nel, 2008). The responses were then translated into English for data analysis purposes. The responses where compared across the different language groups to identify common and language specific aspects (Nel, 2008). Ambiguous and non-representative data was removed and content analysis took place to create facets. This entailed categorizing the content- specific responses together to define

nine clusters of the SAPI. This step enabled the development of item stems (Nel, Valchev, Rothmann, Van de Vijver, Meiring, & de Bruin, 2012). The main aim of the first phase was to identify personality descriptives that are culturally and linguistically appropriate for the 11 official language groups in South Africa (Meiring, 2007) which lead to the materialization of a nine construct SAPI (Prinsloo, 2013).

The project is currently in the quantitative phase in order to determine the validity of the findings as specified during the qualitative phase. So far the quantitative phase has offered significant results as it transformed the nine-factor SAPI to an inventory with only six relevant constructs, decreasing the number of items from 262 to 156. Researchers concluded that the qualitative data and the quantitative data support each other's findings and indicate the need to validate the structure (Valchev, 2012). The aim of this study was to validate the factorial structure of the SAPI by comparing the results of random- and block-item order within the SAPI. In blocked-item designs, related items are listed together, whereas in random-item designs the items are mixed in a single list (Franke, 1997; Ortner, 2004).

1.5   RESEARCH OBJECTIVES

This study was guided by the following objectives:
General Objective

- The general objective of this study was to compare the results obtained by administering a block version of the SAPI and a random version of the SAPI in order to determine which format delivers the best factorial replication within the framework of the SAPI.

Specific Objectives

- To conduct a thorough literature study on block- and random-item format as described in the scientific literature;

- To determine which of the block- and random-item format scales would best replicate or be representative of the preliminary qualitative personality factor structure of the SAPI;
- To identify the difference between the block- and random-item format in order to determine which format is more reliable in measuring personality specific to the SAPI.

1.6   ACADEMIC VALUE AND CONTRIBUTION OF THE STUDY

The quality of an assessment tool determines the quality of its outcomes (Woods & Hardy, 2012) and it is therefore important that quality tools are developed. With this in mind, researchers have investigated how item order influences the quality of the tool. According to Düzel and Heinze (2002), the two major designs available for item order are blocked design or random-mixed design. The research objective states that this study is aimed to determine whether the block version of the SAPI or the random version thereof delivers the best factorial validity within the framework of the SAPI.

Block item order offers advantages and disadvantages. An advantage is that by structuring all the items according to one cluster it may facilitate understanding of context and thereby facilitate less confusion for respondents (Kelly, Griffiths, & Firth, 2002; Stewart, Watson, Allock, & Yaqoob, 2009). On the other hand, candidates could predict the pattern and manipulate results to gain desired and invalid results (West & Finch, 1997) as people generally want others to view them in a positive light as opposed to portraying reality. This manipulation in behaviour is also known as the Hawthorne effect and is especially prominent where tests are carried out for recruitment purposes (Adair, 1984).

Randomised item order also has advantages and disadvantages. An advantage is that randomised item order might lead to increased concentration of participants, considering that they will not be able to make context specific assumptions (Düzel & Heinze, 2002). Alternatively, randomised items could lead to confusion and could lead to false answering of the SAPI (Kelly et al., 2002).

Very little empirical research has investigated block– or random-order as well as the effect this has on the responses to the items in the inventories. Valchev (2012) identified this as a limitation in current knowledge of personalities in South Africa and suggested that a study on item-order of the SAPI was necessary. In addition, a limitation has been detected regarding the availability of research on the positioning of items specifically in the field of personality (Franke, 1997; Laher, 2011). Therefore this study aimed to provide new knowledge in terms of the development of the SAPI within the South African context.

The current study is a very interesting study, which aimed to enlighten practitioners as to the impact of using different item orders. The study of block- versus random-item order has not been previously conducted within the SAPI project, giving the project valuable information regarding the structuring of the SAPI. Also, the results of this study will aid the SAPI to comply with the required legislation, hopefully resulting in a culturally appropriate psychological test.

1.7   DELIMITATIONS AND ASSUMPTIONS

1.7.1   DELIMITATIONS

- Due to the limited empirical research conducted on block- and random-item order (Franke, 1997) in the South African context the researcher was compelled to reference mostly international literature sources.
- The study was based in Gauteng, limiting the number of Indian and coloured participants, thus also limiting the representativeness of the study.
- The sample for this study consisted of nurses, student nurses and administration staff and included an abundance of female participants. This is likely to influence the representativeness of the sample.
- Only considering the nursing industry is not representative of the South African context.

1.7.2   ASSUMPTIONS

- The study was based on the assumption that the SAPI will be implemented as a successful measurement inventory within South Africa.
- It was further based on the assumption that random item order as well as block item order each possess different advantages and disadvantages.

1.8   DEFINITION OF KEY TERMS

Table 1 provides a brief explanation of certain key terms to create an understanding of the main concepts used in this study. These terms are block item order construct validity, factorial validity. and random item order.

Table 1.1. Key definitions

Definition	Key terms
Construct validity	Refers to the degree to which a test assesses the construct or trait that it aimed to assess
Block item order	The items are structured according to related constructs.
Personality	Personality is defined as a) the sum total of all physical, mental, emotional, and social characteristics of an individual, and b) the organised pattern of behavioural characteristics of the individual.
Random item order	In the construction of questionnaires, items are normally presented from a mix of the scales in a random order (Ortner, 2004).
Factorial validity	Factor analysis permits assessment of the structure of constructs, resulting in inferences of what is usually called factorial

	validity. These procedures may best be seen as informing content validity, but are typically presented in the literature as reflecting construct validity. In these procedures a measure is evaluated by examining its internal structure. In the typical case, a measure is assumed to acquire validity if the set of items is found to have a factor structure corresponding to expectation (Koeske, 1994).

Table 1.2: Abbreviations used in this document

Abbreviation	Meaning
CFA	Confirmatory Factor Analysis
CPAI	Chinese Personality Assessment Inventory
EEA	Employment Equity Act
EFA	Exploratory Factor Analysis
HSRC	Human Sciences Research Council
MTMM	Multitrait-Multimethod Matrix
SAPI	South African Personality Inventory
SPSS	Statistical Software Package for the Social Sciences

1.9   RESEARCH METHODOLOGY

Research methodology is concerned with the research design, sampling, data collection, as well as data analysis methods that are used within a study. These elements are discussed briefly in relation to this study.

According to Polit and Hungler (1999), research design is a blueprint that maps out a study in order to achieve maximum control over factors that could affect the validity of the research results. In other words, a design creates a structured plan to follow to obtain the desired results. Saunders, Lewis and Thornhill (2009) claimed that most researchers follow fixed steps when conducting a research study.

This study made use of a descriptive research approach by implementing survey research, considering that the researcher observe/assess the participants without intervention at any specific time. Thereafter comparisons will be made from the results of the respondents. Survey research is defined as a means to gather information about the characteristics, actions, or opinions of a large group, referred to as a population (Tanur, 1982; Polit & Hungler, 1997). The SAPI was used to obtain the data from the sample. The targeted population can also be referred to as a sample, which was described by LoBiondo-Wood and Haber (1998) as a portion of the population selected to participate in a study, representative of the larger population. For this study the sample consisted of nurses, student nurses and administration staff within the medical industry. This sample was selected based on convenience. The data obtained through the SAPI was analysed quantitatively, meaning that statistics were used to analyse whether the block-item order or random-item order best fits the factorial structure of the SAPI (Nieuwenhuis, 2007; Creswell, 2003).

Factorial validity is often referred to as structural validity and in this study, factorial validity is defined as "the extent to which items designed to measure a particular factor (i.e., latent construct) actually do so" (Byrne, 2010, pp. 97- 98). Factorial validity is also defined by Loevinger (1957), as cited in Hoyle & Smith (1994, p. 432) as "the degree to which the measure of a construct conforms to the theoretical definition of the construct". According to Gefen and Straub (2005), factorial validity and Exploratory Factor Analysis (EFA) are frequently used together because "an EFA identifies the underlying latent variables, or factors, that explain the pattern of correlation within a set of measurement items" (Gefen & Straub, 2005, p. 92). In this research project the researcher used (EFA) to determine whether the item order influences the factorial validity. According to Esquivel (2011), EFA may be used to prove the validity of a measure, especially the factorial validity of an instrument such as a questionnaire.

This study also investigated the SAPI's reliability. This was done as "reliability is not usefully separated from the idea of validity when examining appropriateness of test use [because] the concept of reliability is directly related to construct meaning (validity)" (Barnett, Lentz, & MacMann, 2000, p. 369). The establishment of validity and reliability addresses the regulations of section 8 of the Employment Equity Act (No. 47 of 2013). Once the data was analysed and significant results were obtained in relation to the aim of this study, the researcher reported the findings in the results section of this study reflecting the outcome of the EFA and validity studies.

1.10   CHAPTER LAYOUT

Chapter 2: Literature review

This chapter creates the basis of understanding for the full theoretical scope of the SAPI as well as reinforcing the aim of this study. Chapter two provides the reader with the history of psychological assessments and psychological assessments in South Africa. It also elaborates on the development of the SAPI, construct validity, and block- and random-item orders.

Chapter 3: Research design and methods

The purpose of this chapter is to map and explain the process and methodology of this study. Chapter three discusses the research paradigm/ philosophy, the strategy of inquiry and research design, sampling, data collection, data analysis including elements such as how to record, store, code, prepare and analyse the data using Exploratory Factor Analysis. The chapter ends with a discussion of research ethics.

Chapter 4: Research results and discussion

Chapter four's focus is on interpreting the data analysis and results of the study. The discussion focuses on how the data was screened and prepared, the descriptive statistics, factor analysis and reliability of the nine clusters of the SAPI.

Chapter 5: Conclusions, Limitations and Recommendations

The final chapter concentrates on deductions made from the previous chapter and concludes the study by discussing the limitations with regards to the main findings of the study. The implications that this study has for the future development of the SAPI project are also discussed, together with the recommendations for future research.

1.11   CHAPTER SUMMARY

This chapter provided an introduction to the study by previewing the scope of the SAPI. It also provided the reader with an outline of the background, purpose, objectives, challenges and academic contribution that the study aims to deliver.

This study aimed to investigate the item sequence of the SAPI in order to determine whether the items should be placed in a random sequence or in a block order grouping to facilitate the validity process. The researcher's objective was to establish which of the two item formats delivered the best factorial structure replica of the SAPI model. By doing this the research aimed to assist in ensuring that the overall objective of the SAPI is met, which is to guarantee that the SAPI accommodate all South African cultures on a proven scientific platform.

In addition this study also addresses a gap in South African literature and made a contribution in understanding the functioning of the SAPI within the psychological testing framework in South Africa.

This study specifically addressed at two main challenges:
1. There are currently no personality measurement tool that target all culture and language groups in the South African context; and
2. Whether random- or block item-order yields a better factorial structure to support the SAPI's underling factor structure.

Chapter one also discussed the delimitations and assumptions of the study and provided an overview of the research methodology and research design. The next chapter discusses the extensive body of literature regarding personality, construct validity and reliability, item formatting and the development of the SAPI.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This study aimed to explore the effect of random- and block-item selection on the factorial structure of the SAPI and to determine whether block- or random-item order provides better results by confirming the nine factor structure of the SAPI. In order to position this study within the existing research literature an extensive literature review was conducted. This review focused on personality, the assessment of personality, psychological testing and the creation of taxonomies for assessing personality. The literature review also included an examination of research on cross-cultural personality and the concerns and approaches that are predominant in this field. In addition, the literature review focused on personality testing in South Africa, specifically in relation to the development of the SAPI. Finally, the literature review focused on three topics related to this study's specific objectives, namely item formatting of personality questionnaires, block- and random-item sequencing in questionnaires, and construct validity and reliability.

2.2 THE DOMAIN OF PERSONALITY

2.2.1 INTRODUCTION

Personality has been studied extensively over a long period of time with the aim of gaining an understanding of individual differences (Murphy & Davidshofer, 2005). Personality psychology is a large sub-discipline within psychology that produces an enormous volume or research. This section focuses specifically on the definition, origin and evolution of the concept of personality. It also includes a discussion concerning taxonomies of personality.

2.2.2 DEFINITION OF PERSONALITY

Early personality researchers struggled to conceptualise personality as they lacked a clear definition of what it entailed (Frank, 1939; Lamiel, 1997). This section aims to provide an academic, as well as a more commonly used, definition of personality. According to

Murphy and Davidshofer (2005), certain aspects of human functioning need to be considered prior to defining the concept of personality. Firstly, no two people are identical in terms of their temperament, behaviour, or preferences. Secondly, people react differently to certain life situations. Thirdly, although people behave differently in relation to different variables, human behaviour also has commonalities as similar patterns of behaviour can be seen amongst different people in different situations. These three aspects of human function are useful in understanding (and defining) the concept of personality.

Meyer, Moore, and Viljoen (1997) defined personality as continuously changing but a) relatively stable and the total sum of all physical, mental, moral, emotional, and social characteristics of an individual, and b) the organised pattern of behavioural characteristics of the individual (Cervone & Pervin, 2008; Foxcroft & Roodt, 2005; Funder, 2001; Larsen & Buss, 2005; Pervin, Cervone, & John, 2005; Plug, Louw, Gouws, & Meyer, 2000; Teglasi, Simcox, & Kim, 2007). The study of personality in psychology considers all related aspects of an individual, including how they interact and are related to each other; therefore personality can be described as the scientific study of the person as a whole (Cervone & Pervin, 2008; McAdams, 2006).

Two main paradigms are usually used to define personality. The first paradigm is referred to as the ideographic paradigm and is concerned with how the individual is affected by contextual variables (Grobler, 2014). The second paradigm is referred to as the nomothetic paradigm and predicts individual differences in terms of personality attributes (Dumont, 2010). In order to define personality for this study, a broad view was adopted which saw personality as related to all factors of human experience as suggested above by Cervone & Pervin (2008). Personality was therefore defined as consisting of an internal driving force that subconsciously repeats a person's physical, mental, emotional and social instincts in such a manner that is pattern is created which transforms into behaviour and this behaviour can often be predicted. This definition was adopted throughout this study.

2.2.3   ORIGIN OF THE STUDY OF PERSONALITY

This section discusses the origins of the study of personality within psychology. According to Barenbaum and Winter (2008), the concept of personality as described above was only formalized as a field of study in the late 1930s (Laher, 2011; McAdams, 1997). However, although it was not defined as personality the study of individual differences has a much longer history (Laher, 2011). Eysenck and Eysenck (1969) traced the study of personality back to the ancient Greeks, who attributed differences in temperament to the influence of one of four humours. Thus, in this model, "a sanguine personality reflected strong blood [impulsive and pleasure-seeking], a melancholic personality reflected the influence of black bile [pondering and considerate], a phlegmatic personality reflected the influence of phlegm [relaxed and quiet], and a choleric personality reflected an overabundance of yellow bile" [ambitious and leader-like] (Murphy & Davidhofer, 2005, pp. 45-46) (also see Cohen & Swerdlik, 2005). These four temperament classifications provided the ancient Greeks with a theory regarding the causes of individual differences in personality and this theory was used until the mid-19th century. According to Cohen and Swerdlik (2005), as well as Marsella, Dubanoski, Hamda and Morse (2000) this categorisation is based on the work of Hippocrates. Other classifications of personality exist in other cultural traditions. For example, Indian and Japanese cultures referred different blood types that affected a person's temperament (Heine & Butcher, 2009). The Chinese believed that people were bound to different natural elements (earth, water, fire, wood, air) that influenced their behaviours (Ellis, Abrahams, & Abrams, 2009).

Allport (1954) suggested that prior to the formal establishment of the study of personality in the 1930s the writer Comte (1852) foreshadowed the development of this field with his emphasis on research concerning 'le morale'. Comte claimed that a person consisted of both biology and cultural/ social perspectives.

According to Laher (2011) the formal study of psychology commenced in Germany and was majorly driven by a researcher named Wilhelm Wundt, who established the first psychological laboratory in 1879 at the University of Leipzig. The study of personality is closely linked to psychological research as personality is seen as a key sub-dimension of psychology. After the opening of the psychological laboratory, Stern (1924, as cited in

McAdams, 1997, p. 5) researched the assumption that an individual is a "multiform dynamic unity". This was paralleled by work by McDougall (1908), who followed a more academic approach to psychology and perceived personality as consisting of a multitude of instincts and sentiments. In the early twentieth century Kretschmer and Sheldon theorised that personality could be linked to physique and genetic endowment (Larsen & Buss, 2008; Ryckman, 2008).

During the 1930s and 1940s various personality theories/systems were developed. These personality theories can be categorised in accordance with eight major theoretical approaches (McAdams, 1997). These approaches are usually referred to as the psychodynamic approach, lifespan theory, cognitive theories, social learning theories, humanistic/existential approach, behaviourist approach, biological/behavioural genetic theories and the dispositional/trait approach (see Ellis et al., Laher, 2011; Larsen & Buss, 2008; McAdams & Pals, 2006; Meyer, Moore, & Viljoen, 2003; Naidoo, Townsend, & Carolissen, 2008; Pervin & John, 2001; Ryckman, 2008; Schultz & Schultz, 2009; Weiten 2009). These approaches are briefly summarised in Table 2.1 below.

Table 2.1. Summary of the eight major theoretical approaches to personality

The psychodynamic approach	The psychodynamic approach focuses on emotional responses to changing life events. It emphasizes the unconscious influences on personality and human behaviour that are determined by instinct. Prominent theorists in this tradition include Freud, Jung and Adler (Laher, 2011).
The lifespan approach	The lifespan approach is strongly linked to the work of Erik Erikson, who explained human development in eight stages lasting from birth to death (Laher, 2011; Schultz & Schultz, 2009).
The cognitive approach	The cognitive approach focuses specifically on the importance of a person's thinking processes in the understanding of personality. Specifically, this approach sees personality as consisting of the way in which people perceive, evaluate, learn, make decisions and solve problems. The work of Mischel and Kelly is central to this tradition of personality research (Funder, 2001; Meyer et al., 2003; Schultz & Schultz, 2009). According to Kelly any emotional aspects of personality could also be ascribed to cognitive

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	processes (Naidoo et al., 2008; Ryckman, 2008; Schultz & Schultz, 2009).
The behaviourist approach	Theorists working within the behavioural tradition only consider observable behaviour when defining personality and therefore see personality as a learned response to stimuli. Watson and Skinner were the main theorists involved in the development of the behaviourist approach (Laher, 2011).
The social learning approach	The social learning approach is seen as an extension of the behaviourist approach and focuses on overt behaviours rather than on needs, traits and drives. However, unlike the behaviourist approach, the social approach includes internal cognitive variables that mediate between stimulus and response. Bandura is the pioneer of this tradition of thought (Laher, 2011).
The humanistic/existential approach	The humanistic/existential approach criticises the psychodynamic and behaviourist schools of thought, as it focuses on the personal meaning of life. It stresses that personality can only be understood through the investigation of concepts such as human strength, aspirations, self-actualisation and the search for meaning. Rogers and Maslow are considered pioneers in this field of thought, which portrays people as optimistic and creative (Funder, 2001; Larsen & Buss, 2008; Naidoo et al., 2008; Ryckman, 2008; Schultz & Schultz, 2009).
The temperament theory	The biological approach focuses on temperament indicating biological aspects of personality. The behavioural genetic approach is concerned with the extent that genes and life experiences influence the development of personality. Major contributors to temperament theory include Buss and Plomin.
The trait theory	Trait theorists look at the structure of personality. Traits are defined as inherent qualities or personal characteristics and are described as building blocks of personality (Grobler, 2014). Allport was predominantly involved with the trait theory and according to McAdams (1997), Allport's (1937) work on personality can be seen as the origin of personality within social science.

McAdams (1997) effectively summarised the development of personality psychology together with some seminal authors in the passage below. This passage also supports the idea that personality stems from multiple disciplines as stated above.

> The development of general theories within the field of personality psychology started around 1900 with psychoanalysis with the publication of Freud's Interpretation of Dreams (1900/1958); followed by behaviourism around the 1913s with John B Watson's "Psychology as the Behaviourist Views It"; culture and personality in the 1930s influenced by researchers such as Margaret Mead, Ruth Benedict, Edward Sapir, Eysenck and Cattell; the humanistic-phenomenological approach of Carl Rogers and Abraham Maslow; cognitive approaches with the work of George Kelley in 1955, leading to the work of cognitive- experimentalists such as Bandura and Mischel; and work in behaviour genetics and socio-biology becoming more prominent in the 1970s and 1980s with Arnold Buss, David Buss and others (p. 44).

This passage provides insight into the diversity of personality psychology; it also shows that researchers have struggled to pinpoint the exact domain of personality. However, researchers have also found common ground. This common ground can be seen in the evolution of the concept of personality, which is discussed below. This discussion is presented in a chronological manner.

2.2.4   EVOLUTION OF THE STUDY OF PERSONALITY

The 1930s, 1940s and 1950s were a fruitful but controversial time for the study of personality. During this time researchers such as Freud, Jung and Allport (Horak, 2013; Laher, 2011; McAdams, 1997) published competing theories of personality. Following the initial development of personality theories the 1950s, 1960s and 970s were epitomised by strenuous testing of constructs identified in the preceding decades (McAdams, 1997). At the end of the 1970s personality theory and assessments, especially those focusing on traits decreased and only resurfaced in the 1980s (Costa & McCrae, 2008; Hofstede & McCrae, 2004). This era was also characterised by disputes regarding nurture versus nature. McAdams (1997) characterised the late 1960s as a time of peak debate between

'trait psychologists' and 'situationists' who disagreed on whether situational variables influence a person's personality or whether the person is born with a personality (Barnea, Cronqvist, & Siegel, 2010). Representing the 'situationist' side of the debate Murray (1983, p. 39) stated that "the history of the organism *is* the organism". The debate decreased in the 1980s as most personality psychologists agreed to a compromise (McAdams, 1997). This compromise is articulated by the work of Pervin (1985), who suggested that both trait and situational aspects are important to personality, which he defined as a set of characteristics of a person or of people that account for consistent patterns of response to situations. This viewpoint has received substantial research support, indicating that a person's behaviour is created by a mixture of traits (nature) and situations (nurture) (Ekehammer, 1974; Pervin, 1985; Zuroff, 1986).

The study of personality today is mostly concerned with trait theory and is commonly used within the field of cross-cultural psychology as researchers are increasingly focusing on cultural differences in personality (see Cervone, 2004; Church, 2000; Costa & McCrae, 2008; Dalton & Wilson, 2000; Heine & Butchel, 2009; Kaplan & Sacuzzo, 2009; McAdams & Pals, 2006; Paunonen, Zeidner, Engvik, Oosterveld, & Maliphant, 2000). Traits have been grouped together to describe personality types, resulting in the creation of taxonomies. These taxonomies are discussed in the next section.

2.2.5   TAXONOMIES OF PERSONALITY

The development of taxonomies for personality traits increased in the 1980s. During this era psychologists attempted to create a single taxonomy for personality. This culminated in the development of the 'Big Five' trait taxonomy, which is recognised as one of the most influential formulations of individual differences in personality (Avdeyeva & Church, 2005; Goldberg, 1992; Horak, 2013; Judge, Heller, & Mount, 2002; Lee & Ashton, 2008; McAdams, 1997). Although the 'Big Five' is highly valued within the field of personality psychology, it has its flaws and these are especially apparent in relation to its cross-cultural applicability (Gurven, von Rueden, Massenkoff, Kaplan, & Lero Vie, 2012; Laher, 2011; Markus & Kitayama, 1998; McAdams, 1992, 1997; McCrae & Costa, 2008; Meiring, 2007; Murphy & Davidshofer, 2005; Salgado, Moscoso, & Lado, 2003; Swanson, 2007; Yang & Bond, 1990).

The next section discusses the development of personality assessments.

2.3   ASSESSMENT OF PERSONALITY

2.3.1   INTRODUCTION

As researchers became familiar with the domain of personality they created models and taxonomies designed to determine the most dominant personality constructs. Researchers also began to attempt to assess differences between people and make predictions based on these differences. This section explains why testing for personality matters. This is followed by a discussion concerning the origins of personality assessments and the impact of taxonomies on personality testing.

2.3.2   USE OF TESTING FOR PERSONALITY

The assessment of personality can be defined as the act of deriving facts associated with a person. In other words, assessment involves measuring the psychological attributes of a person in order to gain understanding of that person. With the intention to access this understanding various assessment instruments have been created.

Personality testing is used across the world, in diverse settings including counselling, selection and placements (Gregory, 2011; Huysamen, 2002; Ones & Anderson, 2002; Van der Merwe, 2002). This worldwide implementation and varied usage indicates the importance of personality assessments in society. Scientists have also aimed to diagnose deviant behaviour with the help of personality tests (Schreuder & Coetzee, 2010) as psychological tests such as personality assessments measure attributes manifested in the behaviour of individuals (Foxcroft & Roodt, 2005). In addition, personality testing has been useful for explaining and predicting attitudes, behaviour, performance and outcomes in organisational settings (Ones, Dilchert, Viswesvaran, & Judge, 2007). According to Claassen (1995) the goal of psychological assessments is to portray some facet of the world. These tests presumably reflect the broader society in which they are administered

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and therefore need to have representative norms. The role of psychological assessment is therefore to provide information to guide individuals, groups and organisations in making informed and appropriate decisions with regards to an individual's behavioural characteristics (Murphy & Davidshofer, 2005).

2.3.3   ORIGIN OF PSYCHOLOGICAL TESTING

Testing personality has long interested philosophers, psychiatrists and researchers and numerous attempts have been made to unravel the mystery behind a person's personality. Formal psychological testing commenced in Europe in the nineteenth century and spread to America in the early twentieth century (Barenbaum & Winter, 2008; Gregory, 2011; Murphy & Davidshofer, 2005). According to Gregory (2011), psychological testing began when Francis Galton (1822-1911) created the first tests to assess sensory and motor measures (Butcher, 2009; Laher, 2011). However, the official study of psychometrics only commenced in 1886 with the work of Cattell, an American psychologist who had a laboratory at the University of Cambridge in England. Cattell was influenced greatly by Galton's work and was the first psychologist to publish a dissertation on psychometric testing (Ntuli, 2012). Cattell learned about factor analysis from Spearman (1937) and saw this as an opportunity to combine a mathematical approach and psychophysics (which were used by his peers at that time) to examine individual differences scientifically (Cattell, Saunders, & Stice, 1957; Cattell, Eber, & Tatsuoka, 1992; Gregory, 2011; Laher, 2011). Cattell (1890) noted that although psychology is not an exact science by following scientific approaches, such as experimentation and measurement, more accurate results can be obtained. He also stated that tests need to be standardised to enhance their scientific and practical value as this allows researchers to combine and compare assessment results gathered from different people at different stages. Cattell's emphasis on the need for scientific approaches to testing foreshadows the importance of validity in assessment. In addition, his argument that researchers should be able to make comparisons suggests that tests should be administered to various individuals across different times and spaces and should still reveal fair and valid results.

During the 1950s and 1960s many personality inventories were created and refined. Table 2.2 below highlights the chronological development of important personality inventories from 1920 – 1992.

Table 2.2: Highlights in the History of Personality Assessment

Year	Personality test	Reference
1920	Woodworth	Woodworth (1920)
1921	The Rorschach Inkblot Test	Rorschach (1921)
1924	Woodworth & Matthews Personal Data sheet (Children and adolescent)	Woodworth & Matthews (1924)
1933	The Bernreuter personality Inventory	Bernreuter (1933)
1938	Thematic Apperception Test	Murray (1938)
1940	Minnesota Multiphasic Personality Inventory (MMPI)	Hathaway & McKinley (1940)
1956	The California Psychological Inventory	Gough (1956)
1957	The Sixteen Personality Factors Questionnaire	Cattell & Stice (1957)
1977	The Millon Clinical Multiaxial Inventory	Millon (1977)
1985	The NEO Personality Inventory	Costa & McCrae (1985)
1989	Minnesota Multiphasic Personality Inventory (MMPI-2)	Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer (1989)
1991	Personality Assessment Inventory	Motey (1991)
1992	Minnesota Multiphasic Personality Inventory – Adolescent Form(MMPI-A)	Butcher, Williams, Graham, Archer, Tellegen, Ben-Porath, & Kaemmer (1992)

Source: Butcher, J.N. (2009).Oxford Handbook of Personality Assessment. Oxford (p. 8), England, Oxford University Press.

2.3.4   CREATING TAXONOMIES FOR PERSONALITY TESTING

Since the 1980s researchers began to reach consensus regarding common traits present within the domain of personality (McAdams, 1997). Conley (1958) described traits as being among the core determinants of a person's life course. Most researchers agree that the five traits included in the Five Factor Model (also referred to as the 'Big Five' of personality assessments) are very robust descriptors of personality (Murphy & Davidshofer, 2005). The 'Big Five' model has expanded extensively since its initial development and has been replicated numerous times. Most well-designed personality inventories (e.g., the NEO Personality Inventory) contain these five factors, which are usually labelled Extroversion, Emotional Stability, Agreeableness, Conscientiousness and Openness to Experience (Barrick & Mount, 1991; Costa & McCrae, 1985, 1995; Laher, 2011, 2012; Wiggins & Trapnell, 1997). Other inventories such as the 16PF (Cattell, Eber, & Tatsuoka, 1970), the Eysenck Personality Inventory (Eysenck & Eysenck, 1964), the EASI Temperament Survey (Buss & Plomin, 1970), and the Experience Inventory (Coan, 1974) utilise three of the 'Big Five' taxonomy namely Neuroticism, Extraversion, and Openness (Psychoticism) (Horak, 2013).

Although the 'Big Five' became prominent in the 1980s the model has a rich developmental path originating in the 1930s (Wiggins & Trapnell, 1997). The 'Big Five' originated from the work of Galton (1884), who identified 1000 personality descriptors from a dictionary (John, Angleitner & Ostendorf, 1988). Baumgarten undertook a similar study in 1933, but made use of German publications. Both Galton and Baumgarten followed the lexical approach, which is based on the notion that the most significant individual differences and socially important events will eventually be encoded as terms in natural language. In 1934 Thurstone referred to a study where a list of 60 trait adjectives were qualitatively described and stated that he had identified five common factors that could be used to categorise these trait adjectives/descriptives. He attempted to create multivariate models to portray personality structures, resulting in the creation of clusters within personality assessment developments. The method used in this study was supported by Allport and Odbert (1936, p. 33) who were greatly influenced by Galton (1884) and Baumgarten (1933) in the sense that they stated:

Theoretically it would be possible to apply this ingenious method to a complete list of trait-names … The investigator might then declare that … such trait-names are roughly synonymous and that only one of them needs to be retained … The trait-names would be grouped, and only a single representative would be saved for each group.

Cattell (1943) evaluated this statement and reduced the Allport-Odbert lexicon of approximately 4500 terms to 171 synonym groups. These groups consisted of 35 clusters and 12 primary factors, and are known as the standard reduced personality sphere and are included in current version of the 16PF (Ntuli, 2012). Fiske (1949) investigated the selection of psychologists and repeatedly found that only five factors accounted for the variance in personality trait descriptors (Tupes & Christal, 1961). Norman (1963) followed the work by Tupes and Christal (1961) and developed the paradigm for personality structure that is currently still used (Costa & McCrae, 1992a; Goldberg, 1992; Ntuli, 2012). Although many researchers have criticised and challenged the 'Big Five' theory (Angleitner, 1992; Block, 2010; Boyle, 2008; D'Andrade, 1965; Eysenck, 1992; McAdams & Pals, 2006; Mischel, 1968; Ullmann & Krasner, 1975; Wegner & Vallacher, 1977; Zuckerman, 1992) it has remained largely unchanged and continues to be extremely popular (Horak, 2013; Pace, 2008).

As taxonomies have expanded researchers have increasingly acknowledged that although the 'Big Five' model is a sound model for measuring personality in a Western context it has shown unsatisfactory results when applied in non-Western contexts (Cheung, Van de Vijver, & Leong, 2011). Given the unsuitability of the 'Big Five' taxonomy for cross-cultural application, researchers have now started to investigate suitable options for applying universally sound personality assessment instruments. This is discussed in the section below.

2.4   CROSS-CULTURAL PERSONALITY ASSESSMENT

2.4.1   INTRODUCTION

Personality tests began by exploring characteristics of the self and then broadened to analysing social identity (Barenbaum & Winter, 2008; Triandis, 1997). Social identity examines how people within the same social setting (culture) perceive each other as well as how this perception influences the assessed behaviour and ultimately personality. The study of the effect of culture on personality has long fascinated researchers (Honigman, 1959; Hsu, 1959; Valchev et al., 2012). This section discusses personality from a cross-cultural perspective and introduces concepts such as the lexical approach and the emic-etic approach (both of which are important approaches within the cross-cultural field). The discussion aims to create awareness of testing concerns and focus on the South African context.

Research on culture suggests that three different forms of psychology are available, usually labelled indigenous, cultural and cross-cultural psychology (Church, 2001; Taylor, N., 2008). Indigenous psychology focuses on the personality aspects of a certain culture and is also referred to as an emic approach (Taylor,N., 2008). Cultural psychology concentrates on the self within the culture, including behaviour and traits. According to Markus and Kitayama (1998, p. 67), "a cultural psychological perspective implies that there is no person without culture; there is only a biological entity". During the 1950s researchers focused on cross-cultural personality testing (McCrae, 2001), which is concerned with identifying the personality structures commonly seen within cultures and then generalising and replicating these personality structures within other cultures (Cheung, Leung, Fan, Song, Zhang, & Zhang, 1996; Valchev, 2012). Meiring (2007) identified several key characteristics within cross-cultural psychology, namely a) the comparison of multiple cultures, in search of universal components; b) perceiving culture as an external variable of the individual, enabling the prediction of behaviour; c) the "use of traditional and relatively context-free psychometric scales and questionnaires" (p. 12); d) paying attention to the cross-cultural equivalence of constructs and measures; and e) concentrating on individual differences. Simply stated, cross-cultural psychology involves comparing common personalities across cultures and reporting the findings on similarities and differences. According to Cheung and Cheung (2003) and Van de Vijver and Leung (2001), cross-cultural studies on personality suggest that personality traits manifest differences and similarities across cultural groups.

2.4.2 CONCERNS FOR IMPORTED ASSESSMENTS BASED ON THE FIVE FACTOR TAXONOMY

In the twentieth century anthropologists aimed to identify cultural patterns that shaped personality and placed strong emphasis on the social aspect of a person's behaviour (Mayer & Korogodsky, 2011; Valchev, 2012). As an assessment tool, the Five Factor Model of personality concentrates on determining individual differences and has delivered unsatisfactory results when applied cross-culturally (Church, 2001; Gurven, von Rueden, Massenkoff, Kaplan, & Lero Vie, 2012; Laher, 2011; Markus & Kitayama, 1998; McAdams, 1992, 1997; McCrae & Costa, 2008; Meiring, 2007; Murphy & Davidshofer, 2005; Salgado, Moscoso, & Lado, 2003; Swanson, 2007; Yang & Bond, 1990). (For example, Heaven, Connors and Stones (1994) administered the 16PF to a sample of Black South Africans and found a total misrepresentation of the Five Factor Model (Wiggins & Trapnell, 1997). However, the model was retrieved in a sample of White Afrikaans speaking South Africans (Heaven & Pretorious, 1998) indicating unfair testing practices. According to Laher (2011), when applying the CPAI-2 and NEO-PI-R to South Africans item bias was found across gender, population group, and home language. These findings suggest that the 'Big Five' might not be universally relevant or completely transferable and that some of the factors may change or fall away completely as tests are developed for specific cultural contexts (Grobler, 2014; Gurven et al., 2012; Laher, 2011; Markus & Kitayama, 1998; McAdams, 1992, 1997; McCrae & Costa, 2008; Meiring, 2007; Murphy & Davidshofer, 2005; Salgado et al., 2003; Swanson, 2007; Yang & Bond, 1990).

Similar cross-cultural challenges were experienced in the Philippines (Katigbak, Church, & Akamine, 1996), Italy (Di Blas & Forzi, 1999) and China. The challenges experienced in China resulted in the development of the Chinese Personality Assessment Inventory (CPAI), an indigenous personality assessment (Cheung et al., 1996). The promulgation of stricter legislation concerning psychological assessment in South Africa (Employment Equity Act No. 47 of 2013) and the results obtained from the CPAI studies intrigued South African researchers to the point where similar cross-cultural studies were planned which resulted in the launch of the SAPI project in 2005 (Horak, 2013; Meiring, 2007). The SAPI project aimed to use the combined etic-emic approach to uncover the universal personality constructs as well as the unique cultural specific aspects of personality found in South

Africa (Hill, Nel, Van de Vijver, Meiring, Valchev, Adams, 2013; Nel, 2008). The emic-etic approach is discussed in the next section.

2.4.3   CROSS-CULTURAL APPROACHES

Cheung et al. (2011) identified three approaches in relation to the exploration of cross-cultural personality. These approaches are referred to as the etic, emic and the combined etic-emic approaches. According to Grobler (2014), the terms etic and emic originated in 1954 and were introduced by a linguist who argued that behavioural linguistic tools could be adapted to also describe any human social behaviour (Berry, Poortinga, Segall, & Dassen, 2002). Pike (1954) used the linguistic terms *phonetic* and *phonemic* to label the etic and emic approaches, and did so to avoid "philosophic issues about the nature of objectivity" (Grobler, 2014, p. 34).

The etic approach aims to examine external cultures (as opposed to the researcher's own culture) and considers the universality of a personality instrument (Berry et al., 2002). It is also concerned with establishing how comparable western personality models are in terms of cross-cultural personality structures (Cheung et al., 2011; Taylor, N., 2008). In contrast, the emic approach focuses on the collective and investigates how members of a culture allocate meaning (Berry et al., 2002; Cheung et al., 2011; Van de Vijver & Leung, 2001). The emic approach is also referred to as an indigenous approach and was initially developed as a result of inadequate results obtained when western models were applied in other non-western cultures (Cheung, 2004).

Cheung et al. (2011) made use of the combined etic-emic approach, which is concerned with creating a personality construct by reaching a balance between using a universal structure (etic approach) and combining this structure with rich contextual and cultural personality descriptions (emic approach). Cheung et al. (2011, p. 2) defined the etic-emic approach as a combination of the "methodological rigor of the etic approach and the cultural sensitivity of the emic approach". The emic-etic approach is executed by gathering culturally relevant and linguistically appropriate items to identify cross-culturally universal (etic) as well as culturally unique (emic) dimensions (Berry, 2000; Cheung, 2009; Cheung et al., 2011; Triandis, 2000).

According to Berry et al. (2002) cross-cultural psychology has three goals, which are represented by the three approaches. The first goal of cross-cultural psychology is to "transport and test" (Berry et al., 2002, p. 3). In order to achieve this goal western modeled instruments are tested in other cultures to determine their generalisability, transferability and construct validity. This process is etic in nature and most commonly includes the Five Factor Model. The second goal is to "explore other cultures in order to discover psychological variations that are not present in one's own limited cultural experience" (Berry et al., 2002, p. 3). This goal relates to the etic approach, which serves to explore in-depth cultural phenomena. It is during this stage that the lexical approach is used as this approach aims to uncover local constructs. The third goal of cross-cultural psychology is to combine the first two goals to achieve a universally appropriate measure that can be applied across different cultures in a valid manner.

Nel et al. (2012) also recommended that the combined etic-emic approach be used as the advantages and disadvantages of both the emic and etic approaches are combined in this approach. For example, an advantage of the etic approach is that it identifies commonalities. In contrast, a disadvantage is that the researcher might overlook unique cultural aspects due to focusing on these commonalities. An advantage of the emic approach is its high concentration on all unique aspects of a specific culture; however, in so doing it may overlook similarities across cultures (Nel et al., 2012). Therefore by combining the two approaches the researcher insures that nothing is missed.

Both Cheung et al. (2011) and Nel et al. (2012) recommended the use of an emic-etic approach as this approach inspires a more comprehensive theory of a universal personality, which connects indigenous and mainstream psychology. The larger aim of the emic-etic approach is to ultimately define the universal and cultural focus points of psychological constructs (Hill et al., 2013). According to Morris, Leung, Ames and Lickel (1999) the combination of the emic-etic approach could advance knowledge.

According to Saucier and Goldberg (2001) the lexical approach is a good method to use when applying the etic-emic principle. This approach is used as a method of identifying personality dimensions and has been used by researchers such as Galton and

Baumgarten (see John et al., 1988). Cheung et al., (1996) also used this approach in the development of the CPAI. The lexical approach is based on the notion that significant individual differences and socially important events will eventually be encoded as terms in natural language. The lexical approach is founded on the assumption that noticeable individual differences are embedded in language (Allport, 1966; Benet-Martínez & Oishi, 2008; Goldberg, 1981; Lee & Ashton, 2008). This assumption has been confirmed by various researchers as well as by the philosopher Nietzsche (Benes, 2006), who believed that language reflects and shapes the cognitive structures of its speakers. According to Franklin (2009) language largely reflects culture and people process meaning from their culture (Geertz, 1975; Herbert, 1992; Marcus & Fischer, 1986). In addition, Slabbert and Finlayson (1998) claimed that language also has a symbolic value as it is seen as the means through which the values of the individual and the group are expressed.

The lexical approach usually involves examining a dictionary of a given language and gathering descriptives of everyday personality. This is followed by interviews with locals, were the researcher asks them to rate themselves and their peers on these personality descriptives (Cheung et al., 2011). The data is then analysed by means of factor analysis and the most relevant factors/constructs for that culture are determined and compared with the western structures to indicate cross-cultural similarities and differences (Ashton & Lee, 2005). This approach is based on the assumption that a cultural (emic) structure is formed as a result of repeated social interactions and that this structure is in turn reliant on language for the formation and communication of acceptable behaviour and the establishment of the rules that govern that culture. Due to the specific context that governs the culture, culture specific terms exists to communicate contextually on a daily basis.

According to Foxcroft and Roodt (2009), the variety of cultures in South Africa creates a very complex predicament for test developers and assessment practitioners. Therefore special attention must be given to the development of assessment tools in order to ensure that accurate tools are created. The next section discusses the way in which social settings influence personality testing in South Africa.

2.5   PERSONALITY TESTS IN SOUTH AFRICA

2.5.1   INTRODUCTION

Psychological testing in South Africa is influenced by numerous factors, including diversity, development, language and culture. It is therefore clear that understanding the history of psychological testing (specifically personality testing) in South Africa could provide insight into the challenges relating to testing in this diverse context. This section provides a brief timeline of the development of psychological testing in South Africa with a specific focus on personality testing.

According to Foxcroft and Roodt (2009) psychological testing was established in South Africa in the 1820s as part of British colonization (Claassen, 1997; Meiring, 2007). Psychological testing in South Africa subsequently followed international trends, specifically during most of the twentieth century where psychological testing in South Africa was standardised only for the white population (Foxcroft, 1997; Huysamen, 2002; Horak, 2013). Psychological testing was used politically to prove the intellectual superiority of the white group over other racial groups, especially the Bantu and Indian groups (Foxcroft & Roodt, 2009). The observed differences in scores were most likely the resultof the language gap between the test takers and the language of the imported tests (Abrahams & Mauer 1999; Claassen, 1997).

Between 1960 and 1984 research concerning fair practices, equivalence and bias with regards to personality testing was non-existent (Claassen, 1997). Since the end of the apartheid era, research concerning the fairness as well as the ethical consequences of using psychological tests in the multi-cultural South African setting has became popular and tests such as the 16PF (Meiring, 2007) have been investigated (Horak, 2013).

In 1943 Simon Biesheuvel noted that environmental variables such as education, culture, income and language all influenced score differences between Black and White South Africans. This initial observation initiated a debate that continued for over six decades (Biesheuvel, 1943). In South Africa psychological tests were first adapted for English and Afrikaans speaking groups and later expanded to include the African languages (Meiring,

2007). After 1960 the focus of assessments shifted to empowering the Black population of South Africa. The outcome was linked to a growth spurt in the manufacturing and mining industries, as Black people could now be placed as semi-skilled workers within these industries (Meiring, 2007). Researchers such as Fick (1929) and Taylor and Radford (1986) clearly identified that unethical assessment procedures took place. However, despite these observations these trends continued into subsequent eras of psychological testing (Foxcroft & Roodt, 2009). In 1973 the Human Sciences Research Council (HSRC) was the only test provider/ distributor in South Africa. Between 1980 and 1995 the HSRC adapted, standardised, and/or developed various assessments for use in South Africa, including the South African Personality Questionnaire (SAPQ), the 16 Personality Factor Questionnaire and the High School Personality Questionnaire (HSPQ) (Laher, 2012).

Since 1994, with the inception of South Africa's first democratic government and the implementation of equity laws, psychological assessments have experienced a great deal of critique (Grobler, 2014). School testing, usefulness of results, and assessment practices have all been queried. This is in large part due to South Africa's assessment history, as most personality assessments used in South Africa were imported from western countries. These imported tests (such as the 16PF, 15FQ+, NEO-PI-R, Jung Personality Inventory, Myers-Briggs Type Indicator and OPQ) were brought in from Europe and the USA and this importing of tests is a clear example of the etic approach (Grobler, 2014). Imported tests are often not evaluated in terms of their reliability, validity, bias, and applicability within the multi-lingual and multi-cultural South African context (Meiring, 2007).

Although the majority of tests used in South Africa are imported, two indigenous assessment instruments were created, namely the South African Personality Questionnaire (SAPQ) (Steyn, 1974; Taylor, N., 2008) and the basic Traits Inventory (BTI) (Taylor & De Bruin, 2006). "The SAPQ is a 150-item instrument, available in English and Afrikaans, and only applicable to white South Africans with 12 or more years of formal education … [Hence,] the distribution of the SAPQ has since been discontinued" (Grobler, 2014, p. 65). The NEO-PI-R is another example of an inadequate test that was previously used in South Africa. It is inadequate because it has been deemed to be factorially non-equivalent for the Black groups in South Africa. Even highly regarded personality tests such as Cattell's 16PF have shown little construct equivalence across the different cultural

groups found in South Africa (Horak, 2013; Ntuli, 2012; Prinsloo & Ebersöhn, 2002). Ntuli (2012) speculated that the failure of the tests listed above within the South African context is due to the lack of an emic approach. Although many tests have been deemed unfit for use within the South African context, the Basic Trait Inventory (BTI) has shown significant results for both Black and White groups using a five-factor taxonomy (De Bruin, Schepers, & Taylor, 2005; Ramsay, Taylor, De Bruin, & Meiring, 2008; Taylor & De Bruin, 2005).

According to Vogt and Laher (2009) the Five Factor Model has not been well replicated within the South African context, as can be seen by the results presented above in relation to the NEO-PI-R, SAPQ and 16PF. One of the major concerns in relation to these tests is that differences in scores occur among the different racial groups. For example, Black South Africans obtain lower scores for Openness to Experience than their Indian and White counterparts. In addition, White South Africans score higher on Extraversion and Agreeableness than their counterparts from other racial groups (Heuchert, Parker, Stumpf, & Myberg, 2000).

In 2003 the HSRC relinquished their role as tests distributor and initiated a tender process that allowed private organisations to distribute psychological tests (Laher, 2012). Consequentially the onus shifted to test-developers to consider culture and language in order to develop appropriate personality measures for the South African context (Heaven & Pretorious, 1998). Test developers face several challenges within the South African context (Ntuli, 2012), including the multi-culturalism and diversity of languages, a lack of quality test developers in South Africa, and the high cost implications of creating a personality test that meets the standards set forth in legislation (Nakani, Marais, & De Bruin, 2010). As a result of these complications South Africa has mainly made use of imported assessments (Foxcroft, Paterson, Le Roux, & Herbst, 2004) based on universal properties. Using imported tests in South Africa is potentially harmful because the majority of imported tests are not suited to the personality constructs and languages found in South Africa, leading to biased results and erroneous judgements (Cheung et al., 2008; Foxcroft, 1997; Horak, 2013; Van de Vijver, 2002). As a result of incorrect judgments made based on biased results psychological assessments are perceived fairly negatively and people often resist psychological testing (Foxcroft, 1997; Paterson & Uys, 2005). Foxcroft (2004)

found that cultural appropriate assessments are limited in South Africa and South African psychologists therefore need to focus on cross-cultural issues (Meiring, 2007).

Personality tests were once considered to be 'apartheid instruments' (Grobler, 2014). However, over the last decade personality assessments and personality research have become more appreciated in society due to their potential beneficial contribution (Meiring, Van de Vijver, Rothmann, & Barrick, 2005; Taylor, I. A., 2000; Visser & Viviers, 2010). By examining the history of assessments researchers can learn from this history and improve on imperfections. Current developments include the creation of the South African Personality Inventory (SAPI) (Nel et al., 2012), which is discussed in detail in the following section.

2.6 THE DEVELOPMENT OF THE SOUTH AFRICAN PERSONALITY INVENTORY

2.6.1 INTRODUCTION

South Africa is an extremely diverse country, containing many different cultures. This has resulted in the promulgation of legislation governing the design of personality tests in South Africa. The Employee Equity Act (No. 47 of 2013) highlighted the need for fair and equitable testing instruments for the South African population. The Act also encourages a specific focus on overcoming the obstacles posed by factors such as culture, language and race (Hill et al, 2013). The stipulations of the Employee Equity Act (No. 47 of 2013) are mostly viewed in a positive light, as they result in the improvement of reputation and use of personality assessments in South Africa (Horak, 2013; Meiring, 2007). Meiring (2007) investigated the structure of personality within South Africa by administering three different personality instruments to a sample of individuals from the South African Police Service. The results of his study indicated poor structural equivalence[2] and suggested the necessity of studying South African personalities from the ground up (Meiring, Van de Vijver, & Rothman, 2006; Prinsloo & Ebersöhn, 2002). In order to study personality in this manner an inventory of traits uniquely present in South African citizens needed to be

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[2] Structural equivalence is found when the assessment instrument measures the same constructs in all cultural groups (Meiring, 2007)

developed. This need resulted in the creation of the SAPI project. The SAPI was developed with the dual purpose of adhering to the new legislation as set forth in the Employee Equity Act (No. 55 of 1998) (Nel, 2008; Nel et al., 2012) (recently amended as No. 47 of 2013) and ensuring that personality instruments in South Africa truly measure South African personalities (Valchev et al., 2011).

As the development of the SAPI was motivated by the desire to study personality in South Africa the instrument was not based on the Five Factor Model but instead on qualitative studies. SAPI researchers questioned the applicability of the Five Factor Model to non-western cultures (Ntuli, 2012). The Five Factor Model is based around five constructs (Extraversion/Surgency; Neuroticism/Emotional Stability; Openness/Culture; Agreeableness; Conscientiousness) (Laher, 2011, Valchev, 2012), whereas nine constructs were identified in the development of the SAPI (Extraversion, Soft-Heartedness, Conscientiousness, Emotional Stability, Intellect, Openness, Integrity, Relationship Harmony, and Facilitating), with only the first six labels appearing to be related to the Five Factor Model. The remaining SAPI clusters (Soft-Heartedness, Integrity, Relationship Harmony and Facilitating) appear to be unique to the SAPI although they may contain some elements of the Big Five's Agreeableness factor (Hill et al., 2013).

2.6.2   ITEM DEVELOPMENT FOR THE SAPI

2.6.2.1   *South African Personality Inventory*

The SAPI project aims to develop an indigenous personality measure that is psychometrically sound and applicable to all 11 official languages in South Africa. This project was initiated nine years ago (2005) to address the deficiencies in current personality testing in South Africa. This project was initiated using everyday conceptualisations of personality as found in the South African Language groups. The SAPI project follows a combined emic-etic approach and aims to develop an indigenous personality structure.

The SAPI project consists of two stages. The first stage was broadly conceptual and attempted to unravel the implicit personality structure reflected in natural language by speakers of all 11 official languages in South Africa. The second stage of the study focuses on the quantitative exploration and the development of an experimental inventory

that includes the process of item development, scale development and ultimately the empirical validation of the preliminary personality inventory.

2.6.2.2   *Development of the SAPI*

The first stage is also referred to as the qualitative stage. During this stage researchers used a comparative research design to interview 1 216 South African citizens regarding everyday perceptions of personality in order to develop a model of the South African personality structure (Nel, 2008; Valchev et al., 2011).

Convenience and quota sampling were used to ensure representativeness in terms of the gender, age, education and rural residence of participants. The target population included Whites, Coloureds, Indians and Africans (Nel et al., 2012). The interviews conducted during the qualitative stage were based on the emic approach to studying personality and were designed to identify the ways in which participants within a specific culture would describe others. Participants were asked to describe themselves, another person different from him or herself, a parent, a grandparent, a person from another ethnic group, a friend, a child (or a sibling), a neighbour, a teacher he or she liked, and a teacher he or she did not like (Nel et al., 2012). Fieldworkers conducted the interviews using tape recorders and then transcribed the recordings on an answer sheet (Nel, 2008). The fieldworkers were native speakers of the language of the target group. The results of the interviews were captured on Excel spreadsheets and translated into English. Language experts checked the accuracy and corrected the translations where necessary. A total of 53 139 descriptive personality terms were identified.The descriptives obtained from the interview data were compared across languages to examine the effect that the different languages have on the personality-descriptive labels and identify common and language specific aspects (Nel, 2008; Nel et al., 2012). Content analysis was performed to identify unique traits (specific to certain languages) and common traits (shared by most or all languages).

2.6.2.3   Categorising, defining and development of items

Content representative responses were extracted and definitions for the various facets were developed. According to Hill et al. (2013), in order to extract content representative responses the original responses were grouped according to language and the responses from the 11 languages were then grouped as they related to various sub-clusters. The facets were then clustered in each sub-cluster as the various language groups presented them. The original responses were then examined by facet and only the responses that represented the facets were retained to serve as content representative responses. These content representative responses were used to develop the construct maps of the SAPI (Hill et al., 2013). These facets were then further clustered, resulting in the identification of nine overall personality clusters namely, which were labelled Extraversion, Soft-heartedness, Conscientiousness, Emotional Stability, Intellect, Openness, Integrity, Relationship Harmony, and Facilitating (see Hill et al., 2013, for definitions of the nine SAPI clusters). The personality structure that was derived consisted of a three-tier (hierarchical) structure with "nine clusters at the top, 37 sub-clusters (between two to six sub-clusters per cluster), and 190 personality facets at the lowest level" (Hill et al., 2013, p. 2).
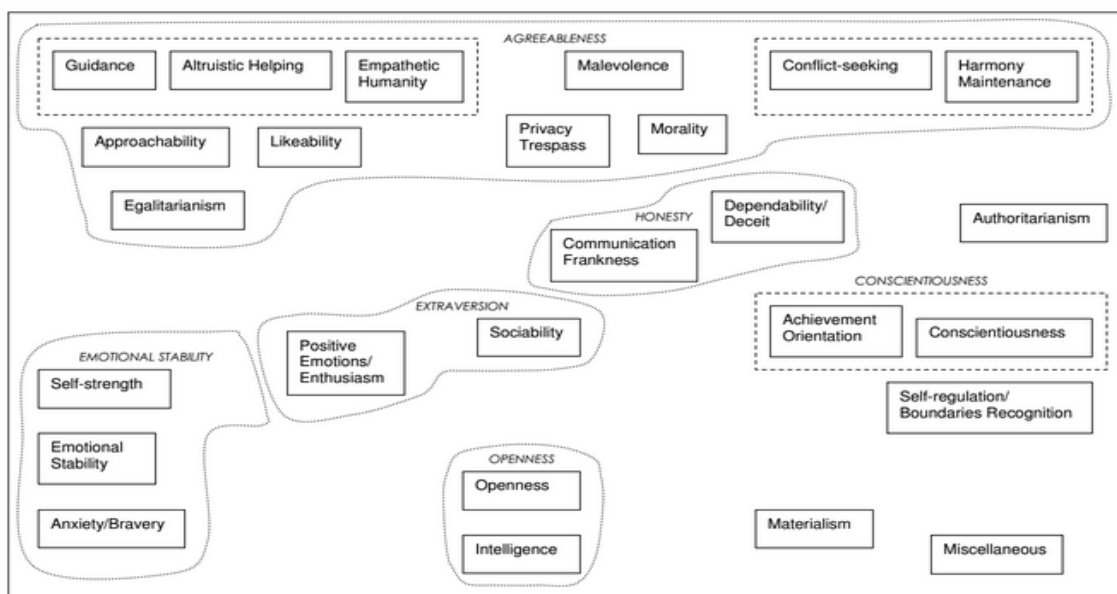
Figure 2.1 **Schematic representation of the possible semantic interrelations of the 26 clusters of personality-descriptive terms**

Source: Valchev V.H., van de Vijver, F.J.R., Nel, J.A., Rothmann, S., Meiring, D., & de Bruin, G.P. (2011). Implicit Personality conceptions of the Nguni cultural linguistic groups of South Africa. *Cross-Cultural Research*, p. 39, doi: 10.1177/1069397111402462.

Item stems were generated based on the facets' definitions as well as the content representative responses. According to Nel et al. (2012), following the refinement of the item stems, categorical clustering of the personality descriptive terms took place through the evaluation of semantic relationships.

Table 2.3: Stages of developing item stems.

Cluster	Sub-cluster	Facet	Original Response	Content-representing response	Item stem
Intellect	Social Intellect	Perceptive	She could easily see when you had a problem (Zulu)	See when someone has a problem	Being observant
Relationship Harmony	Approachability	Accommodating	Addresses us in English so we could understand (Xhosa response)	Addresses us in English so we could understand	Addressing others in mutually understandable language

Source: Hill, C., Nel, J.A., Van de Vijver, F.J.R, Meiring, D., Valchev, V., Adams, B.G. & De Bruin, G.P. (2013). Developing and testing items for the South African Personality Inventory. *SA Journal of Industrial Psychology/SA TydskrifvirBedryfsielkunde*, *39*(1), Art.#1122, p. 4. DOI: http://dx.doi.org/10.4102/ sajip.v39i1.1122.

The authors of the SAPI then used the item stems to create items for the questionnaire. The first part of this process involved rephrasing the item stems into items, focusing largely on the lexical approach (Hill et al., 2013). According to Hill et al. (2013, p. 5) the following considerations were used when converting item stems to items:

1. Items had to be short, simple and clear.
2. Items were written in the first person, starting with 'I' followed by concrete behaviours, objects and contexts.

3. Negatives should not be used in the main parts of items.

4. Items that described a single activity or habit were avoided.

5. Temporal qualifiers like often, always and sometimes were avoided.

6. Items had to be formulated in the direction of the construct.

7. Double-barreled items were not allowed.

8. Items had to refer to concrete behaviours and not beliefs, values or orientations.

9. Psychological trait terms had to be avoided.

10. Items should not use idioms and expressions or sayings in order to avoid confusion.

11. Items had to be written in English so that they could be translated.

The original dataset included more than 50 000 utterances across 11 languages that all needed to be evaluated and formed into items. Some of the personality facets identified were either common to all 11 languages, or specific to some languages or only one language. Before reaching the initial total of 2 573 items, a few challenges in the construction and refinement of these items were encountered and the following steps were taken to refine the items (Hill et al., 2013):

1. Offensive or culture-specific items were eliminated.

2. Vague or abstract items were either eliminated or revised by contextualising the item.

3. Items should not include idiomatic expressions and were thus eliminated.

During the item development stage, the items that were developed were compared to the original responses received from the qualitative data. This was done to ensure that the essence of the original response was found in the items and the item was relevant to the original response (Hill et al., 2013). The procedure was followed with all nine clusters with the aim of developing a personality inventory that can be used across all the cultural and language groups in South Africa.

2.6.2.4   *Item Reduction*

Once the item development process was completed the number of items needed to be reduced in order to construct an experimental questionnaire that covered the different clusters and facets. Language experts were consulted during a workshop to advise the SAPI team on the items in the pool. The language experts received instructions prompting them to check that all the items were understandable, meaningful, translatable and culturally appropriate. The items that were not translated correctly or that could not be translated were removed from the item pool, which resulted in a total of 1583 remaining items.

Pilot studies were then conducted on each cluster. In addition, statistical analysis and equations were applied by means of hierarchical factor analysis in order to reduce the number of items (Chrystal, 2012; Labuschagne, 2010; Lotter, 2010; Oosthuizen, 2011; Van der Linde, 2011). The exclusion criteria employed during this stage of item reduction was to remove the items with extreme mean values and low loadings (De Bruin, 2009). Other psychometric considerations utilised to decide which items to retain included item total correlations, item loadings in factor analysis and substantive considerations including item formulation, content coverage and content overlap.

This stage of the SAPI project was termed the 'item culling process' and resulted in a total of 606 remaining items. A second workshop was then held with the language experts, who were instructed to remove all idiomatic expressions as well as all complex statements. This resulted in a total of 416 remaining items. The SAPI team then held another workshop and further reduced the items by removing long items (10 words and more), which resulted in 315 remaining items. The SAPI team reconvened and decided that, as far as possible, items with abstract traits (e.g. items starting with "I am") would be removed. This resulted in the final item pool of 262 items.

2.6.2.5   *Recent developments of the SAPI*

Recent scale validity studies showed that the factor structure of specific scales (Emotional Stability scale, Conscientiousness scale, Openness Scale) has remained consistent (Chrystal, 2012; Cohen, 2013; Horak, 2012; Ntuli, 2012). Prinsloo's (2013) study showed that the factor structure for all the SAPI scales remained consistent. Recently the factor

structure of the 262 items was explored (Valchev, Meiring, Van de Vijver, Nel, Hill, 2014). The 262 items were administered to 1 155 participants including both students and the general population. Exploratory Factor Analysis was conducted per cluster and items with the loading of <.30 or <.40 were removed. A total of 156 items remained. This analysis resulted in the identification of 18 empirical scales. These scales represent the lower level constructs of the personality model. These 18 scales were subjected to factor analysis and six factors were identified, namely Social Relational Positive, Social Relational Negative, Extraversion, Conscientiousness, Neuroticism and Intellect/ Openness. Valchev et al. (2014) conducted further analysis that involved Exploratory Factor Analysis and reliability analysis. This study was conducted to ensure that the items are psychometrically sound. The study resulted in a final item pool of 158 items, which includes 12 social desirability items.

The shortened SAPI version should preferably be used for future research to ensure that the most recent and empirical data is used to further the SAPI project. Future research should also consider the findings from this study, specifically focusing on the item sequencing, which is discussed in the following section.

2.7   ITEM FORMATTING IN PERSONALITY QUESTIONNAIRES

2.7.1   INTRODUCTION

As previously mentioned (see section 2.2) the 1950s and 1960s were marked by the development of numerous new personality inventories as well as by controversy regarding these inventories. One of the areas of controversy concerned the response style used in these inventories (Christie & Lindauer, 1963; Edwards, 1957; Jackson & Messick, 1958) as it was found that the design influenced the validity of the personality assessment's outcome (McAdams, 1997).

Babbitt and Nylstrom (1989) recommended that researchers should pay more attention to the order of a questionnaire's items. According to these authors selecting question-forms is a function of the content of the questionnaire items and requires knowledge of types of questionnaire items and scaling techniques. Foxcroft and Roodt (2009) agreed with

Babbitt and Nylstrom (1989) and also suggested that researchers should focus on questionnaire items. In particularly, it is important that the choice of the item format be related to the overall construct the researcher is measuring. The manual of any assessment tool usually includes a section concerning the sequence of the items. This should form part of the process of creating a questionnaire. Düzel and Heinze (2002) found that the two major designs available in tests are blocked designs or random-mixed designs. In blocked designs, related items are listed in separate lists. In random-mixed designs the items are intermixed in a single list.

Personality assessment results are presently still affected by the item order utilised within personality inventories, which lead to the main question of the study at hand, which was eloquently phrased by McAdams (1997, p. 16) as "do these scales [item orders] assess the content variables they claim to assess or do they instead tap general test-taking styles [item orders] that cut across a wide variety of content domains?" The item formatting section examines the sequencing order of the 262 items of the SAPI to identify the most appropriate fit with regards to the structural construct validity of the SAPI. A comparison is made between the random item order and block item order, considering the advantages and disadvantages of each format which is discussed next.

2.7.2   DEFINING BLOCK- AND RANDOM- ITEMING

2.7.2.1   *Block Item Order*

According to West and Finch (1997), items within a personality construct are assumed to have an adequate degree of inter-correlation. Therefore, according to this assumption the items should be influenced by the underlying trait construct, resulting in a pattern formation. Franke (1997) defined item-blocking as grouping together items measuring the same dimension. Utilizing item-blocking has an effect on the outcome of this study, seeing that the pattern predicted by West and Finch (1997) might further aid candidates to manipulate their results. Some of the advantages and disadvantages of block item order are listed in Table 2.4 below.

Table 2.4. Advantages and Disadvantages of Block Items

Advantages of block item	Disadvantages of Block item
Assists autistic people in learning method (Stewart et al., 2009).	As the observed item pattern resembles the overarching construct candidates may be able to manipulate their results (West & Finch, 1997).
According to Kelly, Griffiths and Frith (2002), a dyslexic person may find random order blocks more difficult than a sequenced block.	
According to Düzel and Heinze (2002), block designs provide for a 'purer' measurement and create less sequence effects.	
According to Greenberg and Frank (1965), block order leads candidates to respond in a more consistent manner compared to randomly presented items.	

Ortner (2004) identified a German article by Rost and Hoberg (1997) that specifically looked at the difference between a) random- and b) block-item order. According to the research, classical test theory indicates that no differences were identified in the construct validity regarding factor structure between the two forms of item order. However, higher average scores were obtained by the block item format.

According to Greenberg and Frank (1965), block order leads candidates to respond in a more consistent manner than if items are presented randomly. This finding was substantiated by Calvin and Bickerton (2000) who claimed that the brain always tries to predict what comes next and tries to make sense of things. Candidates will try to answer all questions, even if they do not understand a specific question, and they are therefore likely to refer back to previous questions to gather more information to try and make sense of the question (Weinberger, Darkes, Del Boca, Greenbaum, & Goldman, 2006). Making use of block order may improve comfort and reduce anxiety (Revuelta, Ximinez, & Olea, 2003), which leads to increased concentration and ultimately more accurate results. Even when items are not presented in block order (most personality inventories are in random order) it is arguable that the exposure to one factor creates an expectation that a similar question will follow later in the questionnaire. This could create bias based on the item

characteristics, which will negatively affect the results as the candidate may answer a certain question with another context in mind (Weinberger et al., 2006).

According to Shriesheim and DeNisi (1980) block grouping was used by industrial and organisational psychology researchers to build trust and openness in the research process. In addition, personally aimed items are often placed at the end of the questionnaire. This is done based on the assumption that the test-taker feels more relaxed at the end of the process and is also more comfortable with the administrator (Perreault, 1975).

A study conducted with autistic people regarding which format would assist their learning methods found that superior results were obtained when block design was used. The article also stated that block design was useful due to the fact that it enhances logical processing (Stewart, Watson, Allock, & Yaqoob, 2009). According to Kelly, Griffiths and Frith (2002), a dyslexic person may find random order more difficult than block order. Block item order could, however, lead to boredom for some people (Tuckman, 1972). Although block order can assist people with disabilities, the SAPI is mostly targeted at the average person. It is clear that the sequence of items in a questionnaire is very important and Perreault, (1975) notes that questionnaire items should stimulate interest to persuade cooperation and completion of a questionnaire.

Düzel and Heinze (2002) oppose that sequence change mid-questionnaire, whether random-mixed to block or random-mixed to another random-mixed sequence affects the measurement of a test differently. They concluded that block designs provide for a 'purer' measurement by virtue of the fact that it creates less sequence effects, where an item is selected because of the immediately preceding item (Düzel & Heinze, 2002).

2.7.2.2   Random Item Order

According to Ortner (2004, p.467), "in the construction of questionnaires, items are normally presented from a mix of the scales in a random order" and this is referred to as random item order. Researchers use random order in questionnaires in order to reduce

manipulation within tests (Ortner, 2004). Table 2.5 below summarises the key advantages and disadvantages of random item order.

Table 2.5. Advantages and Disadvantages of Random Items

Advantages of random item	Disadvantages of Random item sequence.
Random items prevent subjects from forming strategies to retrieve answers when presented with lists (Düzel & Heinze, 2002).	Random-mixed design implies that the item selected by the respondent is directly affected by the sequence of the immediately preceding items (Düzel & Heinze, 2002)
	A dyslexic person may find random order blocks more difficult than a sequenced block (Kelly et al., 2002)

Baehr (1953), Schriesheim and DeNisi (1980), Schriesheim (1981), Schriesheim, Soloman and Kopelman (1989) all investigated the effects of item grouping and could not find significant differences between item blocking and randomization.

Franke (1997) identified a German article written by Krampen, Hense and Schneider (1992) that investigated the effects of item blocking and randomization on a German personality inventory. This study found that item blocking influenced mean values and ultimately affected the validity and the reliability of the questionnaire. Additionally, while researching Beck's Depression Inventory (BDI) researchers discovered two main biases, namely favourability responding (placing oneself in an unusually desirable state to avoid appearing in a perceived negative light) and acquiescence responding (responding in the expected manner) (Dahlstrom, Brooks, & Peterson, 1990). Considering these two manipulation styles, these researchers found that random order increases the likelihood that the respondent will actually read the items before answering in order to be able to apply one of the above biases; whereas block item order will be easier to manipulate, as a construct can easier be identified as a clear pattern is made available. Therefore Düzel and Heinze (2002) maintained that random items are favoured over blocked items because random items prevent subjects from forming strategies to retrieve answers when presented with lists. Dahlstrom, Brooks, & Peterson (1990) further hypothesised that if random order reports a more realistic depiction of the person's status, then the subjects

should select a wider range of scores on the instrument than on the original (which was arranged in block order from least to most pathological). However this study focused on the order of the response format and not the order of the items. Random item order therefore forces the participant to search for the desired answer and to consider each answer.

This study focused on the difference between block- and random-item order. However, previous research has also looked at reversing positive statements into negative statements (Ortner, 2004). As Tuckman (1972) proposed that people sometimes select automatically due to boredom or disinterest. An example of this would be "I dislike taking charge" instead of "I like taking charge". Using a negatively barrelled question limits the form of response bias caused when an individual chooses the same answer automatically for each item, perhaps without reading the questionnaire or paying attention. In order to keep the interest and the concentration of the candidate high, changes regarding the item order are made – either by using a randomised design or by providing a reverse order format questionnaire (Boecker, Keil, Eiser, & Kline, 1987 as cited in Ortner, 2004) which means that two formats are created, one in the conventional order (presumably random order) and one in a format consisting of the items in a reversed order (Ortner, 2004). Ortner (2004) claimed that item reversal guards against respondents creating erroneous impressions of extremely positive or extremely negative attitudes, because responses to items written in one direction cancel out or neutralize items written in the other.

According to Stern, Smyth and Mendez (2012) numerous studies have demonstrated that even the smallest of changes in the item design of a test or survey can have a large impact on subjects' answers. This occurs due to the subject's use of questionnaire stimuli to understand and answer the items in the questionnaire. The serial position of items within a questionnaire has been shown to affect responses in areas of diverse investigations (Weinberger et al., 2006).

This section demonstrated that response sets and questionnaires can have many different structural formats. However, this study focused on random- versus block-item format in relation to the SAPI. According to Woods and Hardy (2012) analysing and examining the internal structures of a personality inventory is very important because this relates to

construct validity. The manner in which a test is constructed influences its validity and reliability Construct validity is discussed in the next section.

2.8   VALIDITY AND RELIABILITY

2.8.1   VALIDITY

It is important that personality instruments are valid as the results of personality assessments can potentially have permanent consequences for the individuals being assessed (Gatewood, Field, & Barrick, 2008). According to Trochim and Donnelly (2007, p. 56) "the most important characteristic that a measure of a construct can have is validity". These statements clearly illustrate the importance of discussing validity in the context of the current study. In addition, as one of the main objectives of this study was to establish the factorial construct validity of the SAPI, it is important that the concept of validity is understood. In the sections below validity is defined and the various forms of validity are discussed. The discussion then progresses to a more in-depth study of construct validity, discussing the different views, evaluation methods as well as threats associated with construct validity.

Due to the importance of validity it is vital that a clear definition is provided. Messick (1995, p. 741; Messick, 1989, p. 13) defined validity as "an overall evaluative judgment of the degree to which evidence and theoretical rationales support the adequacy and appropriateness of interpretations and actions on the basis of test scores". This definition emphasises the bond between construct theory and validity and supports the increasing trend towards construct validity within psychometric evaluation (American Psychological Association, 1985; Cronbach, 1989). Studies on validity are enforced by legislation in South Africa (Section 8 of the Employee Equity Act (No. 47 of 2013) This enforcement is designed to ensure that the structure of a test is similar for all the cultures, languages and genders found in South Africa. The following few paragraphs will describe the different types of validity.

Factorial validity is used to establish the validity of a latent construct. Latent constructs, also referred to as latent variables, "are research abstractions that cannot be measured

directly, variables such as beliefs and perceptions" (Gefen & Straub, 2005, p. 91). Due to the difficulty of measuring latent variables researchers attempt to measure these variables indirectly through using multiple items in a research instrument (Anderson & Gerbing, 1988; Campbell & Fiske, 1959). An example of this occurs within the Extraversion construct of the SAPI, where questions are repeated with slight differences, such as "I am a good storyteller" and "I enjoy telling funny stories".

Convergent validity and discriminant validity form part of construct validity (Straub et al., 2004). Construct validity refers to the degree to which a test assesses the construct or trait that it aimed to assess. Convergent- and discriminant-validity capture some of the aspects of goodness of fit of a measurement model. In other words, they refer to how well the items relate to the constructs. Therefore factorial validity occurs when each item significantly correlates with the one intended construct. Factorial validity is proven through construct validity in the sense that it relies on discriminant and convergent validity. Convergent validity is present when the item significantly correlates with its assumed theoretical construct, whereas discriminant validity is present when the item rejects or indicates a weak correlation with all other constructs (Gefen & Straub, 2005).

According to Gefen and Straub (2005) factorial validity and Exploratory Factor Analysis (EFA) are frequently used together. "An EFA identifies the underlying latent variables, or factors, that explain the pattern of correlation within a set of measurement items" (Gefen & Straub, 2005, p. 92). This is determined using statistical software such as SPSS, which calculates the relationships between all of the measurement items and sorts them according to their correlations with each other, thus forming a cluster. This cluster should ideally align with the researcher's theoretical framework (Gefen & Straub, 2005).

Validity is divided into three types, referred to as criterion validity (which consists of predictive and concurrent-validity), construct validity and content validity (Gatewood et al., 2008; Messick, 1994; Schlebusch & Roodt, 2008). However, since the identification of construct validity, content and criterion validity have become less popular methods of measuring validity (Landy, 1986). This study focused mainly on construct validity.

Construct validity was introduced by Meehl and Challman in the early 1950s as a by-product of criterion validity research (Strauss & Smith, 2009). Trochim and Donnelly (2007)

defined construct validity as the degree to which theoretical inferences can be applied to practical application on which a study is based. However Maree (2007) referred to construct validity in more specific terms, and defined it as how well the construct is covered by the instrument. Construct validity also measures different groups of related items (Maree, 2007). The term also refers to the degree to which a test assesses the construct or trait it was aimed to assess (Robertson, 2009). According to Haynes, Richard and Kubany (1995), construct validity explores the degree to which an assessment instrument measures the targeted construct. These definitions all point towards testing the believability of constructs and the collecting of evidence to prove the inferences made (Messick, 1995).

According to Bayoglu, Unal, Elibol, Karabulut and Innocenti (2013), reliability and construct validity should be determined prior to conducting any other validity studies. Cronbach and Meehl (1955) investigated how to determine the validity of a construct designed to assess individual differences on a psychological level. This investigation proved difficult because while the dimensions of personality exist as open concepts they cannot be openly observed (Meehl, 1977). Research conducted in the 1950s and 1960s identified ways of observing these dimensions. As a result of questions regarding the validity of the dimensions used, Cronbach and Meehl (1955) together with Loevinger (1957) created guidelines for determining construct validity in psychological research.

Trochim and Donnelly (2007) identified two opposing views with regards to construct validity, referred to as the definitionalist vs the relationalist view. The definitionalist view argues that a construct should measure what it claims to measure. For example, with the SAPI, if the researcher aims to measure the construct of Neuroticism then Neuroticism should be measured and not something else. On the other hand, the relationalist view aims to measure concepts more or less related to each other and allows for grey areas. For example, when telling the truth people may believe that if they stay silent they are not lying but are also not telling the truth. Trochim and Donnelly (2007) found that most research methodologists prefer the relationalist approach and have listed conditions for achieving construct validity based on the relationalist perspective:

- The researcher needs to define what the construct is and what it is more or less similar to in meaning. The researcher needs to have evidence of how and why the items were created to measure the specific constructs. When evidence of

validity is based on the construct, the relationship among items is considered (SIOPSA, 2005). According to Tuckman (1972), the relationship between the item and the defined construct (that needs to be measured) should be maintained.

- The researcher needs to provide evidence that the data supports the theoretical view of the relations among constructs (Messick, 1994).

It is important to note that studies regarding personality traits and the effects of these traits depend to a large extent on data that was gathered using personality inventories. Therefore, in order to ensure accurate and quality scientific findings it is vital that the construct validity of the measures is assessed (Woods & Hardy, 2012). It should be noted that researchers need to consider construct validity throughout the entire construction of a measurement instrument and that it should thus be seen as a process, not an outcome (Strauss & Smith, 2009). In addition, McAdams (1997, p. 15) claimed that the process of construct validation comes down to "hypothesis testing in science".

In the context of this study, a high degree of similarity between the results obtained from the random item questionnaire and the block item questionnaire would be preferable as this would indicate greater construct validity.

Section 8 of the Employment Equity Act (No. 47 of 2013) stipulates that testing and other similar assessments of an employee are prohibited unless (a) the test or assessment being used has been scientifically shown to be valid and reliable, and (b) methods have been created to evaluate the construct validity of the instrument. Construct validity was originally evaluated qualitatively and involved rule-based examinations of patterns of correlations against the expectations of convergent and discriminant validity (Campbell & Fiske, 1959; Trochim & Donnelly, 2007). The different construct validity evaluation methods are discussed below.

According to Trochim and Donnelly (2007), the nomological network was developed by Lee Cronbach and Paul Meehl in 1955 as part of their research on standards for psychological testing. The nomological network was intended to serve as a guide to proving the construct validity of a measure. Strauss and Smith (2009, p. 11) referred to this

as a nomothetic span and defined it as "the pattern of significant relations among measures of the same or different constructs (i.e., convergent and discriminant validity)". Nomothetic span is especially suitable for correlation studies that focus on expected relationships among trait measures of personality constructs (Strauss & Smith, 2009). However, Trochim and Donnelly (2007) found that the nomological network lacked applicability in assessing construct validity and was mainly useful as a philosophical tool.

The multitrait-multimethod matrix (MMTM) was developed in 1959 by Campbell and Fiske in an attempt to create a more practical methodology to evaluate construct validity. The MTMM is a matrix or table of correlations arranged to assist the assessment of construct validity. The MTMM combines the measurement of several traits with different assessment methods.

Cambell and Fiske (1959, pp. 82-83) used the following four criteria when assessing the MMTM:

1. The correlations between the different methods measuring the same trait had to be statistically significant.
2. The correlations found in step one should be higher than the correlations found when using different methods to measure different traits.
3. The correlations found in step one should be higher than the correlations found when using the same (one) method to measure different traits within the same row or column. Campbell and O'Connell (1982) later found that this criterion might be too strict and concluded that minor failures to meet this requirement would not lead to automatic dismissal of validity but should instead be interpreted with caution.
4. Lastly, a general pattern must be present between the different traits–method relationships.

According to West and Finch (1997), although Campbell and Fiske's (1959) MMTM approach is useful, it is burdened with multiple limitations. The first of these is that this approach assumes that the measures all have similar reliabilities and if this is not the case this could potentially lead to the failure of the above criteria. The second limitation of the MMTM approach is that the researcher chooses the methods and traits evaluated by the matrix by means of convenience and not empirically. The third limitation is that a large

number of comparisons are needed for the statistical analysis, resulting in the over-complication of quantifying and interpreting the results. Due to these limitations Marsh and Grayson (1995) recommended combining Confirmatory Factor Analysis with MMTM to simplify the analytical process.

Another method for evaluating the construct validity of a psychological instrument is pattern matching, which aims to match the practical pattern with a theoretical framework. If this approach proves to be insufficient then Structural Equation Modelling can also be used to evaluate construct validity (Strauss & Smith, 2009).

As is clear from the discussion above construct validity is very important and is vulnerable to various threats within the process of developing and evaluating a measure containing constructs. According to Cook and Campbell (1979), threats to construct validity can be divided into two categories, namely design threats and behavioural threats. Messick (1995) also identified two threats to construct validity, namely construct underrepresentation and construct irrelevant variance. Construct underrepresentation poses a threat when an assessment tool is too limited to cover the scope of a dimension whereas construct irrelevant variance occurs when an assessment tool covers too many aspects. Both of these issues seem to fall into the design threat category highlighted by Cook and Campbell (1979).

According to Cook and Campbell (1979), the first design threat is that the definition of the construct might be explained poorly. This results in confusion, unrealistic expectations of the construct being measured and false interpretations. Trochim and Donnelly (2007) suggested that the following steps be followed to avoid this issue:

- Consider the concepts thoroughly.
- Use methods to articulate the concepts; for example, concept mapping.
- Get experts to critique the operationalisation.

The second design threat is referred to as the Mono-Operation Bias (Cook & Campbell, 1979) and involves the assessment only being measured as a single version for a specific sample at a single point in time. This means that there is no way of knowing whether the construct measures what it claims to measure for a representative population. threat can

be avoided by administering the new assessment tool together with other existing (already validated) tools measuring the same constructs. If similar results are obtained then the likelihood of construct validity is relatively high. A third design threat is Mono-method bias, which is when the cause and effect variables are presented in the same way. This can also hinder the interpretation of results, due to nuisance factors resulting from 1) sample incomparability, 2) instrument characteristics, and 3) behavioural effects and communication problems. Instrument bias, which occurs when there are problems that are derived from instrument characteristics; for example, response styles, and stimulus familiarity (He & Van de Vijver, 2012; Voster, Olckers, Buys & Schaap, 2005). Using the block item order could lead to stimulus familiarity. Bias occurs when there is a discrepancy between scores from a questionnaire in which a respondent answered misguidingly about their underlying traits or abilities (Van de Vijver & Tanzer, 1997). Bias is not a characteristic of an instrument (He & Van de Vijver, 2012) but rather is implanted in the characteristics of an instrument in a specific cross-cultural comparison (Van de Vijver & Tanzer, 1997).

Behavioural threats include the participant responding in a falsely favourable manner in an attempt to manipulate the outcome of the assessment (Hogan, 1986). It is therefore important with a personality inventory to assure the participants that there are no right or wrong answers and the only aim is to learn more about the individual (Trochim & Donnelly, 2007). When addressing these issues, the following six aspects of construct validity should be considered: content, substantiations, structure, generalisability, external, and consequences (Messick, 1995, p. 16).

Cronbach and Meehl (1955, p. 283) claimed that "determining what psychological constructs account for test performance is desirable for almost any test" and insisted that construct validation should be determined for all psychological tests, including aptitude, personality, achievement and interest test. According to Schultz and Schultz (2009), construct validity is the most important form of validation in psychometrics and construct validity must be investigated when there is no content or criterion validity present within an assessment (Cronbach & Meehl,1955). Assessing the validity of a test includes the examination of the particular psychological characteristics or constructs assessed by the

test (Robertson, 2009). Therefore it is clear that construct validation is a vital part of creating a psychological measurement tool.

In this study construct validity was evaluated by comparing results obtained from a block itemed SAPI version and a randomized item SAPI version. Most research on randomized- and block-item order suggests that the two item response formats yield similar results (Schriesheim, 1981; Schriesheim, et al., 1989). This study aimed to determine whether this was the case for the SAPI, as this could indicate that the items are valid.

2.8.2   RELIABILITY

Merriam (1998, p. 284) defined reliability as "results [that] are consistent with the data collected". This definition is similar to the one provided by Netemeyer, Bearden and Sharma (2003, p. 42), who defined reliability as "...the ratio of the variance of the true score to the variance of the observed score". Reliability looks at the precision of measurement whereas validity places the selection tool in context (Gatewood et al., 2008). According to Lincoln and Guba (1985), validity cannot exist without reliability and therefore reliability must be investigated if validity is to be determined. Increasing the reliability of a measure may also increase the validity of the measure. One of the ways in which this can be done is by administering the instrument in a consistent manner (Pietersen & Maree, 2007), emphasizing the importance of standardization of an instrument. A second way of increasing reliability involves ensuring that the researcher who administers the SAPI is sufficiently trained to ensure high quality results. Finally, using structured interviews increases the reliability of assessments (Cook & Cripps, 2005). It is also important to note that reliability should be seen as a process and not a single act during analysis (Cook & Cripps, 2005). Reliability, like validity, can be divided into different types and these are defined below.

2.8.2.1   *Types of Reliability*

Reliability is commonly assessed in one of four forms, referred to as Test-retest, Internal consistency, Inter- Rater and Equivalent forms reliability:

- Test-retest reliability is the most common form of reliability testing and is commonly used for survey research. It involves a sample taking the same survey twice and comparing reliability scores from the two administrations. This form of reliability testing is not applicable to this study as the participants only completed the SAPI once.

- Internal consistency reliability shows similar results of all the items of a single instrument.

- Reliability can be measured by determining whether different assessors would come to the same conclusion about a candidate using the same measuring tool (Taylor, I, 2007). This form of reliability is known as Inter– Rater reliability and is calculated using the Cronbach Alpha statistical procedure (Roodt, 2008). The Cronbach alpha coefficient is concerned with the inter-relatedness, or the variance that is common among the items

- Equivalent forms reliability "is the extent to which two different versions of the same instrument … yield similar results" (Leedy & Ormrod, 2013, p. 91). According to Pietersen and Maree (2007), Equivalent Forms reliability can also involve administering an instrument to the same participants on two separate occasions.

This study made use of the Cronbach Alpha coefficient statistical procedure and SPSS to analyse reliability. Reliability is used within quantitative research methodology to quantify the degree of consistency and the degree to which an instrument's data can be reproduced. Cronbach Alpha Coefficients reveal information about the error variance contained in a scale (DeVellis, 1991; Netemeyer et al. 2003) and were investigated for the block- and the random-item formats in this study.

2.9   CHAPTER SUMMARY

This chapter discussed the literature relating to personality, personality testing, cross-cultural personality, personality testing practices in South Africa, the development of the SAPI, random- and block-item ordering, and the role of construct validity and reliability.

The literature review focused specifically on the development of the SAPI, together with literature on random item order and block item order, to establish which response format would best fit the factorial structure of the SAPI. Both construct validity and reliability were reviewed as they play a vital role in the finalisation of the SAPI project. The next chapter discusses the method that was used to achieve the aims of the study.

CHAPTER 3: RESEARCH DESIGN AND METHODS

3.1   INTRODUCTION

This section provides an explanation of the research philosophy, design, sampling method and the data collection and data analysis methods used. In addition aspects such as reliability and the ethics of the study are discussed.

3.2   RESEARCH PARADIGM/ PHILOSOPHY

3.2.1   INTRODUCTION

A paradigm can be defined as "the basic belief system or world view that guides the investigation" (Guba & Lincoln, 1994, p. 105). Krauss (2005) claimed that the research philosophy should start with epistemology, which can be defined as the 'philosophy of knowledge' (Prinsloo, 2013).

This study made use of the positivism paradigm as the researcher gathered data through direct measurement or observation from the sample or phenomenon (Krauss, 2005). Krauss (2005) stated that "according to the positivist epistemology, science is seen as the way to get to the truth, to understand the world well enough so that it might be predicted and controlled" (p. 760). It is clear that the SAPI researcher's aim is to fully understand the domain of personality in order to be able to accurately and validly measure and predict personality within the South African context. The SAPI serves as a tool for attaining truth regarding individual behavioural functioning.

According to Krauss (2005), positivists believe in empiricism, which translates to scientific observation and measurement. Empirical research is grounded on scientific standards, where the researcher needs to gather and analyse primary data. In this study the researcher gathered and analysed primary data in the form of completed SAPI

questionnaires. Jargowsky and Yang (2005) claimed that survey research can be classified as empirical research.

Ontology aims to determine what there is to know (Crotty, 1998). This study aimed to determine whether the item format of the SAPI has an impact on the factorial validity of the questionnaire results. This was determined by the study which was not content or time bound and the results of the study can therefore be generalised.

Axiology aims to determine the values and the value judgements of the researcher (Flowers, 2009). Within the positivistic paradigm the researcher is seen as being objective and the research situation should be carefully controlled (Ponterotto & Grieger, 2007).

3.3   RESEARCH DESIGN

3.3.1   INTRODUCTION

The strategy of inquiry can also be referred to as the research design (Babbie & Mouton, 2001) or research methodology (Kotze, 2009). According to Polit and Hungler (1999), research design can be seen as a blueprint that maps out a study in order to achieve maximum control over factors that could affect the validity of the research results. In other words, a design creates a structured plan to follow to obtain the desired results.

The structured plan that was followed in this study was quantitative in nature and was based on established research procedures (Creswell, 2007). Quantitative research reduces phenomena to numerical values in order to carry out statistical analysis. It also aims to investigate the objective reality of psychological and social objects and seeks to explore the causal effects of such phenomena in order to make generalised predictions (Creswell, 2003; Nieuwenhuis, 2007). Quantitative research methods attempt to maximize the objectivity, replicability and generalisibility of findings,

The types of research designs are categorised into two main groups, namely descriptive or experimental. This study made use of descriptive research as the researcher observed/assessed the participants without intervention at any specific time. Comparisons

were therefore made based on the results of the respondents. Although the data was collected at one point in time various ages or formats (for instance the block- and random-SAPI formats) were used (Shanahan, 2010). According to Hopkins (2008), validity is important in descriptive studies, because if poor validity is obtained an exponential increase in sample size is needed.

This study made use of a cross-sectional research design. The cross-sectional design involved a single administration of either the block- or random-item order SAPI in order to determine which version yielded superior validity outcomes. It has the advantages of being relatively low cost and limiting interviewer bias. A disadvantage of using the cross-sectional design is that "different age groups sampled may have been raised under different environmental conditions [and that the correlations cannot be computed between different age levels]" (Creswell, 2009; Leedy & Ormrod, 2010, p. 186).

3.3.2   RESEARCH STRATEGY

This study aimed to gather information about a specific questionnaire (the SAPI). Therefore, the study made use of a cross-sectional survey research approach. Tanur (1982) defined a survey as a means to gather information about a population, including the characteristics, actions, or opinions of a large group. According to Pinsonneault and Kraemer (1993), survey research has three main characteristics. Firstly the purpose of survey research is to collect quantitative information regarding the population. Secondly, survey research should contain a standardized structure for gathering information. Lastly, the researcher should be able to generalize the results and base the findings on the entire population. The research on the SAPI complied with these three characteristics of survey research. Figure 2 below summarizes the strategy of inquiry followed in this study.
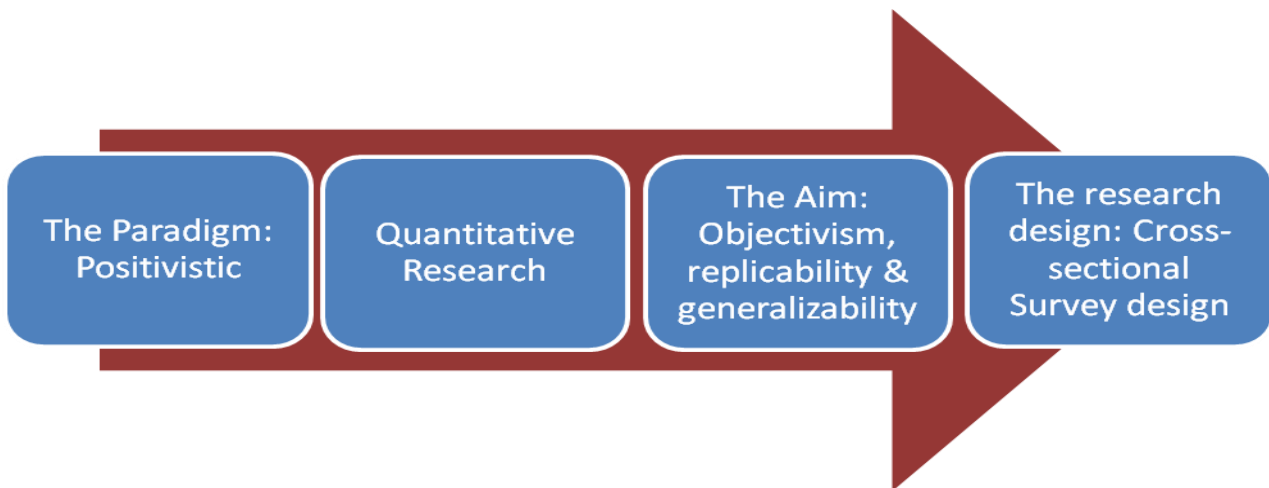
Figure 3.1: Summary of the Inquiry Strategy.

3.4   SAMPLING

3.4.1   INTRODUCTION

Pinsonneault and Kraemer (1993) defined sampling as selecting individuals from the population to enable generalisation about the phenomenon of interest. To ensure that the correct sampling method is selected the researcher should keep the purpose of the study in mind. The aim of this study was to determine whether the item structure of the SAPI has an impact on the factorial validity of the SAPI. In this study it was determined that the sample should have an educational qualification equivalent to matric. This enabled the researcher to select a sample from a very large pool. No other requirements were in place and the researcher therefore made use of non-probability sampling, more specifically convenience sampling.

3.4.2   SAMPLING METHOD AND SIZE

Convenience sampling occurs when the sample is selected based on accessibility or convenience for the researcher (Ross, 2005). According to Skowronek and Duerr (2009), convenience sampling is subject to bias as the sample is not representative of the population. The researcher can attempt to overcome this barrier by controlling the sample's representativeness. Unfortunately the majority of nursing and administrative staff

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are female and the sample used in the current study was therefore not representative of the entire population. Secondly, diversity could strengthen convenience samples. In an attempt to ensure diversity the researcher administered the SAPI to night duty staff, people who work on a contract basis, as well as personnel at the different private nursing education institutions. Thirdly, the researcher could aim to increase the sample size to minimize biased effects. Convenience sampling was selected because the researcher has access to some of the private nursing education institutions in Pretoria, South Africa and therefore participants from the accessible hospitals were used. Participants were selected based on ease of access. It is important to note that nurses have to register at the South African Nursing Council, which means that they all met the minimum requirements set forth for participants, namely a Matric equivalent qualification. Respondents who indicated a lower educational level on the response sheet were eliminated from the study.

When using quantitative research the sample tends to be larger than in qualitative research (Pinsonneault & Kraemer, 1993). The sample for this study consisted of 430 participants, 214 of whom completed block item order questionnaires and 216 of whom completed the random questionnaires.

3.4.3 SAMPLING SELECTION

The sample for this study was recruited from private nursing education institutions' staff, which included nurses, student nurses, contract staff and administration staff. Table 3.1 below shows the biographical information of the participants in order to provide a holistic picture of the representativeness of the sample. It includes a summary of the participants' gender, age, race, first language, highest qualification and English reading ability.

Table 3.1: Biographical information of all the participants (*N*=429)

	Item	Random	N = 216	Block	N = 213
		Frequency	Percentage %	Frequency	Percentage %
Gender					
	Male	14	6.5%	21	9.9%
	Female	202	93.5%	192	90.1%
Age					
	19-29	81	37.5%	88	41.3%
	30-39	59	27.3%	58	27.2%
	40-49	36	16.7%	36	16.9%
	50-59	28	13.0%	25	11.7%
	60-66	11	5.1%	5	2.3%
Race					
	White	92	42.6%	92	43.2%
	Black	114	52.8%	113	53.1%
	Indian	4	1.9%	1	.5%
	Coloured	6	2.8%	7	3.3%
First Language					
	Afrikaans	87	40.3%	87	40.8%
	English	19	8.8%	13	6.1%
	IsiNdebele	7	3.2%	6	2.8%
	IsiXhosa	7	3.2%	4	1.9%
	IsiZulu	8	3.7%	15	7.0%
	Sepedi	30	13.9%	32	15.0%
	Sesotho	11	5.1%	13	6.1%
	Setswana	30	13.9%	21	9.9%
	SisSwati	5	2.3%	4	1.9%
	TshVenda	1	.5%	3	1.4%

	Xitsonga	10	4.6%	10	4.7%
	Other	1	.5%	1	.5%
Highest Education					
	Grade 12	49	22.7%	39	18.3%
	Certificate	59	27.3%	87	40.8%
	Diploma	65	30.1%	60	28.2%
	Bachelors	27	12.5%	16	7.5%
	Honours	10	4.6%	7	3.3%
	Masters	2	.9%	1	.5%
	Other	3	1.4%	2	.9%
English Reading Ability					
	Poor	4	1.9%	4	1.9%
	Good	113	52.3%	115	54.0%
	Very Good	99	45.8%	93	43.7%

Table 3.1 shows that the majority of participants were female. Of the 216 participants who completed the random item order SAPI, 93.5% were female, and of the 213 block item order respondents 90.1% were female. This is most probably due to the fact that nursing is predominantly a female occupation, and nurses consisted of the majority of the sample; although it also included administration staff. The largest percentage of the sample was aged between 19 to 29 years of age (random SAPI, 37.5%; block SAPI, 41.3%). The majority of the sample was either Black (random, 52.8%; block, 53.1%) or White (random, 42.6%, block, 43.2%). The remainder of the sample was Coloured (random, 2.8%; block, 3.3%) and Indian (random, 1.9%; block, 0.5%). The main home language of the random group was Afrikaans (40.3 %), followed by Sepedi (13.9%), Setswana (13.9%) and English (8.8%). The language groupings were similar for the block group, with the majority speaking Afrikaans (40.8%), followed by Sepedi (15.0%), Setswana (9.9%), English (6.1%) and Sesotho (6.1%). The largest educational level category for the random group was at Diploma level (30.1%) followed by a Certificate (27.3%). For the block group more

participants were educated to a Certificate level (40.8%) rather than a Diploma level (28.2%). The English reading ability of the majority of participants, who completed the random questionnaire, was between good (52.3%) and very good (45.8%).

3.5   DATA COLLECTION

3.5.1   INTRODUCTION

Polit and Hungler (1999, p. 267) defined data as "information obtained during the course of an investigation or study". This study made use of primary data, which means that secondary sources were not used but instead information was gained directly from participants. One of the primary collection methods used in quantitative research, namely survey research, was used (Creswell, 2003). According to Babbie and Mouton (2001), survey research is a suitable method when dealing with the positivist paradigm. Surveys and questionnaires are discussed in the following section.

3.5.2   MEASURING INSTRUMENT

Personality assessments are presented in the form of standardised questionnaires. Polit and Hungler (1997, p. 466) defined a questionnaire as "a method of gathering information from respondents about attitudes, knowledge, beliefs and feelings". The SAPI is a questionnaire with 262 randomly sequenced questions (for a complete description of its origin and development see Chapter two, section six). The items are closed-ended and personality related based on the nine constructs of the SAPI. The block SAPI's questions are grouped together according to the nine clusters. The SAPI uses a five-point Likert-type response format with responses ranging from 'strongly disagree' to 'strongly agree'.

The benefit of survey research is that researchers are able to remain objective (Schwarz, 2011). Survey research also offers "high measurement reliability, high construct validity and a large amount of data based on real world observations" (Kelley, Clark, Brown, & Sizia, 2003, p. 262). However, the researcher still needed to establish the validity and reliability of the SAPI. Jordaan (2008) found that survey research is useful when making

comparisons, which was the case in this study where block- and the random-item orders were compared. Brink and Wood (1998, p. 293-298) stated that the following aspects characterize a questionnaire:

- Each participant enters his/her responses on the questionnaire, saving the researcher time, compared to the time required to conduct personal interviews.
- It is less expensive than conducting personal interviews.
- Respondents feel that they remain anonymous and can express themselves in their own words without fear of identification.
- Data on a broad range of topics may be collected within a limited period.
- The format is standard for all subjects and is independent of the interviewer's mood.

A disadvantage of survey research is that it tends to be very context specific (Kelley et al., 2003). Another negative aspect of structured methods is that respondents can manipulate their responses to appear socially desirable (Van der Linde, 2011). Fortunately, if the correct method and design are chosen these disadvantages do not hinder the outcomes.

3.5.2.1 *Data collection process*

Individuals are usually the units utilised for data collection in survey research (Pinsonneault & Kraemer, 1993). Therefore, the first step in this research project involved identifying the individuals to whom the differently formatted SAPIs were to be administered. The second challenge was to obtain approval from the different private nursing education institution managers as well as final approval from the Research Committee. Once the letter of approval was granted, the researcher arranged assessments with the staff at the hospitals, which included, nurses, student nurses and all administration staff. Private nursing education institutions in Gauteng were targeted due to convenience for the researcher. The researcher had to travel to the different private nursing education institutions on several occasions to gain data from all willing participants. In order to assist with participation, the members of staff were accommodated in three ways. Firstly, the patients could not be left unattended and therefore rotations had to be made between staff and both shifts (day and night shift) had to be covered. Secondly, the facilities were too small to administer the assessment to all the respondents

in one sitting. Thirdly, two formats were used (the randomised item SAPI and the block item SAPI) and therefore different sessions had to be arranged.

It took approximately three months to collect all of the responses. Two strategies were used while administering the assessments. The first strategy was only aimed at nursing staff, were the researcher went to the different wards and administered the SAPI in the ward (nurses were mostly unable to leave the wards, as they are not allowed to leave their patients unattended). This process was time consuming as only a limited number of assessments could be administered each day. The second strategy was therefore implemented, which involved including all staff and making use of the private nursing education institutions' Human Resources (HR) managers to arrange assessment sessions with the staff. The HR managers sent communications to the different departmental managers asking them to send their staff to the sessions. The rule of thumb for the nursing managers was to send at least one nurse from their ward per session, ensuring that sufficient care was still provided in the wards. The second strategy proved to be more effective and resulted in the sample becoming more representative and including more male participants. Although all the participants who participated in the first strategy completed consent forms, the open sessions used in the second strategy improved the ethical dimension of the study by allowing for increased voluntary participation in the project.

The SAPI was administered under the researcher's supervision and sufficient instructions regarding the completion of the SAPI were provided. Strict administration was implemented to ensure the confidentiality of the participants and the contents of the SAPI. One administration session, including the time taken to explain the instructions, took approximately fifty minutes. The researcher kept the completed questionnaires and informed consent forms of the participants in accordance with storage regulations.

3.6   DATA ANALYSIS

3.6.1   INTRODUCTION

This section discusses the techniques for analysing the data that was collected in the final stage of the research process. With quantitative data the researcher should focus on fitting statistical models to the data as well as interpreting general trends in the data.

3.6.2   RECORD, STORE AND CODING OF THE DATA GATHERED

The data was collected physically (as opposed to electronically) via the administration of block- and random- itemed SAPIs to willing participants. A paper-pencil based survey methodology was utilized to obtain the data. Optical answer sheets were available where participants could indicate their answers. These answer sheets were then scanned at the University of Pretoria to transfer the answers to an electronic medium. CSX is a division of Metrofile (Pty) Ltd and specialises in the supply, installation and support of business solutions. CSX scanned the answer sheets and produced a data file that was exported into an Excel data file. Thereafter the data file was exported to SPSS Version 22.0 (Statistical Software released in 2013) for analysis purposes. Before the data could be analysed it needed to be coded (Leedy & Ormrod, 2010; Skowronek & Duerr, 2009). The response sets from the two different formats were captured onto two different datasets to be able to make a comparison.

Following the completion of this study, the completed SAPI answer sheets were returned to the SAPI committee to ensure that the confidentiality is preserved after the data has been electronically captured and utilized for this study.

3.6.3   DATA PREPARATION

Before the analysis could take place, the data collected and inserted into the database needed to be prepared and checked for missing data and normality of distribution (Chrystal, 2012; De Bruin, 2009). De Bruin (2009) recommended that the researcher start with checking for any unexpected values through obtaining the descriptive statistics table through the SPSS program (seen as Table 1 in Appendix C). The next step involved identifying items with extreme skewness and kurtosis. Skewness and kurtosis are tested to determine the normality of distribution; skewness refers to a lack of symmetry, whereas

kurtosis refers to the height of the distribution (Field, 2009). Curran, West and Finch (1996) recommended that when using the maximum likelihood estimation with ordinal level data (5 point Likert scale of the SAPI) the researcher could consider variables with skewness > 2 and kurtosis > 4 as problematic. West, Finch and Curran (1995) recommended a kurtosis > 7 as cut-off. In SPSS normal kurtosis is set to 0 rather than 3. The value of 4 was obtained by subtracting 3 from 7. Keeping this in mind, extreme skewness and kurtosis based on the perimeters above was excluded from the analysis.

When checking for missing data De Bruin (2009) suggested replacing the outstanding data with the mean value of that particular person's response set or excluding the data from the analysis process. SPSS syntax can be used to detect missing values and if large sections of data seem to be left out intentionally then that person's response set was excluded.

The next step in preparing the data for analysis involved checking for multivariate outliers (De Bruin, 2009). Outliers are values that fall outside the close proximity of all the other values. The researcher may decide to exclude such extremities as it is likely to influence the result of the factor analysis. After these steps were completed to ensure the quality and completeness of the data set, the data analysis was undertaken.

3.6.4   FACTOR ANALYSIS

In the early 1900s psychological tests were developed and psychologists needed to design a way to test their predictions. Factor analysis was developed as a result of this need. For the purpose of this study, factor analysis was used to "to inform evaluations of score validity" (Thompson, 2004, p. 4). In addition, Laher (2010) claimed that factor analysis is the method of choice when conducting research on personality psychology. It is also a good method for gaining structural validity evidence for assessments, as per the objective of this study (Van Zyl & Taylor, 2012).

Laher (2010) defined factor analysis as a technique used to identify common traits that underlie a large number of items included in a personality assessment. In other words, it is used to simplify interrelated measures (Suhr, 2006). Factor analysis is divided into two categories, namely Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis

(CFA). EFA was developed for identifying psychological traits (Laher, 2010; Van de Vijver & Leung, 1997) and is used to measure the construct validity of psychometric personality assessments (Van Zyl & Taylor, 2012). CFA is a method that evaluates the structure of a questionnaire and investigates how strongly the data obtained from the questionnaire relates back to the constructs under investigation (Tabachnick & Fidell, 2007). In this study the personality constructs in the SAPI were evaluated to determine whether the randomised- or block-item format produced the most salient factor structure when compared to the first qualitative phase of the SAPI project. However, the best structure pertaining to the SAPI still needs to be explored and modelled using EFA and therefore CFA was not applicable in this study and should be implemented to confirm the model proposed by this study at a later stage (Suhr, 2006). With EFA, the outliers are identified, in the sense that similar variables are grouped together in order to identify which factors should be removed to create a suitable model (Tabachnick & Fidell, 2007).

This study made use of quantitative techniques of data analysis. SPSS Version 22.0 (2013) was used to analyse the data, using the Exploratory Factor Analysis technique. According to Maree (2007), data analysis requires the identification of key elements, formulation of categories and the formulation of themes. Each SAPI cluster consists of sub-clusters, which in turn consists of facets. Therefore a three-tier hierarchical structure is present. To attain justification of the scoring of the clusters and sub-clusters a hierarchical factor analysis technique (such as the Schmid-Leiman transformation) was used (De Bruin, 2009; Wolff & Preising, 2005). The aim of the transformation was to explore the fundamental dimensionality of the data and this was done twice (once with the data gathered from the random response set and once with the block responses). Primary factors were revealed for both and these were then compared.

To obtain the information necessary for the study, a first order factor analysis was conducted to identify the items applicable for analysis. Secondly, a second order factor analysis was conducted by using the primary factors attained from the first analysis. A first analysis is used to identify the primary factors. This can be done in SPSS with a common factor extraction method (De Bruin, 2009). In this case a maximum likelihood method was used, as it chooses the parameters that maximize the probability (Field, 2009). The

number of factors was determined by evaluating the scree-plots and eigenvalues, theoretical expectation and parallel analysis (Chrystal, 2012; Laher, 2010).

According to Laher (2010, p. 5), parallel analysis is based on the Monte Carlo principle simulation technique where the emphasis is placed "on the number of factors that account for more variance than the components derived from random data". In this process the eigenvalues of the factors are compared to the eigenvalues of the random data. Due to the emphasis on the factor information, if the eigenvalue of the factor is greater than the eigenvalue of the random data, then the factor is retained (Ledesma & Valero-Mora, 2007).

The factors/loading patterns were rotated to simplify the interpretation using the Oblique Direct Quartimin method due to the tolerance of correlations (Chrystal, 2012; Field, 2009). In the case of direct oblimin, 'delta' regulates the degree to which factors are allowed to correlate (Field, 2009). With direct quartimin rotation, delta's value is 0, which ensures that high correlations between factors are not allowed (Field, 2009).The oblique rotation is a non-orthogonal rotation, meaning that factor loadings are presented in a pattern, making for easier interpretation. According to Gefen and Straub (2005) this process is also referred to as a data reduction process, seeing that weak factor loadings are not shown in the output.

A second analysis is also necessary to obtain a higher order factor. This was done by use of a factor correlation matrix based on the correlations of the first analysis (Chrystal, 2012; De Bruin, 2009). Thereafter the Schmid-Leiman transformation was used (as discussed above) to create a hierarchical factor solution. This transformation requires the information of the first- and second order factor analyses (De Bruin, 2009). These steps took place for both item order data sheets.

The clusters and sub-clusters of the SAPI were compared between the different item formats by means of a coefficient of congruence (Tucker's phi coefficient). Tucker's phi coefficient is widely used and "congruence coefficients of 0.9 or greater usually indicate adequacy of fit" (Laher, 2010, p. 8).

3.7   RELIABILITY

A questionnaire is seen as a reliable instrument when it reports the same results when administered to different samples or at different times (Maree, 2007). The reliability of the SAPI was evaluated by means of Cronbach's Alpha coefficient. Reliability scores are good if equal to or above 0.95 and acceptable at <0.70 (Nunnally & Bernstein, 1994). According to Leedy and Ormrod (2013), instruments designed to measure psychological characteristics are usually less reliable than instruments designed to measure physical aspects, therefore the researcher should make provision for lower reliability scores due to the psychological nature of the construct. Vorster (2010) claimed that researchers can accept a reliability score of 0.65. However, if the researcher uses an exploratory research paradigm a reliability score lower than 0.60 should not be tolerated (Maree, 2010), therefore a value between 0.60 and 0.65 was also considered acceptable (Cortina, 1993; Field, 2009; Robins, Fraley, & Krueger, 2007) for this study. Hence, the reliability cut-off score in this study was set at 0.60 as the study was based on exploratory research.

Pallant (2007) also notes that Cronbach alpha values are sensitive to the number of items in a factor. Factors with fewer items tend to have lower Cronbach values. He gives the example that it is acceptable for factors with less than 10 items to have a Chronbach alpha value of 0.50). For this reason Labuschagne (2010) recommends that factors with less than two or three items be removed from the study as the specified reliability cut off is set at 0.60.

In addition, to improve the reliability of some of the factors and clusters, some items will be reversed to ensure that all the items are analysed in the same direction (positive or negative). By reversing a negative valued item within a majority positive itemed factor, will improve the factorial reliability to a great extent.

3.8   ETHICS IN RESEARCH

3.8.1   INTRODUCTION

Ethics are the norms and standards of behaviour that guide moral choices and behaviour (O'Neil, 2010). In more specific terms, ethics pertains to doing well and avoiding harm (Cascio & Aguinis, 2005). Through applying proper ethical principals in research, harm can be avoided or reduced. The researcher should ensure that the entire study is conducted in an ethical manner, with specific reference to the following domains.

3.8.1.1 The researcher

In an attempt to rectify the bad publicity and reputation of testing practices in South Aftrica, legislation has been put in place to ensure the ethical use of psychological tests. The Health Professions Act No 56 of 1974 stipulates that psychologists need to be registered with the Health Professions Council of South Africa (HPCSA) for them to practice as psychologists also enforcing that:

> A psychologist who performs interventions or administers, scores, interprets or uses assessment methods shall –
> (a) be familiar with the reliability, validation and related standardization or outcome studies and the proper applications and uses of the methods he or she uses;
> (b) recognise limits to the certainty with which diagnoses, findings or predictions can be made about individuals, especially where there are linguistic, cultural and socio-economic variances; and
> (c) make every effort to identify situations in which particular assessment methods or norms may not be applicable or may require adjustment in administration, scoring and interpretation because of factors such as age, belief, birth, colour, conscience, culture, disability, disease, ethnic or social origin, gender, language, marital status, pregnancy, race, religion, sexual orientation or socio-economic status (Government Gazette, 2010, p. 14).

The researcher was registered as an intern industrial psychologist at the HPCSA during the administration process and was supervised by her internship supervisor and study supervisor form the University of Pretoria to ensure that the correct administration procedures were maintained. The results were only used for structural purposes, in order

to evaluate the factorial validity of the SAPI and not interpreted, therefore clause b and c were not applicable in this study and the researcher adhered to the ethical stipulations as set forth above.

3.8.1.2   *Data Collection*

Orb, Eisenhauer and Wynaden (2001) found that when conducting research it is important to bear in mind that the participants in the study have human rights and they have to be protected throughout the research study and this includes ensuring confidentiality. For any research to be considered ethical, a few guidelines must be followed by the psychologist administering the assessments (Cascio & Aguinis, 2005; O Neil, 2010). These guidelines are:

- Guarding against the candidate's invasion of privacy;
- Respecting the candidate's right to know;
- Protecting the candidate's confidentiality;
- Imposing time limitations;
- Treating the candidate with consideration and respect;
- Minimizing mistakes; and
- Ensuring informed consent to participation is gathered.

During gaining the consent of the participants, they must be made aware of the (Cascio & Aguinis, 2005):

- Study's objectives;
- Risk of potential psychological, physical, emotional or social harm;
- Outcome of the data collection and how it will be used;
- Right to withdraw at any time; and

- Guarantee of confidentiality.

Figure 3.2 below presents the ethical process guidelines.
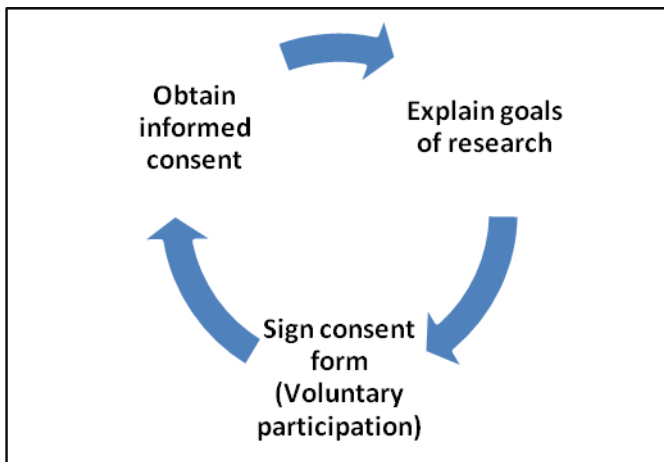
Figure 3.2: **Ethical process guidelines**

Source: Ramcharan, P., & Cutcliffe, J.R. (2001).Judging the Ethics of Qualitative Research: Considering the "Ethics as Process" Model. *Health and Social Care*, 9, p. 363.

The researcher applied to the private nursing education institutions' Research Committee to ensure that the company was aware that data would be gathered from their staff. The application also ensured that the company's name was kept confidential. It should also be noted that the private nursing education institution shall not be held liable for anything regarding this study and that their involvement only included the sample. The researcher also assured the participants that the data obtained through this process will not be used against them in any way. Each administration session was handled with sensitivity and the same procedures were followed for every session throughout the entire process. The whole research design and process was fair and consistent and every attempt was made to adhere to ethical standards (Ramcharan & Cutcliffe, 2001).

3.8.1.3   *Data analysis & interpretation*

While processing the data it is important to adhere to (Cascio & Aguinis, 2005):

- Numerical and mathematical accuracy.
- Data that does not support the views of the researcher or the organisation cannot be discarded

3.8.1.4 *Writing up and publishing the results*

Reporting must be done ethically and in good faith. Results must be reported honestly. Results should not be misleading and should be reported comprehensively so that the reader of the report is able to draw conclusions (Cascio & Aguinis, 2005).

3.9   CHAPTER SUMMARY

This chapter discussed the research methodology of the study and elaborated on the research design, sample, data collection and analysis methods, as well as ethical considerations applicable to this study. In short, this chapter mapped out the blueprint of the study and provided the researcher with a clear strategy of steps to take to complete the study. Chapter four presents the significant results found during the analysis phase.

CHAPTER 4: RESEARCH RESULTS

4.1 INTRODUCTION

This chapter discusses the integration and interpretation of the results of the study. The discussion is structured in accordance with a logical sequence and starts by discussing the data screening and preliminary data analysis, which includes the descriptive statistics. This is followed by an examination of EFA and the internal reliability analysis (Cronbach α) with regards to both the random- and block-item orders. Thereafter a comparison of the factor structures (based on psychometric properties, the conceptual qualitative analysis, and the results obtained from the respondents) is presented. The aim of this comparison is to determine whether the block item order or the random item order delivers the best factorial validity within the framework of the SAPI.

4.2 DATA PREPARATION/SCREENING

Prior to undertaking analysis the quality of the obtained data needed to be evaluated. This processes involved screening the data sets for accuracy, missing values, normality of distribution and outliers. This was done by investigating the minimum and maximum values, means, and standard deviations. No unanticipated values were found across the scoring range (1 to 5). Normality can be assessed to some extent by obtaining skewness and kurtosis values (Pallant, 2007), as well as by using the methods outlined in Chapter 3.

A missing value analysis was completed to determine whether a pattern could be detected for the missing values. A cut off was established at 20%, meaning that if a respondent left more than 20% of the inventory unanswered then that response set would be deleted manually. Based on this criterion two response sets were removed from the random dataset and none were removed from the block dataset. Although the block dataset did contain missing values none of the respondents had left more than 20% of the inventory unanswered and therefore no manual deletion was necessary. A regression estimate was performed on the dataset to compensate for the missing values.

Based on the recommendations made by De Bruin (2009; see Chapter 3) when evaluating the skewness and kurtosis of the data, values with skewness > 2 and kurtosis > 4 were eliminated (see appendix C for the full descriptive statistics). Several items were problematic in the sense that they indicated skewness or kurtosis, or a mean exceeding the allowed cut off (<1.5, >4.5). The items that were problematic for both the random- and the block-response sets were removed from the dataset. The problematic items, together with the removed items, are shown in in Table 4.1 below.

A total of twenty-three items did not comply with the cut off values, of which 19 were identified in the random item order SAPI and four in the block item order SAPI. Items with extreme mean values (<1.5, >4.5) were also deemed to be problematic. Each dataset presented one item with extreme mean value, these items were "I find education important" (block dataset) and "I am hardworking" (random dataset). Three items were problematic in both datasets, these items were "I find education important", "I respect myself" and "I treat all people with respect". These items were removed from both datasets. In order to enable comparison the other problematic items were not removed, as it was deemed important that similar versions of the SAPI were compared.

The researcher also investigated the possibility of multivariate outliers by analysing the Mahalanobis Distance statistic (see Chapter 3). The analysis for outliers showed no negative impact on the data in the sense that the random response set showed a score of 196.75 and the block response set yielded a score of 200.66; indicating that no outliers were present in either response set.

Table 4.1: Problematic and removed items from both block- and random response sets

Cluster	Random	Block
	Variable	**Variable**
Integrity	I do what is expected of me	
	I take responsibility for my mistakes	
	I take good care of my things	
	-	I am a true friend to others
Relationship Harmony	I work well with others	
	I speak politely to others	

	I allow others to ask me questions
	I want people to live in peace
Openness	I want to develop myself
	I find education important (Mean > 4.5)
Soft Heartedness	I insult people
	I give my attention to others
	I treat all people with respect
	I am kind to others
Intelligence	I know myself
Conscientiousness	I am committed to what I do
	I am thorough in my work
	I am hard-working (Mean > 4.5)
Emotional Stability	I act in a mature manner
	I respect myself

Note: the items in bold were removed from both the random- and the block-datasets.

4.3 FACTORIAL ANALYSIS

As indicated in Chapter 3, the most suitable method for further analysis was EFA, which is frequently used when developing a new measuring instrument. However, before EFA can be undertaken it was important to determine whether the data was suitable for such analysis. This was done by utilising the Bartlett's test of Sphericity (Bartlett, 1954), and the Kaiser-Meyer-Olkin (KMO) (Kaiser, 1970, 1974) functions found in the SSPS software. The results showed that the block dataset was suitable at 0.000 for the Bartlett's test of Sphericity ($p < .05$) and 0.88 for the KMO ($p > .06$) (Horak, 2013; Pallant, 2007; Tabachnick & Fidell, 2007). The random dataset was also suitable at 0.000 for the Bartlett's test of Sphericity and 0.92 for the KMO.

The analysis was therefore undertaken using the maximum likelihood extraction method. The number of factors used per cluster was then investigated. This was guided by the criteria of eigenvalues > 1, scree plot evaluations and interpretable themes as identified in the pattern matrices. The Direct Oblimin rotation was used and the delta value was left unchanged at zero as recommended by experts (De Bruin, 2009). The software was initially programmed to suppress the factor pattern coefficients at < 0.30 to simplify interpretation and eliminate items with limited investigative properties (De Bruin, 2009). However, the cut off for the factor loadings was changed to 0.4 to retrieve a clearer

loading. This approach was supported by the work of De Bruin (2009), who noted that more stringent criteria for the identification of items can be set when assessing sub-clusters, as sub-clusters are supposed to be more homogenous than whole clusters.

The following strategy was followed when presenting the results:

- The scree-plot and eigenvalues > 1 were evaluated to determine the number of factors to retain for analysis. The discussion of each construct shows the scree plot and makes reference to the eigenvalues, which recommend the number of factors to retain based on the values greater than one.

- The factors were defined as closely as possible to the manner in which they were conceptualized in Nel's (2008) qualitative study.

- Each of the nine factors for both the random- and block response sets were analyzed by using EFA and the results of these analyses were interpreted separately. The factors are thus presented separately.

- The results from the EFA were analysed according to the most plausible sub-cluster structure for each of the nine factors. This was done in collaboration with a qualitative analysis of items' similarity and logical interpretability.

- The reliabilities of all the factors and sub-clusters for both response sets are reported.

- The structural similarity between the factor loadings for both response sets is compared to the conceptual qualitative personality structure to identify which response set is more closely related.

- Based on the empirical evidence, including psychometric properties and the research from the qualitative phase, a final recommendation is given of the most suitable response set to be utilised.

- An overall comparison is made between the block- and random-response sets.

- A table is presented with the overall reliability scores for the nine main SAPI clusters.

4.3.1 CONSCIENTIOUSNESS

Conscientiousness is described as being painstaking and careful, or the quality of acting according to the demands of one's conscience, to accomplish

something through great effort or inner drive and behaving according to certain social standards, attitudes, and practices, being devoted to reach certain goals, arranged or disposed in a neat and tidy manner or in a regular sequence (Nel, 2008, p. 124-125).

Perry, Hunter, Witt, & Harris (2010) identified achievement oriented, planning oriented, detail oriented, dependability, and self-control as descriptors to explain the Conscientiousness cluster. Other researchers also identified other terms such as, reliability, trustworthiness, and the tendency to adhere to norms, rules, and values (Horak, 2013; Levy, Richardson, Lounsbury, Stewart, Gibson, & Drost, 2011).

4.3.1.1   Block item order results for the Conscientiousness cluster

For the block Conscientiousness cluster, a four-factor solution (which explained 48.28% of the variance) was found to be most applicable based on the scree plot (see Figure 4.1), the eigenvalues and the most intelligible qualitative interpretation. As shown in Table 4.2. below, 22 of the 36 items loaded (at < 0.40) onto the four factors.
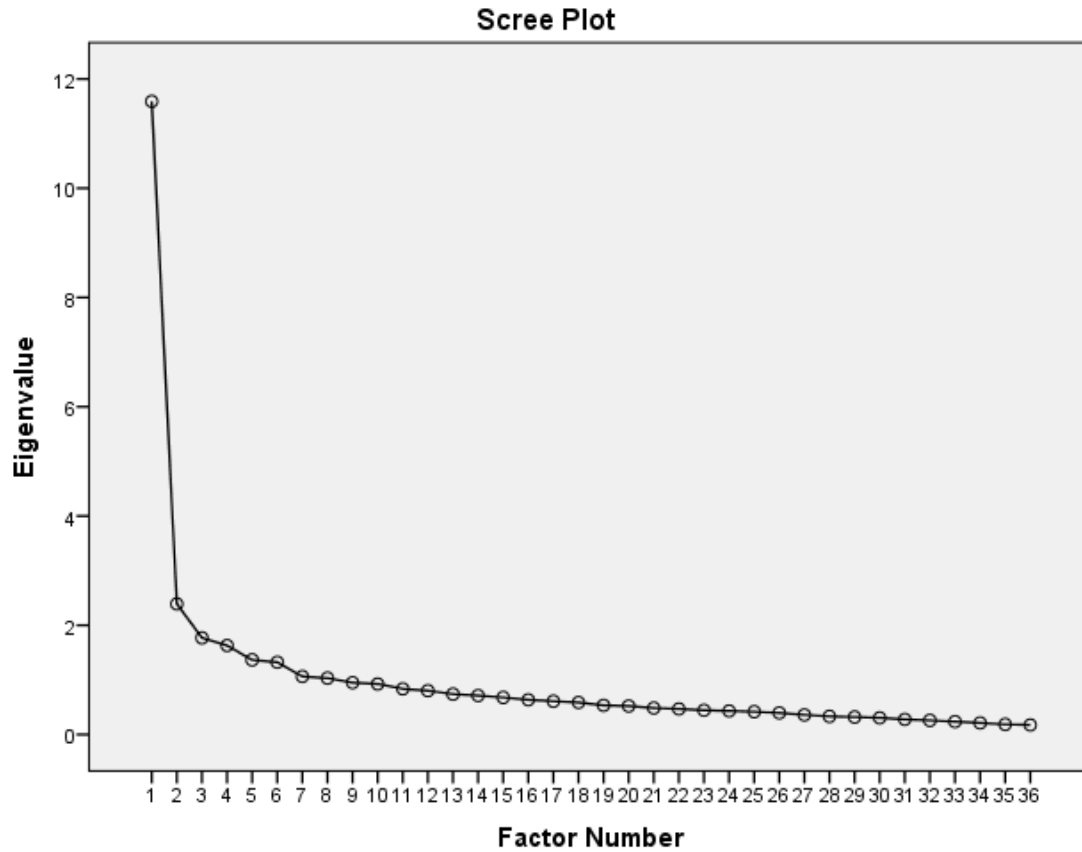
Figure 4.1. Scree plot for the block Conscientiousness response set.

Table 4.2. Pattern matrix for the block response scale restricted to four factors for Conscientiousness

Items	Factor			
	1	**2**	**3**	**4**
I am hard-working	0.661			
I do something until I get it right	0.576			
I complete tasks even if they are difficult	0.545			
I think ahead	0.53			
I stay focused on my tasks	0.481			
I am precise in my work	0.443			
I am determined in the things I do	0.401			
I have direction in life		-0.782		
I have definite goals in life		-0.719		
I am focused on winning		-0.717		
I set goals for myself		-0.589		
I am a motivated person		-0.581		
I am motivated by my work		-0.572		
I do what I say			0.722	
I stick to my decisions			0.55	

I obey rules		-0.68
I do things accurately		-0.661
I follow set rules		-0.552
I want things to be neat		-0.52
I stay within the rules		-0.49
I tidy up where there is a mess		-0.477
I work in an organised manner	0.45	-0.466

Note: Only loadings above .40 are displayed.

Variables are listed in the order of their highest factor loadings.

The four exclusive factors that appeared within the block Conscientiousness cluster were labelled 'Achievement orientation', which accounted for 32.20% of the variance (seven items); 'Dedication', which accounted for 6.64% of the variance (six items); 'Self-control', which accounted for 4.20% of the variance (two items); and 'Self-discipline', which accounted for 4.53% of the variance (seven items).

The theme that was identified for the Achievement orientation factor was working hard (Nel, 2008). Dedication included themes of determination, perseverance and goal setting (Nel, 2008). The Self-control factor was identified as a new Conscientiousness factors, but there is literature supporting its association with the Conscientiousness cluster (Perry et al., 2010). The Self-control factor was based on the theme of keeping to one's word. The Self-discipline factor included themes relating to being rule abiding, accuracy and producing neat outcomes. This is consistent with Levy et al.'s (2011) research on Conscientiousness.

After each factor was determined, the reliability of each of the four factors was analysed and is reported in Table 4.3. The total cluster reliability is also presented at the bottom of the table.

Table 4.3. Reliability statistics for the block response scale restricted to four factors for Conscientiousness

Factor	Cronbach alpha	N= 22 items
Achievement Orientation	.85	7
Dedication	.86	6
Self-control	.68	2
Self-discipline	.84	7

Cluster Reliability	.91	22

Table 4.3 indicates that three factors showed high reliability above 0.84 and that Self-control showed an acceptable reliability value above 0.60 (DeVellis, 2003; Field, 2009; Pallant, 2007).

4.3.1.2   *Random item order results for the Conscientiousness cluster*

For the random Conscientiousness cluster, a four-factor solution (which explained 42.96% of the variance) was found to be most applicable. This solution was informed by the scree plot (see Figure 4.2), the eigenvalues and most intelligible qualitative interpretation. As can be seen in Table 4.4 below 23 of the 36 items loaded (at < 0.40) onto the four factors.

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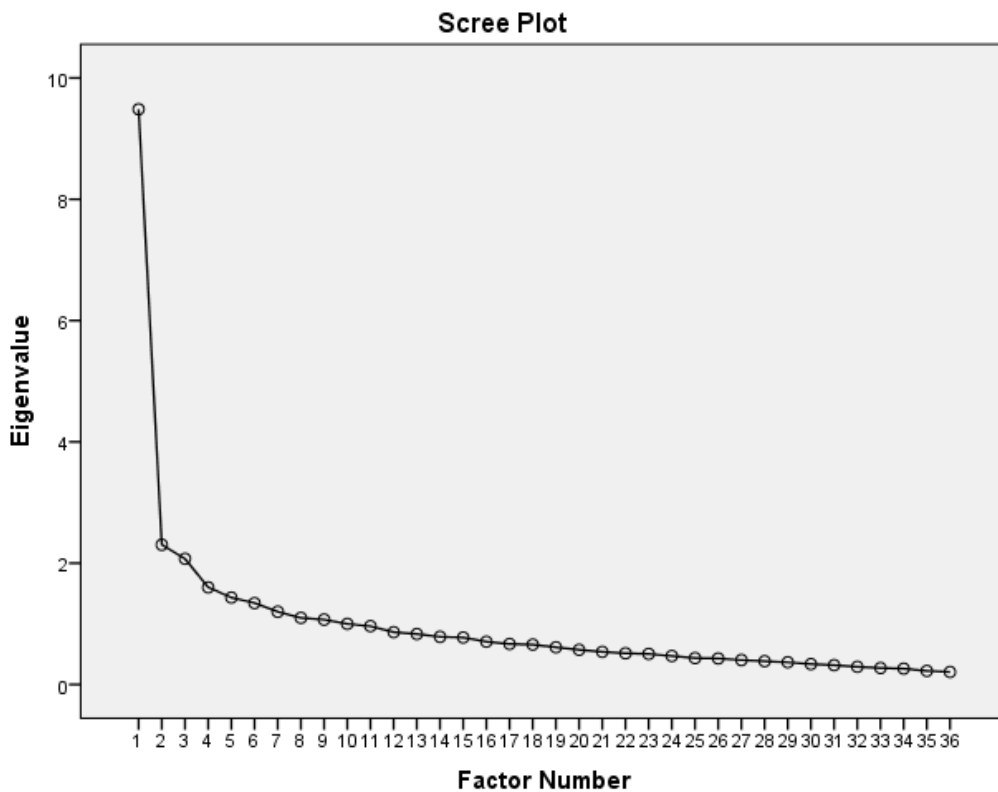
Figure 4.2 **Scree plot for the random Conscientiousness response set**

Table 4.4. Pattern matrix for the random response scale restricted to four factors for Conscientiousness

Item	Factor			
	1	**2**	**3**	**4**
I take care of detail	0.725			
I am precise in my work	0.629			
I am thorough in my work	0.606			
I want things to be neat	0.588			
I do things accurately	0.569			
I tidy up where there is a mess	0.558			
I check for errors in work that has been done	0.511			
I have definite goals in life		0.803		
I have direction in life		0.725		
I am determined in the things I do		0.574		
I am an achiever		0.504		
I set goals for myself		0.484		
I am committed to what I do		0.48		
I am a motivated person		0.456		
I am motivated by my work		0.453		
I learn from previous problems		0.416		
I stay focused on my tasks			-0.639	
I follow set rules			-0.607	
I am always prepared			-0.568	
I think ahead			-0.497	
I finish things I have started			-0.438	
I obey rules				-0.723
I stay within the rules				-0.447

Note: Only loadings above .40 are displayed.

Variables are listed in the order of their highest factor loadings.

The four distinct factors that loaded onto the pattern matrix for the Conscientiousness cluster were labelled 'Orderliness', which accounted for 26.34% of the variance (seven items); 'Dedication', which accounted for 6.40% of the variance (nine items); 'Achievement orientation', which accounted for 5.76% of the variance (five items); and 'Self-discipline', which accounted for 4.50% of the variance (two items).The themes that were included in the Orderliness factor were being precise and thorough (Nel, 2008). Dedication was based on themes of determination, perseverance and goal setting (Nel, 2008). The Achievement orientation factor had negative loadings with the items concentrating largely on being future and task focused. The Self-discipline factor was based on a theme that related to being rule abiding (Levy et al. 2011).

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.5. The total cluster reliability is also presented at the bottom of the table.

Table 4.5. Reliability statistics for the random response scale restricted to four factors for Conscientiousness

Factor	Cronbach alpha	N= 23 items
Orderliness	.81	7
Dedication	.84	9
Achievement orientation	.77	5
Self-discipline	.67	2
Cluster Reliability	**.90**	**23**

From Table 4.5 it is evident that two factors, Orderliness and Dedication, displayed high reliability (above 0.81) and that Self-discipline and Achievement orientation displayed acceptable values for the Cronbach alpha coefficient (above 0.60; DeVellis, 2003; Field, 2009; Pallant, 2007).

4.3.1.3 *Comparison between the block- and random-response scales for Conscientiousness*

The analysis of both the block- and the random-response sets indicated that a four-factor solution would best suit the data in terms of the interpretability of the items. The four-factor solution appeared to be focused and thematically appropriate.

Both the block- and the random-response sets included Dedication, Self-discipline and Achievement orientation factors. In the Dedication factor five[3] items were duplicated. In the Self-discipline factor two[4] items were repeated. One[5] item was replicated in the Achievement orientation factor. The additional factor in the block response set was

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[3] "I have definite goals in life", "I have direction in life", "I set goals for myself", "I am a motivated person" and "I am motivated by my work".

[4] "I obey rules" and "I stay within the rules".

[5] "I stay focused on my tasks"

labelled Self-control and the fourth factor in the random response set was labelled Orderliness

4.3.1.4   *Determining the factor structure of Conscientiousness*

During the qualitative stage of the SAPI project five sub-clusters were identified within the Conscientiousness cluster and were labelled Achievement orientation, Dedication, Orderliness, Self-discipline and Thoughtlessness (Nel, 2008; Nel et al., 2012). The analysis of the data from the block response scale resulted in the identification of four factors (Achievement Orientation, Dedication, Self-control, and Self-discipline). The random response set analysis also resulted in four factors (Orderliness, Dedication, Achievement orientation, and Self-discipline). All four of the factors identified in the random Conscientiousness cluster were also present in the conceptual qualitative personality structure. Three out of the possible four factors in the block response set were replicated from the conceptual qualitative personality structure, but Self-control was identified as a new factor.

The block Conscientiousness cluster consisted of 22 items whereas the random Conscientiousness cluster consisted of 23 items. The single item difference in the number of items is not enough to impact the results. It should also be noted that the block Self-control and the random Self-discipline factors only contained two items each. For practical reasons, it is suggested that these factors be removed during future research (Costello & Osborne, 2005; Labuschagne, 2010). This recommendation is based on the fact that a two-itemed factor does not divulge sufficient information about a specific construct, nor does it significantly contribute to the overall reliability of the construct at large. If these factors are removed the random response set contains three replicated factors from the conceptual qualitative personality structure and the block response set also contains three factors from the conceptual qualitative personality structure. The findings relating to the block- and random-response sets are therefore fairly similar in relation to the conceptual Conscientiousness cluster, with both response sets yielding three replicated factors. Hence the results suggest that either the random- or block-response set could be used to assess Conscientiousness.

Although the overall block Conscientiousness cluster's Chronbach alpha (0.91) is slightly more significant than the Chronbach alpha (0.90) of the random Conscientiousness cluster the difference is non-significant. Therefore, for the Conscientiousness cluster, the reliability values do not provide a significant difference that could be used to determine suitability of item order. Therefore, based on these results it appears that both of the response sets are suitable for measuring the Conscientiousness cluster.

4.3.2 EMOTIONAL STABILITY

Emotional Stability, in this context, means that a person is emotionally either well or unwell, possesses an inner confidence and respect, is sensitive towards outward events or people, has the ability to control and manage own emotions or actions, and is emotionally sound, or capable of handling life issues or stimuli (Nel, 2008, p. 125).

According to Cohen (2013) and De Raad (2000), Neuroticism is the polar opposite of Emotional Stability. However, the term Emotional Stability is given preference in psycho-lexical approaches, as it is more positive in nature. The conceptual SAPI categorises Neuroticism as a sub-cluster of Emotional Stability (Nel et al., 2012). Neuroticism is defined as emotional unsteadiness or instability, cowardliness, dependence, lack of self-efficacy, lack of emotional control and expression, and inability to handle challenging life situations. Neuroticism also includes a tendency to experience fear, sadness, embarrassment, worry, anger, guilt, and disgust (Laher, 2008; Rothmann & Coetzer, 2003; Visser & du Toit, 2004).

Emotional Stability indicates that an individual is usually calm, imperturbable, and relaxed, and is able to manage stress and its accompanying emotions effectively (Hough, Eaton, Dunnette, Kamp, & McCloy, 1990; Rothmann & Coetzer, 2003).

4.3.2.1   Block item order results for the Emotional Stability cluster

For the block Emotional Stability cluster, a five-factor solution (which explained 44.06% of the variance) was found to be most applicable. This was informed by an analysis of the

scree plot (see Figure 4.3), the eigenvalues and most intelligible qualitative interpretation. As can be seen in Table 4.6 below, 17 of the 36 items loaded (at < 0.40) onto the five factors.
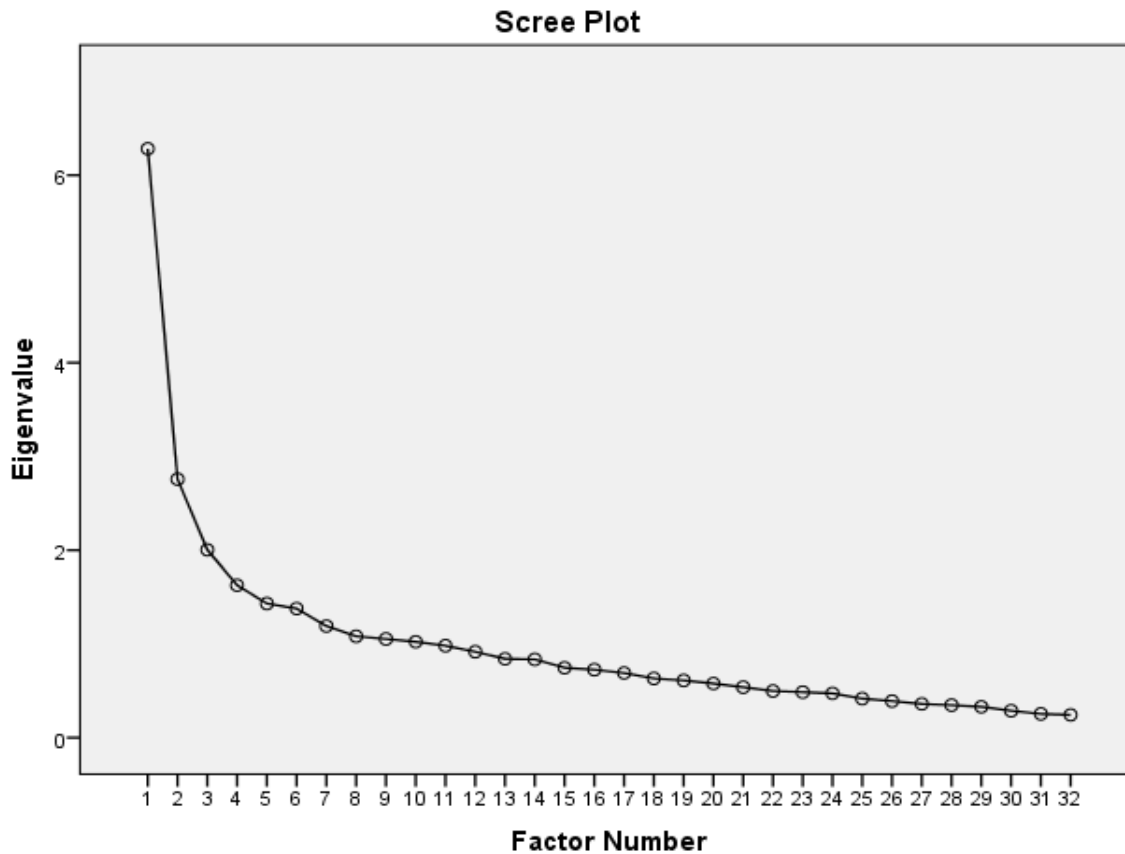
Figure 4.3 **Scree plot for the block Emotional Stability response set.**

Table 4.6. Pattern matrix for the block response scale restricted to five factors for Emotional Stability

Item	Factor				
	1	2	3	4	5
I am afraid of some people	.716				
I am afraid that bad things may happen	.715				
I easily get nervous	.609				
I am afraid of people judging me	.545				
I worry a lot	.541				
I never get what I want	.477				
I control my emotions		.711			

I remain cheerful even when there are problems	.685			
I accept myself	.483			
I calm down quickly	.455			
I am calm in most situations	.436			
I get angry over minor issues		.819		
I get angry easily		.639		
I want people to listen to me			-.497	
I feel emotions deeply			-.453	
I accept things as they are				-.542
I am pleased with what I have				-.525

Note: Only loadings above .40 are displayed.
Variables are listed in the order of their highest factor loadings.

The five factors that emerged from the Emotional Stability pattern matrix were labelled 'Courage', which loaded negatively and accounted for 19.63% of the variance (six items); 'Balance', which accounted for 8.62% of the variance (five items); 'Emotional Control', which accounted for 6.26% of the variance (two items); 'Emotional Sensitivity', which loaded negatively and accounted for 5.1% of the variance (two items); and 'Neuroticism', which accounted for 4.47% of the variance (two items). Courage reflected themes of being fearful and anxious. Balance was related to the theme of being even-tempered and in control of one's emotions. The main theme of the Emotional Control factor was anger and related to an individual's ability to control his or her temper. Emotional Sensitivity's main theme was a negatively scored sensitivity towards being emotional. Finally, the Neuroticism factor included the themes of satisfaction and acceptance (the items loaded negatively).

After each factor had been determined, the reliability of each of the five factors was analysed and is reported in Table 4.7. The total cluster reliability is also presented at the bottom of the table.

Table 4.7. Reliability statistics for the block response scale restricted to five factors for Emotional Stability

Factor	Cronbach alpha	N= 17 items
Courage	.78	6
Balance	.76	5

Emotional Control	.78	2
Emotional Sensitivity	**.37**	2
Neuroticism	.63	2
Cluster Reliability	**.54**	**17**

Table 4.7 indicates that of the five identified factors, four factors showed acceptable reliability values (DeVellis, 2003; Field, 2009; Pallant, 2007). Balance, Courage, Emotional Control, and Neuroticism yielded Chronbach alpha values above 0.6. Emotional Sensitivity yielded a low reliability value, negatively impacting the overall reliability of the block Emotional Stability cluster. Therefore, it is suggested that the Emotional Sensitivity factor should be removed from future studies for practical reasons.

4.3.2.2   *Random item order results for the Emotional Stability cluster*

For the random Emotional Stability cluster, a four-factor solution (which explained 36.00% of the variance) was found to be most applicable. This was informed by the scree plot suggestion (see Figure 4.4), the eigenvalues and most intelligible qualitative interpretation. As can be seen in Table 4.8 below 16 of the 36 items loaded (at < 0.40) onto the four factors.
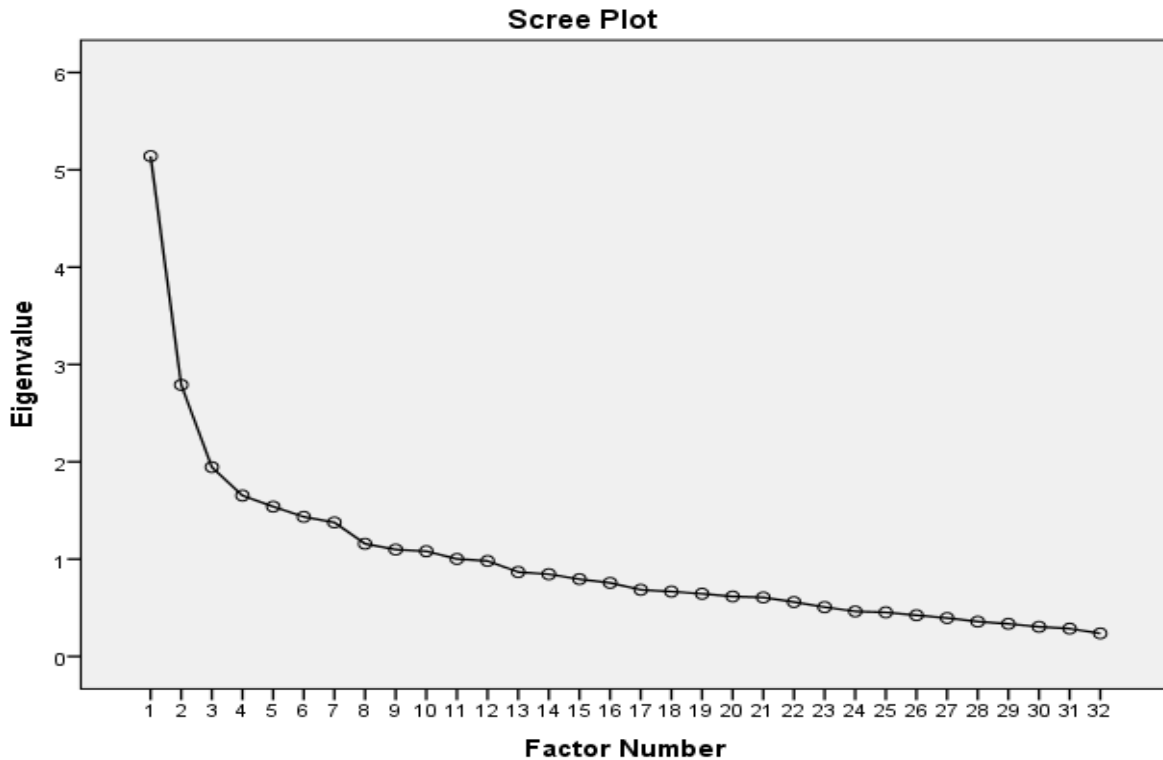
Figure 4.4 **Scree plot for the random Emotional Stability response set.**

Table 4.8. Pattern matrix for the random response scale restricted to four factors for Emotional Stability

Item	Factor			
	1	2	3	4
I get angry easily	.795			
I get angry over minor issues	.788			
I complain about everything	.426			
I can handle difficult situations		.756		
I can deal with difficulties in my life		.615		
I worry a lot			.736	
I am afraid that bad things may happen			.603	
I am afraid of people judging me			.496	
I easily get nervous			.448	
I feel emotions deeply			.425	
I cry easily			.417	
I accept things as they are				.602
I act in a mature manner				.505
reversed_I speak before I think				.409

Note: Only loadings above .40 are displayed.
Variables are listed in the order of their highest factor loadings.

- The title of the item "I speak before I think" was changed to "reversed_I speak before I think" after the reversal of the item for clarity purposes.

On inspection the four factors were labelled 'Emotional Control', which accounted for 16.10% of the variance (three items); 'Balance', which accounted for 8.72% of the variance (four items); 'Fearfulness', which accounted for 6.10% of the variance (six items); and 'Emotional Stability', which accounted for 5.20% of the variance (three items). The themes present in the Emotional Control factor related to anger control and dissatisfaction. Themes of being calm and in control when faced with adversity emerged in the Balance factor. The Fearfulness factor contained themes of being fearful, anxious and emotionally sensitive. In the Emotional Stability factor the main theme revolved around matureness, control in expression and acceptance, which can be seen as being the opposite of neuroticism.

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.9. The total cluster reliability is also presented at the bottom of the table.

Table 4.9 Reliability statistics for the random response scale restricted to four factors for Emotional Stability

Factor	Cronbach alpha	N= 16 items
Emotional Control	.70	3
Balance	.70	4
Fearfulness	.70	6
Emotional Stability	**.47**	3
Cluster Reliability	**.47**	**16**

Table 4.9 indicates that of the four identified factors, three factors showed acceptable reliability values (DeVellis, 2003; Field, 2009; Pallant, 2007). Balance, Fearfulness, Emotional Control reflected acceptable Chronbach alpha values of above 0.70. Emotional Stability showed low reliability even though the item 'I speak before I think' was reversed to achieve a better Chronbach alpha value. The overall reliability of the random Emotional Stability cluster also reported an unreliable Chronbach alpha value.

4.3.2.3 Comparison between the block- and random-response scales for Emotional Stability

The analyses yielded similar factor loadings for the block- and random-datasets. The block dataset loaded onto five factors, whereas the random Emotional Stability dataset was best suited to four factors. The researcher found that the interpretability of the items was more focused and thematically appropriate within the four and five factor solutions respectively. The random- and block-response sets both included Balance and Emotional Control factors. Two[6] items from the Balance factor were duplicated in both random- and block-datasets. The block Courage and random Fearfulness factors shared four[7] items, the Emotional Control factors shared two[8] items, and block Neuroticism and random Emotional Stability factors shared one item[9]. The block response set reported a fifth factor, which related to negatively loaded Emotional Sensitivity, indicating that the respondents do not feel emotions deeply.

4.3.2.4 Determining the factor structure of Emotional Stability

In the SAPI model the Emotional Stability cluster consists of six sub-clusters, namely Ego-strength, Emotional sensitivity, Emotional control, Neuroticism, Courage and Balance (Nel et al., 2012). The results of this study found that the block response scale yielded five factors (Courage, Balance, Emotional Control, Emotional Sensitivity, and Neuroticism) that replicated the sub-clusters within the conceptual Emotional Stability cluster. The Ego-strength factor was not identified in the block Emotional Stability cluster's factor structure. The random Emotional Stability response scale produced two factors (Emotional Control and Balance) that are similar to those contained in the SAPI model and revealed two new factors, namely Fearfulness and Emotional Stability, which can be seen as the opposites of Courage and Neuroticism respectively. The conceptual factors of Ego-Strength and Emotional Sensitivity were not replicated in the factor structure of the random Emotional Stability cluster.

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[6] "I accept myself", and "I am calm in most situations".

[7] "I worry a lot", "I am afraid that bad things may happen", "I am afraid of people judging me", and "I easily get nervous".

[8] "I get angry over minor issues"; "I get angry easily".

[9] "I accept things as they are".

Although the block response set contains 17 items to assess personality and the random Emotional Stability cluster contains 16 items this one item difference is not significant enough to impact the results. It should also be noted that the block Neuroticism, Emotional Control, and Emotional Sensitivity factors each only contained two items, while the random Neuroticism and Emotional Control factors each only contained three items. For practical reasons it is suggested that these factors be removed for future research (Costello & Osborne, 2005; Labuschagne, 2010). This recommendation is based on the fact that a factor containing only two or three items does not provide sufficient information about a specific construct, nor does it significantly contribute to the overall reliability of the construct at large.

The results of the reliability analysis indicated that the block response set yielded a slightly higher Chronbach alpha value (0.54) than its random counterpart (0.47). However, both response sets yielded unreliable Chronbach alpha values. In conclusion, the comparison of the Emotional Stability cluster showed that the block- and random-response sets yielded very similar results. The combined results suggest that the block response set was marginally more suitable for measuring the Emotional Stability cluster.

4.3.3 EXTRAVERSION

Extraversion is described as the act, state, or habit of being predominantly concerned with, and obtaining gratification from, what is outside the self; the power or right to give orders or make decisions, to be open to share or communicate with other people, being energetic and upbeat, and having the relative tendency or disposition to be sociable or to associate with one's fellows (Nel, 2008, p. 124).

Nel (2008) also included facets like humorous, vivacious, outspoken, talkative, and sociable in the definition of Extraversion. Nel (2008) further describe how the Extraversion items were pooled together to facilitate clear thematic facets, such as for the Compassionate facet items pertaining to compassion, empathy and sympathy were grouped; and items pertaining to being talkative or quiet merged into the

Talkative facet. Therefore it can be seen that each cluster has many different components of personality embedded within it.

4.3.3.1   Block item order results for the Extraversion cluster

For the block Extraversion cluster, a five-factor solution (which explained 47.43% of the variance) was found to be most applicable. This was informed by the scree plot (see Figure 4.5), the eigenvalues and the most intelligible qualitative interpretation. Of the 31 items in the scale, 20 loaded (at < 0.40) onto the four factors. This is shown in the table below.
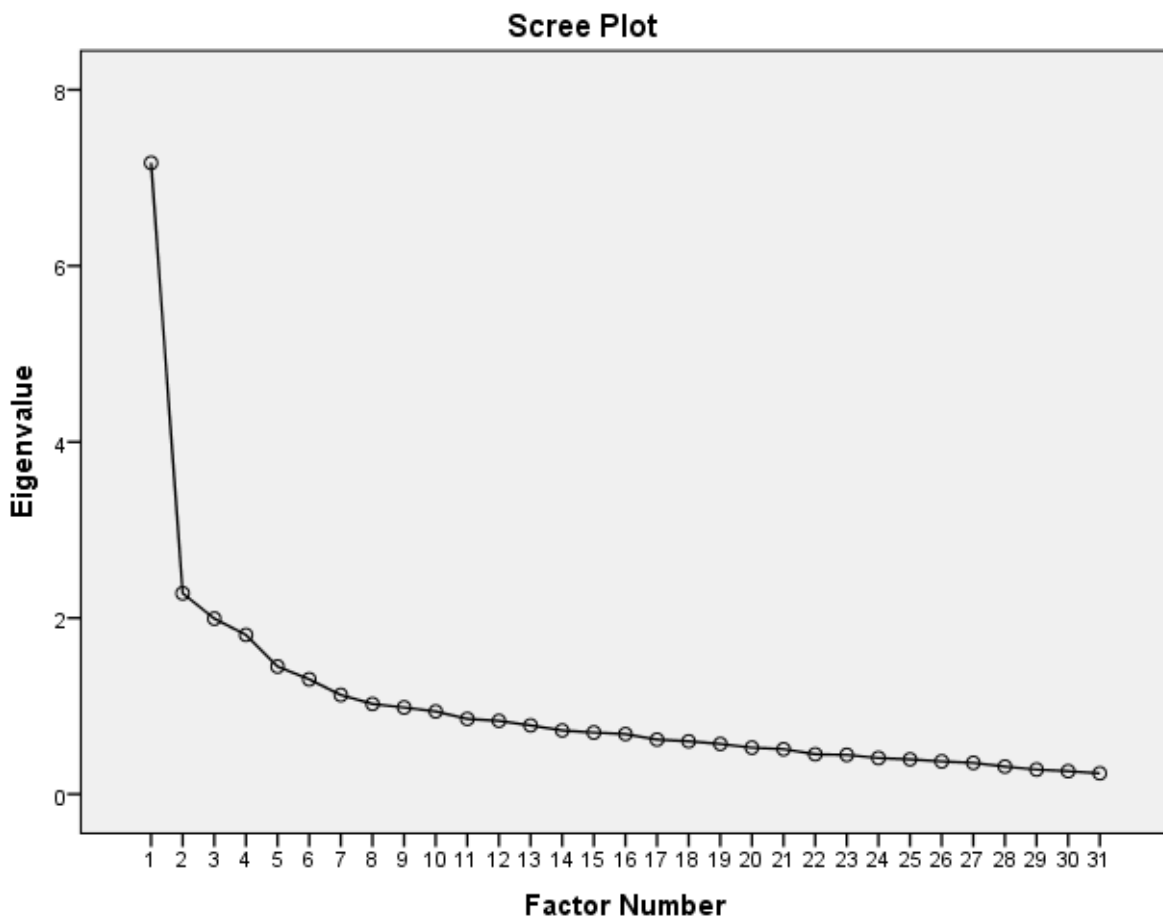
Figure 4.5 **Scree plot for the block Extraversion response set**

Table 4.10. Pattern matrix for the block response scale restricted to five factors for Extraversion

Item	Factor				
	1	2	3	4	5
I connect with people easily	.683				
I am easy to talk to	.674				
I make friends easily	.650				
I share my feelings	.612				
I chat to everyone	.529				
I have many friends	.440				
I control others		.691			
I want to be obeyed		.631			
I am seen as quiet by others			.576		
I am quiet in front of people			.569		
I talk a lot			-.434		
I enjoy telling funny stories				.714	
I enjoy playing tricks on others				.630	
I make others laugh				.600	
I make jokes with everyone				.586	
I am a good storyteller				.547	
I defend my points of view					.724
I tell people when I disagree with them					.649
I have a positive outlook on life					.417
I say what I think					.415

Note: Only loadings above .40 are displayed.
Variables are listed in the order of their highest factor loadings.

Extraversion refers to a person who can easily communicate with other people. The factors that were identified all reflect the domain of Extraversion and were labelled 'Sociability', which accounted for 23.13% of the variance (six items); 'Dominance', which accounted for 7.36% of the variance (two items); 'Talkativeness', which accounted for 6.43% of the variance (three items); 'Positive Emotionality', which accounted for 5.83% of the variance (five items); and 'Outspokenness', which accounted for 4.67% of the variance (four items). Sociability contained the themes of being open about oneself and sociable. Dominance included the theme of being controlling. Talkativeness involved a person's desire to talk and Positive Emotionality related to the theme of being entertaining in social settings. Finally, the Outspokenness factor was concerned with being forthright regarding one's opinions.

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.11. The total cluster reliability is also presented at the bottom of the table.

Table 4.11. Reliability statistics for the block response scale restricted to five factors for Extraversion

Factor	Cronbach alpha	N= 20 items
Sociability	.80	6
Dominance	.68	2
Talkativeness	.67	3
Positive Emotionality	.79	5
Outspokenness	.65	4
Cluster Reliability	**.71**	**20**

Table 4.11 indicates that the four identified factors showed acceptable reliability values, with the Positive Emotionality factor showing high reliability. The Talkativeness factor included one[10] item that had to be reversed.

4.3.3.2   Random item order results for the Extraversion cluster

For the random Extraversion cluster, a five-factor solution (which explained 46.52% of the variance) was found to be most applicable. This was informed by the scree plot (see Figure 4.6), the eigenvalues and the most intelligible qualitative interpretation. An analysis was performed with a cut off at < 0.40 and demonstrated that the fourth factor did not load any visible items; nonetheless the fifth factor still remained the superior choice for analysis. Additional analyses were performed to improve the output of the analysis and the cut off was set at < 0.35 (to allow for more items to load). However, similar results were obtained and the < 0.40 results were therefore utilized for consistency and comparability reasons. These reasons related not only to the block response set, but also to the rest of the SAPI

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[10] "I talk a lot".

clusters. As can be seen in Table 4.12 below 16 of the 31 items loaded (at < 0.40) onto the five random Extraversion factors.
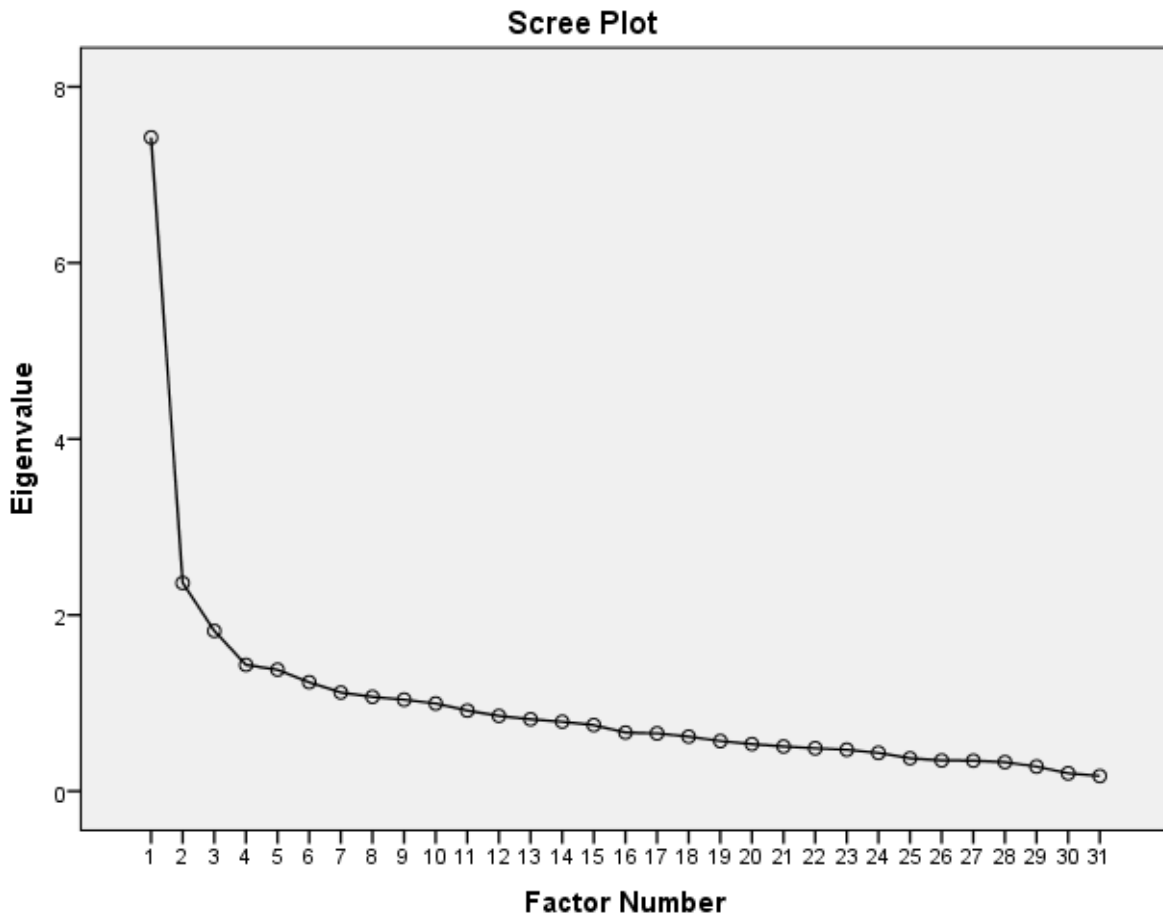
Figure 4.6 **Scree plot for the random Extraversion response set**

Table 4.12: Pattern matrix for the random response scale restricted to five factors for Extraversion

Item	Factor				
	1	2	3	4	5
I connect with people easily	1.059				
I make friends easily	.608				
I have good social skills	.511				
I enjoy playing with others	.433				
I enjoy telling funny stories		.663			
I make jokes with everyone		.576			
I enjoy playing tricks on others		.570			
I make others laugh		.517			

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I am a good storyteller	.410		
I make others feel good		.529	
I have a positive outlook on life		.512	
I am open about my mistakes		.418	
I share my feelings		.415	
I am quiet in front of people			.690
I am seen as quiet by others			.645
I talk a lot			-.437

Note: Only loadings above .40 are displayed.
Variables are listed in the order of their highest factor loadings

The pattern matrix as seen above included the factors of 'Sociability', which accounted for 23.95% of the variance (four items); 'Positive Emotionality', which accounted for 7.63% of the variance (five items); 'Expressiveness', which accounted for 5.87% of the variance (four items); and 'Talkativeness', which accounted for 4.62% of the variance (three items). The Sociability factor included themes of being open and accessible to others, resulting in being well-liked. The Positive Emotionality factor was based on the theme of being entertaining in social settings. The Expressiveness factor indicated a tendency to be open towards others and life in general. Lastly, the Talkativeness factor contained the theme of being talkative.

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.13. The total cluster reliability is also presented at the bottom of the table.

Table 4.13 Reliability statistics for the random response scale restricted to five factors for Extraversion

Factor	Cronbach alpha	N= 16 items
Sociability	.82	4
Positive Emotionality	.75	5
Expressiveness	.63	4
No items in factor 4	**NA**	0
Talkativeness	.67	3
Cluster Reliability	**.67**	**16**

Table 4.13 indicates that of the five identified factors, three factors (Positive Emotionality, Expressiveness, and Talkativeness) showed an acceptable reliability value while Sociability had a high reliability value. The fourth factor had no value as no items loaded on the factor. The Talkativeness factor included a reversed item[11] to improve the Chronbach alpha.

4.3.3.3 *Comparison between the block- and random-response scales for Extraversion*

Both the block- and random-response sets indicated more interpretable themes with a five-factor solution, although only four factors loaded items in the random factor analysis. The block- and random-response sets both included Sociability, Positive Emotionality, and Talkativeness factors. The Talkativeness factor was duplicated completely in both the random- and block-response sets, with three items[12] each. The Sociability factor contained two[13] duplicated items and the Positive Emotionality factor was also duplicated completely in both response sets, containing five[14] items each. The random Extraversion cluster also included an Expressiveness factor, whereas the block Extraversion cluster included Outspokenness and Dominance factors.

4.3.3.4 *Determining the factor structure of Extraversion*

The SAPI structure for the Extraversion cluster contains four sub-clusters, labelled Dominance, Expressiveness, Positive emotionality and Sociability (Nel et al., 2012). Both response sets contained a new factor, labelled Talkativeness, while the block response set also included an Outspokenness factor. In addition, three[15] of the five factors found in the random response set were similar to those contained in the conceptual qualitative personality structure. The block response set also replicated three[16] factors from the conceptual qualitative personality structure.

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[11] "I talk a lot".

[12] "I am quiet in front of people", "I am seen as quiet by others", and the reversed item in both block- and random- response sets of "I talk a lot".

[13] "I connect with people easily" and "I make friends easily".

[14] "I enjoy telling funny stories", "I make jokes with everyone", "I enjoy playing tricks on others", "I make others laugh", and "I am a good storyteller".

[15] Sociability, Positive Emotionality and Expressiveness

[16] Sociability, Dominance and Positive Emotionality

It should also be noted that the block Dominance factor only contained two items and the Talkativeness factors only loaded three items. According to Costello and Osborne (2005), factors with less than three items should be removed for practical reasons. This recommendation is based on the fact that two or three itemed factors do not divulge sufficient information about a specific construct.

The fact that only four of the five possible factors in the random pattern matrix loaded is a clear indication that the block response set is the more appropriate structure to use to assess Extraversion. In conclusion, the reliability was higher for the overall block response set (0.71) than for the random response set (0.67). Therefore the block response set is recommended for future assessment of the Extraversion cluster.

4.3.4 FACILITATING

"Facilitating could be described as directing people according to one's own experiences, guiding others through example and advice, and proactively encouraging people by one's own behaviour" (Nel, 2008, p. 125). Facilitating also includes teaching others about right and wrong and motivating others so that they realize their potential. A person with a high Facilitation score is likely to be well respected as they are seen as a role model for the community (Nel et al., 2012). The Facilitation cluster can thus be summarised as relating to the beneficial influence of a person on others (Nel et al., 2012).

4.3.4.1   *Block item order results for the Facilitating cluster*

For the block Facilitating cluster, a three-factor solution (which explained 57.80% of the variance) was found to be most applicable. This was informed by the scree plot (see Figure 4.7), the eigenvalues and the most intelligible qualitative interpretation. As can be seen in Table 4.14 below 14 of the 17 items loaded (at < 0.40) onto the four factors.
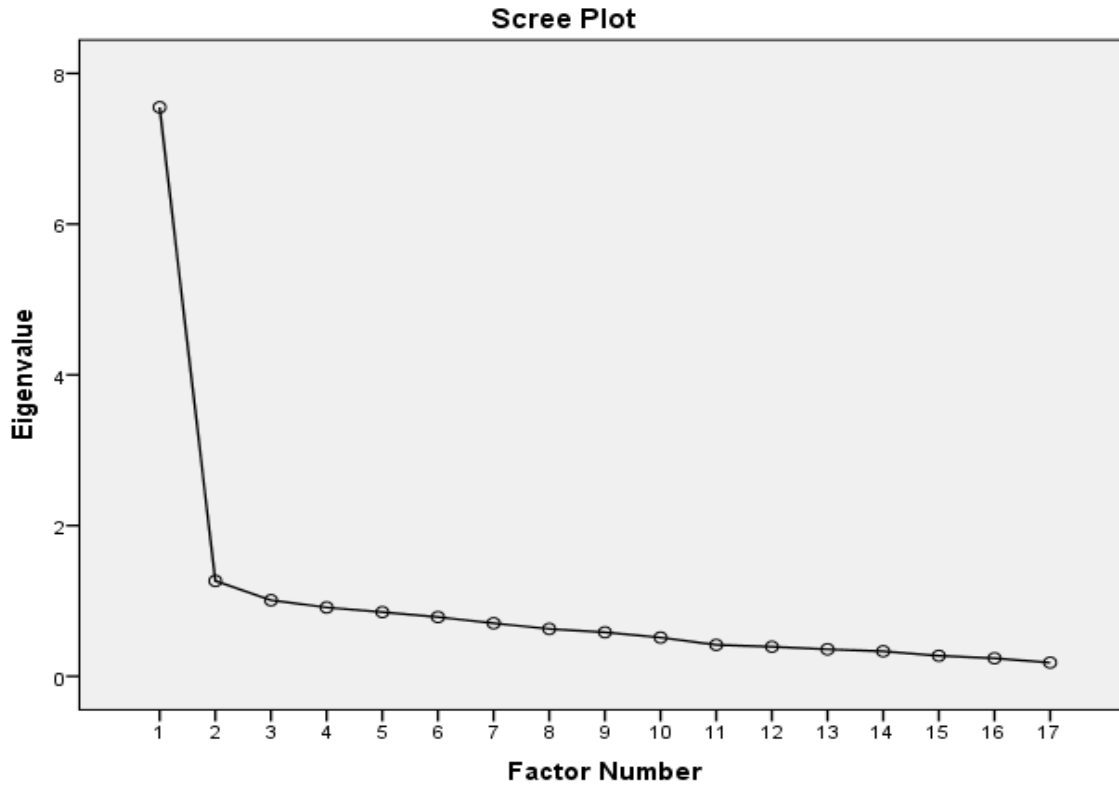
Figure 4.7 Scree plot for the block Facilitating response set

Table 4.14. Pattern matrix for the block response scale restricted to three factors for Facilitating

Item	Factor		
	1	2	3
I help people realize their potential	.755		
I am a source of inspiration to people	.720		
I am an example for others	.704		
I am a good leader	.640		
I make people believe in their own abilities	.560		
I teach people ways of doing things	.526		
I make others better persons	.430		
I give advice to others about their future	.425		
I guide people in life		-.966	
I encourage people to develop		-.599	
I wish others to be successful			.609
I wish people to achieve their goals			.557
I care about other people's future			.447
I motivate others to improve			.428

Note: Only loadings above .40 are displayed.
Variables are listed in the order of their highest factor loadings.

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The three factors that emerged as a result of the analysis were labelled Guidance, Guide and Encourage, and Encouragement. The 'Guidance' factor accounted for 44.41% of the variance (eight items); the 'Guide and Encourage' factor accounted for 7.45% of the variance (two items); and 'Encouraging others' accounted for 5.94% of the variance (four items). The Guidance factor focused more on the physical components of facilitating, such as teaching, advising and acting like a role model. In contrast, the Encouragement factor focused on the more supportive, motivating and caring aspects of Facilitating, such as 'wishing others well'. The 'Guide and Encourage' factor was a contradicting factor as it combined elements of the other two factors, namely being encouraging and guiding others.

After each factor had been determined, the reliability of each of the three factors was analysed and is reported in Table 4.15. The total cluster reliability is also presented at the bottom of the table.

Table 4.15. Reliability statistics for the block response scale restricted to two factors for Facilitating

Factor	Cronbach alpha	N= 14 items
Guidance	.89	8
Guide and Encourage	.86	2
Encouraging Others	.72	4
Cluster Reliability	**.92**	**14**

Table 4.15 indicates that two factors (Guidance and Guide and Encourage) showed high reliability values above 0.80 and the Encouraging Others factor showed acceptable reliability.

4.3.4.2   *Random item order results for the Facilitating cluster*

For the random Facilitating cluster, a three-factor solution (which explained 52.77% of the variance) was found to be most applicable. This was informed by the scree plot (see

Figure 4.8), the eigenvalues and the most intelligible qualitative interpretation. As can be seen in Table 4.16 below, 15 of the 17 items loaded (at < 0.40) onto the four factors.
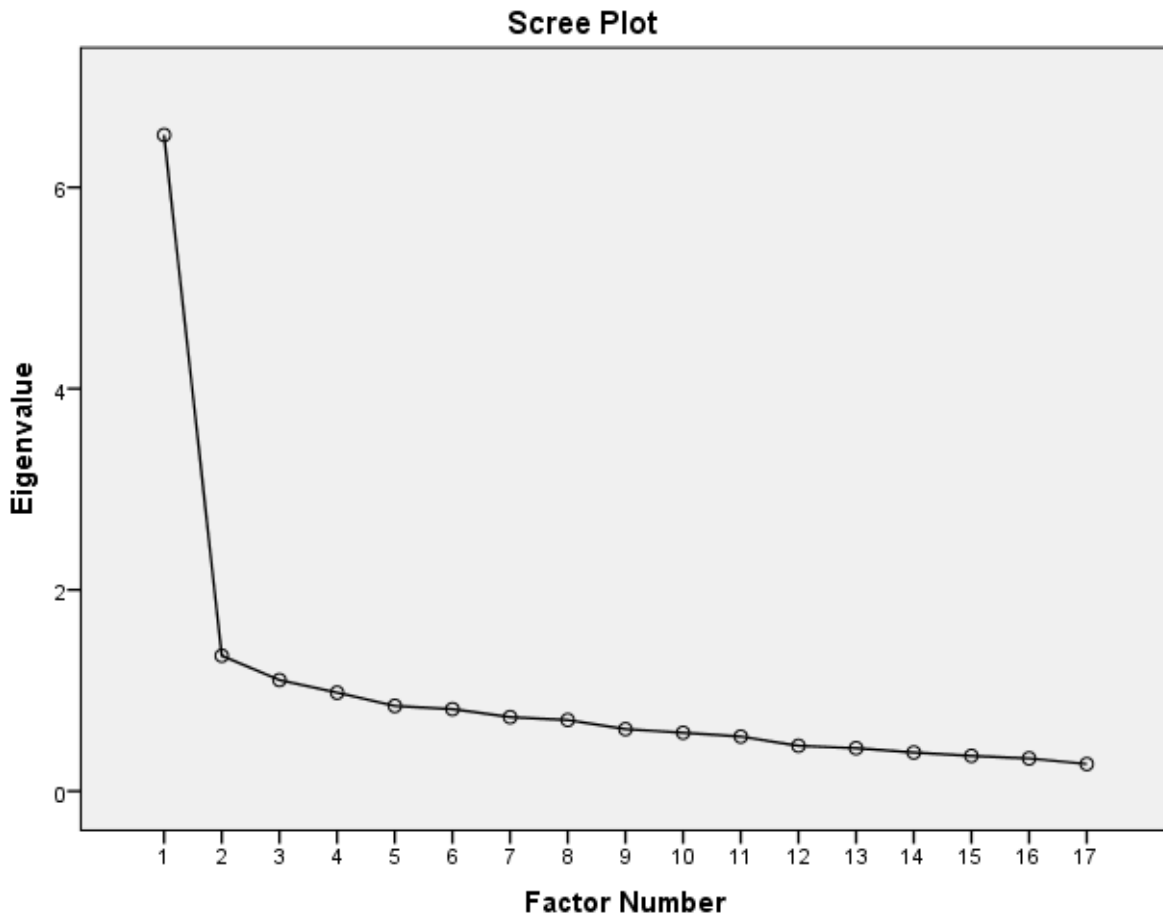
Figure 4.8 Scree plot for the random Facilitating response set

Table 4.16. Pattern matrix for the random response scale restricted to three factors for Facilitating

Item	Factor		
	1	2	3
I wish people to achieve their goals	.875		
I wish others to be successful	.613		
I make others better persons	.446		
I encourage people to develop	.443		
I care about other people's future	.407		
I am a source of inspiration to people		.854	
I am an example for others		.540	
I tell stories with a moral			.608
I manage people well			.605
I give advice to others about their future			.522

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I am a good leader	.514
I help people realize their potential	.423
I motivate others to improve	.419
I teach people ways of doing things	.415
I guide people in life	.413

Note: Only loadings above .40 are displayed.

Variables are listed in the order of their highest factor loadings.

Based on Table 4.16 above the three factors were labelled 'Encouraging others', which accounted for 38.36% of the variance (five items); 'Inspiration', which accounted for 7.91% of the variance (two items); and 'Guidance', which accounted for 6.50% of the variance (eight items). Encouraging others was based on themes of motivation, encouragement and wishing for success. The Inspiration factor included themes of being inspirational and a role-model. The Guidance factor was concerned with the physical components of Facilitating such as advising and teaching.

After each factor had been determined, the reliability of each of the three factors was analysed and is reported in Table 4.17. The total cluster reliability is also presented at the bottom of the table.

Table 4.17. Reliability statistics for the random response scale restricted to three factors for Facilitating

Factor	Cronbach alpha	N= 15 items
Encouraging Others	.79	5
Inspiration	.68	2
Guidance	.83	8
Cluster Reliability	**.89**	**15**

Table 4.17 indicates that two factors (Inspiration and Guidance) showed high reliability values and Encouraging others had an acceptable reliability value of above 0.60.

4.3.4.3 Comparison between the block- and random-response scales for Facilitating

Both the block- and the random-response sets loaded onto three factors. The block- and random-response sets shared the Encouraging others and Guidance factors, which are part of the conceptual qualitative Facilitating cluster. The Encouraging others factor had three[17] items that were equivalent to those in the conceptual Facilitating cluster while the the Guidance factor had four[18] equivalent items. The random Inspiration and block Guide and Encourage factors had no items in common.

4.3.4.4 Determining the factor structure of Facilitating

According to the SAPI project the Facilitating cluster consists of two sub-clusters, labelled Guidance and Encouraging others (Nel et al., 2012). When analysing the response sets, it was clear that the block- and random-response sets loaded very similarly. Both response sets loaded three factors, of which two factors were equivalent to the sub-clusters in the conceptual qualitative personality structure. The two newly identified factors for both the random- and block-response sets also presented with only two items each and therefore should ideally be removed from future analysis (Costello & Osborne, 2005; Labuschagne, 2010).

Both response sets reported acceptable Chronbach alpha values. The block Facilitating cluster had the highest Chronbach alpha value (0.92), while the random Chronbach alpha value was 0.89. These values are so similar that it was not useful to compare them. It was concluded that both the random- and the block-response sets would suffice to adequately assess the Facilitation cluster using a three-factor solution.

4.3.5 INTEGRITY

Integrity "is described as the moral consciousness of a human being, characterised by being honest, loyal and dependable" (Nel, 2008, p. 125). McFall (1987) listed similar

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[17] "I wish others to be successful", "I wish people to achieve their goals", and "I care about other people's future".
[18] "I help people to realize their potential", "I am a good leader", "I teach people ways of doing things", and "I give advice to others about their future".

conventional standards of morality and suggested that truth telling, honesty, and fairness are integral to the concept of integrity. According to Lötter (2010), definitions of integrity consistently relate to honesty, loyalty, telling the truth, consistency in behaviour, fairness, being morally conscious, taking responsibility and keeping promises.

4.3.5.1 Block item order results for the Integrity cluster

For the block Integrity cluster, a four-factor solution (which explained 55.10% of the variance) was found to be most applicable. This was informed by the scree plot (see Figure 4.9), the eigenvalues and the most intelligible qualitative interpretation. As can be seen in Table 4.18 below 14 of the 20 items loaded (at < 0.40) onto the four factors.

Figure 4.9 **Scree plot for the block Integrity response set**

Table 4.18. Pattern matrix for the block response scale restricted to four factors for Integrity

Item	Factor			
	1	2	3	4
I am loyal to others	1.015			
I give everyone a chance	.428			
I do what is expected of me		.562		
I take good care of my things		.530		
I take responsibility for my mistakes		.505		
I am a friend one can rely on		.453		
I am truthful in what I do	.410	.436		
I cheat			.595	
I disappoint others			.562	
I try to fool others		-.407	.516	
I discriminate against people			.477	
I do the right thing				.603
I tell the truth				.447
I am a true friend to others				.442

Note: Only loadings above .40 are displayed.
Variables are listed in the order of their highest factor loadings.

The four factors that emerged were labelled 'Fairness', which accounted for 33.46% of the variance (two items); 'Responsibility', which accounted for 9.58% of the variance (five items); 'Immorality', which accounted for 6.02% of the variance (four items); and 'Honesty', which accounted for 6.0% of the variance (four items). Fairness was based on aspects of being loyal and impartial in an ethically responsible manner and the Responsibility factor included themes of being truthful, trustworthy, and responsible. The Immorality factor indicated themes of dishonesty, deceit and discrimination. Honesty was related to aspects of being truthful and keeping promises.

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.19. The total cluster reliability is also presented at the bottom of the table.

**Table 4.19. Reliability statistics for the block response scale restricted to four factors for Integrity**

Factor	Cronbach alpha	N= 15 items
Fairness	.76	3
Responsibility	.75	4
Immorality	.66	4
Honesty	.76	4
Cluster Reliability	**.65**	**15**

Table 4.19 indicates that all four factors as well as the overall block Integrity cluster showed acceptable reliability values of above 0.60. The overall block Integrity cluster's Chronbach value could increase to 0.71 if the item "I try to fool others" was removed from the analysis. However, it was not removed from this response set for comparability reasons.

4.3.5.2   *Random item order results for the Integrity cluster*

For the random Integrity cluster, a three-factor solution (which explained 44.00% of the variance was found to be most applicable. This was informed by the scree plot (see Figure 4.10), the eigenvalues and the most intelligible qualitative interpretation. As can be seen in Table 4.20 below 15 of the 20 items loaded (at < 0.40) onto the four Random Integrity factors.

Figure 4.10 Scree plot for the random Integrity response set

Table 4.20. Pattern matrix for the random response scale restricted to three factors for Integrity

Item	Factor		
	1	2	3
I am truthful in what I do	.740		
I do what is expected of me	.721		
I tell the truth	.599		
I take good care of my things	.589		
I am loyal to others	.583		
I take responsibility for my mistakes	.524		
I pay my debts	.452		
I do the right thing		.746	
I keep my promises		.667	
I am honest with other people		.569	
I am a true friend to others		.473	-.432
I treat all people equally		.408	
I favour some people above others			.435
I discriminate against people			.433
I am a friend one can rely on			-.423

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Note: Only loadings above .40 are displayed.
Variables are listed in the order of their highest factor loadings.

Table 4.20 indicates three main factors, which were identified as Integrity, Morally Conscious and Fairness. 'Integrity' accounted for 26.78% of the variance (seven items); 'Morally Conscious' accounted for 9.55% of the variance (four items); and 'Fairness' accounted for 7.72% of the variance (four items). Integrity pertained to themes of being loyal and responsible. The Morally Conscious factor included aspects of doing the right thing and treating people in a moral manner. In the Fairness factor, the themes of being discriminatory and selective about people were visible.

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.21. The total cluster reliability is also presented at the bottom of the table.

Table 4.21. Reliability statistics for the random response scale restricted to three factors for Integrity

Factor	Cronbach alpha	N= 15 items
Integrity	.80	7
Morally Conscious	.70	4
Fairness	**.56**	4
Cluster Reliability	**.60**	**15**

Table 4.21 indicates that of the three identified factors, only the Fairness factor showed an unacceptable Chronbach alpha value of below 0.60. The Fairness factor also contained two[19] items that had to be reversed to improve the reliability of the factor. The Integrity factor had a high reliability value and the reliability of the Morally Conscious factor was deemed acceptable.

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[19] "I am a true friend to others" and "I am a friend one can rely on"

4.3.5.3 Comparison between the block- and random-response scales for Integrity

The comparison of the block- and random-response sets indicated that both response sets included 15 items. The block response set showed the best results with a four-factor solution, whereas the random response set yielded a three-factor solution. The block- and random-response sets only shared the Fairness factor; however no items were similar in the two Fairness factors. However, it is suggested that the block Fairness factor be removed from future analysis because the factor only contains three items and therefore does not reveal sufficient information about a specific construct (Costello & Osborne, 2005; Labuschagne, 2010).

The block response set yielded three new factors namely, Responsibility, Immorality, and Honesty, and the random response set yielded a single new factor, labelled Morally Conscious.

4.3.5.4 Determining the factor structure of Integrity

According to the SAPI project the Integrity cluster consists of two sub-clusters, namely Integrity and Fairness (Nel et al., 2012). The analysis of the data revealed that neither of the response sets yielded the same factor structure as that suggested by the conceptual qualitative personality structure. However, the random response set did replicate the conceptual structure more closely as it included both the Integrity and Fairness factors as well as an additional Morally Conscious factor. The block response set only replicated the Fairness factor.

However, the block Integrity cluster's reliability and factorial structure suggest that it is more suitable than the random Integrity cluster for measuring the SAPI Integrity cluster. All four factors included in the block response wet were reliable, whereas the random response set only had two factors with an acceptable Cronbach alpha. The random Fairness factor contained two items that needed to be reversed in order to perform the reliability analysis and was still found to be unreliable based on the 0.60 cut off suggested by Maree (2010). The overall reliability of the block response set was also more significant (0.65) than the reliability score of the random response set (0.60).

In conclusion, a comparison of the structure of the Integrity cluster from the qualitative study with the factor analysis of both the block- and random-response sets indicates that the block Integrity response set is the better option.

4.3.6 INTELLECT

Intellect is described as the capacity for thinking and acquiring knowledge, having a special natural ability or aptitude, being knowledgeable and observant of outward and inward things, having a degree of efficiency in certain issues, and having insight in emotions and internal disturbances of others (Nel, 2008, p. 125).

It should also be noted that there are various types of intelligence. According to Gardner's (1983) theory of multiple intelligences it is important to differentiate between mental skills, talents, or abilities. This includes differentiating between musical, bodily kinesthetics, logical-mathematical, linguistic, spatial, interpersonal, and intrapersonal skills. Intelligence has also been defined as an individual's ability to learn new things (Chamorro-Premuzic & Furnham, 2005) and adapt to certain environments (Bergh & Theron, 2003). According to Bergh and Theron (2003), non-intellectual aspects such as motivation, interests, personality factors and emotional conditions also contribute to the concept of intelligence. Intellect also includes Introspective reflection, Intellectual knowledge and Artistic imagination (Ashton, Lee, Vernon, & Jang, 2000; Goldberg, 1994; Saucier, 1994). According to Labuschagne (2010), intellect can be divided into two groups, namely Intellect and Aesthetics. Intellect consists of themes pertaining to Intellect, being Knowledgeable, Logical, Self-insight, Articulate, Competent, Perceptive, Social intellect and Understanding, whereas Aesthetics is concerned with being Artistic and Creative.

4.3.6.1   Block item order results for the Intellect cluster

For the block Intellect cluster, a three-factor solution (which explained 51.10% of the variance) was found to be most applicable. This was informed by the scree plot (see Figure 4.11), the eigenvalues and the most intelligible qualitative interpretation. As can be seen in Table 4.4 below, 11 of the 15 items loaded (at < 0.40) onto the four factors.

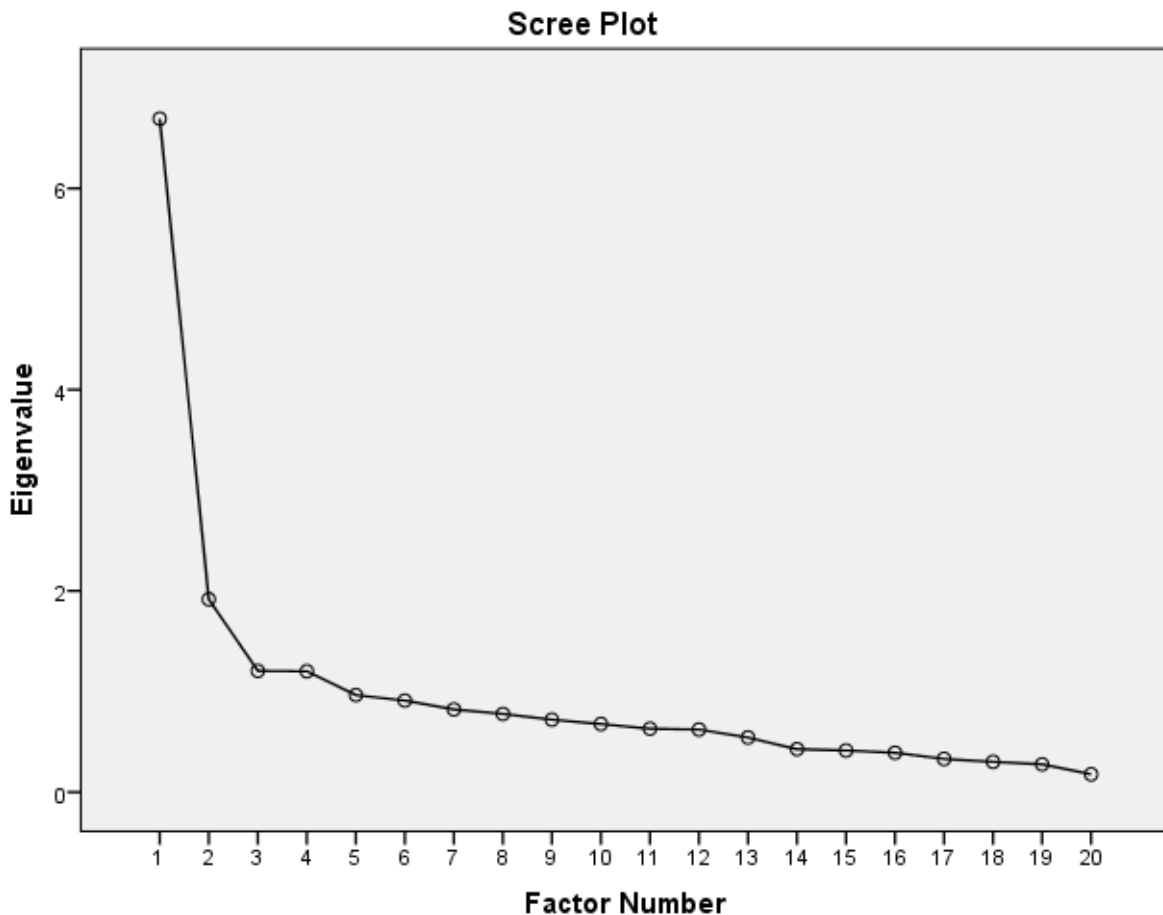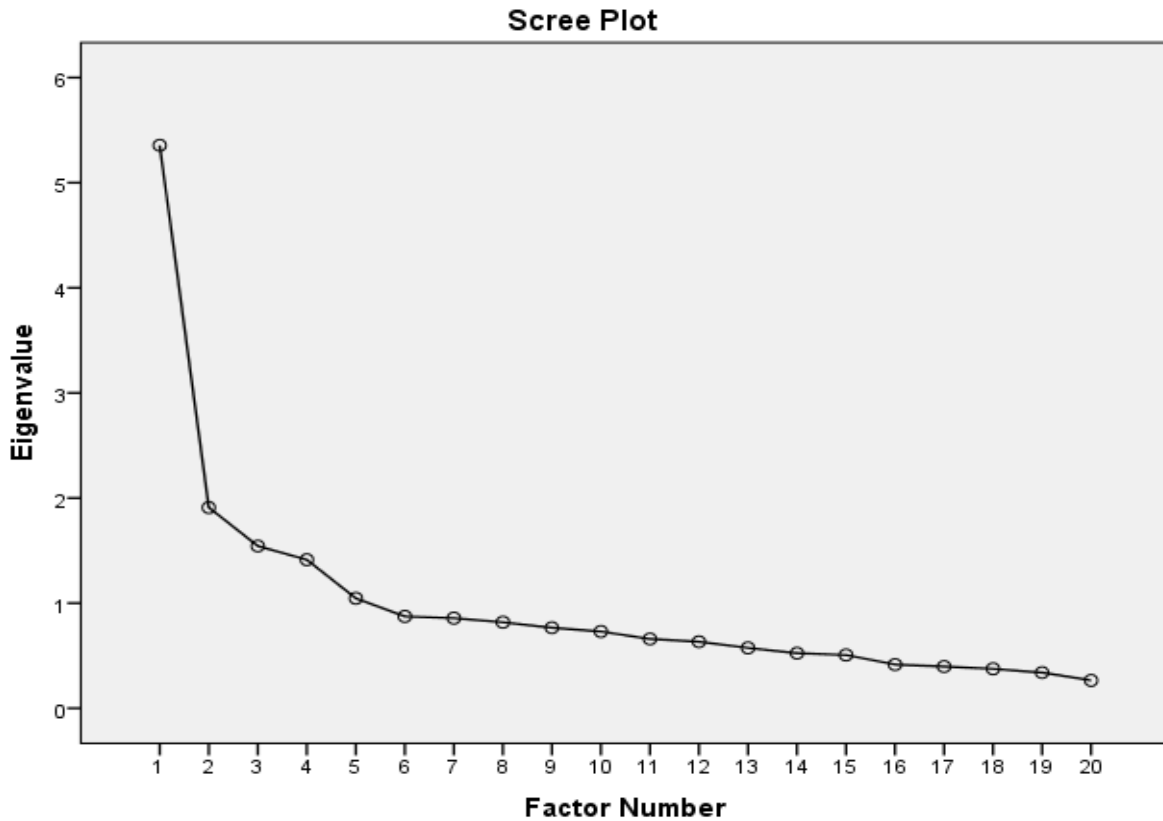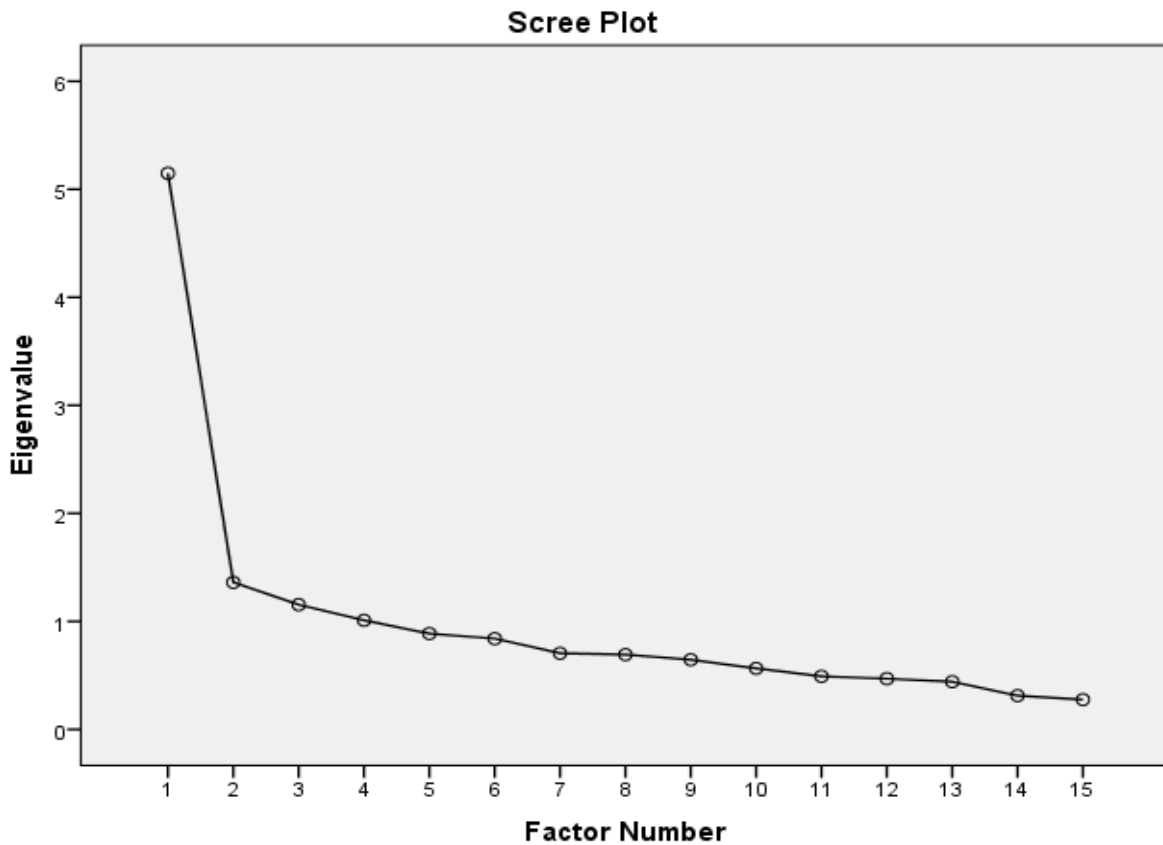*Figure 4.11* **Scree plot for the block Intellect response set**

Table 4.22. Pattern matrix for the block response scale restricted to three factors for Intellect

Item	Factor		
	1	2	3
I am able to plan things	.875		
I am able to relate to people	.592		
I solve problems in new ways	.578		
I am a good speaker	.573		
I explain ideas to others clearly	.515		
I make good decisions	.414		
I understand other people		-.868	
I am able to understand others' feelings		-.703	
I think of new ideas			.581
I have knowledge about many things			.572
I undertake new initiatives			.481

Note: Only loadings above .40 are displayed.

Variables are listed in the order of their highest factor loadings.

The three factors that were identified were labelled Skillfulness, Social Intelligence, and Reasoning. 'Skillfulness' accounted for 34.32% of the variance (six items); 'Social Intelligence' accounted for 9.10% of the variance (two items); and 'Reasoning' accounted for 7.70% of the variance (three items). The Skillfulness factor listed competencies that the respondents believe they possess, such as being well-articulated. The Social Intelligence factor related to the theme of emotional awareness of others and being understanding towards the needs of others. Reasoning was based on themes of being innovative and knowledgeable.

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.23. The total cluster reliability is also presented at the bottom of the table.

Table 4.23. Reliability statistics for the block response scale restricted to three factors for Intellect

Factor	Cronbach alpha	N= 11 items
Skilfulness	.79	6
Social Intellect	.78	2
Reasoning	.60	3
Cluster Reliability	**.83**	**11**

Table 4.23 indicates that all three identified factors yielded Cronbach alpha values above 0.60, which is seen as acceptable.

4.3.6.2   *Random item order results for the Intellect cluster*

For the random Intellect cluster, a three-factor solution (which explained 47.30% of the variance) was found to be most applicable. This was informed by the scree plot (see Figure 4.12), the eigenvalues and the most intelligible qualitative interpretation. An analysis was performed with a cut off of < 0.40 and showed that two of the factors only presented with one item each. The factor analysis further showed that factors two to five all had single item factors. These results were deemed unacceptable statistically and

empirically for analysis and it was therefore decided to make use of a three-factor solution as this could be compared to the block response set. Additional analysis was performed to improve the output of the analysis by setting the cut off at < 0.35 (to allow for more items to load onto the problematic factors). However, similar results were obtained and therefore the < 0.40 results were utilized due to consistency and comparability reasons. As can be seen in Table 4.24 below 11 of the 15 items loaded (at < 0.40) onto the three factors.
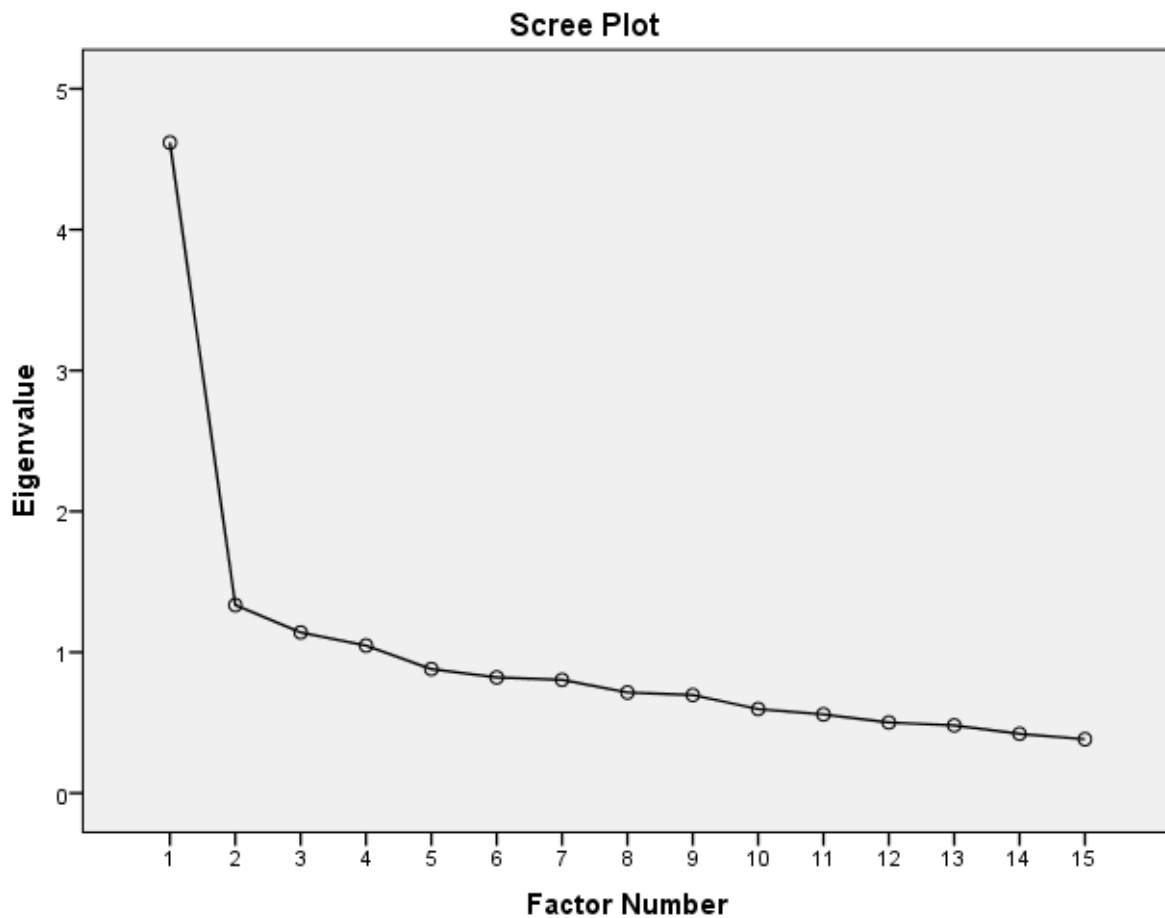
Figure 4.12 **Scree plot for the random Intellect response set**

Table 4.24. **Pattern matrix for the random response scale restricted to three factors for Intellect**

Item	Factor		
	1	2	3
I am able to understand others' feelings	.655		
I solve problems in new ways	.643		
I understand other people	.627		
I am easily understood	.624		

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I am able to plan things	.589		
I have knowledge about many things	.537		
I am able to learn quickly	.493		
I explain ideas to others clearly	.479		
I think of new ideas	.431		
I am a good speaker	.415		
I make good decisions	.415		
I am able to relate to people		-.737	
I can sell things to other people			.612

Note: Only loadings above .40 are displayed.

Variables are listed in the order of their highest factor loadings.

The factor that materialized within the three-factor solution was labelled 'Skillfulness' and accounted for 30.80% of the variance (11 items). In addition, the item "I am able to relate to people" loaded on the second factor and accounted for 8.90% of the variance and the item "I can sell things to other people" loaded on the third factor and accounted for 7.60% of the variance. The Skillfulness factor consisted of themes pertaining to being competent, articulate and perceptive.

After each factor had been determined, the reliability of each of the three factors was analysed and is reported in Table 4.25. The total cluster reliability is also presented at the bottom of the table.

Table 4.25. Reliability statistics for the random response scale restricted to three factors for Intellect

Factor	Cronbach alpha	N= 13 items
Skilfulness	.82	11
"I am able to relate to people"	NA	1
"I can sell things to other people"	NA	1
Cluster Reliability	**.80**	**13**

From Table 4.25 it is evident that the Skillfulness factor yielded a high Cronbach alpha coefficient (Field, 2009; Maree, 2010). The two one-itemed factors' reliabilities could not be assessed as there were too few items present per factor for the reliability analysis to be

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conducted. Therefore, for practical reasons, the one itemed factors should be removed from future analyses (Costello & Osborne, 2005; Labuschagne, 2010).

4.3.6.3 Comparison between the block- and random-response scales for Intellect

Both the block- and the random-response sets loaded onto three factors. However the random Intellect cluster only yielded one useable factor, labelled the Skillfulness factor. This is problematic and possible causes are discussed in Chapter 5. The block- and random--response sets both loaded the Skillfulness factor, which contained five[20] equivalent items. The block response set also identified the Social Intellect and Reasoning factors, which form part of the conceptual SAPI Intellect cluster. Two[21] items from the block Social Intellect factor were contained in the random Skillfulness factor while two[22] items in the block Reasoning factor were contained in the random Skillfulness factor.

4.3.6.4 Determining the factor structure of Intellect

According to the SAPI project the Intellect cluster consisted of four sub-clusters, namely Aesthetics, Reasoning, Skilfulness and Social Intellect (Nel et al., 2012). Both the block- and the random-response sets loaded three factors, which replicated the factors of Reasoning, Skillfulness and Social Intellect.

Reasoning refers to the ability to think logically, to solve problems through planning and the use of principles, as well as the capacity to shape one's beliefs and behaviour to accord with one's knowledge of the world (Simons, Irwin, & Drinnin, 1987). Social intellect can be described as an individual's ability to understand and manage other people, a general tendency to act wisely in human relations, as well as having self-awareness and learned or practiced interpersonal skills (Albrecht, 2006; Thorndike, 1920). Nel (2008) defined Skillfulness as the ability to do things well, particularly in terms of having a high level of competence in work situations or having sufficient communication skills.

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[20] "I am able to plan things", "I solve problems in new ways", "I explain ideas to others clearly", "I am a good speaker" and "I make good decisions"

[21] "I am able to understand others' feelings" and "I understand other people"

[22] "I have knowledge about many things" and "I think of new ideas".

The block Intellect response yielded a three-factor solution, including all of the factors related to the sub-clusters in the conceptual qualitative personality structure, namely Social Intellect, Reasoning and Skilfulness. The random Intellect response set yielded one factor that was similar to the qualitative personality structure's Skilfulness sub-cluster.

Based on the reliability analysis the block factors were all reliable, whereas the random response set had only one reliable factor. The block Intellect cluster also yielded a slight better overall reliability score (0.83) than the random Intellect cluster (0.80). Therefore the analysis of both response scales indicated that the block response set was more suitable for measuring the Intellect cluster, based on both the factor replication and high reliability.

4.3.7 OPENNESS

The Openness cluster may be difficult to comprehend as, according to Ntuli (2012), Openness is not expressed in the same way across different cultures. Piedmont, Bains, McCrae, and Costa (2002) speculated that the Openness cluster fails to replicate cross-culturally and that the construct inadequately represents the South African context as it is imported. Despite these concerns Nel (2008) defined Openness as being receptive to new and different ideas or things or to the opinions of others; it refers to a person who is open or receptive to others or ideas, and a person who wants to learn new things. Openness is related to the domains of Culture (Norman, 1963; Tupe & Christal, 1961), Intelligence (Borgatta, 1964), and Refinement (Smith, 1967). Costa and McCrae (1992b) included some indigenous concepts in the concept of Openness, such as being traditional, a dreamer, progressive, prim and proper, a visionary, and fashion conscious.

4.3.7.1   Block item order results for the Openness cluster

For the block Openness cluster, a four-factor solution (which explained 49.31% of the variance) was found to be most applicable. This was informed by the scree plot (see Figure 4.13), the eigenvalues and the most intelligible qualitative interpretation. As can be seen in Table 4.26 below 17 of the 23 items loaded (at < 0.40) onto the four factors.
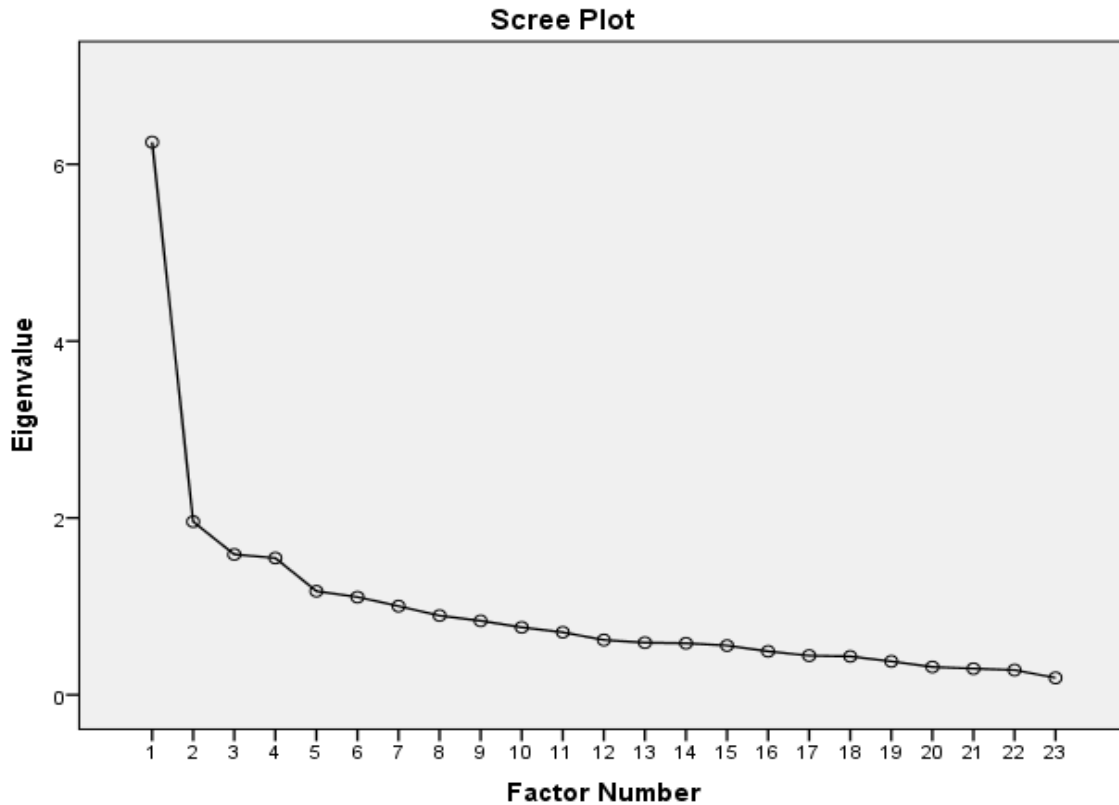
Figure 4.13 **Scree plot for the block Openness response set**

Table 4.26. Pattern matrix for the block response scale restricted to four factors for Openness

Item	Factor			
	1	2	3	4
I want to learn new things	.793			
I am open to new information	.745			
I want to develop myself	.687			
I have many interests	.601			
I am willing to try out new things	.595			
I have a lot of imagination	.582			
I am curious about the world	.578			
I am eager to learn	.569			
I encourage others to study	.538			
I find pleasure in studying	.473			
I am full of new ideas	.469			
I am a religious person		-.924		
I pray for others		-.541		
I respect my culture			-.910	

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I believe in the importance of tradition	-.559	
I take my own decisions		.715
I do what I want to do		.626

Note: Only loadings above .40 are displayed.

Variables are listed in the order of their highest factor loadings.

Table 4.26 shows the four factors, labelled as 'Epistemic Curiosity', which accounted for 27.17% of the variance (11 items); 'Religiosity', which accounted for 8.51% of the variance (two items); 'Traditionalism', which accounted for 6.90% of the variance (two items); and 'Individualism', which accounted for 6.72% of the variance (two items). Epistemic Curiosity was related to themes of having various interests and seeking new knowledge and information through an eagerness to learn. Religiosity and Traditionalism were straightforward factors that directly related to religion and tradition respectively. The Individualism factor was concerned with the self and being independent.

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.27. The total cluster reliability is also presented at the bottom of the table.

Table 4.27. Reliability statistics for the block response scale restricted to four factors for Openness

Factor	Cronbach alpha	N= 17 items
Epistemic Curiosity	.86	11
Traditionalism	.65	2
Religiosity	.67	2
Individualism	.61	2
Cluster Reliability	**.82**	**17**

The reliability analysis indicated that three (Religiosity, Traditionalism, and Individualism) of the four identified factors yielded acceptable reliability values of above 0.6. Epistemic Curiosity yielded a high Cronbach alpha value of above 0.80.

4.3.7.2   Random item order results for the Openness cluster

For the random Openness cluster, a four-factor solution (which explained 46.51% of the variance) was found to be most applicable. This was informed by the scree plot (see Figure 4.14), the eigenvalues and the most intelligible qualitative interpretation. As can be seen in Table 4.28 below, 13 of the 22 items loaded (at < 0.40) onto the four factors.
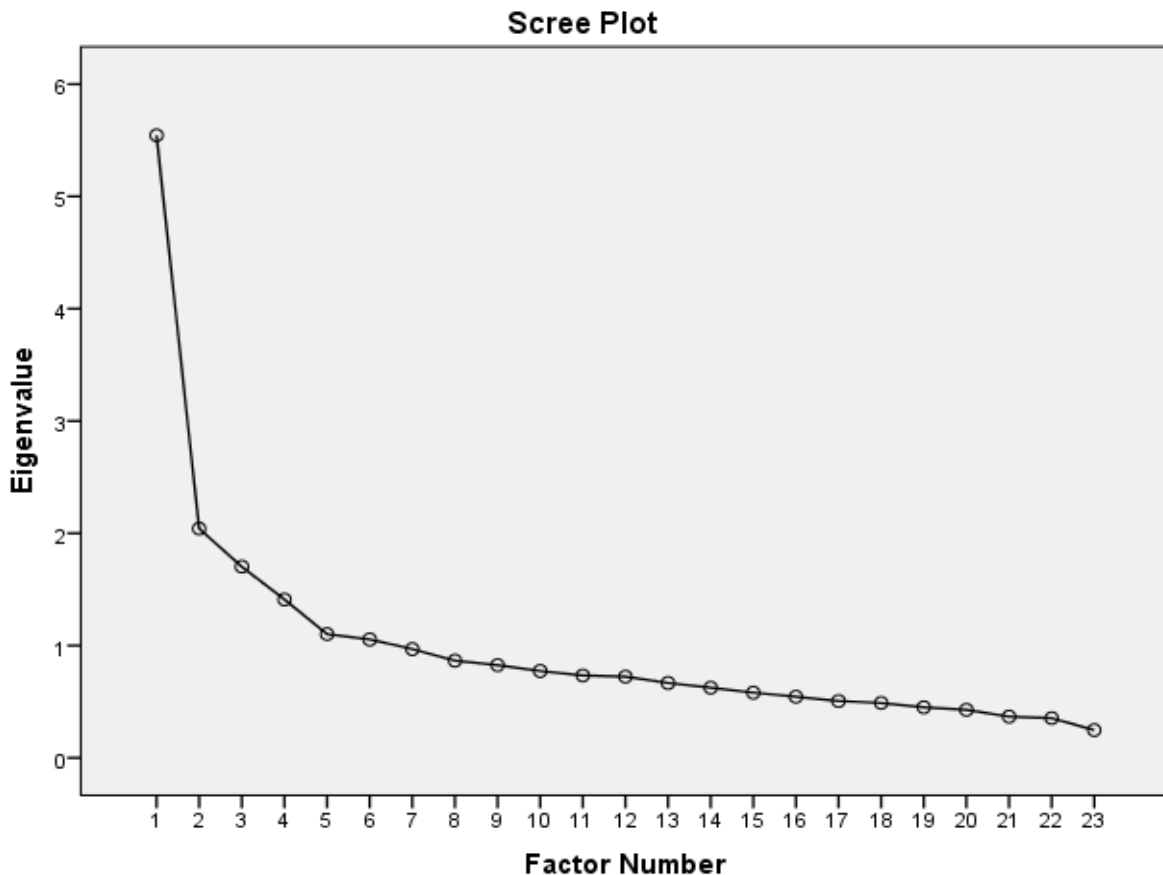
Figure 4.14 **Scree plot for the random Openness response set**

Table 4.28. Pattern matrix for the random response scale restricted to four factors for Openness

Item	Factor			
	1	2	3	4
I want to learn new things	.720			
I encourage others to study	.712			
I want to develop myself	.682			
I am eager to learn	.655			
I am willing to try out new things	.548			

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I find pleasure in studying	.511			
I respect my culture		.849		
I believe in the importance of tradition		.506		
I pray for others			.788	
I am a religious person			.624	
I do what I want to do				.523
I take my own decisions				.429
I have a lot of imagination				.426

Note: Only loadings above .40 are displayed.

Variables are listed in the order of their highest factor loadings.

The four distinctive factors that materialized were labeled 'Traditionalism', which accounted for 8.87% of the variance (two items); 'Individualism', which accounted for 6.13% of the variance (three items); 'Religiosity', which accounted for 7.40% of the variance (two items)'; and 'Epistemic Curiosity', which accounted for 24.11% of the variance (six items). Religiosity and Traditionalism are straightforward factors with the main themes of religion and tradition respectively. These factors are consistent with Costa and McCrae's (1992b) notion of the Openness cluster, as they included indigenous concepts such as tradition within the construct. The Individualism factor was concerned with the self, being independent and having imagination. Epistemic Curiosity portrayed themes of seeking new knowledge and information through an eagerness to learn, this is similar to Nel's (2008) definition provided above.

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.29. The total cluster reliability is also presented at the bottom of the table.

Table 4.29. Reliability statistics for the random response scale restricted to four factors for Openness

Factor	Cronbach alpha	N= 13 items
Traditionalism	.65	2
Individualism	**.42**	3
Religiosity	.68	2
Epistemic Curiosity	.79	6

Cluster Reliability	**.74**	**13**

From Table 4.29 it is evident that three (Epistemic Curiosity, Religiosity and Traditionalism) of the four factors yielded acceptable values of above 0.60 for the Cronbach alpha coefficient (Field, 2009). The Individualism factor yielded an unacceptable Cronbach alpha.

4.3.7.3 Comparison between the block- and random-response scales for Openness

For the block response set, the factor analysis indicated that a four-factor solution was suitable. An analysis of the random response set indicated that a four-factor solution would also be suitable. Both the block- and random-response sets loaded the Epistemic Curiosity, Religiosity, Traditionalism, and Individualism factors. The random Epistemic Curiosity factor duplicated the Epistemic Curiosity factor of the block response set. This factor contained six[23] of the same items for both the random- and block-response sets. The entire Religiosity factor was also mirrored in both the random- and block-response sets[24]. The Traditionalism factor had two[25] replicated items; and the Individualism factor had two[26] replicated items. It would therefore seem that the Openness factor is quite similar for the random- and block-response sets.

4.3.7.4 Determining the factor structure of Openness

According to the SAPI project the Openness cluster consisted of the following four sub-clusters: Broad-mindedness, Epistemic curiosity, Materialism and Openness to Experience (Nel et al., 2012). The block- and random-response sets both loaded three factors (Religiosity, Traditionalism, and Individualism) that did not replicate the conceptual qualitative personality structure. The response sets loaded exactly the same factors and therefore replicated the conceptual qualitative personality structure in the same way, with only the Epistemic Curiosity factor being replicated.

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[23] "I am willing to try out new things"," I find pleasure in studying", "I want to learn new things", "I want to develop myself", "I am eager to learn" and "I encourage others to study"

[24] "I am a religious person", and "I pray for others"

[25] "I respect my culture", and "I believe in the importance of tradition"

[26] "I do what I want to do", and "I take my own decisions"

It should be noted that the block- and random-Traditionalism and Religiosity factors, together with the block Individualism factor, only contained two items each. Therefore for practical reasons these items should be removed from future research (Costello & Osborne, 2005; Labuschagne, 2010). Alternatively more research should be conducted on these three factors, as they continuously arose in the anlaysis process (this is discussed in Chapter 5). This recommendation is based on the fact that a two-itemed factor does not divulge sufficient information about a specific construct, nor does is significantly contribute to the overall reliability of the Openness construct.

In addition, the reliability analysis indicated that the block response set would be a more suitable option to use for interpreting the Openness cluster, as the overall reliability of the block Openness cluster (0.82) was better than its random counterpart (0.74). Also, for the block response set, all factors were reliable, as opposed to the random response set in which only three of the four factors were reliable. Therefore the block response scale is considered more suitable for measuring the Openness cluster.

4.3.8 RELATIONSHIP HARMONY

"Relationship Harmony means a state in which a person believes in keeping good relationships with others, keeping the peace, maintaining relationships on good terms, and being open to understanding and tolerance" (Nel, 2008, p. 125).

Oosthuizen (2011) suggested that Relationship Harmony can be defined as consisting of two facets, labelled Positive Relational Behaviour and Negative Relational Behaviour. The positive pole includes concepts such as being Tolerant, Flexible, Proud, Approachable, Accommodating, Constructive, Appeasing, Welcoming, Forgiving, Peacemaker, Open for others, Peaceful, Co-operative, Good relations with others and Well-mannered. In contrast, the negative pole consists of facets such as being Troublesome, Provoking, Gossiping, Interfering, Arrogant and Argumentative (Oosthuizen, 2011).

4.3.8.1 Block item order results for the Relationship Harmony cluster

For the block Relationship Harmony cluster, a four-factor solution (which explained 42.80% of the variance) was found to be most applicable. This was informed by the scree plot (see Figure 4.15), the eigenvalues and the most intelligible qualitative interpretation. As can be seen in Table 4.30 below, 24 of the 36 items loaded (at < 0.40) onto the four factors.
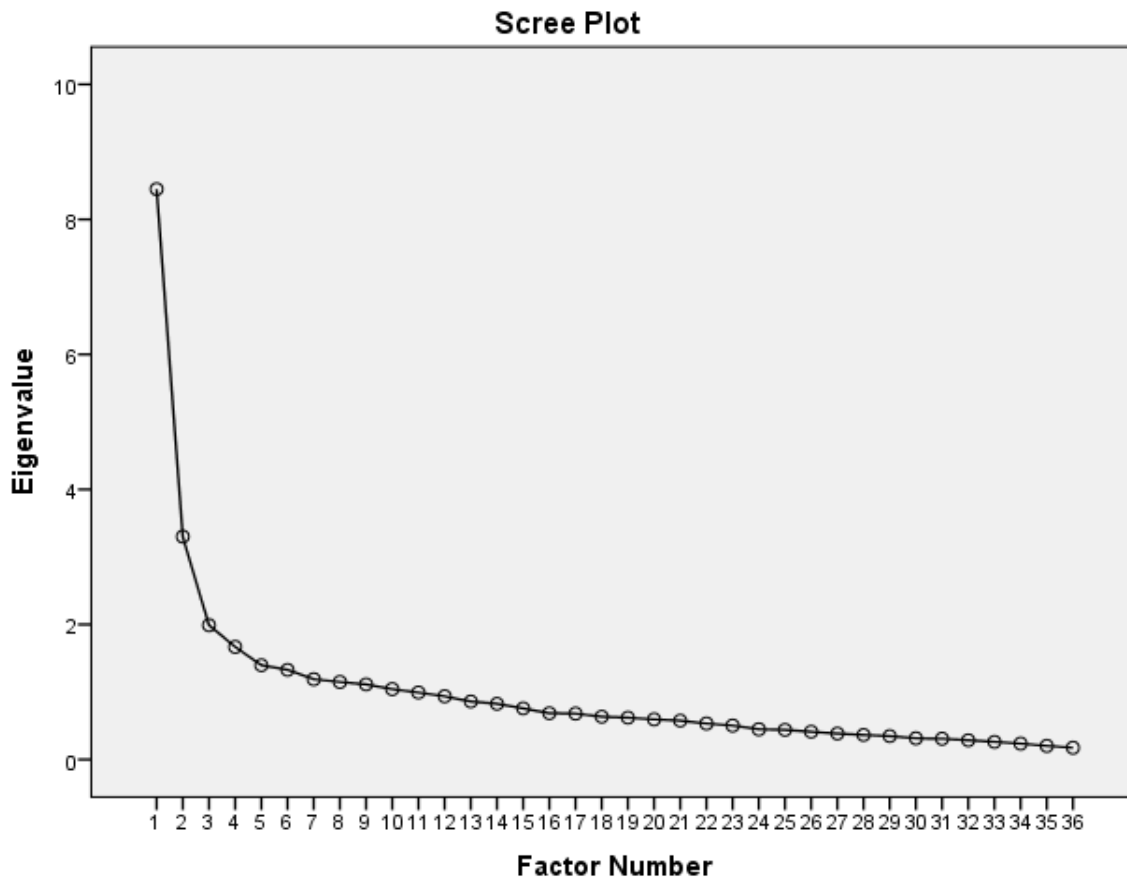

Figure 4.15 **Scree plot for the block Relationship Harmony response set**

Table 4.30. Pattern matrix for the block response scale restricted to four factors for Relationship Harmony

Item	Factor			
	1	2	3	4
I accept change	.744			
I accept the advice of others	.723			
I work well with others	.642			
I adapt to any situation	.559			
I make others feel at home	.523			

I interfere in the lives of others	.704		
I create tension between others	.636		
I provoke others	.630		
I make jokes about other people	.553		
I am better than others	.547		
I think I am more important than others	.531		
I spread rumours about others	.518		
I make fun of others	.471		
I challenge people in front of others	.466		
I forgive others when they have hurt me by mistake		.846	
I apologise if I have made a mistake		.515	
I refuse help from others		-.487	
I forgive easily		.473	
I avoid arguments		.412	
I accept people with their problems			-.698
I relate well to others			-.591
I allow others to ask me questions			-.482
I help others to make peace with each other			-.475
I share helpful ideas			-.439

Note: Only loadings above .40 are displayed.

Variables are listed in the order of their highest factor loadings.

The analysis of the Relationship Harmony cluster resulted in the four underlying factors being labelled 'Approachability', which accounted for 23.47% of the variance (five items); 'Conflict Seeking', which accounted for 9.17% of the variance (nine items); 'Peacemaker', which accounted for 5.53% of the variance (five items); and 'Interpersonal Relatedness', which accounted for 4.63% of the variance (five items). The Approachability factor contained themes of being accepting and welcoming towards others. The Conflict Seeking factor was related to being provoking and superior to others. The Peacemaker factor was listed as a facet under the conceptual Interpersonal relatedness factor and was deemed an appropriate label for this factor (Oosthuizen, 2011). This factor is concerned with forgiveness and being avoidant of conflict. The Interpersonal Relatedness factor contained the theme of being accommodating and open to others (Oosthuizen, 2011).

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.31. The total cluster reliability is also presented at the bottom of the table.

Table 4.31. Reliability statistics for the block response scale restricted to four factors for Relationship Harmony

Factor	Cronbach alpha	N= 24 items
Approachability	.78	5
Conflict Seeking	.81	9
Peacemaker	.71	5
Interpersonal Relatedness	.78	5
Cluster Reliability	**.67**	**24**

The reliability analysis indicated that three of the identified factors showed acceptable reliability values of above 0.60. The item "I refuse help from others" was reversed to improve the Cronbach alpha value for the Peacemaker factor. The Conflict Seeking factor showed a high Cronbach alpha value of above 0.80. Overall acceptable reliability was found for the block Relationship Harmony cluster.

4.3.8.2 *Random item order results for the Relationship Harmony cluster*

For the random Relationship Harmony cluster, a four-factor solution (which explained 38.10% of the variance) was found to be most applicable. This was informed by the scree plot (see Figure 4.16), the eigenvalues and the most intelligible qualitative interpretation. As can be seen from Table 4.32 below, 22 of the 33 items loaded (at < 0.40) onto the four factors.
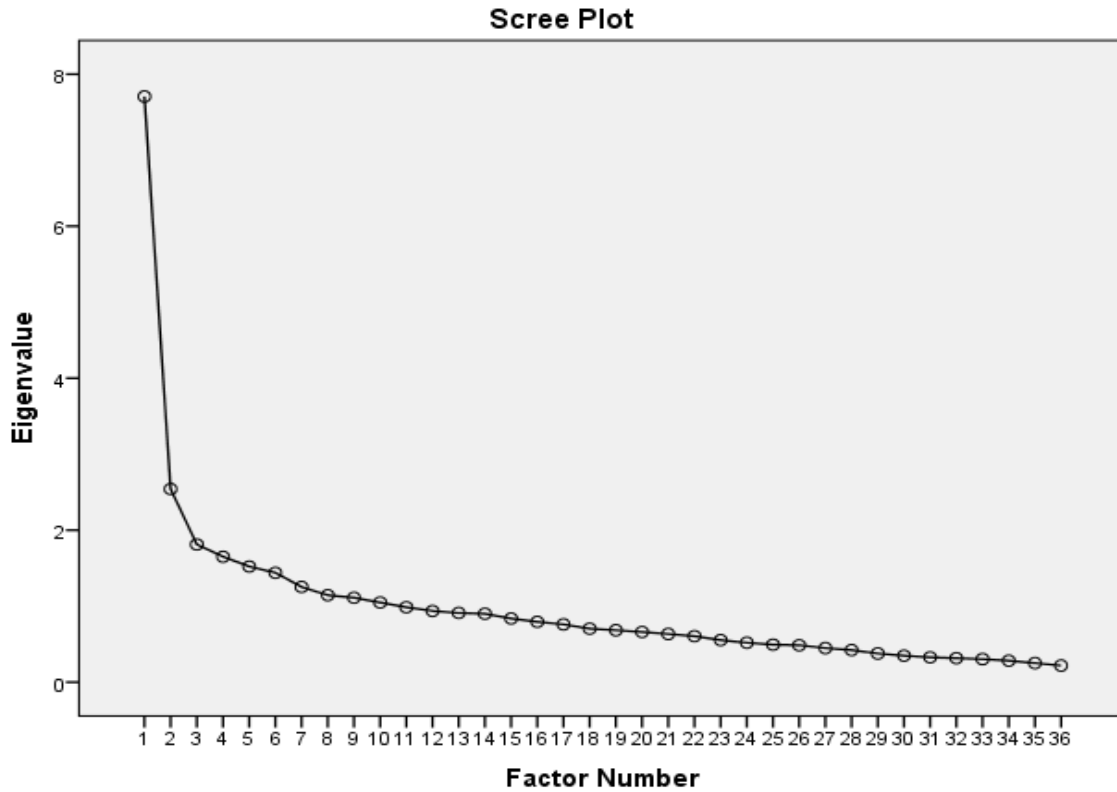
Figure 4.16 Scree plot for the random Relationship Harmony response set

Table 4.32. Pattern matrix for the random response scale restricted to four factors for Relationship Harmony

Item	Factor			
	1	2	3	4
I talk to others to resolve differences	.721			
I make others feel at home	.612			
I make others feel comfortable	.583			
I work well with others	.577			
I accept the advice of others	.561			
I help people to solve their arguments	.539			
I share helpful ideas	.487			
I help others to make peace with each other	.484			
I help others with their work	.451			
I relate well to others	.444			
I accept change	.425			
I spread rumours about others		.624		

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I talk about others in their absence	.601		
I make jokes about other people	.409		
I speak politely to others		.556	
I accept others		.515	
I behave in an appropriate manner		.507	
I allow others to ask me questions		.425	
I speak calmly		.419	
I provoke others			.533
I create tension between others			.463
I refuse help from others			.412

Note: Only loadings above .40 are displayed.

Variables are listed in the order of their highest factor loadings

The analysis further revealed that the factors that materialized could be labelled 'Interpersonal Relatedness', which accounted for 21.40% of the variance (11 items); 'Meddlesomeness', which accounted for 7.10% of the variance (three items); 'Approachability', which accounted for 5.00% of the variance (five items); and 'Conflict Seeking', which accounted for 4.59% of the variance (three items). The Interpersonal Relatedness factor was concerned with being cooperative and accepting. In the Meddlesomeness factor, the themes that appeared include gossiping and taunting others. The Approachability factor contained themes of being approachable and open to others. The Conflict Seeking factor's theme pertained to being antagonistic and provoking.

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.33. The total cluster reliability is also presented at the bottom of the table.

Table 4.33. Reliability statistics for the random response scale restricted to four factors for Relationship Harmony

Factor	Cronbach alpha	N= 22 items
Interpersonal relatedness	.65	5
Meddlesomeness	**.55**	3
Approachability	.85	11
Conflict Seeking	**.56**	3
Cluster Reliability	**.67**	**22**

Table 4.33 shows that the Approachability factor yielded a high reliability value of above 0.80. The Interpersonal Relatedness factor yielded an acceptable reliability value of above 0.60. However, the Cronbach alphas for the Conflict Seeking and Meddlesomeness factors were unacceptable and therefore the factors are unreliable. It is recommended that the two unreliable factors be removed from future analyses. This recommendation is based on the fact that these factors each contain only three items, which is not adequate for a robust factor as it does not provide the researcher with sufficient information about the factor (Costello & Osborne, 2005; Labuschagne, 2010). Overall acceptable reliability was found for the random Relationship Harmony cluster.

4.3.8.3 Comparison between the block- and random-response scales for Relationship Harmony

For both the block- and random-response sets, the factor analysis indicated that a four-factor solution was most suitable. The block- and random-response sets both loaded Approachability, Conflict Seeking and Interpersonal Relatedness factors. The Interpersonal Relatedness factor contained one[27] duplicated item, while Conflict Seeking had two[28] duplicated items and Approachability had no duplicated items. The block response set loaded an additional Peacemaker factor; whereas the random response set loaded the conceptual Meddlesomeness factor.

4.3.8.4 Determining the factor structure of Relationship Harmony

According to the SAPI project the Relationship Harmony cluster consisted of four sub-clusters referred to as Approachability, Conflict-seeking, Interpersonal Relatedness and Meddlesome (Nel et al., 2012). The block response set included three[29] of these factors, while the random response set duplicated four[30] factors from the conceptual SAPI model. It would appear that the random response set, rather than the block response set, most closely replicates the qualitative personality structure.

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[27] "I help others to make peace with each other"

[28] "I provoke others" and "I create tension between others"

[29] Approachability, Conflict Seeking and Interpersonal Relatedness

[30] Approachability, Meddlesomeness, Interpersonal Relatedness and Conflict Seeking

When comparing the reliability results for the two response sets, all four of the factors in the block response set were reliable, while only two of the four factors in the random response set were reliable. It was further recommended that the random Meddlesomeness and Conflict Seeking factors be removed from future analyses, as the factors only contain three items each (Costello & Osborne, 2005; Labuschagne, 2010). The random- and the block-Relationship Harmony clusters both had the same overall Cronbach alpha value of 0.67. In conclusion, it would seem that the block response set presents a better structure for adequately assessing the Relationship Harmony cluster.

4.3.9 SOFT-HEARTEDNESS

Soft-Heartedness is defined as a feeling of concern for the welfare of someone else (especially someone defenceless), low concern for own interests and welfare, being thankful for others or overall life being, an actively expressed feeling of dislike of aggressive behaviour, a compassionate type of person who is understanding and sensitive towards others' feelings, and a concept of community from sub-Saharan Africa, often summarised as *humanity towards others* (Nel, 2008, p. 124).

Nel et al. (2012) extended the initial concept of Soft-Heartedness and found that it includes qualities of being pleasant, kind, being appreciative of life, considerate, caring and generous. The Soft-Heartedness cluster is noticeably the largest of the nine SAPI clusters, with six sub-clusters and 39 facets.

4.3.9.1   Block item order results for the Soft-Heartedness cluster

For the block Soft-Heartedness cluster, a three-factor solution (which explained 38.25% of the variance) was found to be most applicable. This was informed by the scree plot (see Figure 4.17), the eigenvalues and the most intelligible qualitative interpretation. As can be seen in Table 4.34 below, 29 of the 34 items loaded (at < 0.40) onto the three factors.
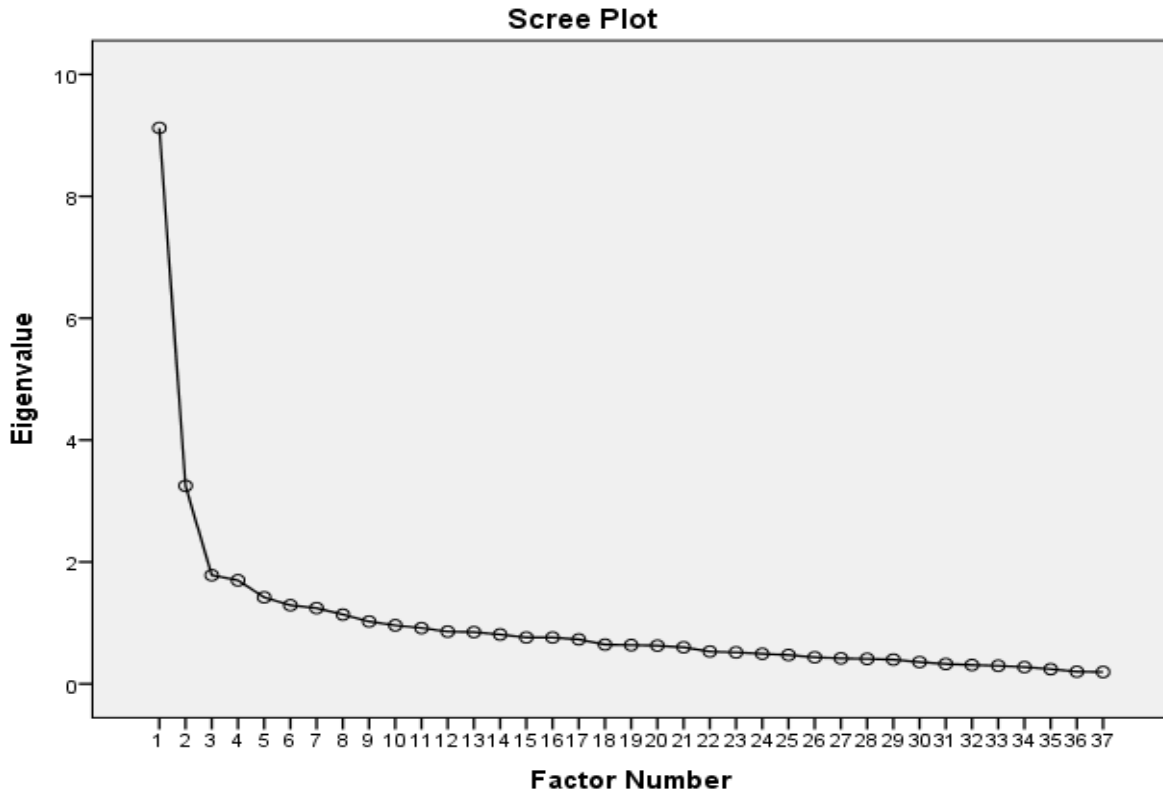
Figure 4.17 Scree plot for the block Soft-Heartedness response set

Table 4.34. Pattern matrix for the block response scale restricted to three factors for Soft-Heartedness

Item	Factor		
	1	2	3
I start fights with others	-.724		
I make others feel stupid	-.679		
I threaten people	-.657		
I hurt others	-.636		
I abuse my power over others	-.590		
I have done things that are against the law	-.560		
I insult people	-.559		
I use others for my own purposes	-.554		
I have hurt others with my words	-.546		
I criticise others' mistakes	-.518		
I have taken things that do not belong to me	-.509		
I only think of myself	-.447		
I make people do things for me	-.445		
I only care about my own things	-.438		
I have humiliated others	-.421		

I protect others	.742	
I give my attention to others	.699	
I am kind to others	.665	
I consider others' needs	.615	
I tell other people when I am grateful	.526	
I feel sympathy for people who have problems	.434	
I ask people if they are all right	.403	
I support others when they experience problems		.827
I listen to other people's problems		.605
I help others when they are in need		.589
I am friendly towards others		.575
I make time for others		.564
I make people feel special		.475
I help others solve their problems		.419

Note: Only loadings above .40 are displayed.

Variables are listed in the order of their highest factor loadings.

The three factors that materialised as part of Soft-heartedness were labelled 'Hostility', which accounted for 24.65% of the variance (seven items)'; 'Empathy', which accounted for 8.78% of the variance (seven items)'; and 'Active Support', which accounted for 4.82% of the variance (15 items). The Hostility factor included themes of aggression, selfishness and verbal assault towards others. The Empathy factor was based on themes of compassion and consideration of others. Lastly, the Active Support factor involved themes of involvement and assistance which are consistent with Nel's (2008) definition of Active Support.

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.35. The total cluster reliability is also presented at the bottom of the table.

Table 4.35. Reliability statistics for the block response scale restricted to three factors for Soft-Heartedness

Factor	Cronbach alpha	N= 29 items
Hostility	.87	15

Empathy	.81	7
Active support	.82	7
Cluster Reliability	**.69**	**29**

Table 4.35 indicates that all three factors showed high reliability values of above 0.80. The overall reliability of the block Soft-Heartedness cluster was acceptable.

4.3.9.2 Random item order results for the Soft-Heartedness cluster

For the random Soft-Heartedness cluster, a three-factor solution (which explained 36.58% of the variance) was found to be most applicable. This was informed by the scree plot (see Figure 4.18), the eigenvalues and the most intelligible qualitative interpretation. As can be seen in Table 4.36 below, 30 of the 34 items loaded (at < 0.40) onto the three factors.
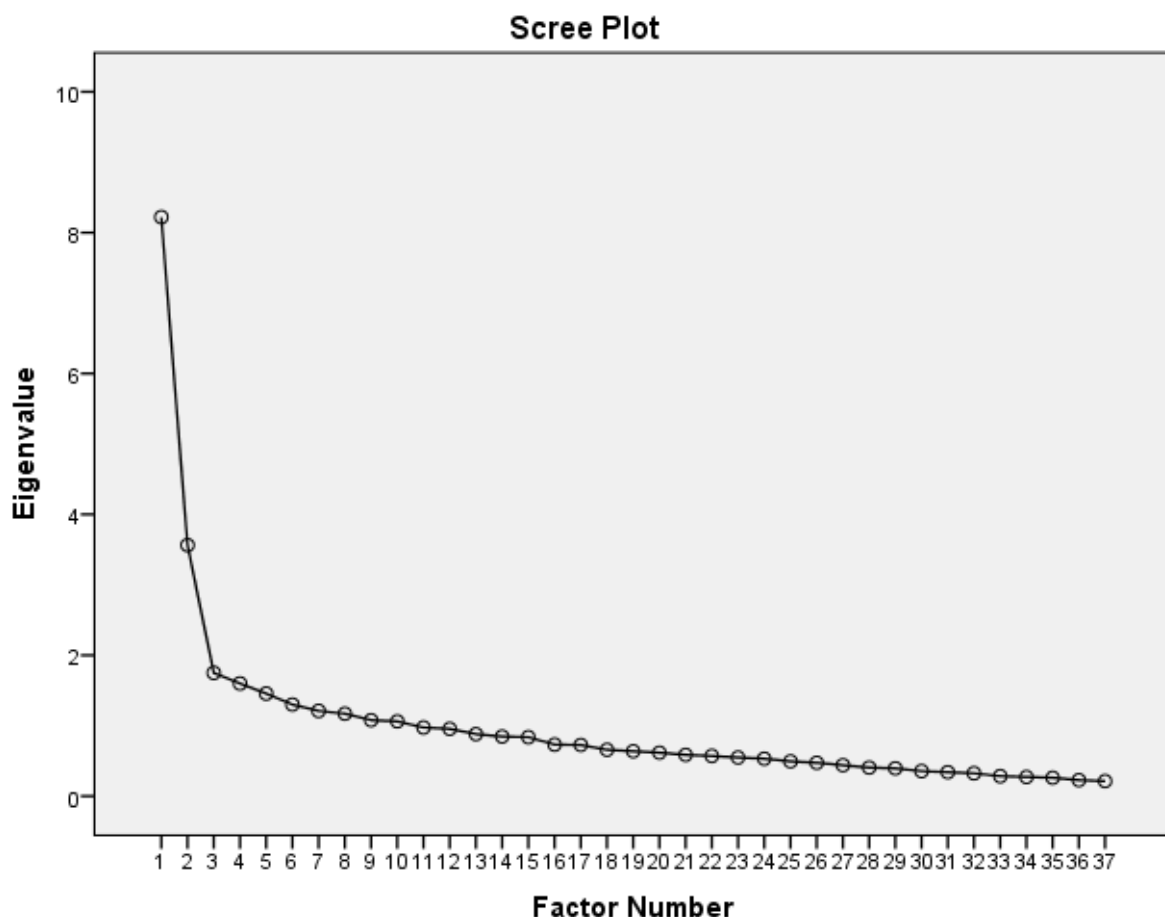
Figure 4.18 **Scree plot for the random Soft-Heartedness response set**

Table 4.36. Pattern matrix for the random response scale restricted to three factors for Soft-Heartedness

Item	Factor		
	1	2	3
I support others when they experience problems	.804		
I help others when they are in need	.774		
I am friendly towards others	.683		
I listen to other people's problems	.679		
I make time for others	.618		
I consider others' needs	.603		
I share what I have with others	.577		
I make people feel special	.566		
I help others solve their problems	.557		
I take others' feelings into account	.550		
I am kind to others	.536		
I give my attention to others	.534		
I respect others' opinions	.516		
I feel sympathy for people who have problems	.464		
I treat others in a careful way	.453		
I have humiliated others		.614	
I make others feel stupid		.569	
I insult people		.564	
I distrust other people's opinions		.485	
I start fights with others		.479	
I criticise others' mistakes		.471	
I have hurt others with my words		.460	
I abuse my power over others		.446	
I have taken things that do not belong to me		.428	
I use others for my own purposes		.424	
I hurt others		.414	
I make people do things for me		.413	
I threaten people		.411	
I tell other people when I am grateful			.528
I protect others			.467

Note: Only loadings above .40 are displayed.

Variables are listed in the order of their highest factor loadings.

The three factors that emerged from the random Soft-Heartedness data set were labelled 'Active Support', 'Hostility' and 'Empathy'. Active Support accounted for 22.22% of the

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variance (15 items); Hostility accounted for 9.63% of the variance (13 items); and Empathy accounted for 4.73% of the variance (two items). In the Active Support factor, the main themes were acting in a considerate and caring manner towards others, investing in others and being assistive. The Hostility factor focused on themes of aggression and psychological and verbal assault. In the Empathy factor themes of taking care of others emotionally and physically emerged.

After each factor had been determined, the reliability of each of the four factors was analysed and is reported in Table 4.37. The total cluster reliability is also presented at the bottom of the table.

Table 4.37. Reliability statistics for the random response scale restricted to three factors for Soft-Heartedness

Factor	Cronbach alpha	N= 30 items
Active support	.90	15
Hostility	.79	13
Empathy	**.57**	2
Cluster Reliability	**.72**	**30**

Table 4.37 indicates that the Active Support factor had the highest reliability value (0.90). This factor also contained the highest number of items of all the factors within the Soft-Heartedness factor. The Hostility factor was also considered to be reliable as it yielded an acceptable Cronbach alpha value of above 0.60. However, the Cronbach alpha for the Empathy factor is unacceptable and therefore the factor was deemed to be unreliable. The Empathy factor also contains only two items and it should therefore be removed from future analyses (Costello & Osborne, 2005; Labuschagne, 2010). Overall acceptable reliability was found for the random Soft-Heartedness cluster.

4.3.9.3   *Comparison between the block- and random-response scales for Soft-Heartedness*

For both the block- and random-response sets, the factor analysis indicated that a three-factor solution as preferable. The two response sets loaded the same three factors,

namely Hostility with 11[31] items loading the same; Active Support with seven[32] items loading the same; and Empathy, which had two[33] duplicated items.

4.3.9.4 *Determining the factor structure of Soft-Heartedness*

According to the SAPI project the Soft-Heartedness cluster consisted of six sub-clusters, namely Amiability, Egoism, Gratefulness, Hostility, Empathy and Active support (Nel et al., 2012). The results indicated that both the block- and random response sets loaded three factors that replicated the conceptual qualitative personality structure of the Soft-Heartedness cluster.

The block response set resulted in three reliable factors, whereas the random response set only yielded two reliable factors. The random response set's Empathy factor only included two items and yielded an unacceptable Cronbach alpha value. It was therefore recommended that this factor be removed from future analyses. This resulted in the random response set only yielding two factors.

The random response set reported a better overall reliability score at 0.72 as opposed to the 0.69 obtained for the block response set. However, the difference between the two scores is insignificant. In conclusion, a comparison of the structure of the conceptual Soft-Heartedness cluster with the factor analysis of the two response scales indicates that the block response set was better suited to measuring the Soft-Heartedness cluster.

4.4 RELIABILITY

When performing a factor analysis it is crucial to evaluate the reliability of the factors and clusters. One of the most commonly used indicators of internal consistency is Cronbach's alpha coefficient (Pallant, 2007). When using this indicator values closer to 1.00 are seen as more consistent (Salkind, 2013). The reliability cut off score in this study was set at 0.60

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[31] "I hurt others"; "I criticise others' mistakes"; "I have humiliated others"; "I make people do things for me"; "I have taken things that do not belong to me"; "I abuse my power over others"; "I start fights with others"; "I insult people"; "I use others for my own purposes"; "I have hurt others with my words"; and "I make others feel stupid".

[32] "I support others when they experience problems"; "I listen to other people's problems"; "I help others when they are in need"; "I am friendly towards others"; "I make time for others"; "I make people feel special"; and "I help others solve their problems"

[33] "I tell other people when I am grateful" and "I protect others"

(Maree, 2010), as discussed in Chapter 3. It was necessary to ensure that each of the newly identified factors, as well as the overall clusters, were reliable within the particular response sets obtained. Each of the clusters for the random- and block-response sets were assessed for reliability and the summary of the Cronbach alpha values per cluster is displayed in Table 4.38 below.

Table 4.38. Summary of the Cronbach Alpha Coefficients per Cluster

Cluster	Block Response set	Number of Items N=249	Random Response set	Number of Items N=226
Conscientiousness	.91	22	.90	23
Emotional Stability	**.54**	17	**.47**	16
Extraversion	.71	20	.67	16
Facilitating	.92	14	.89	15
Integrity	.65	15	.60	15
Intellect	.83	11	.80	13
Openness	.82	17	.74	13
Relationship Harmony	.67	24	.67	22
Soft- Heartedness	.69	29	.72	30
Mean	**.75**		**.72**	

The Cronbach alpha coefficients for the block response set ranged from 0.54 to 0.92, whereas the Cronbach alpha coefficients for the random response set ranged from 0.47 to 0.90. Eight out of the possible nine clusters for both the random- and block-response sets had reasonable internal consistency. In both the random- and block-response sets the Emotional Stability cluster had a Cronbach value below 0.60 and was therefore deemed to be unreliable. Table 4.38 indicates that the random response set had lower internal consistency than the block response set for the measurement of the same constructs. The block response set loaded higher values for the overall Cronbach alpha coefficients, with the exception of two clusters (Relationship Harmony, which showed the same Cronbach value and Soft-Heartedness).

4.5 CHAPTER SUMMARY

This chapter presented the results of the analysis, which was conducted to meet the research objectives set out in the first chapter. This chapter focused on the statistical, psychometric, structural and overall differences that occur between the block- and the random-response sets and investigated how these differences impact the factorial validity of the SAPI. In addition, the factor analysis also resulted in the identification of new factors. These are summarised in Table 4.39 below.

Table 4.39. Summary of new identified Factor labels

Cluster	New Factor/ Label	Block/ Random	Theme/ Definition	Support
Conscientiousness	**Self-Control**	B	Keeping one's word	Perry et al. (2010)
Emotional Stability	**Fearfulness**	R	Being afraid	Prinsloo (2013)
	Emotional Stability	R	Opposite of: lack of emotional control and expression.	De Raad (2000), Laher (2008), Rothmann and Coetzer (2003), Visser and Du Toit (2004)
Extraversion	**Talkativeness**	B & R	Desire to talk	Nel (2008)
	Outspokeness	B	Being forthright regarding one's opinions	
Facilitating	**Guidance and Encouragement**	B	Combination of being encouraging and giving guidance	-
	Inspiration	R	Being inspirational and a role model	Nel et al. (2012)
Integrity	**Responsibility**	B	Being truthful, trustworthy and responsible	
	Immorality	B	Opposite of acting in a moral, appropriate manner	Lötter (2010)
	Honesty	B	Being truthful and keeping promises	
	Morally Conscious	R	Doing the right thing and treating people in a moral	

				manner	
Intellect					
Openness	**Individualism**	R & B		Concerned with the self and being independent	-
	Traditionalism	R & B		Value culture	Costa and McCrae (1992b), Tupes and Christal (1961)
	Religiosity	R & B		Praying	-
Relationship Harmony	**Peacemaker**	B		Concerned with forgiveness and being avoidant of conflict	Oosthuizen (2011)
Soft-Heartedness					

Note: The factors in bold represent the newly identified factors per cluster.

Table 4.40 summarise the findings as laid out in Chapter 4 and specifically show the nine clusters and factors for both response sets as well as indicate whether block or random was preferable.

Table 4.40. Summary of the factors found in the nine clusters for block- and random

Cluster	Random Factors	Block Factors	Block/ Random Preference
Conscientiousness	Achievement Orientation Dedication Self-control Self-discipline	Achievement Orientation Dedication Self-control Self-discipline	Block
Emotional Stability	Emotional Control Balance Fearfulness Emotional Stability	Courage Balance Emotional-Control Emotional-Sensitivity	Block
Extraversion	Sociability Positive Emotionality Expressiveness Talkativeness	Sociability Dominance Talkativeness Positive Emotionality	Block

		Outspokenness	
Facilitating	Guidance Encouraging Others Inspiration	Guidance Guide and Encourage Encouraging Others	Block- and random-
Integrity	Integrity Morally Conscious Fairness	Fairness Responsibility Immorality Honesty	Block
Intellect	Skilfulness	Skilfulness Social Intellect Reasoning	Block
Openness	Epistemic Curiosity Traditionalism Religiosity Individualism	Epistemic Curiosity Traditionalism Religiosity Individualism	Block
Relationship Harmony	Interpersonal relatedness Meddlesomeness Approachability Conflict Seeking	Approachability Conflict Seeking Peacemaker Interpersonal Relatedness	Block
Soft-Heartedness	Hostility Empathy Active Support	Hostility Empathy Active Support	Block

Based on the comparisons and results in this chapter it would appear that the block response set (as opposed to the random response set) provides a more structurally and factorially valid framework when applied to the SAPI. However, close inspection shows that the differences between the block- and random-response sets are relatively trivial in relation to their replication of the conceptual qualitative SAPI; their reliability scores for both clusters and factors; their qualitative interpretability in terms of item similarity and logical interpretability; their psychometric properties; and the the overall comparison.The differences are considered trivial because, given the sample size (N=475) and the length

of the questionnaire (262 items), the observed differences would have no major impact on the results. Thus, although the results indicate a slightly superior factorial fit for the block response set, this superiority is not sufficient to impact assessment results when administrating the SAPI. Finally, this chapter reported problematic results with regards to the random Extraversion and Intellect clusters' ability to produce psychometrically appropriate factors during the exploratory factor analysis. Additional future research should be introduced to determine why these two clusters loaded so strangely.

The next chapter discusses these results and provides recommendations regarding the appropriate response format for the SAPI.

CHAPTER 5: CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

5.1   INTRODUCTION

This chapter presents a discussion of the major findings and conclusions (based on the results presented in Chapter 4) in relation to the research objectives set out in the first chapter. These findings are discussed in the context of existing literature. The limitations and implications of the main findings are also presented together with recommendations for future research regarding item format and structural fit, and the SAPI project in general.

5.2   ACHIEVEMENT OF THE RESEARCH OBJECTIVES

5.2.1   GENERAL OBJECTIVE

The general objective of this study was to determine whether block- or random-item format delivers the best factorial replication within the framework of the SAPI. This was done by comparing the results obtained by administering block- and random-versions of the SAPI. This objective was designed to assist with the overall objective of the SAPI project, which is to guarantee that the SAPI accommodates all South African cultures on a proven scientific platform. Four aspects were investigated in order to meet this general objective, namely qualitative interpretability, item similarity and logical interpretability; replication of the conceptual qualitative SAPI model; reliability of the factors and clusters; and existing literature on the relevant subject.

Based on the findings relating to these four aspects it was determined that the block response format was marginally more suitable for the SAPI. The block response set had fewer problematic items, better factor loadings that resulted in better item interpretability and similarity, and slightly higher internal reliability than the random response set. In addition, it was determined that the random response set best replicated the conceptual qualitative personality structure across all nine clusters with one additional cluster when compared to the block response set. However, when analysed on an overall factorial level,

the block response set replicated two factors more than the random response set. There were thus no major replication differences between the random-and block-response sets. Moreover, all the other differences were insignificant relating to the four aspects listed above as comparability points, when considering the sample size of the study and the number of items within the SAPI. Therefore the findings indicated that the random response set can also be used for the SAPI as the differences between the results of the two response sets were minor.

In addition, the findings in the present study are confirmed by previous research regarding personality. Ortner (2004) identified a German article by Rost and Hoberg (1997) that stated that no differences were identified in the construct validity of the factor structure when using either block- or random-response forms. However, other researchers have reported higher average scores when using the block item format. Baehr (1953), Schriesheim and DeNisi (1980), Schriesheim (1981), Schriesheim et al. (1989) also investigated the effects of item grouping and could not find significant differences between item blocking and randomization.

5.2.2   SPECIFIC OBJECTIVES

This section discusses the three specific research objectives presented in Chapter 1 (see section 1.5). This discussion is integrated with a discussion of the analysis of factor structure, including qualitative interpretability, item similarity and logical interpretability. This factor analysis strategy is included in the discussion as it contributed to the final recommendations of this study.

The first specific research objective was to conduct a thorough literature study on block- and random-item format. Although limited research was available on the subject of item sequencing in relation to the difference between block- and random-item formatting, a comprehensive literature review was conducted using available sources (Chapter 2, section 2.7). In short, the advantages and disadvantages of each item format were discussed and presented in table format. The immediate impression when analysing these tables was that the block item format presents with more advantages and less disadvantages than its counterpart. However, it should be kept in mind that the literature

on block advantages is strongly based on autistic (Stewart et al, 2009) and dyslexic (Kelly et al., 2002) samples and is therefore not related to a normal population.

The second specific research objective was to determine whether the block- or random-item format best replicated, or was best representative of, the preliminary qualitative personality factor structure of the SAPI. The replication of the conceptual qualitative SAPI model within the block- and random-response sets showed that four of the clusters replicated the same number of factors in both block- and random-response sets. These clusters were Facilitation with two replicated factors; Soft-Heartedness with three replicated factors; Extraversion with three replicated factors; and Openness with one replicated factor. Two clusters replicated more factors in the block response set, namely Intellect with three replicated factors and Emotional stability with five replicated factors. Three clusters replicated more factors in the random response set, namely Conscientiousness with four replicated factors, Integrity with two replicated factors and Relationship Harmony with four replicated factors. Based on the analysis in Chapter 4 (see section 4.3), it was determined that the random response set best replicated the conceptual qualitative personality structure across all nine clusters. However, when analysed on an overall factorial level, the block response set replicated two factors more than the random response set. Therefore no major replication differences are applicable between the random– and block-response sets.

The third specific research objective involved identifying the difference between the block- and random-item formats in order to determine which format is more reliable for measuring personality specific to the SAPI. In evaluating the reliability of the two response sets, specific cut-offs were used (see Chapter 3) to ensure clearer interpretation and classification of scores. In the final step of the analysis, the Cronbach alpha coefficients of all nine clusters for both the random- and block-response sets were identified (see Chapter 4)

For the purpose of the study, reliability scores were classified as high if they were equal to or above 0.80 and as acceptable if they were equal to or above 0.60. These cut offs are deemed suitable for exploratory studies such as this one (Cortina, 1993; Field, 2009; Robins et al., 2007). Reliability scores lower than 0.60 were not tolerated and were

deemed unacceptable (Maree, 2010). The Cronbach alpha coefficients for the block response set ranged from 0.54 to 0.92, whereas the Cronbach alpha coefficients for the random response set ranged from 0.47 to 0.90. Eight of the nine clusters for both the random- and block-response sets had reasonable internal consistency. For both the random- and block-response sets the Emotional Stability cluster had a Cronbach value below 0.60 and was therefore deemed unreliable. The analysis showed that the block response set had higher overall Cronbach alpha coefficients for all except two of the clusters (Relationship Harmony, which showed the same Cronbach value for both response sets and Soft-Heartedness).

An additional strategy for analysis (which was not one of the specific objectives noted in Chapter 1), namely the analysis of factor structure, was also undertaken. This was done by looking at and comparing the qualitative interpretability (themes), item similarity and logical interpretability of the factor loadings. Based on the analysis in Chapter 4 (see section 4.3), it was determined that the block response set portrayed clearer themes and logical interpretability per factor than the random response set.

5.3   LIMITATIONS OF THE RESEARCH STUDY

This section focuses on the limitations encountered in this study (Chapter 1, section 1.7); related to non-representative sampling, barriers experienced by the sample, limited existing literature relating to item formatting and survey research bias.

Firstly, the sample for this study consisted of nurses, student nurses and administration staff. This resulted in a large proportion of female participants, thus limiting the gender representativeness of the sample. In addition, the study was based in Gauteng, which limited the representativeness in terms of race; as Gauteng has lower Indian and Coloured citizens as when compared to KwaZulu-Natal.

The assessments were administered using two different strategies. The first strategy was only aimed at nursing staff, were the researcher went to the different hospital wards and administered the SAPI in the ward (nurses are mostly unable to leave the wards, as they are not allowed to leave their patients unattended). This strategy limited the sample and

proved to be time consuming as only a few questionnaires could be administered each day. A second strategy was therefore implemented, which included all staff and was facilitated by the hospitals' Human Resources (HR) managers who arranged assessment sessions with the staff. The second strategy increased the representativeness of the sample by including more male participants. Although all the participants from the first strategy completed informed consent forms, the use of open sessions in the second strategy ensured that participation was completely voluntary.

Secondly, the sample may have experienced a language barrier when completing the assessment as only 6.1% of the respondents who completed the block SAPI and 8.8% of the respondents who completed the random SAPI indicated their home language as English. The administration of the SAPI in English should however not be a crucial influencer as the private nursing education institution's policies specifically state that English is their official language. Therefore, all individuals employed at the institution should have sufficient English language skills. Participation in the study was voluntary and individuals who were uncomfortable with the language could choose not to participate. It should be noted that misunderstanding the items or instructions could severely affect the results of assessments and consequently the findings of this study.

The third limitation relates to the fact that limited empirical research has been carried out on block- and random-item order (Franke, 1997), especially in the South African context. The researcher was thus compelled to reference mostly international literary sources, which were also limited. Not referencing adequate sources of information could result in the recommendations of a study being outdated or irrelevant. Valchev (2012) identified a lack of current knowledge regarding personality in South Africa; emphasising the need for a study concerning the item order of the SAPI. In addition, a limitation has been detected regarding the availability of research on the positioning of items in the field of personality (Franke, 1997; Laher, 2011). Therefore this study provides new knowledge in terms of the development of the SAPI within the South African context.

A fourth limitation that arose during the analysis was that some of the factors loaded only two or three items, limiting the interpretability, reliability and all over psychometric

properties of the factor (Costello & Osborne, 2005). These factors were highlighted in each construct (see Chapter 4.3).

Lastly, the use of block item order could facilitate candidates in predicting the pattern and manipulating results to gain desired and invalid results. People generally want others to view them in a positive light. In research this phenomenon is better known as survey research bias (Prinsloo, 2013). This limitation can be avoided by giving thorough instructions at the beginning of the administration.

5.4   IMPLICATIONS OF THE RESEARCH FINDINGS

The specific recommendations of this study provide valuable insight for the SAPI project and contribute to the existing limited body of literature regarding item formatting within personality questionnaires (Franke, 1997; Laher, 2011). Most of the previous research conducted on the SAPI formed part of the qualitative phase and was focused on cluster, factor, facet and item development. This study focused on structural validity. Most of the previous studies conducted on the SAPI also focused on only one of the personality clusters. This study encompasses the entire existing SAPI literature in the sense that it combined information from all nine clusters to create an integrated picture of the structure of the SAPI.

This study also adds to the available empirical research concerning the effect of item orders on personality questionnaires. This could aid in the development of new personality measures. It could also potentially enhance the quality of assessment measures developed for the South African population and thus increase compliance with Section 8 of the Employee Equity Act (No. 47 of 2013) which highlights the need for culturally appropriate psychological testing.

Although the analysis suggested that the differences between the block- and random-order questionnaires were insignificant, this does provide valuable information. It indicates that within the nursing industry within Gauteng, respondents answered the items and were not influenced by the structure of the SAPI. This is a positive sign for the SAPI project as implies that the researchers involved in the qualitative phase conceptualised the items in

such a manner that they could be measured and interpreted across various scenarios and within different sequences and structures (Foxcroft & Roodt, 2009). This suggests that the item development process was valid as the items measure what they were intended to measure and produce similar results even if the structure is altered.

5.5 RECOMMENDATIONS FOR FUTURE RESEARCH ON ITEM FORMATTING IN PERSONALITY QUESTIONNAIRES

This section makes recommendations to assist future research endeavours specifically focusing on structural fit and item formatting of personality measurements. It also includes a discussion relating to the generalisability of this study's design and sample.

The first recommendation is that this study, which focused on the best factorial fit between block- and random-item response forms, be duplicated utilising another sample to widen the representativeness of the data obtained from the analysis. This recommendation specifically addresses the limitation of non-representative sampling as discussed in section 5.3. Future researchers could also increase the sample size and the geographical scope of the sample to ensure inclusion of the multi-cultural context found in South Africa.

The researcher would also recommend that future researchers follow the second data collection strategy used in this study by scheduling specific administration sessions. This strategy facilitates the data collection process immensely and improves administrative matters.

Due to limited literature on item formatting within personality assessments it would be interesting to use this study's data and investigate alternative components, such as the impact of block- and random-item formatting on the different demographic groups in South Africa. Previous research suggests that there are differences between South African individualistic and collectivistic cultures and therefore investigating the impact of block- and random-item sequencing on cultural groups and linking this to collectivism and individualism could be interesting.

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To build on research concerning the SAPI's item formatting, future researchers could use the data acquired for this study and perform a Confirmatory Factor Analysis (CFA) to confirm the results stated in Chapter 4 (Suhr, 2006). According to Byrne (2005), the use of a CFA allows the findings of a study to become more theoretically grounded, which will also legitimise the findings of this study.

In relation to the fourth limitation discussed in section 5.3 regarding the factors with less than three items, it is advised that, for practical reasons, these factors be removed in future research (Costello & Osborne, 2005; Labuschagne, 2010). This recommendation is based on the fact that factors with less than three items do not divulge sufficient information about a specific construct, nor do they significantly contribute to the overall reliability of the construct. One such example is the block Emotional Stability factor.

By adhering to the above recommendations, it would appear that the design and sample utilised in this study could also be used in additional studies relating to psychometric assessments in South Africa. These alternative studies do not specifically need to focus on block- and random-item order, but could investigate other item sequencing options as noted in section 2.7.1.

5.5.1   RECOMMENDATIONS PERTAINING TO THIS STUDY

This section discusses the recommendations pertaining to this specific study. It is incorporated to address the issues pertaining to reliability, and the empirical, statistical and psychometric properties of the SAPI. It aims to create awareness around these issues for potential future studies.

Firstly, it is recommended that the "I try to fool others" item be removed from the block Integrity analysis to improve the cluster reliability score from 0.65 to 0.71. Both these Cronbach alpha values are deemed as acceptable.

Secondly, attention should also be given to the random Extraversion and Intellect clusters as the factor analysis showed unsatisfactory statistical and empirical pattern matrixes. The random Intellect analysis showed that two of the factors presented with only one item

each. This is not an ideal situation as the results are deemed unacceptable statistically and empirically for analysis. It was therefore decided to make use of a three-factor solution, for comparability reasons with the block response set. Additional analysis was performed to improve the output of the analysis, whereby the researcher set the cut off at < 0.35 (to allow for more items to load onto the problematic factors). However, similar results were obtained and therefore the < 0.40 results were utilized for consistency and comparability reasons pertaining not only to the block response set, but also to the rest of the SAPI clusters.

The random Extraversion analysis showed that the fourth factor did not load any visible items. Additional analysis was performed to improve the output of the analysis, whereby the researcher set the cut off at < 0.35 (to allow for more items to load). However, similar results were obtained and therefore the < 0.40 results were utilized for consistency and comparability reasons pertaining not only to the block response set, but also to the rest of the SAPI clusters.

Costello and Osborne (2005) noted that if the factor loadings appear disorganised and uninterpretable, as was the case for the random Intellect and Extraversion clusters, this is unlikely to be improved by manipulating number of factors or the cut off values of the factor loadings as the problem probably originates from the data. To improve the factor loadings, they advise the removal of problematic items (with low loadings) followed by repeating the analysis (only if the removal of the items does not compromise the reliability of the data). However, considering that this study made use of descriptive research, allowing for comparison between the block- and random-results, item removal was not ideal as it would impact the comparability of the formats and thereby compromise the reliability of the data. Therefore no additional items were removed; only items that were problematic in both response sets were removed as part of the data screening process and this was done specifically for comparability reasons. Costello and Osborn (2005) further suggested that if the structure factors remain problematic probable causes include the item construction, scale design or a limited sample size and future researchers should investigate these possible problems.

Thirdly, according to Costello and Osborne (2005), factors with less than three items should be removed. This recommendation was accepted and promoted for future research with the exception of the factors within the Openness cluster namely, Individualism, Traditionalism and Religiosity, which loaded onto both the block- and random-response sets. These three factors repeatedly loaded and appeared to be pertinent and clear cut factors. It is therefore recommended that further research be conducted on these factors, perhaps allowing for the inclusion of items specifically measuring these three factors in more depth within the South African context.

5.6 RECOMMENDATIONS FOR FUTURE RESEARCH ON THE SAPI PROJECT

It is recommended that future research be based on the reduced SAPI questionnaire utilising six constructs and 158 items, which include 12 social desirability items (Valchev, et al., 2014). This will result in more focused assessment and results as it will be less time consuming to administer the questionnaire and to interpret the factor loadings.

Secondly, researchers should administer the SAPI to respondents in their home languages to facilitate understanding and aid in interpretability. This might not be practical for paper-and-pencil assessments as administrators will then be responsible for having multiple questionnaires in multiple languages on hand as requested and this will potentially lead to administrative challenges. This option might be more viable for computer adaptive testing. However, this presents with new challenges regarding the computer literacy of the respondents.

5.7 CONCLUSION

According to Taylor, N., (2008) the purpose of psychological research is to further knowledge, ultimately resulting in the upliftment of people. To improve on the existing body of knowledge the SAPI project's goal is to develop and validate an indigenous personality inventory that is cross-culturally equivalent and applicable to South Africa's multicultural and multilingual society. This study epitomises the progression towards these goals, in the

sense that it aims to aid personality practitioners and developers in their understanding of the impact of item formation within personality questionnaires. Specifically, this study investigated the most suitable item format resulting in the best factorial fit of the SAPI; indirectly improving psychometric practices as stipulated in Section 8 of the Employee Equity Act (No. 47 of 2013)

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APPENDIX

Appendix A
-Request for Participation -

REQUEST FOR PARTICIPATION IN RESEARCH PROJECT

To whom it may concern,

This letter aims to establish your interest to participate in a large ongoing project on personality assessment in South Africa.

Psychological assessment lies at the heart of much of what industrial psychologists do, especially with regards to recruitment, selection, career guidance and employee development. The quality of research and the success of interventions are (at least in part) dependent on the quality of the assessment. At present, South African psychologists tend to rely on imported assessment tools. While this has many advantages, psychologists sometimes fail to ask whether these imported tools (often developed in first world westernized contexts) actually measure what they claim to measure in the multi-cultural South African context (Valchev, 2012).

Additionally, South African legislation (Section 8 of the Employment Equity Act (No. 47 of 2013)), stipulates that psychological testing and other similar assessments are prohibited unless the test or assessment being used (a) has been scientifically shown to be valid and reliable; (b) can be applied fairly to all employees; and (c) is not biased against any employee or group; and (d) has been certified by the Health Professions Council of South Africa established by section 2 of the Health Professions Act, 1974 (Act No. 56 of 1974), or any other body which may be authorised by law to certify those tests or assessments.

Based on the above-mentioned findings a project called the SAPI has been initiated. The SAPI aims to discover the universal and culture-specific personality traits for all 11 language groups in South Africa. The project's central research objectives are to develop a personality instrument that (a) complies with South African legislation; (b) meets all the

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regular criteria for adequate assessment as formulated in psychology; and (c) is relevant for South-African institutions (companies, health care, etc.).

As part of the development of the SAPI and determining its validity, reliability and non-bias, we need to administer a pilot version of the instrument to a large sample of South Africans who have a minimum qualification of Grade 12.

We would like to enquire whether it would be possible to distribute and collect information with the pilot version of the SAPI at your organisation. The questionnaires will be paper-and-pencil questionnaires containing 262 items relating to personality and general behaviour. The questionnaires will be kept confidential and will be administered by the researcher (under the guidance of the HR manager/appointed liaison officer) and collected directly after the completion of each questionnaire.

The questionnaire will preferably be administered to a sample of 600 nurses of the Gauteng region. This includes Registered Nurses, Enrolled Nurses and Enrolled Nursing Auxiliary nurses registered with The South African Nursing Council, including day and night duty. In this specific study the sequence of the questions will be different in the two questionnaires that the participating candidates have to complete. Each participant will be administered once with one of the two different questionnaire formats. Keeping in mind that nurses work shifts, the questionnaires can be administered according to their shifts.

If it is possible to collect data from your organisation, the researchers would request data collection to take place during 2013. Also, feedback regarding the research findings will be sent to your office by December 2013.

Could you please indicate whether you are willing to participate in this study and, if so, the approximate number of nurses that you are willing to submit to partake in the completion of the two questionnaires respectively.

Thank you for your time and consideration.

Regards

Caro Cilliers

SAPI Researcher

Appendix B

- Informed consent form -

Faculty of Economic and Management Sciences

Letter of Introduction and Informed Consent for Participation in an Academic Research Study

Dept. of Human Resource Management

DETERMINING THE BEST FACTORIAL FIT FOR THE SAPI: COMPARISON OF BLOCK- AND RANDOM ITEM FORMATIONS

<u>Research conducted by</u>:

Mrs C Cilliers (27267513)

Cell: 084 44 32848

Dear Respondent

You are invited to participate in an academic research study conducted by Caro Cilliers, a Masters student from the Department Human Resource Management, at the University of Pretoria.

The purpose of the study is to confirm the validity of the SAPI Questionnaire by measuring the different effects that occur when using a random-item order and a block-item order questionnaire.

Please note the following:

- This study involves an <u>anonymous</u> questionnaire. Your name will not appear on the questionnaire and the answers you give will be treated as strictly <u>confidential</u>. You cannot be identified in person based on the answers you give.

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- Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- Please answer the questions in the attached questionnaire as completely and as honestly as possible. This should not take more than 50 minutes of your time.
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.
- Please contact my supervisor, Prof. Deon Meiring (deon.meiring@up.ac.za) if you have any questions or comments regarding the study.

Please sign the form to indicate that:

- You have read and understand the information provided above.
- You give your consent to participate in the study on a voluntary basis.

_____ _____

Respondent's signature

Appendix C

- Descriptive Statistics for both Random- and Block-item order SAPI -

Table 1: Descriptive Statistics for both Random- and Block-item order SAPI

		Block				Random			
		Mean	Std. Deviation	Skewness	Kurtosis	Mean	Std. Deviation	Skewness	Kurtosis
I abuse my power over others	Item1	1.61	0.728	1.048	0.715	1.64	0.8	1.12	0.637
I accept change	Item2	4.09	0.722	-0.668	1.141	3.88	0.861	-0.7	0.89
I accept myself	Item3	4.22	0.849	-1.103	1.249	4.31	0.831	-1.316	1.938
I accept others	Item4	4.18	0.73	-1.17	3.076	4.16	0.6	-0.599	2.892
I accept people with their problems	Item5	4.05	0.588	-0.446	1.509	4.1	0.701	-0.798	2.286
I accept the advice of others	Item6	4	0.759	-0.971	2.385	3.88	0.796	-0.572	1
I accept things as they are	Item7	3.64	0.969	-0.41	-0.268	3.56	0.876	-0.367	-0.195
I act impulsively	Item8	3.13	1.062	-0.073	-0.713	2.8	1.06	0.001	-0.536
I act in a mature manner	Item9	4.16	0.72	-0.856	1.661	4.15	0.753	-1.381	**4.19**
I adapt to any situation	Item10	3.86	0.815	-0.642	0.7	3.76	0.873	-0.375	-0.083
I admit when I am wrong	Item11	4.06	0.885	-1.443	3.027	4.05	0.909	-1.105	1.366
I admit when I do not know something	Item12	4.1	0.823	-1.117	1.761	4.12	0.877	-1.398	2.654
I allow others to ask me questions	Item13	4.18	0.626	-0.517	1.009	4.1	0.369	-1.063	**4.552**
I always do as I say	Item14	3.41	1.003	-0.354	-0.44	3.72	0.894	-0.517	0.319
I always obey laws, even if I'm unlikely to get caught	Item15	3.62	0.97	-0.463	-0.118	4.06	0.805	-0.652	0.085

I am a friend one can rely on	**Item16**	4.21	0.782	-1.108	1.714	4.34	0.767	-1.412	3.007
I am a good leader	**Item17**	3.89	0.805	-0.615	0.465	3.93	0.753	-0.561	0.311
I am a good speaker	**Item18**	3.4	0.965	-0.44	-0.222	3.34	1.036	-0.447	-0.318
I am a good storyteller	**Item19**	3.06	1.118	-0.05	-0.848	3.03	1.117	-0.127	-0.698
I am a motivated person	**Item20**	4.11	0.826	-0.707	0.023	4.17	0.745	-0.768	0.984
I am a religious person	**Item21**	4.3	0.881	-1.286	1.229	4.25	0.896	-1.259	1.514
I am a source of inspiration to people	**Item22**	3.78	0.785	-0.593	1.113	3.81	0.829	-0.611	0.766
I am a true friend to others	**Item23**	4.23	0.704	-1.411	**4.462**	4.27	0.7	-0.921	1.8
I am able to learn quickly	**Item24**	3.93	0.823	-1.151	2.243	4.01	0.794	-0.971	1.66
I am able to plan things	**Item25**	3.94	0.718	-0.757	1.497	4.12	0.74	-1.108	2.737
I am able to relate to people	**Item26**	3.86	0.758	-0.743	1.386	4.03	0.713	-0.993	2.733
I am able to understand others' feelings	**Item27**	3.95	0.686	-0.732	1.777	4.06	0.7	-0.98	2.935
I am afraid of people judging me	**Item28**	2.78	1.143	0.136	-0.916	2.92	1.121	0.081	-0.699
I am afraid of some people	**Item29**	2.89	1.169	0.072	-0.877	3.07	1.181	-0.067	-0.834
I am afraid that bad things may happen	**Item30**	3.02	1.219	-0.124	-0.944	3.24	1.156	-0.175	-0.724
I am always prepared	**Item31**	3.72	0.881	-0.463	0.179	3.78	0.855	-0.584	0.515
I am an achiever	**Item32**	4.03	0.724	-0.254	-0.36	4.13	0.823	-0.649	0.054
I am an example for others	**Item33**	3.82	0.83	-0.65	0.832	3.89	0.732	-0.326	-0.029
I am better than others	**Item34**	1.99	1.071	1.03	0.259	2.36	1.061	0.558	-0.259

I am calm in most situations	Item35	3.94	0.884	-0.913	0.948	3.96	0.834	-0.706	0.665
I am committed to what I do	Item36	4.28	0.654	-0.569	0.269	4.28	0.752	-1.578	**4.502**
I am curious about the world	Item37	3.99	0.893	-0.738	0.31	4.13	0.876	-1.102	1.596
I am determined in the things I do	Item38	4.04	0.661	-0.837	2.565	4.22	0.622	-0.781	2.962
I am different from others	Item39	3.8	1.037	-0.727	0.093	3.53	1.074	-0.286	-0.705
I am difficult to please	Item40	2.57	1.142	0.426	-0.639	2.48	1.074	0.583	-0.347
I am eager to learn	Item41	4.19	0.902	-1.241	1.704	4.37	0.855	-1.732	3.626
I am easily understood	Item42	3.72	0.828	-0.794	0.889	3.71	0.82	-0.891	1.528
I am easy to talk to	Item43	3.96	0.909	-0.686	-0.045	4.11	0.785	-0.83	1.266
I am focused on winning	Item44	3.99	0.932	-0.939	0.811	3.78	1.127	-0.787	-0.063
I am friendly towards others	Item45	4.28	0.617	-0.376	0.013	4.2	0.609	-0.632	2.692
I am full of new ideas	Item46	3.78	0.832	-0.261	-0.469	3.61	0.873	-0.089	-0.475
I am hard-working	Item47	4.47	0.691	-1.381	2.654	**4.61**	0.525	-0.859	-0.459
I am honest with other people	Item48	4.16	0.646	-0.481	0.675	4.11	0.642	-0.418	0.651
I am involved in my work	Item49	4.25	0.631	-0.941	3.424	4.13	0.853	-1.629	3.848
I am jealous of others with good fortune	Item50	1.99	0.999	0.661	-0.566	2.03	1.125	1.041	0.357
I am kind to others	Item51	4.14	0.833	-1.299	2.69	4.26	0.72	-1.347	**4.22**
I am liked by everyone	Item52	3.36	1.021	-0.198	-0.444	3.3	0.886	-0.252	0.012
I am loyal to others	Item53	4.23	0.615	-0.435	0.64	4.27	0.774	-1.493	3.762
I am motivated by my work	Item54	3.99	0.89	-0.711	0.265	4.11	0.89	-1.406	2.899

I am open about my mistakes	Item55	3.93	0.866	-0.793	0.623	3.84	0.831	-0.775	0.8
I am open to new information	Item56	4.36	0.641	-0.727	0.544	4.29	0.616	-0.414	0.136
I am pleased with what I have	Item57	3.93	0.975	-1.116	1.34	4.04	0.789	-0.919	1.575
I am precise in my work	Item58	4.05	0.641	-0.589	2.004	4.15	0.695	-1.053	3.267
I am quiet in front of people	Item59	3.1	1.145	-0.28	-0.844	2.96	1.073	-0.29	-0.813
I am seen as quiet by others	Item60	3.18	1.209	-0.294	-0.889	3.3	1.31	-0.362	-0.994
I am thorough in my work	Item61	4.17	0.846	-1.367	2.718	4.17	0.744	-1.453	**4.591**
I am truthful in what I do	Item62	4.22	0.614	-0.29	0.068	4.35	0.719	-1.322	3.309
I am very confident of my judgments	Item63	3.66	0.801	-0.63	0.828	3.9	0.745	-0.648	1.367
I am willing to try out new things	Item64	4.18	0.672	-0.516	0.366	4.16	0.726	-0.847	1.532
I apologise if I have made a mistake	Item65	4.15	0.918	-1.407	2.254	4.2	0.853	-1.302	2.166
I ask people if they are all right	Item66	4.23	0.844	-1.492	3.345	4.05	0.831	-0.933	1.434
I avoid arguments	Item67	3.7	1.102	-0.731	-0.053	3.75	1.041	-0.772	0.242
I behave in an appropriate manner	Item68	3.85	1.133	-1.172	0.78	3.97	0.968	-1.608	2.909
I believe in the importance of tradition	Item69	3.68	1.011	-0.71	0.323	3.75	1.059	-0.638	-0.088
I calm down quickly	Item70	3.73	0.971	-0.754	0.482	3.82	0.905	-0.89	0.977
I can be distracted	Item71	3.19	0.977	-0.354	-0.154	3.07	0.961	-0.244	-0.204
I can deal with difficulties in my life	Item72	4.01	0.759	-0.803	1.595	4	0.786	-0.918	1.898

I can handle difficult situations	Item73	4	0.743	-0.62	0.909	3.91	0.858	-0.848	1.215
I can sell things to other people	Item74	2.99	1.155	-0.195	-0.91	2.8	1.243	0.084	-1.016
I care about other people's future	Item75	4.03	0.707	-1.012	2.918	3.96	0.859	-1.079	1.922
I challenge people in front of others	Item76	2.24	1.016	0.625	-0.251	2.28	0.966	0.487	-0.292
I chat to everyone	Item77	3.62	1.149	-0.468	-0.738	3.7	1.08	-0.734	-0.004
I cheat	Item78	1.9	1.077	1.169	0.68	1.81	1.085	1.419	1.368
I check for errors in work that has been done	Item79	3.94	0.879	-0.807	0.566	3.9	0.764	-0.773	1.433
I choose the people I want to speak to	Item80	3.05	1.21	-0.18	-0.88	3.03	1.125	-0.187	-0.744
I complain about everything	Item81	1.91	0.976	1.132	1.169	1.92	0.976	1.182	1.522
I complete tasks even if they are difficult	Item82	4.11	0.75	-0.932	2.016	4.1	0.692	-0.818	2.009
I connect with people easily	Item83	3.83	1.01	-0.603	-0.344	3.8	0.99	-0.742	0.334
I consider others' needs	Item84	4.02	0.633	-0.92	3.292	4.03	0.711	-0.986	2.752
I control my emotions	Item85	3.8	0.942	-0.746	0.626	3.8	0.941	-0.572	0.106
I control others	Item86	2.17	1.069	0.699	-0.119	1.94	0.901	0.869	0.727
I create tension between others	Item87	1.69	0.906	1.628	2.766	1.78	0.959	1.342	1.629
I criticise others' mistakes	Item88	2.3	1.04	0.378	-0.609	2.44	1.09	0.176	-0.938
I cry easily	Item89	3.18	1.319	-0.308	-1.003	3.31	1.193	-0.156	-1
I defend my points of view	Item90	3.82	0.822	-0.586	0.292	3.84	0.82	-1.026	2.073

I depend on other peoples' opinions	Item91	2.35	1.064	0.451	-0.408	2.51	1.034	0.281	-0.358
I disappoint others	Item92	2.51	1.035	0.38	-0.248	2.25	0.956	0.576	0.142
I discriminate against people	Item93	1.95	0.991	0.921	0.229	1.67	0.977	1.699	2.605
I distrust other people's opinions	Item94	2.22	0.869	0.387	-0.029	2.52	0.896	0.24	-0.055
I do something until I get it right	Item95	4.25	0.794	-1.103	1.733	4.19	0.774	-1.062	2.003
I do the right thing	Item96	4.05	0.678	-0.515	0.695	3.95	0.811	-0.97	1.987
I do things accurately	Item97	3.98	0.741	-0.588	0.876	3.99	0.772	-0.955	2.167
I do things on time	Item98	3.85	0.84	-0.73	0.9	3.91	0.828	-0.619	0.551
I do things that I later regret	Item99	2.6	1.068	0.258	-0.482	2.71	0.989	0.166	-0.371
I do things without thinking too much in advance	Item100	2.44	1.069	0.669	-0.111	2.51	0.998	0.231	-0.595
I do what I say	Item101	3.93	0.801	-0.708	0.964	3.76	0.899	-0.79	0.802
I do what I want to do	Item102	3.59	0.985	-0.424	-0.013	3.37	0.941	-0.317	-0.112
I do what is expected of me	Item103	4.14	0.678	-0.54	0.576	4.33	0.702	-1.365	**4.01**
I dress well	Item104	4.15	0.842	-0.903	0.635	4.09	0.772	-0.773	0.935
I easily get nervous	Item105	2.76	1.153	0.153	-0.881	2.98	1.112	0.081	-0.724
I encourage others to study	Item106	4.23	0.778	-0.8	0.181	4.22	0.881	-1.399	2.56
I encourage people to develop	Item107	4.03	0.696	-0.719	1.188	4.06	0.738	-1.014	2.465
I enjoy playing tricks on others	Item108	2.74	1.171	0.213	-0.851	2.48	1.075	0.355	-0.456
I enjoy playing with others	Item109	3.94	0.945	-0.848	0.717	3.95	0.936	-0.894	0.981

I enjoy telling funny stories	Item110	3.21	1.148	-0.082	-0.843	3.35	1.191	-0.236	-0.911
I explain ideas to others clearly	Item111	3.82	0.733	-0.933	1.892	3.97	0.778	-0.914	1.973
I favour some people above others	Item112	3.1	1.141	-0.131	-0.7	2.74	1.2	0.008	-1.058
I feel emotions deeply	Item113	3.76	1.073	-0.788	0.18	3.99	0.943	-0.781	0.1
I feel sympathy for people who have problems	Item114	4.31	0.819	-1.416	2.719	4.28	0.783	-1.077	1.338
I find education important	Item115	**4.52**	0.654	-1.555	3.822	**4.7**	**0.599**	**-3.047**	**13.728**
I find it difficult to trust others	Item116	2.98	1.151	0.218	-0.693	3.29	1.071	0.083	-0.801
I find it important to have money	Item117	4.03	0.908	-0.826	0.369	3.97	0.851	-0.723	0.788
I find pleasure in studying	Item118	3.72	1.008	-0.662	0.122	3.68	1.037	-0.68	0.099
I finish things I have started	Item119	4.13	0.831	-1.102	1.611	4	0.847	-0.97	1.625
I focus on others' weak points	Item120	2.31	0.998	0.592	-0.127	2.18	0.956	0.566	-0.262
I follow set rules	Item121	4.02	0.816	-0.716	0.529	4.03	0.76	-1.002	2.479
I forgive easily	Item122	3.85	0.986	-0.798	0.306	3.62	1.023	-0.487	-0.416
I forgive others when they have hurt me by mistake	Item123	4.05	0.867	-1.199	1.989	3.94	0.876	-1.087	1.739
I get angry easily	Item124	2.37	1.127	0.557	-0.52	2.52	1.204	0.437	-0.709
I get angry over minor issues	Item125	2.49	1.181	0.444	-0.651	2.43	1.167	0.535	-0.542
I give advice to others about their future	Item126	3.83	0.818	-0.666	0.717	3.81	0.759	-0.244	-0.226
I give everyone a chance	Item127	4.04	0.632	-0.146	-0.076	4.15	0.7	-0.715	0.926

I give my attention to others	Item128	3.95	0.735	-1.216	3.69	4.05	0.652	-1.263	**4.785**
I guide people in life	Item129	3.89	0.741	-0.386	0.05	3.82	0.835	-0.713	0.886
I have a lot of imagination	Item130	4.06	0.894	-0.792	0.163	3.99	0.942	-0.738	0.159
I have a low opinion of others	Item131	2.23	0.951	0.654	0.142	2.13	0.866	0.733	0.505
I have a positive outlook on life	Item132	4.25	0.781	-1.361	3.215	4.3	0.788	-1.28	2.312
I have definite goals in life	Item133	4.06	0.798	-0.616	0.324	4.2	0.715	-0.863	1.586
I have difficulty concentrating	Item134	2.57	1.139	0.412	-0.698	2.52	1.033	0.419	-0.369
I have direction in life	Item135	4.21	0.74	-0.697	0.641	4.22	0.701	-1	2.767
I have done things that are against the law	Item136	2.09	1.239	0.836	-0.446	2.06	1.311	1.01	-0.197
I have done things that I do not tell other people about	Item137	3.28	1.247	-0.362	-0.868	3.36	1.129	-0.316	-0.684
I have fun with others	Item138	3.93	0.894	-0.98	1.171	3.94	0.826	-1.038	2.217
I have good social skills	Item139	3.81	0.929	-0.532	-0.175	3.79	0.905	-0.875	0.91
I have humiliated others	Item140	2.14	1.039	0.665	-0.291	2	1.007	0.807	-0.178
I have hurt others with my words	Item141	2.74	1.139	0.009	-0.835	2.9	1.072	-0.012	-0.586
I have knowledge about many things	Item142	3.62	0.837	-0.491	0.147	3.84	0.799	-0.573	0.708
I have lost interest in life	Item143	1.94	1.106	1.152	0.557	1.76	1.029	1.369	1.29
I have many friends	Item144	3.33	1.15	-0.216	-0.995	3.04	1.167	-0.064	-0.952

I have many interests	Item145	4.04	0.83	-0.629	-0.089	3.96	0.882	-1.041	1.407
I have some bad habits	Item146	2.92	1.208	-0.144	-1.061	3	1.226	-0.113	-1.037
I have taken things that do not belong to me	Item147	1.96	1.055	0.909	-0.106	2.09	1.197	0.904	-0.184
I help others solve their problems	Item148	3.88	0.768	-0.476	0.773	3.84	0.816	-0.418	0.304
I help others to make peace with each other	Item149	3.86	0.819	-0.624	0.626	3.84	0.908	-0.99	1.293
I help others when they are in need	Item150	4.13	0.701	-0.85	1.958	4.14	0.663	-0.746	2.147
I help others with their work	Item151	4.12	0.716	-1.048	2.892	4.11	0.678	-0.592	1.383
I help people realize their potential	Item152	3.95	0.688	-0.811	1.972	3.93	0.747	-0.696	1.458
I help people to solve their arguments	Item153	3.73	0.862	-0.388	0.011	3.58	0.88	-0.387	-0.002
I hurt others	Item154	1.9	1.004	1.03	0.592	1.9	0.975	1.015	0.616
I ignore people	Item155	2.07	0.971	0.756	0.21	2.14	0.954	0.528	-0.328
I insult people	Item156	1.6	0.906	1.746	2.984	1.48	0.8	1.976	**4.199**
I interfere in the lives of others	Item157	1.7	0.833	1.366	2.129	1.92	0.939	1.008	0.866
I keep my promises	Item158	4.05	0.889	-1.448	2.986	4.04	0.767	-0.757	1.34
I keep my things for myself	Item159	2.96	1.05	0.17	-0.651	3.04	1.061	-0.228	-0.64
I keep others' secrets	Item160	4.15	0.841	-1.213	2.074	4.12	0.816	-0.634	0.076
I keep to deadlines	Item161	4.06	0.793	-0.617	0.074	3.94	0.74	-0.589	1.284
I know myself	Item162	4.35	0.664	-0.621	-0.219	4.36	0.796	-1.683	**4.034**
I laugh a lot	Item163	4.04	0.933	-0.748	-0.128	3.98	0.911	-0.732	0.36

I learn from previous problems	Item164	4.36	0.691	-1.051	1.459	4.26	0.63	-0.72	2.286
I listen to other people's problems	Item165	4.03	0.765	-1.138	2.819	4.17	0.664	-0.687	1.829
I make friends easily	Item166	3.66	1.132	-0.483	-0.7	3.73	1.044	-0.73	0.166
I make fun of others	Item167	2.18	1.09	0.724	-0.28	1.91	1.019	1.014	0.366
I make good decisions	Item168	3.78	0.652	-0.06	-0.158	3.76	0.714	-0.076	-0.285
I make jokes about other people	Item169	1.97	0.95	0.865	0.357	2.11	1.015	0.899	0.506
I make jokes with everyone	Item170	3.38	1.113	-0.205	-0.867	3.32	1.086	-0.341	-0.542
I make others better persons	Item171	3.71	0.745	-0.38	0.393	3.84	0.75	-0.442	0.529
I make others feel at home	Item172	4.25	0.651	-0.61	0.742	4.16	0.757	-0.931	1.804
I make others feel comfortable	Item173	4.1	0.648	-0.727	2.422	4.07	0.747	-1.127	3.062
I make others feel good	Item174	3.96	0.754	-0.455	0.441	3.96	0.749	-1.004	2.561
I make others feel stupid	Item175	1.65	0.912	1.536	1.948	1.65	0.809	1.517	2.843
I make others laugh	Item176	3.59	0.939	-0.242	-0.208	3.72	0.882	-0.537	0.43
I make people believe in their own abilities	Item177	4.09	0.616	-0.79	3.276	4.07	0.726	-0.913	2.313
I make people do things for me	Item178	2.4	1.007	0.251	-0.668	2.26	1.024	0.589	-0.241
I make people feel special	Item179	4.03	0.79	-0.853	1.404	3.94	0.739	-0.68	1.493
I make time for others	Item180	3.99	0.664	-0.375	0.445	3.91	0.696	-0.959	2.647
I manage people well	Item181	3.69	0.841	-0.342	-0.164	3.79	0.836	-0.884	1.083
I misbehave	Item182	2.19	1.13	0.804	-0.091	1.92	0.959	0.862	0.096

I motivate others to improve	Item183	4	0.694	-0.769	1.357	4.05	0.803	-1.242	2.866
I never get what I want	Item184	2.37	1.017	0.646	0.051	2.4	0.889	0.398	-0.027
I obey rules	Item185	4.1	0.772	-0.736	0.788	4.04	0.733	-0.99	2.443
I only care about my own things	Item186	1.96	0.947	1.165	1.345	2.27	1.067	0.86	0.32
I only think of myself	Item187	1.9	0.962	1.163	1.225	1.78	0.947	1.605	2.875
I pay my debts	Item188	4.2	0.785	-0.782	0.526	4.24	1.016	-1.55	2.181
I pray for others	Item189	4.32	0.86	-1.395	2.105	4.13	0.869	-1.113	1.505
I protect others	Item190	4	0.727	-0.67	1.616	4.05	0.758	-0.659	0.807
I provoke others	Item191	1.76	0.845	1.107	1.017	1.85	0.974	1.066	0.689
I punish mistakes	Item192	3.06	1.056	0	-0.502	2.59	0.948	0.083	-0.262
I refuse help from others	Item193	2.15	0.972	0.698	-0.021	2.04	1.011	0.937	0.512
I relate well to others	Item194	3.88	0.764	-0.818	1.507	3.92	0.842	-0.973	1.62
I remain cheerful even when there are problems	Item195	3.72	0.908	-0.481	0.031	3.68	0.982	-0.531	-0.109
I respect my culture	Item196	4.15	0.833	-1.029	1.337	4.01	0.938	-1.106	1.569
I respect myself	Item197	4.04	0.708	-0.868	2.445	4.03	0.705	-1.092	3.18
I respect others' opinions	Item198	3.54	1.031	-0.554	-0.128	3.28	1.046	-0.356	-0.415
I say what I think	Item199	4.14	0.709	-0.45	-0.108	4.14	0.684	-0.716	1.689
I search for answers when I do not have them	Item200	3.78	0.865	-0.528	0.171	3.7	0.872	-0.606	0.744
I seek adventure	Item201	4.13	0.737	-0.5	-0.136	4.23	0.708	-0.911	1.814
I set goals for myself	Item202	4.05	0.621	-0.63	2.535	4.13	0.658	-0.643	1.85
I share helpful ideas	Item203	3.4	1.084	-0.354	-0.601	3.72	0.867	-0.709	0.717

I share my feelings	Item204	3.9	0.823	-0.926	1.463	4.01	0.772	-0.691	0.824
I share what I have with others	Item205	3.56	0.802	-0.635	0.569	3.6	0.806	-0.339	0.231
I solve problems in new ways	Item206	3.41	0.942	-0.369	-0.162	3.52	0.971	-0.573	0.235
I sometimes regret my decisions	Item207	2.87	1.143	-0.058	-0.889	2.86	1.104	0.029	-0.643
I sometimes tell lies if I have to	Item208	2.57	1.124	0.309	-0.749	2.62	1.167	0.112	-0.945
I speak before I think	Item209	3.97	0.803	-0.372	-0.409	3.76	0.875	-0.86	1.109
I speak calmly	Item210	4.15	0.719	-0.699	0.641	4.04	0.747	-1.419	**4.269**
I speak politely to others	Item211	1.67	0.922	1.638	2.667	1.6	0.757	1.273	1.757
I spread rumours about others	Item212	1.67	0.934	1.436	1.474	1.55	0.77	1.669	3.495
I start fights with others	Item213	4.1	0.77	-0.805	1.038	4.16	0.698	-1.054	3.223
I stay focused on my tasks	Item214	3.91	0.75	-0.532	0.305	3.87	0.831	-0.932	1.597
I stay within the rules	Item215	3.81	0.843	-0.492	0.265	3.82	0.818	-0.734	1.061
I stick to my decisions	Item216	4.12	0.736	-1.056	2.628	4.06	0.683	-0.695	1.76
I support others when they experience problems	Item217	4.04	0.742	-0.561	0.676	4.1	0.653	-0.621	1.862
I take care of detail	Item218	4.3	0.689	-1.006	2.177	**4.47**	**727**	**-2.169**	**7.612**
I take good care of my things	Item219	4	0.861	-0.725	0.484	3.91	0.782	-0.733	0.855
I take my own decisions	Item220	4.02	0.835	-1.013	1.626	4.05	0.727	-0.878	1.791
I take others' feelings into account	Item221	4.18	0.693	-0.862	1.506	4.31	0.736	-1.492	**4.347**

I take responsibility for my mistakes	Item222	3.23	0.993	-0.363	-0.378	3.44	1.098	-0.504	-0.401
I take risks	Item223	3.16	1.222	0.005	-0.988	3.14	1.206	-0.074	-0.923
I talk a lot	Item224	2.33	0.99	0.192	-0.761	2.44	1.024	0.244	-0.447
I talk about others in their absence	Item225	3.78	0.842	-1.302	2.542	3.95	0.773	-0.766	1.349
I talk to others to resolve differences	Item226	4.02	0.69	-0.719	1.768	3.93	0.798	-0.976	1.85
I teach people ways of doing things	Item227	4.03	0.821	-1.04	1.593	4.4	0.722	-1.401	3.321
I tell other people when I am grateful	Item228	3.83	0.976	-0.638	0.001	3.82	0.835	-1.091	1.942
I tell people when I disagree with them	Item229	3.54	0.886	-0.568	0.352	3.51	0.931	-0.425	0.097
I tell stories with a moral	Item230	4.06	0.763	-0.417	-0.313	4.19	0.783	-0.826	0.717
I tell the truth	Item231	3.87	0.782	-0.85	1.701	4	0.855	-0.894	1.145
I think about my options before I make a choice	Item232	4.15	0.75	-0.931	1.582	4.27	0.682	-0.663	0.392
I think ahead	Item233	1.87	0.884	1.072	1.343	2.04	0.922	0.888	0.779
I think I am more important than others	Item234	3.83	0.818	-1.035	1.841	4	0.782	-1.118	2.481
I think of new ideas	Item235	1.68	0.962	1.528	1.905	1.64	0.888	1.77	3.578
I threaten people	Item236	4.25	0.821	-1.202	2.143	4.3	0.818	-1.458	3.26
I tidy up where there is a mess	Item237	3.96	0.776	-0.605	0.619	3.91	0.848	-0.656	0.483
I treat all people equally	Item238	4.04	0.719	-0.904	2.389	4.02	0.725	-0.853	2.147
I treat all people with respect	Item239	1.71	0.863	1.405	2.233	1.76	0.907	1.404	1.928
I treat others in a careful way	Item240	3.21	1.113	-0.093	-0.798	3.45	0.982	-0.597	0.107

I try to fool others	Item241	3.88	0.728	-0.632	1.067	3.94	0.735	-0.539	0.807
I turn to others when I have a problem	Item242	3.69	0.869	-0.809	0.744	3.77	0.79	-0.418	0.208
I understand other people	Item243	1.76	0.738	0.764	0.365	1.93	0.9	1.066	1.165
I undertake new initiatives	Item244	3.54	0.903	-0.586	0.387	3.54	0.909	-0.75	0.686
I use others for my own purposes	Item245	4.38	0.746	-1.372	2.527	**4.5**	0.675	-1.814	**5.828**
I want people to listen to me	Item246	4.33	0.762	-1.474	3.757	4.32	0.751	-1.343	3.003
I want people to live in peace	Item247	3.45	1.031	-0.521	-0.008	3.56	1.056	-0.519	-0.169
I want things to be neat	Item248	2.89	1.159	-0.026	-0.879	3.09	1.13	-0.263	-0.844
I want to be noticed	Item249	4.25	0.774	-1.208	2.044	4.3	0.665	-0.515	-0.289
I want to be obeyed	Item250	4.27	0.76	-1.086	1.67	**4.55**	**0.753**	**-2.096**	**5.58**
I want to be respected	Item251	4.39	0.704	-1.101	1.861	4.45	0.651	-0.871	0.136
I want to develop myself	Item252	3.77	0.909	-0.717	0.156	3.64	0.916	-0.423	0.03
I want to learn new things	Item253	4.07	0.67	-0.839	2.446	4.17	0.873	-1.684	3.974
I want what I ask for	Item254	4.27	0.641	-0.856	2.656	4.25	0.611	-0.942	3.965
I warn others about dangers	Item255	4.21	0.685	-1.186	3.954	4.31	0.626	-0.806	2.525
I wish others to be successful	Item256	4.11	0.885	-1.243	2.127	4.1	0.919	-1.068	1.16
I wish people to achieve their goals	Item257	4.2	0.702	-1.045	3.05	4.35	0.739	-1.573	**4.53**
I work in an organised manner	Item258	3.1	1.189	-0.062	-0.937	3.06	1.129	0.14	-0.762
I work well with others	Item259	2.81	1.164	0.083	-0.909	2.67	1.254	0.238	-1.016
I worry a lot	Item260	3.64	0.897	-0.501	0.23	3.66	0.84	-0.312	0.038

It is hard for me to break my bad habits	**Item261**	4.44	0.695	-1.615	**4.706**	4.41	0.772	-1.852	**5.243**
My first impressions of people usually turn out to be right	**Item262**	**4.52**	0.742	-1.894	**4.557**	**4.62**	**0.643**	**-2.294**	**8.184**