

**PSYCHOLOGICAL ASSESSMENT: A STUDY OF PERCEPTIONS OF
PERSONNEL UNDERGOING ASSESSMENT FOR OCCUPATIONAL
PURPOSES IN THE SOUTH AFRICAN NATIONAL DEFENCE FORCE
(SANDF)**

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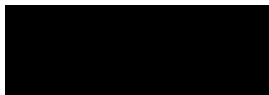
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DECLARATION

I, **Cynthia Zinhle Mthombeni** declare that:

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I, Prof Augustine Nwoye, confirm that the work reported in this dissertation was carried out by Cynthia Zinhle Mthombeni, under my supervision.

Professor Augustine Nwoye



Date: 16 June, 2022

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DEDICATION

For Enamile Libo Buthelezi

ABSTRACT

Background and aim: This study sought to examine how personnel who work within the SANDF perceive psychological assessment measures in their workplace. In the South African military, psychological tests were seen by the organisation's leadership as invaluable decision aids for recruiting efficient servicemen, procuring promotion recommendations and guiding personnel development. It was this official view of the value of psychological assessment measures in the SANDF, which was put to test in this research. In this regard, the crucial question was: Do the people from 'below', the personnel that work in the Defence Force and had undergone psychological testing, share this official view of the role of test measures in their organisation? Exploring this question was considered important given historic issues of negativity and contestation that surrounded psychological test use in the pre-democracy era of the SANDF's history. Against this background, understanding how military personnel presently view psychological tests in their workplace would help to determine whether efforts by the field of psychological assessment in the South African military to redeem its past contested reputation are yielding the expected dividends.

Method: To implement the study, perceptions of purposively selected SANDF military members were explored through qualitative enquiry that followed IQA methodology. Data were collected during two focus group, consisting of constituents from both senior and junior military ranks (N=29), followed by individual interviews (N=18) that were aimed at unpacking themes that emerged from the discussions. The study sample was diverse in terms of gender, age, ethnicity and years of service.

Findings: Findings of the study were mixed. While some aspects of the data showed that some SANDF personnel entertained a positive view and were beginning to appreciate the value of the use of psychological tests in the Defence Force, not all constituents of the study sample shared this positive perspective.

Conclusion and implications: The study concluded that considered against the background of the pervasive negative perceptions associated with psychological assessment measures in the South African military during the apartheid period, as reported in the literature, there was cause for optimism that transformative measures introduced to improve the quality and practice of psychological assessment in the SANDF were making the expected impact of changing people's perceptions about psychological tests in the military. Based on this, a

number of recommendations were made about how positive perceptions on psychological tests in the SANDF could be further enhanced and sustained.

TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENTS	ii
DEDICATION	iii
ABSTRACT	iv
TABLE OF CONTENTS	vi
LIST OF TABLES	xi
LIST OF FIGURES	xii
ABBREVIATIONS	xiii
CHAPTER ONE: INTRODUCTION	1
Background to the study	1
Statement of the problem	18
Purpose of the study	20
Objectives of the study	20
Research Questions	21
Significance of the study	21
Assumptions of the study	23
Scope and delimitation of the study	24
Operational definition of terms	24
Summary and overview of the study	25
CHAPTER TWO: PSYCHOLOGICAL TESTING	28
Introduction	28
Overview of the SANDF	29
The Constitutional mandate of the SANDF	30
A career in the military	31
Conclusion	37
Psychological testing in the military	37
Uses of psychological assessment measures	38
The assessment process	43
Cognitive ability tests	44
Personality tests	48
Work Simulations	53
Selection interviews	54
Summary of tests used in the SANDF	60

Conclusion	70
Criticisms of psychological assessments.....	71
A problematic history	71
Differential predictive validity	76
The problem of faking in personality tests	81
Conclusion	85
Regulation of psychological assessments in South Africa.....	87
Governance of psychological assessment	87
Rules, regulations and the ethics of testing	88
Precautionary measures in psychological testing post-apartheid	89
The Employment Equity Act of 1998	89
Health Professionals Act 56 of 1974	90
Summary and Synthesis of Literature	91
Introduction	96
Forming perceptions.....	97
Public's understanding of science	98
The Role of personal experience	102
Personal Reflection	106
Summary and Synthesis	108
CHAPTER FOUR: RESEARCH METHODOLOGY.....	111
Introduction	111
Research paradigm	112
Research Methodology: Interactive Qualitative methodology.....	115
The warm-up exercise	117
Brainstorming	117
Affinity analysis	118
Inductive coding	118
Axial coding	118
Affinity Relationship Table	119
Interrelationship Diagram.....	119
Systems Influence Diagram.....	120
Location of the study.....	121
Study population	122
Inclusion and exclusion criteria.....	122
Sampling technique and sample size	123

Research instrument	125
Trustworthiness	129
Transferability	132
Dependability	132
Confirmability	133
Reflexivity	133
Pilot study	134
Data Collection, analysis and interpretation	136
IQA Focus Group Discussions	137
Warm up exercise	137
Brainstorming	138
Affinity analysis	139
Inductive coding	139
Axial coding	140
Data arising from focus group discussion with senior ranking constituents	141
Data arising from focus group discussion with junior ranking constituents	152
Data collection and analysis of the semi-structured interviews	157
Data synthesis and analysis	161
Ethical considerations	163
Informed Consent	163
Confidentiality	164
Beneficence	164
Non-maleficence	165
Positionality and researcher reflexivity	165
Summary	170
CHAPTER FIVE: FINDINGS OF THE STUDY	171
Introduction	171
Descriptive Analysis of Constituents	171
Presentation of findings emerging from IQA focus group discussions	176
Focus group affinities of Senior Constituents	176
Experience / Personal experience	177
Advantages	179
Reflection	179
Usefulness	180
Disadvantages	182

Culture and language	182
Barrier	183
Manipulation.....	184
Bias	185
Irrelevant.....	185
Suggestions / Solutions / Awareness	186
Focus group affinities of Junior Constituents	187
Personal experience	188
Positive mental state	188
Valid	189
Presentation of Findings Research Question by Research Question emerging from thematic analysis	190
Research Question 1: In what ways are psychological assessment measures for occupational purposes perceived by military personnel?	190
Research Question 2: What are the major reasons of positive perceptions (if any) of psychological assessment measures in the South African military?	192
Research Question 3: What are the major reasons of negative perceptions (if any) of psychological assessment measures in the South African military?	195
Research Question 4: How can the perception of psychological assessment measures in the SANDF be improved?	199
Summary and synthesis of findings	201
CHAPTER SIX: DISCUSSION AND CONCLUSION	204
Introduction	204
Discussion of research questions.....	205
Perceptions of psychological assessment measures in the South African military	205
Major reasons behind positive perceptions of assessment measures in SANDF	211
Major reasons behind negative perceptions.....	219
Improving perceptions on psychological tests in the SANDF	226
Summary of the Study.....	235
Conclusion / Implications of study.....	245
Recommendations for policy and practice	247
Need for development of more cross-cultural assessments.....	247
Need for translation of tests into South African languages	248
Need for advocacy for use of psychological assessment measures in the SANDF.....	248
Limitations of the study.....	249
Recommendations for future research.....	250
REFERENCES	252

Appendix 1: Minutes of Portfolio Meeting on psychometric assessment in the SANDF	302
Appendix 2: South African National Defence Force Ranks	309
Appendix 3: Letter to the gatekeeper	310
Appendix 4: Authority to conduct research	311
Appendix 5: Letter requesting participation	312
Appendix 6 Ethics Approval for present study	315
Appendix 7: Informed Consent for Research Participation	316
Appendix 8: Turnitin Report.....	319

LIST OF TABLES

Table 1	62
Table 2	63
Table 3	127
Table 4	140
Table 5	141
Table 6	143
Table 7	145
Table 8	147
Table 9	148
Table 10	148
Table 11	153
Table 12	153
Table 13	155
Table 14	155
Table 15	155
Table 16	175
Table 17	176

LIST OF FIGURES

Figure 1	79
Figure 2	82
Figure 3	83
Figure 4	108
Figure 5	121
Figure 6	128
Figure 7	138
Figure 8	146
Figure 9	146
Figure 10	149
Figure 11	150
Figure 12	152
Figure 13	154
Figure 14	154
Figure 15	156
Figure 16	156
Figure 17	172
Figure 18	173
Figure 19	173
Figure 20	174
Figure 21	174

ABBREVIATIONS

16PF	16 Personality Factors Test
AA	Affirmative Action
AAT	Academic Aptitude Tests
ANC	African National Congress
APM	Advanced Progressive Matrices
ART	Affinity Relationship Table
CAT	Computer adaptive testing
CSF	Comprehensive Soldier Fitness
CWB	Counterproductive work behaviours
DAT	Differential Aptitude Test
DI	Defence Intelligence
DOD	Department of Defence
FFM	Five-Factor Model
GAT	Global Assessment Tool
HPCSA	Health Professions Council of South Africa
HSRC	Human Sciences Research Council
IQ	Intelligence quotient
IQA	Interactive Qualitative Analysis
IRD	The Interrelationship Diagram
MMPI-2	Minnesota Multiphasic Personality Inventory-2
MPI	Military Psychology Institute
MSDS	Military Skills Development System
PIBSpEEx	Potential Index Batteries and Situation Specific Evaluation Expert Scales

PMA	Primary Mental Abilities
PRI	Psychological Risk Indicator
PTSD	Post-traumatic stress disorder
PUS	Public Understanding of Science
RSA	Republic of South Africa
SAAF	South African Airforce
SAMHS	South African Military Health Services
SAN	South African Navy
SANDF	South African National Defence Force
SAPI	The South African Personality Inventory
SAPS	South African Police Service
SAT	Senior Aptitude Test
SID	Systems Influence Diagram
SPM	Standard Progressive Matrices
UKZN HSSREC	University of KwaZulu-Natal Humanities and Social Sciences Research Ethics Committee
UN	United Nations
USA	United States of America
VTS	Vienna Test System
WW1	World War 1
WW2	World War 2

CHAPTER ONE: INTRODUCTION

Background to the study

The use of psychological assessment measures for recruitment, development and promotion of military personnel is a widely established and accepted practice. This practice stems from the belief that psychological tests are beneficial in the evaluation of an individual's suitability for specified roles within organisations. As part of this evaluation, psychological tests are often employed to determine important work-related aspects such as an individual's cognitive ability, their personality traits, leadership ability and other characteristics perceived as desirable for optimal job performance (Anestis et al., 2019; Bang et al., 2017; Fathi Ashtiani & Sajadechi, 2005; Køber et al., 2017).

A review of literature in the area of psychological assessment measure utilisation for various purposes in military organisations point to their significant contribution in the optimisation of military goals; more specifically in describing, explaining, predicting and modifying military behaviour. Moreover, Nwafor and Adesuwa (2014, p.5) further attest to their utility in the placement, promotion and development of servicemen; suggesting the utility of psychological testing as occurring on a continuum in the sense that "it starts during selection for recruitment into the military and spans until retirement" from active service. Even though these scholars make this assertion in reference to the Nigerian military, there exist a large body of academic literature commenting on the uses of psychological assessment measures at different stages of the employment cycle in military organisations of a vast number of countries. This suggests that the use of psychological assessment measures is not limited to a marginal number of military organisations but is a prominent decision-making aid in militaries around the globe (Scroggins et al., 2008).

The extensive application of psychological assessment measures around the globe comes as no surprise when one considers that the first widespread use of psychological tests

date back to World War 1 (WW1) where a sizeable number of psychologists were recruited into the military to support war efforts. As reported by Hughes et al. (2018), this constituted the first mass deployment aimed at the selection and classification of servicemen. As part of these efforts, psychologists were given the mandate to develop and administer cognitive tests; to screen recruits; to assess personality characteristics; and to rehabilitate servicemen who had incurred head injuries. The gains derived from psychological testing during this period proved to be an astounding success to the extent that the Second World War (WW2) saw the practice of psychological assessment being implemented on an even greater scale. As noted by Hughes et al. (2018) owing to this success, the use of psychological assessment measures in the military has continued to the present day.

The need to make practical decisions about who to employ, promote and develop is especially critical in institutions like the military. The advantages of using psychological tests as a decision-making aid have been attributed to their capacity to objectively quantify human behaviour with considerable accuracy (Hartmann et al., 2003; Picano & Roland, 2012; Reynolds et al., 2021). Urbina (2014) defined psychological assessment as a methodical procedure through which samples of behaviour can be obtained. Concurring, Melton (2018) conceived psychological assessment as tools and methods that aid gathering and integration of data consisting of psychological constructs for the purposes of making psychological observations and decisions. These conceptualizations suggest that by quantifying behaviour, psychological tests offer an objective approach in behaviour measurement than is possible with more subjective methods commonly used in selection processes such as interviews and personnel referees (Shute et al., 2016).

The use of psychological measures in military and non-military organisations has been demonstrated in numerous studies where organizations have assessed individuals using psychological tests to determine whether they possess specific characteristics deemed

important for performing their job. For example, Xiao et al. (2011) contended that the ability for new recruits to adapt to challenges inherent in military environments is integral to a successful military career. Results of Xiao et al. (2011) study which evaluated interpersonal and training adaptation in those who had been recruited into the Chinese Army illustrated how psychological assessment measures added value in this regard. In that study, Xiao et al. (2011) made use of two assessment measures, one that the researchers had developed for the measurement of soldier's propensity to create meaningful relationships with peers and other military officers which was termed, interpersonal adjustment, and their ability to attain military competence known as training adjustment. A second assessment was employed for the purposes of evaluating the predictive ability of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2), a psychological assessment measure that quantifies a person's psychological state, to evaluate soldiers' adjustments. The findings study revealed that recruits who had scored highly on the MMPI-2 adapted quicker and adjusted better to military life when compared to recruits who had obtained lower scores for both types of adaptation. These findings speak to the validity of the MMPI-2 as a psychological assessment measure that is not only able to provide insights successfully and accurately about a person's mental health but also one that can identify and differentiate between recruits who would successfully complete military training, achieve professional competence, and build harmonious relationships with colleagues, supervisors and commanders and those who would lack this ability (Rona et al., 2005).

Of course, the utility of psychological tests extends beyond the goal of aiding the recruitment of servicemen as these tools are also often employed during training, development, promotion and deployment. For example, Peterson et al. (2011) observed that the US army makes use of tests such as the Global Assessment Tool (GAT) that measures four dimensions of strengths namely, emotional, social, family and spiritual. As reported by

Lester et al. (2015) the GAT forms part of the Comprehensive Soldier Fitness (CSF) program and serves as a baseline to track personal -development and growth of recruits over time. Commenting in this regard, Vie et al. (2016) emphasized that the GAT is administered routinely to serve the purpose of distinguishing those who can benefit from advanced training on resilience and coping skills from those who would not. Indeed, the benefit of psychological assessment tests in the military as alluded to above, have been reported as helping to identify soldiers who may display behavioral problems when deployed as well as to separate these from those who score highly, and are thus earmarked for advanced training and promotion opportunities that lead to high statuses within the organization (Meredith et al., 2011; Morgan & Bibb, 2011).

In the South African National Defence Force (SANDF) similar use of psychological assessments measures are made during recruitment, promotion, and development of servicemen to aid effective decision-making processes (Haarhoff et al., 2020; Dijkman, 2009; Ditsela & Van Dyk, 2013; Kotze et al., 2007; Marimuthu, 2017; Pretorius & Redelinghuys, 2010; Themba et al., 2012).

Unfortunately, despite the long-standing practice of psychological testing in the military and substantial literature highlighting the numerous benefits of psychological assessment measures, these decision-making aids have not always been viewed from the vantage point of the benefits they provide. For instance, Kgosana (2012) noted that in the SANDF some had viewed the use of psychological tests as a tool to frustrate economic participation of previously disadvantaged race groups. Kgosana's (2012) study, which looked at psychological tests from the perspective of affirmative action in the SANDF, noted that at that point in time, a majority of people in the country, particularly those from previously marginalised cultures, tended to be predisposed toward a general disapproval of psychological assessments for recruitment, development and promotion purposes and treated

their outcomes with distrust. Consequently, Kgosana (2012) observed that recommendations stemming from psychological tests had often been dismissed by employees and unions, such that at times people refused to undergo psychological assessment. In highlighting the historical timeline of psychological testing practice in the country, Laher and Cockroft (2014) provided support for Kgosana (2012) argument noting that the fields participation in supporting racial separateness during its early years resulted in a tainted reputation which led to protestations against the use of assessment measures by interest groups such as unions, which ultimately led to their ban, albeit for a short time period. It was part of the interest of the present study to find out the extent to which these negative perceptions of, and protestations against the use of psychological assessment measures in the SANDF still remain, and if so to determine the reasons for their enduring persistence.

In as much as the benefits of psychological tests have been documented worldwide, tensions around psychological assessment measures have not been limited to South Africa only, and are also not new. As early as the 1960s, Anastasi (1967) noted some objections towards psychological tests Jensen (1980) comment that, criticism in any scientific field usually remains within the profession however, the extent of anti-testing sentiments during this period had been so widespread that contestation of using psychological assessment measures had spilled over into the public domain. As noted by Brim (1965), anti-testing sentiments were expressed by both lay persons and professional groups and as Jensen (1980) remarks, numerous national and political organisations had also organised themselves not only to oppose psychological tests but went as far as waging anti-testing campaigns. Contesting organisations included the National Education Association, the Association of Black Psychologists and similar groups identifying themselves as “Marxist” including the Progressive Labour Association (all emanating from the United States) who cited criticisms concerning cultural bias, problems with specific test items which were viewed as biased and

discriminatory, failure of tests to measure innate capability, the use of unsuitable norms within specific groups as well as test scores being contaminated by extraneous variables (Brim, 1965). A study conducted during this period, that investigated attitudes toward intelligence tests among Americans indicated that there was consensus between concerns raised by lay persons and those of professional groups (Brim, 1965). As noted by Anastasi (1967), these objections were linked to test content, item form, criterion problems and concerns around the testing of culturally diverse groups.

A review of the extant literature suggests that in South Africa controversies and conflicts around the use of psychological assessment measures in the military have been exacerbated by the socio-political history of the country. Several studies in this area showed that in South Africa assessment (both in the military and in the wider society) has often been viewed as unfairly discriminatory (Antohnie, 2016). Concurring, Vermeulen (2011) notes that the field of psychology had not remained unaffected by occurrences that exist in the country's political and social landscape. Consequently, Laher and Cockroft (2014) suggest that an investigation of people's attitudes to psychological assessment in South Africa cannot be conducted in isolation; that is, without considering the socio-political history of the country. The present research noted this conclusion and planned to include in its study of people's perceptions of psychological assessment tests in the military, an attempt to explore how these perceptions were related to the time when the study was being done in the country.

Commenting in this regard, Bohmke and Tlali (2008) note that in the 1940s and 1950s the main focus of psychological testing was solely on the classification of black South Africans for servitude roles and to prevent their social and economic advancement. However, the political and social climate of transformation that the country underwent during regime change in 1994 implied the emergence of a change in direction. Following that change, psychological tests in the military and other agencies could no longer be used as a tool for

political agenda. Affirming these changes, Laher and Cockcroft (2013) observed that the new political dispensation country called for an urgent need for tests that were culturally inclusive to meet the needs of all groups in the newly formed rainbow nation, South Africa. Despite this need for inclusion in the practice of testing in the military, Foxcroft (2011); Laher and Cockcroft (2014), have noted that up until that point, few tests were available that had applicability to diverse cultural and language groups. However, over the subsequent years there has been a gradual but greater increase of tests that are appropriate for testing diverse cultural groups which have also demonstrated sound levels of validity (Laher & Cockcroft, 2014). It was considered important to explore the extent to which these changes have brought in positive changes in the attitudes and perceptions of those who participated in the present study towards psychological assessment measures in the SANDF.

In an effort to find additional literature that addressed psychological tests in the SANDF, not much information was yielded by the literature search. However, a study conducted by Van Wijk (2007) although conducted over 10 years ago, suggests the plausibility of Kgosana's (2012) argument earlier highlighted. Referring to the South African Navy (SAN) selection for submariners, Van Wijk (2007) pointed to the established use of psychological tests dating as far back as the 1960's which included the use of pen-and-paper tests, questionnaires, interviews, and skills assessments. As noted by Van Wijk (2007, p.1), the advent of democracy required a change in the demographic representation of the SAN (South African Navy) thus "the navy to make drastic changes to the selection model and to introduce a fairer system of psychometric assessment of individuals in the larger South African society." The need for assessment measures that catered for all groups recruited into the SANDF correlate with the argument of why some from previously marginalised groups might have rejected psychometric tests.

The majority of studies pertaining to psychological tests in the SANDF were predominantly concerned validation studies of assessment batteries, therefore apart from the two studies mentioned above, not much literature could be located. However, minutes that took place between the Department of Defence and a Portfolio Committee which had the agenda to discuss psychometric testing carried out in the DOD published on a government website were located (Parliamentary Monitoring Group, 2007). The minutes of this meeting were particularly helpful in understanding what was perceived as key issues around testing in the SANDF (the complete minutes are attached as appendix no 1). A critical review of these documents and those of corresponding studies was undertaken below to highlight the key issues underpinning the present study.

Several themes emanated from the minutes of the meeting on psychometric tests which suggest why in some instances psychological assessment measures may have been treated with mistrust particularly from a perspective of affirmative action in the SANDF. Firstly, the minutes of this meeting point to significant score differences resultant from testing between black and white candidates were a cause of concern. Secondly, several factors were identified as affecting test performance of black test takers, these being influences emanating from culture and language aspects; socio economic factors; and the quality of education the country offers, all of which were perceived to disadvantage test takers from African cultural backgrounds.

A great deal of concern around psychological assessment measures has been caused by observations of extensive score differences in test performance, particularly those measuring cognitive ability or intelligence, between racial groups (Parliamentary Monitoring Group, 2007). Score differences in this area have been widely reported in literature. For instance, Rushton, Skuy and Bons (2004) found that average intelligence scores in the United States of America (USA) indicated that when completing psychometric tests, Europeans and

their descendants obtained IQ averages of 100 points whereas average IQ scores for Africans were reported at 85. This performance pattern on IQ tests scores is not unique to the USA, but has also been observed in studies investigating the same in the Netherlands and in South Africa (Rushton et al., 2004). In a South African study, Rushton (2001) administered the Raven's Standard Progressive Matrices (SPM) to 309 university level psychology students between the ages of 17 to 23. In this research, African students who included a sample of 173, managed to solve an average of 44 problems out of the 60 presented by the test, whereas the performance of their white counterparts was reported at significantly higher rates. In a sample of 136 white students the average problems solved were 54 of the 60 problems presented which symbolise significant differences. Similar trends have also been observed in cognitive ability test scores in the SANDF (Parliamentary Monitoring Group, 2007). This is problematic given that in the employment setting, candidates who obtain higher scores on cognitive ability tests have higher chances for being recruited or being earmarked for promotion opportunity over those with lower scores.

The DoD document further identified several factors closely tied to test performance, which included test takers language, culture and quality of the education system (Parliamentary Monitoring Group, 2007). As argued by Lozano-Ruiz et al. (2021) socio cultural factors such as those mentioned above pose far reaching influences in various aspect of a person's life. And as asserted by Choudhry, Mutalib and Ismail (2019) certain factors once they have been a part of a person's life for extended period, they become irreversible and may not necessarily be remediable. In demonstrating the extensiveness of the impact of socio economics Bush and Glover (2016) assert that despite the extended period that the country has been in a democracy, research shows that affluent and white children still attained significantly higher scores than black children.

Culture was identified as having a critical influence on test performance in the DoD (Parliamentary Monitoring Group, 2007). Ginzberg (2017) defines culture as understandings and interpretations which are shared by a group that also affect information and knowledge that is available to that group or society. Furthering the definition, Mironenko and Sorokin (2018) view it as dictating what is, and what is not relevant and what is worth knowing. Ginzberg (2017) comments on the role culture has in affecting how people communicate, information that is perceived as factual, as well as how things within their environment take place. Iliescu (2017) argue that aspects such as language and culture as influencing performance on psychometric test scores. Ideally, for testing fairness to be achieved, all those who undergo the assessment need to have an equal opportunity to learn and understand the activity they are tested in. The implication of this is if an activity that is to be tested is not a part of a test-takers culture, individuals from that culture are less likely to achieve good performance in that activity. As noted by Scott et al. (2018) a psychological test that results in significantly different test scores for different cultural groups is often regarded as culturally biased.

As commonly cited, South Africa has eleven officially recognised languages which include nine African languages, English and Afrikaans. This has implication with regard to psychological measurement. Gaylard, et al. (2013) indicate that learners whose home language is English are from the very beginning of their schooling years taught in the English language. This is a contrast to African learners whose home languages constitute of other languages; in this instance they are taught in their home language. It is only when they transition to grade 4 that the language, they are educated in is routed to English. When one looks at the languages and dialects that the majority of South Africans speak, these are considerably different that they are incomparable to the language that most tests make use of. Ercikan and Lyons-Thomas (2013) therefore argue that language significantly contributes to

test score differences often observed between white and black groups. In a study by Foxcroft and Aston (2006) the leading mediator with regards to test performance was found to be language most notably when the test administered was a language different from the test takers home language. This study suggested that the way in which individuals understood concepts that form part of psychological tests may challenge test takers who are non-English speakers.

Another point that makes language a considerable barrier in psychological tests is the internal translation process second language speakers of English often engage in while completing test items. This process entails first translating test questions into a default language such as their mother tongue before determining how to respond. While this may not necessarily pose a problem when completing assessment measures such as personality questionnaires, the disadvantage is readily observed in cognitive assessments which often have a time limit. In these cases, such internal translation poses major implications in terms of performance. This observation is supported by Foxcroft and Roodt (2006) who remarked that when individuals were assessed in their mother tongues, they tended to perform better.

Another argument put forward by the DoD document is that the majority of Black South Africans have been previously disadvantaged by socio-political circumstances, and thus the likelihood to outperform those who have had a better advantage in life becomes minimal. This document further notes that the past had subjected many South Africans to a life of underprivilege which made it difficult for previously disadvantaged individuals when competing for jobs. As noted by Jubane (2020) the majority of those who seek employment often matches the demographics of the overall racial profile of the country. By implication this means the majority of those who seek employment within the SANDF are among those previously disadvantaged. From this perspective using results from psychological tests, which produce lower scores for African people, potentially denies those who have already

been previously destitute and are trying to improve their lives by joining or progressing within the SANDF. Constituents at this meeting viewed such a reproduction of disadvantage as thwarting transformation goals aimed to achieve equality and levelling the playing field. To negate these undesirable effects, it was noted that there was a need for an African model of psychometric testing which would serve as a mediating factor. This model would potentially serve as a way for understanding the background of test takers that come from previous social and political disadvantage and included social factors of township life; language barriers that may prove to be a challenge for test-takers when writing psychometric tests and other cultural factors that had the potential to impact test results.

Emphasising the role that the environment plays in cognitive test performance Cockcroft et al. (2015) argued that factors such as schooling and nutrition influence test takers performance to the extent that the use of 'middle class' tests on individuals from poor cultural backgrounds is not a true reflection of intelligence but rather reflects the discrepancy between the western middleclass 'norm' and the individual's culture. Comments on this aspect communicated in the DoD document correspond to sentiments by Blumenau and Broom (2011) who observed that in South Africa psychological assessment measures that have been developed and normed for Western white groups are sometimes administered on different populations such as individuals from black African cultures. The problem with this lies in that the experiences one has which take place within a specific sociocultural context have a significant influence on how a person understands what the task entails and requires (Foxcroft & Roodt, 2006). This factor is also supported by the notion that given the unfamiliarity of the assessment measure, test takers from rural areas in South Africa tended to experience anxiety levels that were much higher than their urban peers thereby further contributing to their poor performance (Parliamentary Monitoring Group, 2007).

To a large extent, what the majority of cognitive ability assessments measure are indirectly correlated to an individual's learnings which has taken place during the course of the lifespan and these learnings are largely influenced by a person's educational experiences. As noted by Foxcroft and Roodt (2006) formal education empowers individuals with a wide range of skills such as problem-solving, the ability to reason as well as knowledge on how to acquire information or deal with unique problems which are all elements required by traditional intelligence measures. However, in South Africa a common complication is that the achievement of a specific grade may not necessarily be the best way to gain insight into a person's achievement potential. Schooling based on a poor-quality education system prohibits students from competing on equal footing with those who have enjoyed better education. As such, a grade twelve qualification obtained from a government school may not cover similar knowledge or skills as one attained from a more privileged school such as a private school (Foxcroft & Roodt, 2006). Given this, a further factor that may further contribute to consistently low performance observed in black individuals from rural areas is what is termed test sophistication (Cockcroft et al., 2015). Test sophistication refers to the extent to which one may or may not be conversant with a specific type of test which ultimately affects scores obtained. When individuals lack test sophistication, they are seldom conversant with the language used, and may have to overcome challenges associated with this prior to developing self-confidence to successfully complete the test.

The literature presented above provided some insight into reasons why psychological assessment measures may be viewed with hesitation despite their many benefits particularly in the SANDF. While these studies shed insight into these views, particularly those in decision making positions of the SANDF, as indicated by the DoD document, few studies have looked at the perceptions of those on the receiving end of psychological testing within the organisation. Kgosana (2012) argued that psychological tests in the DoD were sometimes

associated with a gatekeeping narrative to economic participation whereas the minutes on psychometric testing in the SANDF argued that psychological assessment measures posed a disadvantage to test takers of African backgrounds due to historically unfair practices. This begs the question, do members of the SANDF who have undergone psychological testing perceive these assessment measures in the same way as that reported by Kgosana (2012) as well as constituents who participated in the meeting around psychometric testing in the SANDF.

Investigating this question was considered of key importance as the implications of test takers' perceptions may have an influence on the practice of psychological testing in the DoD. If psychological assessment measures were viewed in a similar light by test takers, one such consequence could be a loss of buy in on the relevance of psychological tests in the DoD over time; particularly if assessment measures were viewed as unfair, discriminatory, and preventing previously disadvantaged groups from accessing employment opportunities. A second consequence pertained to recommendations made on role suitability of applicants may result in a lack of consideration from decision makers during the hiring process if both test takers and those in leadership viewed assessments negatively. From the perspective of test takers, personnel may additionally adopt a casual stance to areas of development suggested for their roles for them to become top performers if results of psychometrics tests were viewed with distrust. In the most extreme cases unconfident views of assessments may result in a discontinuation of testing which may have damaging outcomes especially for highly specialized roles in the military. Given the above, the problem which the present study set out to explore as the question about the nature of South African military personnel's' perceptions towards psychological tests at SANDF.

Given that studies that similarly examined the perceptions of psychological assessment measures from the perspective of test takers in the SANDF or other military

organisations could not be located, the scope of this study was therefore aimed at investigating how psychological tests were perceived by those who make up the workforce of the South African military by investigating their overall views on the topic, exploring what were perceived as positives, and negatives as well as their perceptions on how the practice of psychological testing could be improved within their organisation. This study therefore aimed to empirically investigate the views and observations put forward by research constituents on the nature of psychological assessment measures in the SANDF and thus to close this gap through the provision of an empirical investigation on the issue.

In an effort to gain an understanding of current research in the field within which this study belongs, a comprehensive literature search was conducted. The literature reviewed the nature of the military as an organisation to provide an understanding of why the practice of psychological testing may be beneficial in this context. Parallel to this understanding was the need to furnish the reader with background information about the SANDF to facilitate understanding of the specific context within which the study was located. As part of this review, the arms of services of the SANDF as well as their mandates were discussed. The review thereafter aimed to build on this understanding by introducing literature about psychological testing in military organisations. This section looked at studies that have been conducted on psychological assessment measures during various stages of the employment cycle with specific reference to recruitment, promotion and development as well as the types of tests commonly utilised during these processes. This review was most beneficial in enriching the present study with a mental picture of some of the assessments tests that military members had in mind when forming and relating their perceptions. The second half of the literature presented research in conflicts and controversies surrounding assessment measures and explored factors that were identified to influence members' perceptions. The aim of this review was to highlight key concerns noted in literature which related to how tests

in the military were perceived. The collective presentation of these studies aimed to additionally provide the reader with an understanding of where the current study was located within current literature.

To investigate military members' perceptions in this regard, this study postulated that the perceptions of SANDF personnel would be influenced either by intrinsic or extrinsic factors or both. This study proposed that intrinsic influences would be derived from their personal experience of undergoing testing in the DoD during recruitment, promotion, or development. To explain this angle of the review, the study drew on Roth and Jornet (2014) theory of experience which proposed that military members would engage in the process of formulating their perceptions about the experience they have gone through depending on how their lives have been impacted by that particular experience. This process of recalling one's experience of a situation such as completing psychological tests in the military was what would guide constituents into sharing their overall perceptions including what they perceived as positive or negative about that experience and ways to improve the experience in their organisation. Extrinsic factors that might influence and guide personnel's' perceptions in their comments on the practice of psychological testing in the military were postulated to include those that could emanate from communication messages that they had been exposed to about psychological testing. In exploring these extrinsic factors, the study looked to Gross (1994) theory which is borrowed from the field of Public Understanding of Science (PUS) an area of social research, which explains what informs the way in which the public and by extension, military personnel potentially view science. The foundations of Gross (1994) models are based on how rhetoric influences the way the public understands science. Drawing on these theories, the present study aimed at arriving at the perceptions that personnel who participated in psychological testing in the military viewed assessment measures that formed part of the process.

Presently, psychologists who work in the military perform a wide range of duties that assist with decision making during the process of recruitment, promoting and development of personnel. These duties include the development, administration and validation of psychological tests and assessment measures; making recommendations on role suitability based on test results; evaluating job performance as well as identifying key areas for personnel development. Given the extensive use of psychological assessment measures in achieving military goals understanding how they are perceived has much relevance especially in a context where the views of test takers have not been documented and are therefore unknown. Studies that have investigated how psychological tests have been received have predominantly explored the subject from the perspective of the political historical orientations of psychometric tests in South Africa and their impact. Some noteworthy research in this area has included the work of Laher and Cockcroft (2014) and Kgosana (2012). This body of work looked at issues around historical perspectives on psychometric testing; cultural differences and their contribution to test bias; the legacy of racism on psychological testing and the most suitable way forward in post-apartheid South Africa. Other studies within the same area have approached the matter from the perspective of multicultural tests and their importance to South Africa's diverse culture and language groups. On the whole, a review of work in this area including studies mentioned above explored issues related to testing in multicultural contexts; the need for invariant assessment measures in South Africa, cultural differences in testing; the adverse effect which specific types of tests pose for certain groups; and how to handle testing in diverse populations.

Still within the field of personnel selection numerous studies have looked at test takers' attitudes to selection tools (Bilgiç & Acarlar, 2010; Butucescu et al., 2019; McCarthy et al., 2017; Truxillo & Bauer, 2011). The majority of these have looked at test takers' attitudes in terms of comparisons which selection tools were perceived most favourably by

applicants and which were seen as least favourable. The tools considered included cognitive ability assessment measures and personality tests. Other evaluation tools mentioned in these studies comprised of interview, work-sample tests or simulation exercises and assessment centres. An extensive report of these studies is discussed in the second chapter.

A review of literature conducted over the past ten years (2010 to 2020) yielded no results of research that has explored perceptions of psychological tests in the South African National Defence Force. A review of this nature would have shed valuable insights into how assessment measures have been perceived within the context of those studies. This review would have additionally provided a comparative framework in which the results of this study could be understood. Given that no studies could be located that investigated these perceptions, the present study aimed to close this gap. The present study further aimed to contribute to academic literature by looking at psychological tests from the perspective of test takers. It was designed to ascertain how psychological assessment measures were received by test takers, who were personnel of the SANDF.

Statement of the problem

The arms of service of the SANDF namely, the army, the airforce, the navy, and the South African Military Health Services (SAMHS) are required to be constituted of servicemen and personnel that are capable to carry out their work, for the most part, decisively, effectively, and in the most professional manner. There are two fundamental aspects of serving in the military. As noted by Lucas (2019) the first aspect as politically unpopular as it may be, relates to the military's very existence being created as an instrument of war. This means the military always needs to be prepared for that role. As such the military needs to have at hand a force that is ready and prepared to engage at any given time when called upon to do so. Although not all military roles aim to fulfil this mandate, however, a considerable, if not most of the workforce, irrespective of arm of service is

recruited to either fulfil or support this mandate. The second aspect about the military is the notion that the military has the function to serve society. According to Finer (2017) part of the military's role in a democratic society, is to exercise its power rationally and for purposes that benefit the public. These very roles echo the mandate of an organisation that typically involves a high degree of responsibility that calls for defence, preservation, and protection of human lives on a large scale. This therefore requires personnel to be able to operate under any circumstances at any given notice.

Psychological tests in SANDF are used for screening, recruiting, developing and the deployment of efficient servicemen. This assertion has been supported by numerous studies carried out by military organizations which have charted desired personality attributes and abilities of members such as stress coping styles, emotional intelligence and motor abilities required for optimal performance in specific military roles (Benmelech & Frydman, 2015; Everly et al., 2012; Fathi et al., 2005; Hartmann et al., 2003).

Studies that have investigated test taker attitudes note that a person's motivation whilst undergoing psychological testing has an influence on their test performance. For this reason, understanding how SANDF personnel perceive psychological assessment measures is a worthwhile exercise as their perceptions may have an impact on their motivation which ultimately can influence test results. In addition to this, if psychological assessment measures are viewed with suspicion in the military as noted by Kgosana (2012) such negative perceptions can have undesirable effects such as a loss of buy in from clients on the relevance of psychological tests, or recommendations made on role suitability of applicants may result in a lack of consideration from decision makers during the hiring process. From the perspective of test takers, personnel may additionally fail to take seriously development opportunities suggested for their roles for them to become top performers. In most extreme cases unconfident views of psychological tests may result in discontinuation of testing in the

organisation which may have damaging outcomes especially for highly specialized military roles. Given the above, the problem which this study set out to explore was the question about the nature of South African military personnel's perceptions towards psychological tests in the SANDF.

Purpose of the study

The present study was primarily concerned with investigating how psychological tests were perceived by personnel of the SANDF. The study also aimed to discover reasons behind these perceptions. This involved understanding what military personnel viewed as strengths and challenges, whether they viewed psychological tests as valid and reliable measures of job competencies and job performance. Finally, once these areas had been determined, the study aimed to explore how the perception of psychological assessment measures could be enhanced in the SANDF. Hence, the present study can be summarised as a study that aimed to facilitate a way for the organisation to self-introspect their standing on psychological assessment measures to enable practitioners to reinforce positive perception and work towards changing attitudes about negative perceptions that might be discovered.

To achieve this purpose, the study undertook a qualitative method of inquiry that was informed by the tenets of social constructionist. A social constructionist perspective sees the development of knowledge as socially constructed by those involved with the process (O'Connor, 2015). This study therefore aimed to understand the prevailing knowledges held by military personnel in the SANDF which may include their personal experience of undergoing testing for occupational purposes in their work environment.

Objectives of the study

The specific objectives of the study were:

1. To determine how psychological tests for recruitment, personnel development, and promotion, were perceived by military personnel of the SANDF;

2. To discover the major reasons behind positive perceptions (if any) of psychological tests by military personnel of the SANDF;
3. To discover the major reasons behind negative perceptions (if any) of psychological tests by military personnel of the SANDF; and
4. To explore views on how the perception of psychological tests for occupational purposes (recruitment, personnel development, and promotion) among military personnel in the SANDF could be improved from the perspective of those who have experienced the process.

Research Questions

The following research questions were formulated to guide the study:

1. In what ways are psychological tests for occupational purposes (recruitment, personnel development, and promotion) perceived by military personnel?
2. What are the major reasons of positive perceptions (if any) of psychological tests in the South African military?
3. What are the major reasons of negative perceptions (if any) of psychological tests in the South African military?
4. How can the perception of psychological tests for occupational purposes (recruitment, personnel development, and promotion) in the SANDF be improved?

Significance of the study

The findings of this study were expected to mainly benefit the Military Psychology Institute (MPI), a unit in the SANDF under the Psychology Directorate. A core mandate of this unit is to conduct psychological assessments for military roles. Understanding how military personnel perceive psychological assessments was envisioned to firstly; equip psychologists to anticipate possible objections to psychological tests from those who do not see their value. Secondly, such insights were expected to enable psychologists to build

scientific evidence for clients of MPI to develop trust in their validity. A third benefit lay in the fact that, the attainment of such knowledge was valuable in its own right, because it may help psychologists to understand how the military community perceives tools instrumental in procuring occupational recommendations, an area which at the point of conducting the study, was an unknown.

Understanding test takers perceptions was particularly important given tensions such as their yield of significant score differences between race groups and historic conflicts that led to protestations against their use, among others. Understanding test takers perceptions further had implications for indicating whether efforts by the field of psychological testing to redeem its reputation had any impact in the way psychological tests were perceived in the present day.

For any field to evolve, its practitioners need to maintain a holistic and constant understanding of their audiences and how these audiences engage with their science. Such an undertaking enables practitioners to evaluate how their science is perceived, whether it is valued and trusted, rather than presupposing the disposition of its public. Even though the benefits of psychological tests have been well established particularly in the Euro-American contexts, and are well known in these places, controversies around psychological assessment measures in South Africa, that created tensions that threatened the very existence of the field of occupational tests under their ban warranted an investigation to determine the current standing of the field based on understanding the perspectives of the people on the ground, that it, those who have undergone psychological testing for opportunities related to gaining employment, development for increased performance and promotion possibilities.

This study was perceived to potentially to contribute to psychological practice in the expectation that it may bring awareness to psychologists who are part of selection processes to discover and understand the unknown and undocumented viewpoints of test-takers.

Understanding these views was significant in enabling military psychologists to make improvements in areas surrounding psychological testing, if required.

Many studies have contributed a wealth of knowledge of psychological assessments in South Africa (Foxcroft, 2011; Hill et al., 2013; Kgosana, 2012). However, few have investigated the topic from the perspective of test-takers. This study contributed to this area where little about test takers perceptions on psychological testing in the country currently exists. What is more, is that the study aimed to do so in the context of military personnel. As is common knowledge, the military environment is one of strict command and control where personnel are often expected to follow orders without questions or to obey orders before complaint. By virtue of conducting this research through a participant (or the test-takers) driven approach, the aim was to enable the voices of those who would otherwise not be heard to have the platform to present their views.

Assumptions of the study

This study was grounded on four assumptions. The first assumption was that military personnel possessed specific feelings or attitudes towards psychological tests. O'Connor (2015) asserts that for people to understand and make sense of their social reality they form perceptions. Often when people have experienced a specific situation their personal experience will be among criteria that shape that perception.

The second assumption was that these perceptions could be discovered and understood through the method of inquiry that the study undertook; namely, Interactive Qualitative Analysis (IQA) which falls within the qualitative paradigm. Qualitative research is a powerful method of inquiry when the phenomenon under investigation explores people's subjective feelings, viewpoints, attitudes, and perceptions.

The third assumption of the study was that uncovering these perceptions had the potential to inform psychologists on how perceptions of psychological tests and practice

could be improved in the SANDF. When one looks at theories related to rhetoric such as that of Gross (1994) contextual and deficit model of the public's understanding of science, this theory shows that the way scientific information is communicated has a dual impact; firstly, to understand what current views around psychological tests were; and secondly, to understand how public perception can be influenced.

The fourth assumption made by this study was that study insights had the potential to make an original contribution to literature in the field of psychological testing specifically in the military environment. Research relating to how psychological assessment measures were perceived by military members had not been explored in the SANDF. This study therefore contributed to this area.

Scope and delimitation of the study

The scope of the study was limited to military personnel serving in the South African military and living in the province of Gauteng, in the regions of Pretoria and Johannesburg. The study population consisted of military personnel from all four arms of service of the SANDF namely, the Army, the Airforce, the Navy and the South African Military Health Services. The study would have benefited from including representation of the entire South African population however given limited resources this was not feasible.

Operational definition of terms

- ***Psychological assessment***: the process of collecting data and interpreting it to evaluate a person's behaviour, abilities, and other characteristics. Assessment data may be gathered through interviews, observation, standardized tests, self-report measures, physiological or psychophysiological measurement devices, or other specialized procedures and apparatuses (Coulacoglou & Saklofske, 2017).
- ***Psychological test***: a standardized instrument, including scales and self-report inventories, used to measure behaviour or mental attributes, such as attitudes,

emotional functioning, intelligence, and cognitive abilities (reasoning, comprehension, abstraction, etc.), aptitudes, values, interests, and personality characteristics. Also called psychometric test (Reynolds et al., 2021).

- ***Multicultural assessment***: tests or assessment measures that are designed specifically for relevance in multi culture contexts (Dana, 2011).
- ***Reliability***: the extent to which a test can provide the same result on different occasions (Cronbach, 1947).
- ***Validity***: an external concept or standard of comparison that is used to define the attribute an instrument is purported to measure and that is applied in estimating how well the measurement instrument fulfils its intended purpose (Newton, 2012).
- ***Personnel selection***: the process of selecting employees best suited for a job. This process entails the use of procedures such the analysis of biographical data, interviews, employment tests and at times psychological assessment measures (Houston, 2014).
- ***Constituents***: refers to research participants in a study, like the present one, that utilise interactive qualitative analysis as a methodology (Northcutt & McCoy, 2004).

Summary and overview of the study

This dissertation consists of six chapters. The first chapter introduced the research study by firstly presenting the background of psychological tests in the military and went on to specify the research problem. A brief summary of literature which provided the framework for the study was undertaken wherein the gap that the study aimed to fill was identified. The purpose, study objectives, key research questions, significance and key assumptions of the study were thereafter addressed. In addition to this, the scope and delimitations of the research, operational definition of terms and overall summary of the study were provided.

The second chapter reviewed literature and empirical studies in the area of psychological testing in personnel selection. The literature commenced with an overview on the SANDF to provide a backdrop from which servicemen perceptions of psychological assessment measures in the SANDF could be understood. The overview entailed discussing the organisations constitutional mandate, culture, and the manner in which one goes about in pursuing a career within the institution, as all these elements interact and interlink with the use of psychological tests in this environment. Following this discussion was a review of the policy of affirmative action that has been adopted within the organisation and the tensions that it presents for the use of psychological tests during the employment cycle. The review thereafter discussed various types of assessment measures, and how test takers have responded to these during selection processes as well as key conflicts and controversies surrounding psychological testing practice. Central to the objectives of the study was the intention of understanding what military personnel viewed as positive aspects of psychological tests, as well as those they perceived as negative elements. To understand these required a consideration of factors that might influence their perceptions. To accommodate this, factors such as personal motivation, test anxiety, and perceptions of test relevance were reviewed. The latter sections of the review discussed governance and regulation of assessment measures in ensuring fair and non-discriminatory practice and closed by providing an in-depth summary and synthesis of the chapter.

Chapter three presented the conceptual framework of the present study by looking at and discussing empirical studies and theories underpinning this research.

In the fourth chapter, the research paradigm, the study design, and population were discussed. In addition, the technique employed to sample constituents, the size of the participating sample and data collection instruments were described. From this, data analysis and measures that taken to achieve scientific rigour and ethics are presented.

Chapter five presented the results of the study. This chapter specifically described the sample that participated in the research as well as the collective affinities that emanated through IQA focus group discussions.

In addition to data analysis that follows IQA methodology, data emanating from the study were analysed according to thematic analysis to triangulate themes that emerged from focus group discussions and interviews that followed. Extracts from interviews with constituents were presented in this chapter.

Chapter six provided an interpretation and discussion of the findings elaborating on how these relate to the existing body of research associated to the research topic. As part of the final chapter, the summary of the study, a discussion on the implications of the present research, recommendations for policy and practice, limitations of the study and recommendations for further research are presented.

CHAPTER TWO: PSYCHOLOGICAL TESTING

Introduction

Literature around psychological testing in military organisations point to numerous benefits derived from utilising psychological assessment measures as decision-making aids while recruiting, promoting and developing servicemen. However, despite their avowed benefits, some scholars have indicated that psychological tests in the military sector have not always been received with enthusiasm. In South Africa, this has largely been attributed to tensions that arose when assessing individuals from historically disadvantaged backgrounds and the implications that arise from resultant test scores with respect to possibilities for employment and progression opportunity. While benefits and conflicts and tensions of psychological tests are well established in literature, a gap exists with respect to understanding how test takers in the Defence Force perceive psychological assessment measures in the military, a task which also entails raising the question such as, do test takers also view psychological tests as potentially hindering employment and progression opportunities for them? To answer this question this research asked three key questions that aimed to gain insight into what military personnel view as positives and negatives of psychological tests in the SANDF and areas for improvement with respect to these measures in their work environment. To locate the present study within field of psychological measurement research, literature related to this topic was reviewed, critically engaged with and synthesised. This review of literature was organised into several themes and is presented in this chapter.

The first theme focused on the nature and characteristics of the SANDF as a military organisation; detailing its mandate, recruitment processes and culture. This discussion was of central benefit in understanding the environment within which military personnel narrated their perceptions of psychological tests explored in this study. Literature pertaining to the

types of psychological assessment measures commonly used during selection processes were further reviewed. These psychological measures were identified as cognitive ability tests; personality assessments; work simulations and assessment centres. To integrate this section with the purposes of the present research, examples of specific psychological tests employed within the SANDF were presented. This section further covered literature on test takers' attitudes to various tests with a commentary on the method cited as garnering more frequent positive perceptions.

The literature thereafter discusses conflicts and controversies that exist in the field of psychological assessment measures in South Africa. As part of this, reviews were conducted on the practices of psychological testing in the country over the years and how various events had contributed to these tensions. Studies on the impact of adverse effect and differential validity produced by cognitive ability tests in assessing multicultural groups were additionally presented. The review further consulted literature pertaining to issues of faking in personality assessments and their impact.

The concluding parts of this chapter discuss the regulation of psychological assessment and measurement in South Africa, including the legislation supporting fair, ethical testing practice. This section of the review aimed to highlight the importance placed by the regulating authorities on ensuring that psychological testing in South Africa did not discriminate among race and cultural groups to potentially cause harm and the entrenchment of exclusionary practice for those undergoing psychological testing.

Overview of the SANDF

To a large extent, the way people understand their social realities is influenced by an integrated account of their experiences which include the environment in which those experiences occurred. Considering that the present research concerned tapping into the perceptions of military personnel around psychological tests in their work environment, it is

considered important that effective understanding of the context of the organisation and the operational factors within which it operates be achieved. In this regard, to understand the backdrop against which views emanating from military personnel could be understood, this section reviews the SANDF as a military institution.

The Constitutional mandate of the SANDF

Most countries around the world have a Defence Force that has been established to provide defence capabilities that are commensurate with the needs of that specific country. Holmberg and Alvinus (2019) suggest that despite national differences, common characteristics exist among militaries, the most notable amongst these being having a capable defence system that enhances national, regional and global security.

In South Africa, the importance of establishing an effective military is tied to its constitutional obligations. For instance, paragraph 200 (b) of the Constitution of the Republic of South Africa (RSA) defines the objective of the Defence Force as entailing the defence and protection of the Republic, its territorial integrity, and its people. Act No. 200 of 1993 further describes this objective as including the preservation of life, health, property; the provision or maintenance of essential services; upholding law and order in unison with the South African Police Service (SAPS) under circumstances where the SAPS are unable to do so on their own as well as the provision of support to state departments in endeavours to uplift socio economic activities. While all these functions are important, Williams (1999) contends that these functions do not carry equal weight. In this regard, the primary function of the SANDF is to defend the Republic against external military aggression while all other functions become secondary (Neethling, 2011). These objectives of the DoD have implications on the kind of people who are recruited into the organisation as well as those who are promoted into leadership positions.

A career in the military

In line with the Constitution of South Africa and more specifically the Bill of Rights, when the Republic of South Africa (RSA) transitioned into a democratic country in 1994, a chief aim of the ruling party, the African National Congress (ANC) was to do away with inequalities that were perpetuated by the previous apartheid government through the adoption of the policy of Affirmative Action (Dupper & Garbers, 2012; Harris & Narayan, 2019). According to The White Paper on the Transformation of the Public Service (1995), the term affirmative action was defined to refer to a means by which state departments would be broadly enabled to become representative of the demographic composition of the population with the view to ending inequality and affording equal opportunities to all. To achieve the goal of affirmative action in the South African military, the Department of Defence (DOD) promulgated its own policy, known as "Equal Opportunity & Affirmative Action in the SANDF" (OC Pers1/98). Through this policy, the DoD aimed to increase employment and progression opportunity to previously disadvantaged groups by taking into account demographic factors like race and gender during all stages of the employment life cycle its employees, including recruitment, selection, training, development and promotion. The implementation of affirmative action policies takes place when candidates apply for employment during recruitment and selection, as well as during internal employment opportunities. Affirmative action in the SANDF also means implementing a principle of "promotion from within" whereby the identified groups are provided with specialised training and development to successfully take up space in positions formerly occupied by privileged groups (Heinecken, 2020; Johnson et al., 2018).

The Defence Act, Act 42 of 2002 describes the SANDF as consisting of four services namely, the SA Army; SA Air Force; SA Navy and the SAMHS. Since the abolishment of conscription in 1993, the SANDF consists of an all-volunteer defence force (Department of

Defence, 2003). The two routes that exist for those desiring entry into military service are either through direct application into the defence force or through the Military Skills Development System (MSDS). According to Department of Defence (2003) the MSDS program was established to ensure the DoD maintained sufficient able-bodied reserve members as well as to alleviate youth unemployment in the country through skills development. This program is targeted at recruits between the ages of 18 and 22 who are in possession of a matric certificate and extends to the age of 26 for those who have obtained a tertiary qualification. Additional basic requirements for service entry include being a South African citizen; being medically, mentally and battle fit, as well as being clear of any criminal records (Department of Defence, 2003; Rona et al., 2005).

During their first year, those who have been recruited undergo basic military training as well as functional training that includes combat and non-combat tasks related to the service within which they are being trained. In the second year, recruits are deployed according to the needs of their service where they are expected to apply their knowledge and further develop their skills. Commenting in this regard, Themba et al. (2012) note that after completing the MSDS programme recruits have the opportunity to study further. These studies not only equip recruits for a career within their mustering but also empower those who do not wish to pursue a career in the military to qualify for careers related to their study outside of the military. The MSDS programme therefore serves a dual purpose of ensuring a young agile supply of military servicemen as well as providing skills development support and curbing youth unemployment within the larger population. The low entry requirements into the SANDF are not the only reasons why military service may be perceived as attractive. The SANDF through its Military Academy also provides opportunity for further study at state cost for service members; whilst still receiving a full salary; which is an added advantage for those desiring to attain higher tertiary levels of education. Additional factors such as

promotion opportunities through the rank system may also entice recruits. Opportunities offered by the SANDF suggest that a career in military service in South Africa is one that may be easily accessible and may thus attract individuals who may be less interested in the military but see the organisation as a steppingstone towards a better life. However, the nature of the military environment is not one that may be suited to everyone particularly if they do not share the values or the interest of service itself. The constitutional mandate and culture of the organisation have a profound impact on an individual's overall experience and identity as a service member.

Military culture

Military service entails conforming to a number of conditions that are not inherent in civilian organisations. One such condition is the chain of command structure. According to English (2017) military chain of command is defined as an hierarchical power dynamic designed to foster a predisposition of obedience and rule following in service members. Through chain of command and the rank system service members' rightful place, behaviour, roles, and status are reinforced thus ensuring discipline is achieved and maintained. An equally important aspect of this structure discussed by Atuel and Castro (2018) is that it revolves around a system that differentiates superior and subordinate roles where those that are senior such as commanding officers are accorded higher status, power and authority over others that fall within the scope of commissioned officers, warrant officers, non-commissioned officers.

In SANDF rank structure, senior roles include, but are not limited to Brigadier-general, Colonel, Lieutenant-Colonel, Major, Captain, Warrant Officer Class 1 and Class 2. Within the same organisation, junior ranks include, but are not limited to those of Lieutenant; Staff Sergeant, Sergeant, Corporal, Lance-Corporal, Private (see appendix 2 for a comprehensive list and description of SANDF ranks). Military recruits are expected to adhere

and adjust to this aspect of the military service during and after basic military training (Scroggins et al., 2008; Themba et al., 2012). While not all people who join the military will have the same characteristics, the hierarchical structure of the organization means that some people might be more drawn to it and might also thrive in this environment and culture than others who may not readily adjust. Hence one of the aims of assessment measures in the military is to be able to separate those who might thrive from those who might find career in the military exceptionally challenging.

The ability to conform to military norms, both from a behavioural and psychological perspective is essential as it predicts group cohesion, which is a necessity for the success of military operations (Hartmann et al., 2003; Thomassen et al., 2015). To enforce group cohesion, Thomassen et al. (2015) states that the military strives to immerse servicemen into its culture by inculcating military ways of thinking, values, beliefs, and other ceremonial events directly related to military life. This is viewed as particularly beneficial when one considers that from the time servicemen undergo basic training and onwards, personnel might live in military facilities, in isolation from civilian culture and spend most of their time surrounded by other servicemen (Hartmann et al., 2003; Meyer, 2015). Furthermore, as service members conform to military culture, a degree of individuality is forfeited in exchange for uniformity, a sense of oneness, a spirit of camaraderie which means certain rights that civilians have might also be relinquished in the process. Service members often become immersed in a culture that demands a strong focus on communal life, loyalty, discipline, and hierarchy to the extent that it becomes part of their identity. This has been observed in studies where life-long servicemen struggle to reintegrate into civilian life post military service thus illustrating the degree which pursuit of a military career can have on an individual (McCormick et al., 2019).

A review of literature additionally suggested that the theme of sacrifice was central to servicemen accounts of their service (Grimell, 2019; Hall, 2011). For instance, a study that considered identity reconstruction among Swedes after military service found that narratives such as being separated from families, partners and friends were regarded as “part of sacrifices that had to be made” during service. Such sacrifices were not only limited to relationships with others but also encompassed sacrifices of physical and mental nature which implied that some sacrifices resulted in suffering among the recruits. Commenting in this regard, Grimell (2019) noted that when service members, who participated in this study, reflected on life post military service, they could easily recount the sufferings that were borne not only by themselves but by others such as close family and friends on account of their service. It is evident from extant research studies that employment in the military requires a high level of commitment and involvement. Recruiting, promoting, and developing service members who can readily make sacrifices of the extent required becomes critical to the successful implementation of military goals.

Castro and Adler (1999) further describe military culture as a “warrior culture” in the sense that service members need to be in a constant state of combat readiness as they can be called to duty at any time and be deployed to any place where they are needed. A critical point put forward by Burke (2018) affirms that the primary objective of the existence of the military, of being trained to go to war when the need arises, places those who decide to become soldiers in direct confrontation with their mortality. As noted by Burke (2018) the idea of dying and killing becomes part of the daily lived experience of servicemen. Concurring, Hall (2011), remarks that such a way of being diverges from what is perceived as the norm. Again, corroborating Burkes (2018) statement, Hall (2011) contends that the worldview, mindset, and characteristics of the military are so vastly different from everyday civilian life that they require a unique understanding of their structure, language, commitment

to the mission and sacrifice. Building on this point, Burke (2018) further notes that to cope with this aspect of service, the way soldiers and veterans think of and speak of death changes such that it isn't out of the ordinary for those in service to develop a ubiquity of dark humour and morbid jokes about life and death.

Several studies have investigated the use of the dark humour metaphor within the occupational sector. The findings of Christopher (2015) that investigated dark humour within the context of student paramedics found that emergency personnel commonly used dark humour as a coping mechanism from traumatic incidents that their work exposed them to. A similar study that investigated the same among diagnostic radiographers reached the same conclusion, that while it seemed callous and uncaring to joke about taboo subjects such as trauma, injury and death, this type of humour was primarily used to deal with stressful situations that they had to deal with in their work practice (Strudwick, 2012). Both these studies support the view of the notion of dark humour having therapeutic value. The use of dark humour by servicemen suggests that military employment is one that can be distressing, confrontational to military members own sensitivities such as the possibility of injury, trauma, and death. Thus, it becomes imperative that military personnel recruited into service can perform and endure taxing environments amid deployment and combat and also possess a mindset that can cope with this reality.

It is against this background that the use of psychological tests in the military derives its basic importance since it is by means of such assessments that it becomes possible for management of military organisations like the SANDF to determine and differentiate those endowed with the necessary affordances to survive and thrive in military occupations from those who are not.

Conclusion

The SANDF as a military organisation offers employment and a culture that is rather complex and diverges significantly from civilian employment. Fundamental features of the military environment such as chain of command, military norms, and the identity that servicemen assume during their time in service have a significant bearing on individuals who work within the military which tend to last post service. Given this, it becomes imperative to identify recruits that will successfully adapt to military culture and to promote into positions of leadership those with the ability to conform to the norms, the organisations culture as well withstand the physical and psychological challenges that are part of service. It is with psychological assessment measures that a military organisation like the SANDF can navigate the critical decisions that these processes constantly demand.

Psychological testing in the military

To achieve the mandate of the SANDF, a major goal of the institution is achieving and maintaining a high level of mission-readiness. To ensure this aim the SANDF routinely recruits new servicemen, who are then trained in order to achieve mission readiness. During selection processes, psychological assessment measures are often utilised to identify recruits who have the abilities, interests, and characteristics that fit the goals of the organisation; that is, those who can successfully complete basic training and adapt to military life. Given that not everyone who applies for military service can be assimilated by the institution nor are there limitless opportunity for development and promotion of the recruited servicemen within the organisation, the need for use of psychological tests to select the best suited individuals to serve in various capacities within the organisation become a necessity. In describing the utility of psychological assessment measures in various sectors of the economy, Coaley (2014) present their utility as lending objectivity to observations made about behaviour; as eliciting behaviour that people are capable of under controlled circumstances; as providing

insight into aspects of human beings that are not directly observable; and as predicting future behaviour; all aspects which provide information for feedback and decision-making to management.

Uses of psychological assessment measures

The South African Airforce (SAAF) is tasked with protecting South African air space. During non-combat periods part of its duties is being involved with providing humanitarian aid during times of disaster. To achieve both combat and non-combat missions, the SAAF needs to have a force of highly skilled, professional pilots ready to carry out its objectives. According to De Kock (2004) this necessitates that the SAAF identifies candidates who meet the profile of a pilot. In its human resource implementation, the SAAF makes use of test batteries which include psychometric tests such as the Raven's Advanced Progressive Matrices Test, the Blox Test and the Vienna Determination Test (VTS) (De Kock, 2004; Flotman, 2002). Carretta and King (2019) affirm that pilot test batteries are assembled to evaluate cognitive abilities, psycho-motor functioning characteristics and personality requirements of candidates to ensure role suitability. The Blox test supports this by measuring spatial ability, while tests such as the Advanced Progressive Matrices test (APM) provide a means of evaluating speed of intellectual work and capacity for orderly thinking (Waschl et al., 2017). An additional assessment measure that forms part of the SANDF pilot assessment battery is the Vienna Determination test (Flotman, 2002). Yingchao et al. (2015) describe this assessment type as a measure of cognitive and motor performance that evaluates how quickly an individual can respond to distracting stimuli such as being able to discriminate between colours and tones; being able to memorise and remember stimulus configuration, their response buttons, and the relationship between them among other variables. As noted by Yingchao et al. (2015) the challenge of the Vienna Determination test depends on two variables which is the speed of stimulus presented and the number of stimuli

and reactions. All these assessment measures contribute to making effective decisions for appointment of suitable potential pilots.

A common use of psychological tests in the military is assessing cognitive ability of applicants as it has been found to be a strong predictor of future performance. The predictive validity of cognitive ability tests has been well demonstrated in several studies. For instance, a study by Spain et al. (2020) evaluated the potential for cognitive ability tests to identify candidates with high potential for placement in future leadership roles among a sample of cadets. This study made use of training data originating from 13 classes of graduates who remained in the army to be considered for early promotion into a more senior rank. The results indicated that cognitive ability along with grade and academic performance were strong predictors of future military career success in this sample. This therefore shows that measures of cognitive ability help identify promising candidates and begin setting them up for promotions later in their careers. Early identification of candidates with the best chance of reaching the required standards for final qualification is a contributing factor of organisational success.

Another area in which psychometric tests can be used is in the development of characteristics that are useful in the military which include traits such as resilience. According to Britt et al. (2013), the need to adapt to adversity and intensely stressful conditions are a must for those serving in combat and non-combat military environments. Rice and Liu (2016) attribute the need for service men to build resilience to circumstances that form part of their work such as deployments, being away from home and stressful exposure while serving on missions. Given the nature of the service environment, military organisations benefit when they identify individuals who are naturally more resilient as well as those who have the potential to develop this trait (Meredith et al., 2011; Morgan & Bibb, 2011). To illustrate this, a cross sectional study investigated predictors of resilience in a

sample of US army service members and veterans (Jaeschke, 2016). This study found that those who completed resilience training reported higher levels of this construct than those who had not completed the training and that a higher level of resilience was associated with optimism and self-efficacy (Jaeschke, 2016). The findings of the study further pinpointed paths through which this trait could be developed through cultivating an optimistic mindset and mobilizing internal resources such as visualization, meditation, problem-solving, self-talk as well as external resources such as unit support, recreational activities, friends and family relationships. These findings carry strong support for the use of psychological to develop characteristics deemed necessary for optimal military performance.

At times, military personnel are required to deploy on combat operations for peace keeping missions (Dhladhla & van Dyk, 2016; Parth & Schneider, 2017). During these times, the measurement of psychological well-being is another area in which psychological tests have contributed to the military. For instance, Nkewu (2014) notes that during deployment missions' psychological assessment measures are utilised for the pivotal role of assessing the mental functioning of servicemen, identifying risk factors as well as protective factors pre and post deployment. Those serving in the military have a significantly higher exposure to trauma, which have been known to lead also to high rates of post-traumatic stress disorder (PTSD) in some individuals (Rona et al., 2005). Screening for characteristics that may contribute to an individual being more resistant to trauma and hardship, in particular traits such as hardiness and optimism is particularly beneficial. Such an assessment also includes screening for risk factors for trauma vulnerability, such as childhood emotional problems, externalized anger, prior traumatic exposure and mental disorders. (Brooks & Greenberg, 2018; Denning et al., 2014; Fathi et al., 2005; Lee et al., 2013).

In the present day, military organisations like the SANDF similarly engage in testing large numbers of applicants wishing to join the institution during their annual call for

servicemen. As noted in the section pertaining to military culture of this chapter, military service is open to anyone that can fulfil the entry requirements which are generally non-stringent. This on its own often results in large volumes of applications. For instance, in like manner to other services, the SAN actively recruits in all nine provinces of the country, including rural areas, thus attracting volumes of up to 15000 applicants each year (Van Wijk & Fourie, 2017). To aid the navy in selecting the best candidates, assessment measures that look at the fit between person and organisation are considered beneficial in guiding the placement of navy officers. Such testing is of particular importance when one considers findings of a recent study conducted in the SANs which investigated associations between selection practices in the service and dropout rates during basic military training as well as failure rates for officer courses. In this study, Marimuthu (2017) found that applicants often did not have a realistic understanding of the organisation and what service entails when applying for enlistment. As a result, applicants often found themselves ill-prepared to deal with the requirements of basic training. As noted by Marimuthu (2017) during this training, many applicants sustained injuries due to the physical demands of training and dropped out as a result. Other reasons that contributed to high dropout and failure rates included the problem of culture shock that was experienced as some applicants found the SAN environment unfamiliar and difficult to adjust to.

Rahim et al. (2018) emphasise the benefits of selecting only the best as aiding the achievement of organisation's goals, mitigating financial losses, high absenteeism rates as well as curbing employee turnover. Processes such as screening for motives to ascertain why those who have applied for service have done so helps in separating applicants with a genuine interest from those who are merely doing so for mainly financial or material gain (Smith & Heineken, 2014). To illustrate the value of such screening, a study by Woodruff (2017) investigated enlistment motives in the U.S. army and found that those who were

driven by altruistic motives contributed greater relational and behavioural value during their service whereas those whose motivations were driven by personal gain such as financial benefits or gaining skills for future employment outside of the organisation, demonstrated lower positive engagement, identified less with the organization and were motivated to contribute only the bare minimum. In contrast to this group, this study found that those who had motivations that aligned with the goals of the military experienced higher levels of career satisfaction, organizational identification, and engaged in pro-organizational behaviours (Woodruff, 2017). Psychological tests in this context added value in eliminating applicants who were motivated purely by self-serving goals. Prior to making a hiring decision, employers aim to get a good understanding of each applicant's potential to contribute to achieving the organization's goals. Making the right selection decisions can reduce training costs, improve job performance, and enhance organizational effectiveness. In the military, the usage of assessment measures has benefited the organisation to identify by means of objective measurement, servicemen who have abilities, interests, and characteristics that align with the goals of the organisation.

In the section that follows, the testing process as well as the two dominant types of psychological assessment measures namely, cognitive ability tests and personality tests are discussed. These tests are discussed in the light of their utility as measures of behaviour in the military. This review particularly aimed to discuss their nature and application with the view that those participating in the study would reflect on the tests they had completed in their organisation to present their perceptions thereof. Other assessment measures that were reviewed in this section were work simulations as literature points to their considerable use within the military. These assessment measures were discussed under the premise that they too would be considered and included in the perceptions of servicemen if they had been required to complete them. The section concludes with a presentation and discussion of

specific psychological tests, located from literature, that were shown to be used in the SANDF, which could serve as a backdrop for understanding servicemen's' perceptions focused on in the present study.

The assessment process

Studies that have looked at the assessment process describe it as beginning with a clear and realistic identification of the intended goals (Melikyan et al., 2019; Ridenour & Zimmerman, 2019; Scroggins et al., 2008). In the military the intended goals usually involve identifying competent recruits, to assess their skills and abilities in relation to the competencies required for the organisation and for the job. In most instances, the assessment process is either carried out by the organisation for its own purpose of filling a vacancy or is carried out by a group of duly qualified personnel involving psychologists and psychometrists licenced by the Health Professions Council of South Africa (HPCSA). Ones et al. (2017) further note that without clearly defined objectives the assessment process is unlikely to be satisfactory.

The testing of candidates involves administering psychological assessment measures that are designed to measure specific domains of functioning such as intellectual ability, personality, work preference styles, leadership ability and emotional intelligence. Assessment measures are often accompanied by guidelines that provide instruction on how to administer the test, how to score it as well as how to interpret the results. Most assessment processes make use of a test battery rather than a single measurement (Flanagan et al., 2013). A test battery refers to a group of several psychometric tests that evaluate a number of psychological functions. (Lockie et al., 2018; Scroggins et al., 2008; Wolf et al., 2016). Test batteries can come packaged by a test development publisher or they may be assembled by a psychologist or psychometrists for that specific assessment (Lockie et al., 2018). Through this multidimensional assessment process, information is gathered and synthesized to aid the

effort of learning about a person's personality, cognitive ability, and work-related preferences. This process aims to inform appropriate decision-making and intervention through quantifiable means (Bornstein, 2017).

The outcome of the assessment process is often a written report that conveys information that has been concluded about the in a way that the information can be used in decision making for appointing, promoting of pinpointing areas of development for the candidate or employee (Ballantyne & Povah, 2017). Professionals involved in the assessment process, usually psychologists and psychometrists apply their professional expertise to reach defensible results. To a large extent, civilian and military selections take a similar process to the above. However, Sellman, Russell and Strickland (2017) point to the main differentiating factor being that with candidates recruited into the military, the expectation is that they will serve in more than one role during their career in the organisation as they progress through the military rank structure.

Cognitive ability tests

Cognitive ability and intelligence are terms that are often used interchangeably to refer to a construct that describes a person's mental capability. As a means of defining this construct, Ones et al. (2017, p.13) refer to intelligence as a capability that involves using mental faculties for the purposes of reasoning, planning, solving problem, comprehending complex and abstract ideas as well as learning quickly. Cognitive ability or intelligence therefore supersedes book learning, academic skill or test taking smarts but rather, it reflects a broader and deeper capability for comprehending things in a person's surroundings and making sense of these. Ones et al. (2017) further argue that the core of this construct addresses or is concerned with an individual's ability to among others, adapt to new tasks, challenging environments, and the effectiveness they possess when processing information stemming from their intellectual capacity. Cognitive ability test batteries therefore typically

contain a group of assessment measures that are expected to provide insights about a person's cognitive qualities such as numerical reasoning, verbal reasoning, spatial ability, mechanical comprehension and general reasoning (Kotze et al., 2007; Ones et al., 2017; Picano & Roland, 2012; Scharfen et al., 2018).

According to Brehmer and Thunholm (2011) the optimal execution of military tasks depends on the continuous application of cognitive functions to fulfil diverse task demands of military work. For instance, military combat officers perform complex duties such as mission command of multi-person aircraft, coordinating electronic systems, intelligence, and communications (Poisson & Miller, 2014; Picano & Roland, 2012). Comparatively, air combat commanders serve the role of providing broad view command and control support for air missions ranging from risk management to location identification, and the pursuit of opponent targets. As noted by Brehmer et al. (2011) the role of pilots is similarly complex as they need to operate intricate machinery while at the same time maintaining a continuous perception of themselves, the aircraft, and the environment within which they are operating. Tasks such as the aforementioned require high level cognitive ability hence test batteries of military selection often include tests that measure cognitive ability at role level.

A review of military aviation research indicate that test batteries used specifically for pilot selection often include measures of cognitive ability such as memory, attention, judgment, decision making, psycho-motor functioning and spatial perception, as these functions determine the everyday life of pilots. Measuring spatial ability, for instance, has been found to provide enormous cost benefits in ameliorating spatial disorientation; a contributing factor to aviation mishaps thus, protecting the lives of pilots and aircraft (Gibb et al., 2011). Moreover, Boril et al. (2018) found that a strong sense of space and focused attention additionally played a critical role in deciding future actions, safety relevant

behaviour when facing critical situations such as high-pressure combat missions and immediate threat situations.

In addition to evaluating cognitive ability such as spatial perception Verde et al. (2016) contend that assessing cognitive constructs such as working memory capacity has demonstrated to predict a comprehensive range of outcomes such as a person's ability to multitask, susceptibility to mind wandering, attentional control, the ability to deal with life-event stress and, tactical decision-making, among others. As noted by Verde et al. (2016) these abilities are most helpful in pilot selection as the complex process of human navigation involve the simultaneous processing of sensory input, perception/cognition, selection, and execution of an action, all which compete for the same cognitive resources thus serving as a distraction from the task at hand. Thus, as indicated by Burrus et al. (2013) working memory is an established measure of fluid intelligence which encompasses the ability to learn, reason, and to solve novel problems which aids workforce competency. The impaired ability to perform work or training tasks adequately, let alone optimally, has significant consequences such as increased risk of accidents and injuries, reduced individual and unit readiness and effectiveness, and decreased likelihood of meeting mission or training objectives (Hartmann et al., 2003). Evaluating cognitive ability within military training and operational environments using measures that are well established has been demonstrated to play a critical role in the trajectory of success for military roles and helps mitigate risk factors that may arise.

According to Naglieri and Otero (2018) cognitive ability assessments are developed based on several theories. Three of the most dominant cognitive ability theories are Spearman's (1904) theory of "g" (Flores-Mendoza et al., 2018); Thurston's (1938) primary mental abilities model (Beaujean & Benson, 2019), and Horn and Cattells' (1966) models of intelligence. Theoretical underpinnings on which tests are built help with construct

identification such that those assembling tests batteries are able to ascertain what is being measured by the test and effectively determine the roles for which they are relevant.

One of the major theoretical foundations on which a majority of cognitive ability tests are constructed is Spearman's (1904) two factor model of intelligence. Spearman's (1904) theory supposes that all intelligence tests consist of a common factor referred to as "g" or general intelligence and that intelligence tests measured general intelligence but also had an associated smaller specific ability which he referred to as "s". Spearman's (1904) theoretical undertaking therefore defines cognitive ability as consisting of two factors namely general intelligence and aptitude. Today, almost all IQ tests are factor models inspired by Spearman's work. An example of cognitive ability tests developed with a basis on Spearman's model is the Stanford-Binet test, which measures different areas of performance that contribute to general intelligence, like working memory and visual-spatial reasoning as well as aptitude.

Another major theoretical framework underpinning several cognitive ability assessments is Thurstone's (1938) theory of primary mental abilities (PMA) which is founded on Spearman's (1904) two factor model. According to Thurstone (1938) a broader profile of individual mental abilities was seen to provide more substantive definition and use over one measure that confounded all constructs together. Thurstone's (1938) primary mental abilities therefore expanded Spearman's (1904) variables of measurement from two to a total of seven. These variables were verbal comprehension, word fluency, numbers or numerical ability, spatial orientation, memory, perceptual speed, and reasoning. Psychological tests such as The Spatial Test of the Primary Mental Abilities are built on this model.

The third cognitive ability theory pertains to Horn and Cattell (1966) argument which regarded Spearman's theory as clearly a two-factor theory, that is, every measured ability contained a mixture of general intelligence and specific ability particular to that field. According to their argument, Horn and Cattell (1966) believed that although verbal and

numerical ability were highly loaded with Spearman's "g", each consisted of an additional something of a special primary ability in it. Horn and Cattell (1966) viewed these two factors, that is, fluid and crystallised intelligence, as distinct but correlated. According to Horn and Cattell (1966), one of the most interesting features was that although crystallised ability generally does not enter culture fair subtest performance, fluid performance does, although to a lesser extent, into those primaries such as verbal, numerical and reasoning abilities which are prevalent traditional intelligence tests. Cognitive ability tests based on Horn and Cattell (1966) model are built on the premise of crystallised intelligence being a measure of the outcome of culture and educational experience whereas fluid intelligence is perceived as more dependent on the physiological structure that supports intellectual behaviour.

Personality tests

Personality assessment measures are an integral part of selection batteries in the military. As such, Chamorro-Premuzic (2016) describe their role as being able to decipher an individual's personality traits, that is, their inherent qualities that form a distinctive character of each individual (Tieger et al., 2014). As noted by Buss and Plomin (2014) personality characteristics tend to be stable over time and across varying situations and play an important role in informing a person's patterns of thinking, feeling and behaviour; therefore, the assessment of an individuals' personality aims to provide the end user with an understanding of these patterns (Schultz & Schultz, 2015). A large body of literature point to the utility of personality tests as comprising of the potential to describe specific work-related personality characteristics with a certain measure of accuracy (Caliendo et al., 2014; Korschun et al., 2014; Schmitt, 2014). Research additionally supports the notion of their function to predict performance, evaluating behaviours, attitude, and attrition of potential soldiers (Morgan & Bibb, 2011; Stark et al., 2014).

In accordance with Hambrick and Mainz's (2011) observation, military organisations are generally among the largest employers of young adults ranging from the ages of 18 to 22, with little or no prior work experience. Hiring a person with little or no work experience may pose a risk for the organisation as there is no assurance that the recruit will successfully fit into their assigned role and be able to execute their duties. This means that military organisations have a vested interest to accurately identify, select, and classify personnel ensuring that those who are recruited, developed and promoted have the characteristics required for their roles. As demonstrated by several studies, personality tests correlate with work related outcomes such as job performance (Bakker et al., 2012; Morgan & Bibb, 2011) long term career success (Spurk et al., 2016); employee retention (Sarwar et al., 2013); and more importantly, in organisations such as the military, citizenship and counterproductive work performance (Sjahruddin & Normijati, 2013). Studies in the same field further demonstrate the utility of personality assessments in unlocking motivational factors of servicemen such as whether they are a good fit for military service, possess leadership potential, resilience, team orientation, ingenuity, selflessness, and a commitment to serve (Brooks & Greenberg, 2018; Meredith et al., 2011).

By making use of personality tests, researchers have been able to discover how personality factors interact with the military environment, a critical factor in ensuring the efficient running of the institution. For instance, studies have discovered personality factors that underlie suicidal behaviour among military youth (Soltaninejad et al., 2014); psychopathic personality traits that tend to be prevalent in the military organisations (Anestis et al., 2019); and the manner in which conditions such as alexithymia and traits like low cooperativeness influence suicide attempts in military personnel with adjustment disorders (Na et al., 2013). Studies of this nature have been key to identifying personality risk factors

and developing a baseline from which interventions designed to address these issues can be measured.

Personality assessment measures also function to identify personality characteristics of future leaders with efforts to detect individuals who may lean towards destructive leadership behaviours. This is of particular importance as toxic leadership in the military has been found to be high, ranging between 10% to 30% among army leaders (Erickson et al., 2015). An investigation conducted by Matsuda (2010) illustrates the damaging effects of destructive leadership and the importance of identifying individuals predisposed to this leadership style. In his study, Matsuda (2010) found that 30 US soldiers who had been deployed to Iraq and had subsequently committed or attempted suicide in the previous year, had in common at least one leader who made their life exceptionally difficult to the extent that it became a living “hell” (Erickson et al., 2015). While other factors such as contending with major personal problems contributed to suicide risk, the investigation supported the notion that the leaders who had made their lives hell, played a significant part in pushing them over the brink. The issue of destructive leadership seems to be perpetuated by the prevailing military culture of hierarchy, respect, and loyalty – even when it is not due, such that junior members may be reluctant to report toxic behaviour by their commanders. However, this kind of leadership often has devastating effects as illustrated in Matsuda (2010). Evaluating personality traits help in confronting toxic leadership during promotion initiatives. For instance, including assessments such as the DestrudoL, a personality assessment specifically designed to measure destructive leadership behaviours in a military and identifies personal characteristics such as arrogance, being unfair; making threats, being ego-oriented among others, can help identify and prevent promotion of unsuitable servicemen for leadership roles (Larsson et al., 2012).

The development of personality assessment measures used during selection processes, in like manner to cognitive tests, are founded on theoretical frameworks. Borman (2017) notes that while the majority of personality tests approach personality from a trait or biological orientation, other approaches emphasise the role of nurture and environmental influences (Peck & Whitlow, 2019). Two of the most common trait-based theories are the five-factor model and the 16PF (personality factor) and a theoretical foundation that is biologically based widely referred to as Eysencks personality theory.

According to Soto and Jackson (2013) the five-factor model of personality (FFM) is comprehensive taxonomy of personality traits which consist of a set of five broad trait dimensions namely, extraversion, agreeableness, conscientiousness, neuroticism and openness to experience. Soto and Jackson (2013) further report that the FFM model was developed with the aim to represent the inherent variability of people's personalities in as few as possible trait dimensions. Numerous researchers concur that the dimensions of the FFM encompass the most important individual differences in personality traits and because of this many alternate personality models have been developed using the FFM structure (McCrae & Costa, 2021).

Several studies have found demonstrable support that the structure of the FFM occurs across cultures (Carloet al., 2014; Cheung et al., 2013). This aspect of its versatility contributes to its wide usage in the development of personality tests (De Raad & Mlacic, 2017). Consequently, Cheung et al. (2013) attest that numerous personality assessment measures have followed in using the FFM structure as a basis for personality measures that have cross cultural application. To illustrate the versatility of the FFM structure in the development of personality tests across different cultures, the South African Personality Inventory (SAPI) is one such assessment measure which has been built on this structure for use across all cultural groups of South Africa. The SAPI was developed in response to a need

for indigenous and psychometrically sound personality measures that adhered to the requirements of South African legislation and were devoid of cultural bias. The success of the SAPI as a personality tool that has cross cultural application is influenced by its adoption of the Five Factor Model as an underlying structure for its nine dimensions (Morton et al., 2018).

Cattell's (1965) 16 Personality Factors Test commonly known as the 16PF in like manner to the FFM is based on trait theory. However, Cattell (1965) theory argues that to attain a complete picture of an individual's personality, a much larger number of traits needed to be considered. In developing the 16PF Cattell (1965) collected a wide range of data namely, L-data which contained life records such as a person's school grades, absence from work etc.; Q-data which was the 16PF questionnaire that rated an individual's personality traits and T-data which refers to data from objective tests designed to 'tap' into a personality construct. In its current version (5) the 16PF is based over several decades of research and is the product of data collected through behaviour observation, experiential research, and questionnaires. This personality assessment measure contains 16 personality factors common to all people, 5 second order scales, 2 third order scales and comprises of 185 questions in total with ten questions relating to each personality factor and is one of the personality tests used in the SANDF.

Eysenck (1947) personality theory proposed that individuals have a nervous system that influences learning ability and affects potential to adapt to environmental factors. This personality theory integrates behavioural genetics, cognitive psychology, and psychometrics to establish a unified personality theory that still potentially explains individual personality differences. According to Revelle (2016) Eysenck's (1947) theory was built using research on soldiers which established that there were several different personality traits that were common throughout the responses obtained from soldiers, which Eysenck referred to as

psychoticism. These personality traits were termed first order traits. A secondary discovery made was that soldiers' behaviours were represented within two dimensions, namely, introversion and extroversion (E); neuroticism and stability (N) which were referred to as second order personality traits. According to Revelle (2016), Eysenck theory traces each of the three dimensions to a different biological cause and personality is therefore seen as dependent on the balance between excitation and inhibition processes of the autonomic nervous system.

Work Simulations

Work related simulation exercises such as role plays are often used as part of the selection process (Ryan & Ployhart, 2014). Defining simulation exercises Aertsen et al. (2013) present this selection method as an exercise involving reality of function in an artificial environment and one that places the participants inside that environment. Stone et al. (2017) similarly define them as a facsimile of reality, with the intention to unveil how a person would respond if they were placed in conditions similar to those presented by the simulation. As such, Stone et al. (2017) expand their description of simulations as a way of offering a more effective way to understand what would transpire in the future based on present behaviour and actions.

Simulation exercises are often used to screen for leadership potential (Dragoni et al., 2014). Work simulation exercises are designed to present candidates with real-world problems or situations that they would face in a real-life work setting. By placing candidates through these simulated situations, candidates are required to demonstrate practically how they would respond in that situation rather than providing mere descriptions. As work-related simulations tend to replicate work tasks in a realistic manner, they help provide the test taker with an understanding of actual work realities and the employer with practical insight into how the test taker would realistically respond to those events. According to Endacott et al.

(2015) work simulation exercises can be valuable and useful given their strong face and content validity however, according to Gatewood et al. (2015) the validity of simulation exercises has been found to be moderate.

Selection interviews

The selection interview is one of the most widely used selection methods (Florea & Duica, 2016). Research additionally indicates that the selection process enjoys high favourability among test takers in a number of countries. Owing to this, even though the selection interview may not fall within the classification of psychological assessment measures, this method was reviewed due to its wide usage and potential consideration and reference when servicemen shared their perceptions of selection tests used in their work environment.

Selection interviews typically take the form of both structured rather and unstructured formats that seek to ask work related questions as a means of identifying attitudes, knowledge, and work-related experiences of candidates. According to Levashina, Hartwell, Morgeson and Campion (2014) structured interview formats make use of carefully considered methods to attain information about a candidate's work experiences. Structured interview formats have, over the years, garnered more favourability over unstructured formats given that they yielded better validity while those that lack predetermined questions have been found to have low reliability. To illustrate this, research by Dana et al. (2013) found that interviewers only agreed with each other on candidate's role suitability only 10% of the time when employing unstructured formats. The same study further showed that in some instances the method itself resulted in a lack of consistency in that candidates were judged differently even by that same person when interviewed at different times. Roulin et al. (2014) attribute the preference for structured interviews to their capability for standardisation, that is, the capacity to promote fairness by ensuring all candidates are asked the same

questions. When structured, candidate's responses are evaluated through the use of a carefully developed rating scale, which further provides the benefit) of comparing interview results between candidates (Dipboye, 2017).

Research by Buehl et al. (2019) note that the basis of applicants' job suitability is often drawn from what they say or do during the interview. This suggests that estimates are high that candidates may present themselves in a much more favourable light than what the truth presents. A study that supports this found that over 90% of undergraduate job applicants engaged in some form of faking behaviour during interviews (Buehl et al., 2019). Hogue et al. (2013) refer to applicant faking as an intentional distortion while responding implemented as an attempt to create a specific impression or to provide the kind of answer believed will be deemed the correct one by interviewers. When applicants fake interview responses, this gives rise to the question of whether distorted responses can impair the quality of the selection decision. To examine this, a study by Buehl et al. (2019) on these concerns, investigated if applicants interview scores could be improved through faking. This study also explored the effect of faking on the criterion validity. To investigate this researchers conducted simulated interviews in an honest and an applicant instruction condition using a within subjects' design. The results indicated that applicants were able to improve their interview scores. According to these researchers, the extent to which interview scores were improved correlated with interviewees' cognitive ability and their ability to identify the targeted interview dimensions.

Among concerns around issues of validity pertaining to selection interviews is interviewer bias recorded in numerous research work. This concern can be understood from Derous et al. (2016) framework that explains how the stigmatization of applicant characteristics takes place and its impact on interviewers' information processing during selection. According to Derous et al. (2016) this framework describes interviewer processes that take place outside of conscious control. Many times, interviewer decision making has

been approached from the perspective of evaluations being based on job related information such as that exchanged during the interview; however, this theory proposes that there are other processes at play, some which are deliberate or rational and others which are implicit or automatic. Derous et al. (2016) suggest the focus on initial impressions and reactions to stigmatized candidates may prevail more strongly during the first stages of the interview but may gradually shift towards less associative/reflexive reactions and more rational evaluations of candidates' fit with the job role in subsequent interview stages. Interview stages that Derous et al. (2016) refer to are 1) pre-interview and initial impression making stage; 2) the actual interview stage and finally; 3) the post interview and decision-making stage. Pre-interview impressions and stigmatization may be based on supporting information provided by the candidate such as their curriculum vitae, credentials, and prior test scores; while impressions during the interview stage may be based on the candidate's nonverbal behaviours such as their handshake and physical appearance which all summate to the last stage of decision making. Another aspect contributed by this framework is that the extent to which stigmatizing information shapes the interview is the interviewer's own characteristics. For instance, Derous et al. (2016) note that in instances where the interviewer shares the same stigmatizing characteristics such as the candidate having tattoos this can result in positive 'similar to me' attitudes and the 'friendship' effect. These attitudes and effects have been demonstrated in several studies (Yamada et al., 2017). While the selection interview is a common method, like other methods it presents both advantages and disadvantages and has been found to be particularly low in validity owing to concerns pertaining to applicant faking and interviewer bias. Test-takers attitudes toward selection methods

Of significant relevance to the present study was gaining insight into studies that have explored test takers attitudes to selection tools with a desire to locate how psychological assessment measure fare when compared against other selection methods. A review in this

area did not yield much information concerning test takers attitudes in the military context, however, several significant studies concerning this issue, although these dated far back and no recent studies of the same magnitude could be identified, some insights were gleaned into which methods were favoured and the attributions behind test takers preferences.

This body of research that has investigated applicant's reactions to selection methods points to applicants' attitudes being positively correlated to principles of organisational justice (Butuceanu et al., 2019). According to Gilliland (1993) the theory of organisational justice suggests that the factors with which applicants use to gauge fairness within the selection process are what the outcome is, the rules and procedures that were employed to reach that decision, how the applicant was treated in terms of being shown sensitivity and respect as well as any explanations that they received during, and after the selection. It is assumed that the way in which applicants perceive the selection process, may impact their perceptions on the selection methods and tools, which psychological tests are a part of.

A study conducted by Steiner and Gilliland (1996) explored applicants' attitudes towards ten selection methods. The aim of the study was to understand which selection methods were perceived most favourably by applicants and which were seen as least favourable. The methods under consideration were the interview, resumes review, work-sample test or simulation exercises, biographical information, cognitive assessments, values and motives, personality tests, integrity tests, personal contacts, and graphology. The study was initially conducted in the United States and France (Steiner & Gilliland, 1996) and was later replicated in Singapore (Phillips & Gully, 2002), Germany (Marcus, 2003), Spain and Portugal (Moscoso & Salgado, 2004), Greece and Italy (Nikolaou & Judge, 2007; Bertolino & Steiner, 2007) and the Netherlands (Anderson & Witvliet, 2008). In addition to evaluating method favourability, participants were further asked to indicate why they had rated the method with or without favour, making use of seven dimensions. Dimensions given were 1)

scientific evidence, meaning that the method was seen as based on solid scientific research, (2) face validity - the approach was aligned to the job in question, (3), opportunity to perform, the method will detect the individuals' important qualities differentiating them from others, (4) interpersonal warmth, the selection instrument seemed warm and not impersonal, (5) employers have the right to obtain information from applicants by using the method, (6) the method invades personal privacy, and (7) the method is appropriate given that it was widely used.

Results from these studies yielded interesting and somewhat consistent findings. For instance, findings from Nikolaou and Judge (2007) showed that interviews, resumes, and work samples were the most favoured selection methods among both employees and student samples in Greece. Elaborating on their findings, Nikolaou and Judge (2007) noted that the attributions behind these methods being rated highly was due to their interpersonal warmth, being perceived as providing applicants with the opportunity to perform and having high face validity. In the employee sample, written ability tests, biodata, personal references, and personality tests were the next procedures most favourably rated whereas personal contacts, honesty tests, and graphology received the lowest ratings. The aforementioned methods were preferred owing to scientific validity, and the belief that employers had the right to obtain information using these methods. As far as face validity was concerned, employees considered interviews, work samples, and written ability tests as the most face valid approaches. According to this study, employees considered personal references and personal contacts as very warm methods.

In the same study, Nikolaou and Judge (2007), in like manner to the employee sample, students similarly rated written ability tests and personality tests quite high followed by biodata, honesty tests, and personal references while personal contacts and graphology received the least favourability ratings. Written ability tests were perceived as the method

providing the best opportunity for job applicants to perform. However, students considered resumes and biodata as impersonal whereas work samples, interviews, and written ability tests were seen as having high face validity. In this sample, students additionally rated positively work samples and personal contacts as warm methods while honesty tests were perceived as impersonal.

As far as the scientific evidence was concerned, personal contacts received the lowest ratings in both samples along with personal references and graphology. Both samples further agreed that honesty, personality tests, and graphology invaded personal privacy, whereas work samples and resume reviews were considered as methods respecting job applicants' personal privacy. Finally, for the dimension pertaining to prevalence, both samples agreed that interviews, resumes, and work samples were the most extensively used and that graphology, personal contacts, and honesty tests were the least used.

Comparatively, Moscoso and Salgado' (2004) study conducted with Spaniards and Portugese using the same study methodology of Nikolaou of Judge (2007). Findings pertaining to their sample found that favourability of the selection methods in question were similar in both countries and corresponded to findings of Steiner and Gilliland (1996). In these samples, the most positively appraised methods were interviews, resumes, and work samples whereas the least favourable were personal contacts, integrity tests and graphology. Face validity and opportunity to perform were the attributions that accounted for selection methods favourability.

In line with previous findings, Marcus (2003) investigated the same in a sample of Germans. This study similarly found that test takers viewed interviews, work samples and resumes as the main favourites however, what differed was that unlike in other countries, such as Greece, Spain and Portugal, the German sample held neutral attitudes towards written ability tests and had relatively negative reactions to personal contacts and graphology.

A comparison of test taker attitudes in France and the United States produced results that showed that interviews, work sample tests, and resumes were considered positively (Steiner & Gilliland, 1996). In France however, graphology was received more favourably compared to those from other countries where this method received consistently low ratings. Nicolas et al. (2015) suggest that this might be due to the extensive use of graphology as a selection method in that country. The strongest reasons for method favourability accounted for these methods being seen as highly aligned to the job in question (face validity) and being perceived as based on solid scientific methods.

A summary of the studies mentioned above show notable similarity in the preference of test takers selection methods in the studied countries. These studies identified interviews, work samples and resume reviews as methods that garnered the most favourability followed by written ability tests, biodata, and personality tests. Among the least favoured methods were personal contacts, graphology and to some extent, honesty tests. The consistent favourability of interviews can be attributed to their extensive use in selection processes suggested by a large body of literature despite the validity of selection interview having been found to be lower than that of psychological measures such as cognitive ability tests (Ryan & Ployhart, 2014).

Summary of tests used in the SANDF

This section discussed psychological tests used in the SANDF that could be located from literature. Information herein was presented with a view to understanding assessment measures that servicemen recalled when relating their views on psychological assessments. Depending on which selections servicemen underwent, some of these tests would have formed part of their test batteries. A literature search was conducted on psychological tests in the SANDF from the past 20 years and several studies were yielded. Assessment measures older than this period were additionally included on the assumption that those who

participated in the current study may be include long serving members in the organisation and may have thus been recruited at a time when those tests may have been in use.

Psychological assessments that were located from literature related mostly to studies on test validation, standardisation, studies evaluating the predictive validity of selection batteries of various roles and those commenting on SANDF selection processes. These assessment measures are listed and described in this section and in the latter part commentary are made.

A study that evaluated the predictive validity of the selection battery for trainee pilots in the South African Air Force noted that tests such as the Blox, Advanced Ravens Progressive Matrices (ARPM) and Vienna Testing System were part of the pilot test battery (Flotman, 2002). While the ARPM forms part of the pilot battery, Muller and Schepers (2003) also refer to this assessment measure being used in the selection battery for junior leaders. In the study that evaluated predictive validity for the junior leader test battery, the SPEEX test is mentioned as a measure of human potential. Furthermore, a study that commented on psychometric tests use in South Africa noted that tests of cognitive ability mainly in use in the SANDF included the Senior Aptitude Test (SAT), Differential Aptitude Test (DAT) (form L) and Academic Aptitude Tests (AAT) (Kgosana, 2012). A study conducted more recently noted that the single and double letter cancellation test which measures the construct of attention also formed part of psychometric tests used in the SANDF (Haarhoff et al., 2020).

Van Wijk's (2007) study explored the development of the submariner selection processes in the SAN over the past four decades. From this research we learnt that psychometric tests in this selection included the mechanical comprehension test (which is part of the DAT form L), a number of biographical questionnaires that include mental history, interpersonal interaction, knowledge of submarines, and personal information relating to qualification and experience. As prevalent in selections, the selection interview

comprised of mental health history, interpersonal adjustment, and motivation. Psychological assessments made mention of in Van Wijk (2007) are presented in Table 1.

Table 1

Submarine selection in the early 1990s

Pen and paper phase	
Mental Health	Biographical Questionnaire • Mental health history
Personality	16Personality Factor Questionnaire (16PF) (with a focus on): • Factor H - adventurousness · Factor 0 - confidence · Factor Q2 - group orientation • Factor Q3 - self sentiment IPAT Anxiety Scale
Interpersonal Relations	Biographical Questionnaire • History of interpersonal interaction Personal, Home, Social and Formal Relations Questionnaire (PHSF)
Technical Potential	Biographical Questionnaire • History (qualifications, experience, etc.) Mechanical Comprehension Test
Motivation	Biographical Questionnaire · Knowledge of submarines, prior contact with submarine service. etc.
Interview phase	
Mental Health	Mental Health history
Interpersonal adjustment	History of adjusting in groups History of coping with limited personal space and privacy
Motivation	Prior interest and efforts to gain information

Note. Adapted from Van Wijk, C. (2007). An historical perspective on submariner selection in the South African Navy. *South African Journal of Psychology*, 37(4), 878-892. Copyright 2007 by the South African Journal of Psychology.

Other sources have similarly provided guidance in terms of tests used in the SANDF. For instance, on the website of the Parliamentary Monitoring Group (2007) a presentation that comprises of psychological assessment measures used in the SANDF was published (Parliamentary Monitoring Group, 2007). These psychometric tests are listed in Table 2.

Table 2*List and Categories of SANDF tests*

Test Name	Measurement
Academic Aptitude Test (AAT)	<p>General intellectual ability (intelligence).</p> <ul style="list-style-type: none"> • Verbal ability and the level achieved in the official languages. • Mathematical ability. • Level of spatial ability.
Blox Test	<p>Measures visual orientation.</p> <ul style="list-style-type: none"> • Ability to comprehend the nature of arrangements within visual stimulus pattern primarily with respect to candidate's body or frame of reference. • Ability to recognise spatial arrangements from different orientations without the benefit of physical shifts of the body. • Recognise the same visual stimulus pattern from different angles. • Ability to manipulate (rotate, twist) on or two parts of a visual stimulus pattern in the candidate's imagination in order to recognise change appearance of the object.
Differential Aptitude Test (DAT).	<p>Provide information on candidates who want to undergo tertiary training or gain entry to particular high-level occupations, especially with the view to the provision of counselling, and the placement in and selection for tertiary or other post-school training and specific occupations.</p> <ul style="list-style-type: none"> • Vocabulary. • Verbal reasoning. • Non-verbal reasoning. • Calculations. • Reading comprehension. • Comparison. • Price controlling. • Spatial visualisation. • Mechanical insight. □ Memory
Raven's Progressive Matrices (RPM).	<p>To measure the candidate's capacity to apprehend meaningless figures presented for his/her observation, see the relations between them, conceive the nature of the figure completing each system of relations presented, and by so doing, develop a systematic method of reasoning.</p> <ul style="list-style-type: none"> • Suitable for comparing candidates wrt their immediate capacities for observation and clear thinking.
Potential Insight Battery (PIB).	<p>Job Profiling Expert.</p> <ul style="list-style-type: none"> • Comprehensive Structured Interviewing for Potential. • Situation Specific Evaluation Expert. • Performance Appraisal Scoring Scale.

Test Name	Measurement
Psychological Risk Inventory (PRI).	To scan for self-reported symptoms of psychopathology. <ul style="list-style-type: none"> • To determine the need for an interview. • To recommend the candidate for deployment or not. <input type="checkbox"/> Utilised for concurrent health assessment processes. • To confirm the mental health status in adhering to set standards for deployment.
Vienna Test System (VTS).	Flight Crew Selection <ul style="list-style-type: none"> • Military Officer/Driver • Air Traffic/Combat control • Naval Operations • Weapon Delivery Skills

Note. Adapted from Parliamentary Monitoring Group (2007).

<https://Pmg.Org.Za/Committee-Meeting/10359/>.<https://pmg.org.za/committee-meeting/10359/>

While psychological assessments mentioned above provide a measure of insight into tests used in the SANDF, these are unlikely the only assessment measures in use. A majority of these seem to be measures of cognitive ability with the exclusion of measures of personality (except for the 16PF) integrity/ honesty tests, simulation exercises and assessment centres. However, the value in this presentation was that even though the list may be far from comprehensive, it provides an indication of some assessment measures that servicemen may have had in mind in recalling experiences of undergoing psychological tests.

An evaluation of literature points to the Advanced Ravens being a part of a number of test batteries. According to Chiesi et al. (2012) the Ravens is a nonverbal test with international application that was developed to evaluate the full spectrum of a candidate's intellectual development while minimising cultural influences. The Ravens aims to measure the candidate's capacity to apprehend seemingly meaningless figures presented for their observation and to see the relations between them, conceive the nature of the figure completing each system of relations presented, and by so doing, develop a systematic method of reasoning. The format of this test consists of 60 problems, which are divided into 5 sets. In

each set the first problem is as closely as possible self-evident; however, problems that follow become progressively more difficult. There are several variations of the test with the option of a more advanced form, the Advanced Ravens.

Regardless of the version, Raven's tests which include the Coloured Progressive Matrices, the Standard Progressive Matrices and the ARPM are the best known, most researched and most widely used of all culture-reduced tests (Raven & Raven, 2003). While most research suggests that the Ravens Progressive Matrix is an effective tool to use in instances where language needs to be minimised, other studies have indicated that a lack of test sophistication may impact test performance. For instance, a study by Zindi (2013) compared the results of black working-class Zimbabwean children with white children living in London using the Ravens Progressive Matrix (RPM). The results showed that the English group outperformed the Zimbabwean sample. This lowered performance was not seen as indicative of a lack of validity in the sample but was attributed to a lack of test sophistication. In another study, Jukes and Grigorenko (2010) noted that the RPM has been used in many studies that report on IQ scores for sub-Saharan Africans. This study also reflected intergroup difference in test performance which were attributed to the effects of schooling and urban residence (Jukes & Grigorenko, 2010). The examples listed above highlight problems impertinent to testing such that even though tests like the Ravens that significantly reduce cultural influence on test results, still present other factors that need to be considered when testing candidates. The occurrence of score differences between groups despite using nonverbal test, indicates that consideration is still needed even when testing with psychometric tests that are viewed as culturally neutral. When one thinks of the military environment, the Ravens can contribute positively towards a fair selection process however, given that candidates applying for positions in the military come from varying backgrounds,

one cannot assume that test results will be fair for all candidates, the impact of a person's test sophistication, schooling background and place of residence still requires consideration.

The Blox test was developed in South Africa by the Human Sciences Research Council as a psychometric test that measures visualisation, spatial relations, and spatial orientation (Mnguni, 2011). As a way to prevent language interference, the test format makes use of isometric drawings of different combinations of two, three, four, five or six cubes. Each set of cubes must be compared to similar arrangements of cubes viewed from other angles. Each page is divided into two sections with an easy black line. Above the line are five sets of cubes which are the responses and below the line are nine sets of cubes which form the stimuli. Candidates are required to analyse each stimulus set and choose the corresponding set seen from a different angle, from the five possible responses. The Blox test has demonstrated good validity across several studies.

While a literature search of validation studies pertaining to the Blox test resulted in a relative dearth of recent literature (over the last 10 years, of South African studies in particular) a wider range of older studies gave insight into the validity of this assessment measure. For instance, a study conducted by Holburn (1992) with engineering graduates reported high internal consistency (0.91) and good reliability (0.81). In another study conducted by Wheeler (1993) that examined the predictive validity of the Blox Test, this test was found to make a significant contribution to predicting overall effectiveness across both black and white racial groups. A study by De Kock and Schlechter (2009) supports the findings of Holburn (1992) and Wheeler (1993). This study reported that the Blox Test has been shown to yield acceptable reliability estimates of scores for various South African cultural groups, namely for black Xhosa males ($KR_{20} = 0.89$), coloured Afrikaans males ($KR_{20} = 0.82$), Indian males ($KR_{21} = 0.79$) and black Zulu males ($KR_{21} = 0.77$). These studies indicate that the Blox test, has on many occasions demonstrated acceptable validity

and is therefore a reliable assessment measure that mitigates the influence of language on test scores. In an organisation like the military where the force constitutes of personnel from diverse backgrounds, a test like the Blox has particular relevance in addressing bias induced by language.

According to Opperman and Greyling (2015) the Potential Index Batteries and Situation Specific Evaluation Expert Scales (PIB/SpEEEx) is a psychological measure of human potential designed to quantify a person's ability to understand their environment through conceptualisation, observance, reasoning, perception, comparison and other cognitive skills that are not reliant on previous education and skill acquisition. In this sense, the PIB/SpEEEx is both a measure of traditional cognitive intelligence and dynamic learning potential. A literature review of validation studies pertaining to the PIB/SpEEEx revealed that this assessment measure did not employ language. A study that aimed to determine the differential item functioning and structural equivalence of the PiB/SpEEEx for five of the eleven South African language groups found that even though the PiBSpEEEx did not employ language, it was not necessarily completely language insensitive (Schaap & Vermeulen, 2008; Schaap, 2003). This demonstrates that despite the PiBSpEEEx being a nonverbal test it should be considered as a language reduced test and not one that is completely language neutral and should therefore be used with caution when assessing multilingual populations.

Schuhfried (2013) describes the Vienna Test System (VTS) as a computerized, assessment measure that consists of a number of interactive tests, which are commonly used for the evaluation of cognitive and psycho-motor function in aircrew personnel. Tests such as the Determination Test provide insight into attentional capacity, reactive stress tolerance, reaction speed among continuously and quickly changing acoustic and visual stimuli. The test taker is expected to distinguish between colours, sounds, and other stimuli which may at times occur simultaneously and to select the correct answer speedily. Accordingly, this test

records reaction speed, the number of correct answers attained, and those missed, thus indicating an individual's ability to accurately and quickly select adequate answers under pressure as an indication of how they are likely to perform under pressure (Neuwirth & Benesch, 2012). The Cognitrone test which is also part of VTS tests measures attention and concentration. The COG works on the premise that concentration can be assessed by looking into three variables such as the energy that is needed for a person to complete his/her task, function that is related to the control of concentration of variable extent connected to the accomplishment of the task, and precision related to the success of the outcome (Tenenbaum & Gershgoren, 2015). These variables are similarly measured by looking at number of correct answers and reaction times of both correct, and incorrect answers and the total score. Constructs such as decision making, attention and concentration, and reactive stress tolerance are measured by different tests of the VTS (Tenenbaum et al., 2015). Several studies have evaluated the effectiveness of VTS tests on aircrew such as pilots and air traffic controllers and found the VTS to be a useful evaluator of important pilot functions (Bałaj et al., 2019; Bai et al., 2020).

According to Haarhoff et al. (2020) the single and double letter cancellation test is used as a measure of attention for specialised placements within the organisation. As most cancellation tests, this measure consists of target stimuli that are distributed amongst distractor stimuli whereby the target stimulus is the identified symbol or letter that the individual needs to identify and cancel, while the distractor stimuli aim to divert the individual's attention from the target stimulus. Performance is scored by recording the number of omissions, errors and time taken to complete the test. Haarhoff et al. (2020) indicate that despite the wide usage of the test in various sectors of the country, standardised scoring information consisted of broad cut off scores which was a concern, as it made use of international norms that did not take into account the socio-demographic aspects of the

country and its impact on test performance. In their research, Haarhoff et al. (2020) aimed to develop detailed administration and scoring procedures and to provide normative data. Through the employment of a non-probability sampling strategy, 292 participants were recruited for this project. This test has now been standardised for use within the military population.

According to Parliamentary Monitoring Group (2007) the SANDF assesses members for self-reported symptoms of psychopathology through the Psychological Risk Indicator (PRI). The PRI indicates specific risks that must be noted with respect to deployment, such as the tendencies to be unstable or impulsive and not well controlled by self and authority. In addition, the PRI assesses suicidal ideation and a person's negativity about life in general; exposure to one or more traumatic events which have not been resolved; self - reported excessive drinking over a recent period of time as well as tendencies to express aggressive behaviour due to frustration or interpersonal conflict. However, no publicly accessible information relating to research and validation studies on the PRI could be located.

The above review provided insight from which servicemen's perceptions of the psychological assessment measures they went through could be understood. A review of validation studies pertaining to these indicated that tests such as the Blox, Ravens, PiBSpeex, were found to be valid measures in the populations in which they were investigated. However, to understand the validity of these psychometric tests within the context of the SANDF, data pertaining to validation studies within representative populations were required. The review also showed that certain validation and standardisation studies had been carried out on assessment measures used within the organisation however only a handful of these were accessible in the public domain. As noted by Flotman (2002) much research had been done on pilot selection in the SANDF, however, due to its confidential and potentially sensitive nature access to this information was restricted. It is likely that due to

reasons pertaining to confidentiality, that psychometric tests other than those discussed in this section are used in the DoD and that research related to their validity may constitute classified information.

Conclusion

A literature review of studies indicated that cognitive ability and personality tests were used extensively in the SANDF to support the goal of achieving and maintaining a high level of mission-readiness. Through test batteries that evaluated ability, interests, behaviours, attitudes and cognitive functions organisations like the SANDF were able to identify personnel with the potential to successfully complete basic training, adapt to military life and execute tasks aligned to the organisation's goals with a measure of effectiveness in their assigned roles. Psychological assessment measures were further found to support this function by describing work-related, personality characteristics and predicting future job performance with accuracy thus contributing to their utility as objective decision-making aids.

A number of studies further elucidated on test takers preferred selection methods. In studies that investigated favourability of selection methods namely, interviews, resume reviews, work-sample test or simulation exercises, biographical information, cognitive assessments, values and motives, personality tests, integrity tests, personal contacts, and graphology, selection interviews were rated most favourably. Following closely were work samples, resume reviews and to some extent, cognitive ability and personality assessment measures. The above review additionally discussed psychometric tests used in selection batteries in the SANDF and found that tests such as the Blox, Ravens, PiBSpeex were cited in a number of research studies as having acceptable to good validity; although, few validation studies involving SANDF populations were located which was attributed to confidentiality and restriction reasons.

Criticisms of psychological assessments

Previous sections of this report have presented the numerous benefits derived from psychological testing. However, scholarly work notes that in as much as assessment measures have made positive contributions in the measurement of behaviour, this practice has faced challenges and controversies which have been the subject of much public debate. To understand the current standing of psychometric tests from the perspective of servicemen at the SANDF, its controversies over the years are discussed. This sections further discusses issues emanating from the use of imported measures as is the case with respect to the majority of tests in use in the country. Among these differential predictive validity, adverse impact, concerns around faking in personality tests are discussed.

A problematic history

The practice of psychological testing in South Africa, elicits strong reactions due to the contentious role it played in promoting unfair and biased testing during its early years (1915 to 1952) and during the apartheid era (1952 – 1994). Even though some major interventions have taken place to improve the image of the practice post-apartheid and major strides have been made in contributing to fair testing, as noted by Laher and Cockcraft (2014), testing in South Africa cannot be divorced from the country's political, economic and social history. The ethics surrounding the testing of culturally diverse groups has been an issue of controversy for many years. In South Africa, this was first sparked by psychologist, Fick, in 1929. As a means of legitimizing the field of psychology as a useful discipline during the early years (1915 – 1952), psychological testing focused mainly on their application within the education setting. Through the use of intellectual assessments, a group of researchers carried out testing using measures that were developed, normed and standardised for white children on black children. This resulted with lower scores observed for black

children being used to support the argument for racial inferiority, and also sparking the development of Bantu Education.

As the field of psychological testing expanded, similar discriminatory narratives unfolded in other areas. For instance, in the 1940s, the National Institute of Personnel Research (NIPR) was formed and is accredited for developments in organisational testing. The work of this body focused on African workers aptitude for industrial work, and development of adaptability testing procedures such as the silent-film technique that used mime to convey test instructions. According to Laher and Cockcraft (2014) these tests evaluated the capacity of natives in performing 'high work'. Commenting in this regard, Laher and Cockcraft (2014) remarked that there remained an underlying racist agenda within this testing as evidenced by Biesheuvel (1952), a main contributor to the NIPR, sentiments on black workers:

On the other hand, he (the African) makes up for his lack of speed by his liking of repetitive action, on which he imposes a rhythm of his own. Africans may, therefore, prove far more tolerant to the monotony of machine operative work than Europeans. By transforming such works into mildly satisfying experiences, they may retain efficiency where the European becomes restless and frustrated (Biesheuvel, 1952, cited in Laher & Cockcraft, 2014), p. 3).

As evidenced from the above discussion, psychological assessment measures played a prominent role in supporting political developments that promoted racial separateness.

During the apartheid years (1952 to 1994) the narrative of separate development continued with psychometric tests being adapted and normed for white populations. Kgosana (2012) notes that even though standardisation and norming procedures were based on white samples, these assessment measures were unapologetically used on black individuals. Furthermore, Bohmke and Tlali (2008 p.144) describe these years as characterised by a

growing body of research that aimed to understand the African personality which had the broad objectives of ‘achieving an understanding of African peoples’ behaviour; providing a means of testing the general validity of human behaviour hypotheses; and determining the extent to which African individuals’ behaviour was modifiable. Studies that have made commentary on this research note that the need to understand the African personality stemmed from a desire to justify inferiority of the black race and gain means to controlling the behaviour thus supporting the racist agenda of the prevailing government of that time (Bohmke & Tlali, 2008; Laher & Cockcroft, 2014).

The supportive role played by psychological testing in the legitimization of racist ideology resulted in damaged reputation locally to the extent that at the demise of apartheid, trade unions protested against the use of psychometric tests. As noted by Tredoux (2013) the opposition was so fierce that early drafts of the Employment Equity Act banned psychometric testing for occupational purposes (Tredoux, 2013). In an effort to guard against unfair and discriminatory testing practices several laws were passed which prohibited the use of assessment measures unless they could be proven to be reliable, valid, unbiased and could be applied fairly to all employees (these laws are discussed in section 2.6 under regulation of psychological assessment measures).

In 2004, the Human Sciences Research Council (HSRC) published a comprehensive report of a need’s analysis of psychological assessment practice in South Africa. The aim of the survey was to gather perceptions of psychological testing from practitioners into the main reasons that psychological assessment measures were used and to explore areas of testing that practitioners regarded as needing attention (Foxcroft et al., 2004). The results of this study were valuable as they provided insight into the state of psychometric testing at the time, based on a wide-ranging survey into assessment measure usage patterns. The present study

considered the findings of this survey given that it is the only known study of this magnitude in South Africa to date.

Data for that landmark survey was collected in three phases. The first phase consisted of a postal survey. HSRC (2004) reported that out of 881 people, who were sent the questionnaire, the response rate was rather low and responses were counted at 13.3%. Even though this was the case, the sample however remained representative of the demographics of registered psychology professionals across the various registration categories. Some of the items of the survey questionnaire inquired the extent to which practitioners used assessment measures, what they used them for, which cross cultural tests were used and whether practitioners felt these measures needed to be updated or adapted. In the next phase, 141 practitioners participated in 17 focus group interviews. These interviews focused on understanding the views of practitioners' regarding the perceived gains and benefits of psychological testing, and critiques on the strengths and weaknesses of psychometric tests they used the most. The final phase involved conducting 22 interviews with 31 practitioners. The interviews asked questions about tests that they used, their strengths and limitations, what the needs of new test were, as well as issues around the examining and regulating of the quality of services provided that related to psychological testing.

Findings of this study were quite noteworthy. Practitioners relayed that clients perceived psychometric test and testing processes positively and that clients felt testing added value in instances that tests in use were perceived to be firstly, culturally appropriate; secondly, psychometrically sound and thirdly, were of high quality. Another important insight that emerged from the survey related to what the tests were used for. Tests were used for a wide variety of purposes with clients of varied age groups for the identification and diagnosis of clinical conditions; for describing a clients' intellectual, cognitive and personality functioning, and to perform forensic and psycho-legal evaluations and for

occupational purposes in areas of selection and development. Decisions on which tests to use were mostly influenced by the test's status; that is, if it was on list of tests classified by the Professional Board for Psychology or not. An issue of significant concern noted by assessment practitioners was that a great number of tests frequently used needed adaptation for South Africa's diverse language and cultural context or were in need of updating to suit the rapid changes taking place in the world of work.

These findings suggest that psychometric tests were commonly used across many areas of application and despite challenges they faced, practitioners' perceptions of how they were received by clients seemed favourable. However, as indicated by the opening statement of the report, test validity and reliability remained a central issue. The report opens the executive summary with the following comment:

Psychological assessment in South Africa faces many challenges at present.

Among these challenges is the fact that assessment practitioners need access to high quality tests so as to ensure that the assessments that they perform yield valid and reliable results (HSRC, 2004, p. 1)

This comprehensive survey provided valuable academic commentary and insight into the perceptions of practitioners authorised to administer psychological assessment measures by the Health Professions Council of South Africa (HPCSA).

The practice of psychological testing has come a long way since 1915 and considerable strides have been made toward equitable testing. However, as indicated by Laher and Cockcroft (2014) and Kgosana (2012), despite attempts to reconstruct a new positive image, some still view psychometric tests with suspicion, although Laher and Cockcroft (2014) further noted that this negative perception seems to be diminishing. The principal argument of the present study was that the best way to determine the extent to which negative perceptions of psychological assessment measures in South Africa were

diminishing was to conduct a study like the present, one interested in investigating the perceptions of personnel undergoing assessment for occupational purposes in the South African National Defence Force (SANDF).

Differential predictive validity

A key goal of psychological assessment measures is to generate valid observation of the underlying construct. In this regard, test reliability and validity are critical to the accurate measurement of behaviour, particularly in ensuring that evaluations made based on such measures are useful, and can be relied on. As indicated by Franklin et al. (2014), a test that produces consistent results and measures what it intends is imperative to efficient selection and placement processes as inferences made on such a basis are dependable. An area that has experienced contentions in the field of psychological testing has been the use of tests that produce different scores for different populations. The majority of psychological tests used in South Africa have been translated and adapted from international versions (Foxcroft & Roodt, 2006). In defining adapted tests, Hernández et al. (2020) state that these are tests which have been revised and improved to facilitate a better fit for usage in a different context other than that for which it was developed. While test adaptation has been commonplace for over 90 decades, according to Epstein et al. (2015), psychological tests including those that have been adapted often produce different scores for different groups. This phenomenon has been termed differential predictive validity.

Numerous studies point to predictive validity as the degree to which test scores accurately predict scores on a criterion measure (Cottrell et al., 2015). A test score can predict an individual's behaviour in a narrowly defined set of circumstances, and is said to have predictive validity when it yields consistent, reliable measurements. For example, an honesty test has predictive validity if persons who score high on it are later shown by their behaviours to be honest. When accurate in predicting a job applicant's future behaviour,

psychological tests fulfil the purpose of being valuable decision aids in selections. In as much as studies have demonstrated the capacity of psychological assessment measures for demonstrating good validity and to predict job performance with accuracy, a common critique of these tests noted in extant literature of their propensity to show significantly large differences between groups. This phenomenon referred to as differential predictive validity studies has been largely reported by studies that have investigated test bias.

Illustrating differential validity, Berry et al. (2011) conducted a meta-analysis on investigating issues of test validity among a number of race groups which included persons of black descent, white and Hispanics. The results of this study found support for the existence of group differences as differential validity was found for Black and White subgroups in the prediction of both job performance and training performance. Berry et al. (2011) further reported that the overall results within the employment settings, correlations between measures of job performance were .19 for Whites and .16 for Blacks thus indicating a difference of .03. With regard to the military context, mean correlations obtained using training grades were reported at .34 for Whites and .17 for Blacks showing a difference of .17. The study reported that overall correlations for Hispanic and White groups were found to be .34 for Whites and .30 for Hispanics. A comparison between Whites and Asians (.33) reported smaller difference with correlations of .34 and .33 respectively. On the basis of these results, the studies concluded that “enough evidence currently exists to conclude that it is likely that observed test-criterion correlations differ for White and Black subgroups” (Barry et al., 2011). Similar trends have been reported elsewhere (Colella et al., 2017; Reynolds et al., 2021). The extent of the problem of differential validity is rather far reaching when one considers the findings of Cottrell et al. (2015 p. 1) which noted that “Black–White gap in cognitive tests is nearly three times as large as the Black–White gap in job performance itself.” Consequences of group differences, also known as adverse impact, lead to

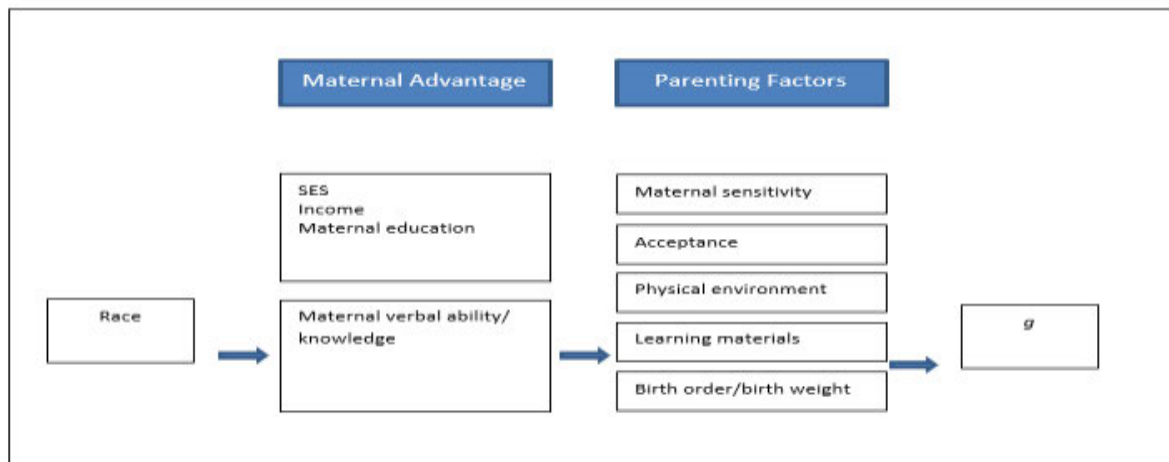
inequitable social consequences such as lower job selection rates for blacks and other minorities. Such outcomes are unfortunate as groups that tend to score lower on average are mostly individuals who already face some kind of social disadvantages such as past discrimination, as is the case in South Africa.

Several scholars claim that test bias, claims of differential validity and test unfairness, cannot be blamed for score differences between minority and majority groups. Proponents of this view argue that test score differences are most likely due to social disadvantages such as the quality of education that minority groups typically experience and as a result, minority groups are not adequately exposed to the cognitive skills measured by psychological tests. This view holds the position that given that test score difference is a social policy problem, the problem cannot be solved by modifying or eliminating psychometric tests.

A theory that supports this viewpoint, is the theory of adverse impact by Cottrell et al. (2015) depicted in Figure 1 which describes the phenomenon of score differences from an etiological perspective. These researchers suggest that the relationship of race with cognitive ability tests scores occurs in three sequential steps. The first step is presented as maternal advantage, which is described as promoting step 2, that is, parenting factors which in turn promote/ influence step 3), which is cognitive ability. These researchers define the first step, maternal advantage as income, maternal education, and maternal verbal ability/knowledge. The second step, parenting factors is, defined as maternal sensitivity, acceptance, physical environment, learning materials in the home, birth weight, and birth order. Step three is then defined as the outcome of these influences namely having an advantage when it comes to cognitive ability.

Figure 1

Cottrell's model of adverse impact depicting maternal advantage and parenting factors



Note. This model was produced by Cottrell et al. in 2015 adverse impact depicting maternal advantage and parenting factors. From “Explaining the black–white gap in cognitive test scores: Toward a theory of adverse impact” by J. M Cottrell, D. A. Newman, and G. I Roisman, 2015. *Journal of Applied Psychology*, 100(6), p. 1713. Copyright 2015 by the Journal of Applied Psychology.

From the perspective of the historical socio-political situation of the country; economic disadvantage and the quality of the education system, this theory has plausibility for the context of cognitive tests in South Africa. Other theories however, such as the cultural bias hypothesis have proposed that racial group differences on psychometric tests are the result of biases that are a product of the tests flawed by psychometric development. For instance, Helms (1984) argued that group differences in psychological measurement stem from characteristics of the tests which are unrelated to any actual differences in what the test aims to measure or the psychological trait. According to the cultural bias hypothesis, rather than differences stemming from social issues, differences stem from inadequate notions of culture that tests produce for those who hold majority group membership impose on minority groups. Differences in mean performance for members of different ethnic groups do not constitute of real differences among groups but are artefacts of tests or of the measurement

process. This approach holds that ability tests contain systematic error occurring as a function of group membership and other nominal variables.

The widely accepted way to address adverse impact in recent years has been suggestions that stem from the cultural bias hypothesis that propose that through the use of construct equivalence the technical properties of an assessment measure become equal among people irrespective of their cultural orientation with those from which the psychometric test had been constructed, or the scores normed and validated on. Helms (2015) define construct equivalence as a means to ensure that the construct being measured provides the same meaning and value to test takers across different cultural groups. A shared understanding of the construct provides test takers with more equitable test conditions and test administrators the right tools to make cross-cultural comparisons. Cultural equivalence is seen as the more equitable option over the development of different tests for different cultural groups (Karl et al., 2020). In South Africa, in line with global trends and the call for fairness by the Testing Standards, construct equivalence has been explored as a measure to produce comparative data in psychometric testing.

Differential validity is of serious concern as it has implications for those undergoing the psychological testing. In an education setting, bias of this nature can lead to scholars being unwarrantedly unassigned to special learning classes or educational programs for the mentally impaired, individuals being denied college admission, graduate, or professional degree programs. In the employment setting, candidates can find themselves being unfairly denied employment and even promotion opportunity. Given that the military is one of the largest employers of previously disadvantaged individuals, it becomes imperative that psychometric testing is equitable and does not amount to aiding some candidates while being biased over others

The problem of faking in personality tests

It is largely accepted by organisations that personality factors comprise some of the most important individual difference variables for describing, understanding, and predicting human behaviour which is why many organisations including military organisations have relied on psychometric tests for their selection processes (Stark et al., 2014). However, in like manner to ability tests, personality measures have also faced validity concerns. Illuminating on the severity of these concerns, Guion and Gottier (1965) conducted a meta-analysis of research on personality tests use for personnel selection between the years 1952 to 1963. These researchers concluded that personality tests lacked validity and as a result stated, “It is difficult in the face of this summary to advocate, with a clear conscience, the use of personality measures in most situations as a basis for making employment decisions about people” (Guion & Gottier, 1965, p. 160). This viewpoint influenced a drastic decline of personality test usage and personality research for more than 25 years. In recent years concerns related to personality testing have been with regard to diminished validity resulting from applicant faking (Lee et al., 2019).

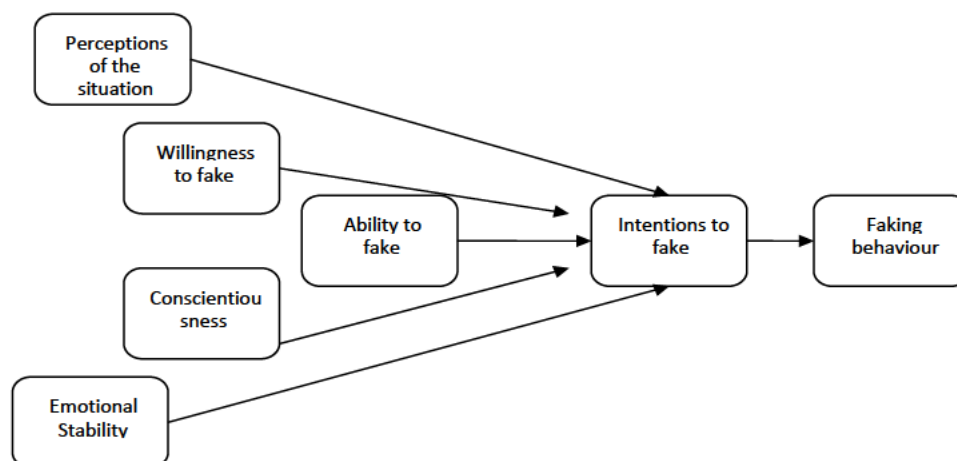
According to Salgado (2016), faking emanates from the apparent comprehension of what the right or positive answer is. A study conducted in the Swedish military for instance, found that military officers tended to exhibit high levels of socially desirable responding when compared with students. In this study, the Marlowe-Crowne Social Desirability Scale and a subset of test items were administered to a group of 216 Army, Navy, and Air Force captains and as noted by Thunholm (2009), the data revealed a comparably strong tendency for faking which was attributed to a need to look good. A study by Paunonen and LeBel (2012) found that less than a third of comparisons between the validity of accurate and overly desirable respondents were significantly different. However, there has been substantial research suggesting that even though faking may occur, it does not diminish the validity of

the test. To address the issue of faking, some test publishers have opted to use techniques such as controlling for impression management and self-deceptive enhancement (Lopez et al., 2019; Müller & Moshagen, 2018) and examining the impact of social desirability on personality factor structures (Larson, 2019).

Several authors have proposed frameworks within which to understand faking psychometric tests (Mueller-Hanson et al., 2006; McFarland & Ryan, 2000). Within this discussion we considered two frameworks and how these applied to the sample at hand. These frameworks are Mueller-Hanson et al. (2006) conceptual model of faking and McFarland and Ryan (2000) Integrated model of faking. According to Mueller-Hanson et al. (2006) model, a person's intention to fake is influenced firstly, by their perception of the situation, their willingness to fake, their ability to fake, their conscientiousness as well as their emotional stability. A sufficient completion of these intentions may result in faking behaviour. This model is presented in the Figure 2.

Figure 2

Conceptual model of faking



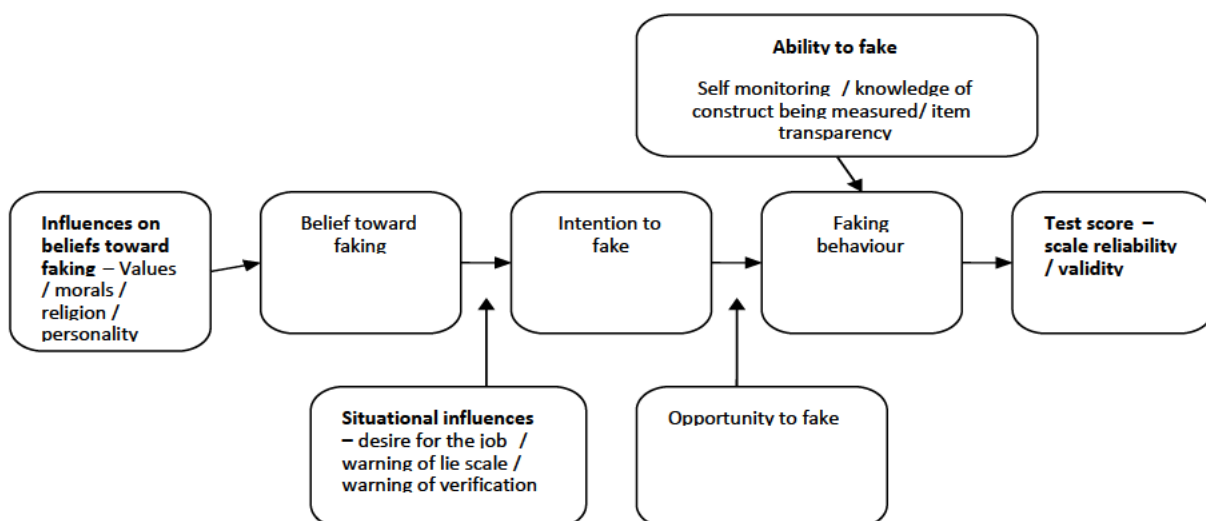
Note. This model was produced by Mueller-Hanson et al. in 2006 depicting a conceptual model of faking. From “Individual differences in impression management: An exploration of the psychological processes underlying faking” by R. A Mueller-Hanson, E. D. Heggstad

and G. C. III Thornton in 2006. *Psychology Science*, 48(3), p. 288–312. Copyright 2006 by Psychology Science.

The integrated model of faking proposed by McFarland and Ryan (2000) provides a similar concept to that of Mueller-Hanson et al. (2006). However, the latter model tends to be much more comprehensive and integrative in its description. According to McFarland and Ryan (2000) faking behaviour is influenced by a person's belief toward faking. These influences comprise of values, morals, religion and personality traits. Secondly, a person's belief toward faking influences their intention to fake. A person's intention to fake may in addition be impacted by situational influences such as their desire for the job, whether they are aware of a lie scale that may be embedded within the test or the possibility of verification. This model further proposes that whether a person actually carries out the faking is dependent on two factors. These factors are the person's ability to fake and if the opportunity to fake presents itself. The ability to fake is aided by a person's propensity to self-monitor their knowledge of the construct and item transparency. According to this model, all these factors influence the test score, scale reliability and the overall validity of the measure. This model is presented in the following Figure 3.

Figure 3

Model of faking



Note. This model was produced by McFarland and Ryan in 2000 depicting a model of faking. From “Toward an Integrated Model of Applicant Faking Behavior” by L. A. McFarland and A. M. Ryan in 2006. *Journal of Applied Social Psychology*, 36(4), p. 979–1016. Copyright 2000 by the Journal of Applied Social Psychology.

In light of the theories discussed above, both models allude to test takers differing in their motivation to fake. Boss et al. (2015) sought to investigate whether motivational differences were indeed related to the extent of faking on personality tests. This was explored using a sample of military personnel in service for compulsory service in Switzerland. In the study, military service motivation was assessed by asking participants to indicate their level of motivation to serve in the armed forces, and to take a cadre position in the Swiss Armed Forces. A second questionnaire was administered at the end of the final recruitment day, after decisions about service enlistment had already been made and communicated to the conscripts. This questionnaire required conscripts to answer this question on a nine-point response scale in which the lowest category (1) had the anchor “you presented yourself worse on purpose”, the middle category (5) had the anchor “you answered truthfully”, and the highest category (9) had the anchor “you presented yourself better on purpose”. For tracking purposes conscripts were requested to write down their names on the questionnaire as the information would be used to evaluate the quality of the selection process. Boss et al. (2015) report that military service motivation showed a significant correlation with self-admitted faking, meaning that those who had a higher motivation were also more likely to deliberately present themselves better than they were. The finding that motivational differences matter significantly for faking supports the basic argument of faking models such as those discussed in this section.

A large body of literature argues that faking is inconsequential as suggested by a meta-analysis by Geiger et al. (2018). However, this perspective has countered criticism

where other studies have demonstrated that criterion related validity is substantially decreased when people fake (Holden & Book, 2012; O'Neill et al., 2017). Similar research studies that have explored the effects of faking in psychological measures indicate that faking not only has adverse effects on the validity of the criterion but also the quality of selection decisions made. For instance, a study conducted by Mueller-Hanson et al. (2006) examined the effects of criterion related validity and quality of selection decisions by combining the control of an experiment with the realism of an applicant setting. In this study, participants were asked to complete an achievement motivation measure in either a control or incentive group which was followed with the completion of a performance task. The results of this study found that greater prediction error was found in the incentive group among those with scores at the high end of the predictor distribution. However, when selection ratios were small those in the incentive group were more likely to be selected but had lower performance than those in the control group. These results indicate that applicant faking may have a detrimental impact on the validity of assessment measures as well as the quality of decision made using those scores.

Research has further demonstrated that faking even in its modest form may have dramatic effects on decisions to the point of reducing testing utility (O'Neill et al., 2017). A study conducted by researchers Schilling et al. (2020) found that these effects were further exacerbated by individual differences in peoples' willingness to fake. As noted by O'Neill et al. (2017) extreme fakers tended to score very high thus giving them an advantage over honest people and thus made up the majority of those who were successful in a pool of applicants.

Conclusion

Despite the strengths of psychological tests, literature cited a number of criticisms faced by the field. Among tensions relevant to the present study was the problematic history

of psychological assessment measures in the country, differential validity and its adverse impact and the problem of faking in personality tests. Its inequitable contributions to separateness during the time in which the profession aimed to legitimise itself, and involvement in apartheid ideology in subsequent years, resulted in an unfavourable reputation even beyond the apartheid years. The review also indicated that the tendency to use tests that were normalized and standardized in white populations to evaluate characteristics such as intelligence in populations that they were not normed for, contributed to threats of discontinuing the practice at the establishment of democracy.

An examination of literature revealed that cognitive ability assessments were largely criticised for producing significantly different test scores between cultural groups which were seen as reproducing inequalities between disadvantaged and advantaged groups, as individuals from underprivileged race groups tended to obtain lower scores in comparison. However, recommendations around ensuring test fairness and regulations prohibiting biased tests such as ensuring cultural equivalence have worked towards ameliorating these concerns.

A review of personality test literature produced a large number of studies that highlighted the challenge of faking personality measures. While some literature argued that faking was inconsequential, other perspectives demonstrated that the impact of faking was indeed significant as it resulted in diminished validity and impacted the quality of decisions made during selection processes. In addressing the issue of faking, some test publishers have opted to use techniques such as controlling for impression management and self-deceptive enhancement. In this section of the review, areas where psychometric tests have been less successful were discussed with mention made of measures that have been implemented to ameliorate its impact, while making strides to improve test fairness, reduce bias and remain current with international trends in psychological testing.

Regulation of psychological assessments in South Africa

The section above shed light into the beneficial role that psychological assessment measures were intended to fulfil and how these positive orientations were derailed by political racial agenda. In light of this, several legislation and regulations have been promulgated to negate the resultant discriminatory trajectory that ensued. In this section, guidelines that govern psychological testing in South Africa are presented in terms of their role in curbing discriminatory unfair assessment practice. Legislation discussed herein include the HPCSA Ethics guidelines, ethics measures of the Professional Board for Psychology as regulating authority of psychology and psychological testing; precautionary measures that test practitioners are required to adhere to in ensuring fair ethical practice as well as the Employment Equity Act as legislation that guides and promotes non-discriminatory test usage.

Governance of psychological assessment

The profession of psychology in South Africa has been regulated by the Health Professions Council of South Africa's (HPCSA) since 1974 (Pillay & Zank, 2018). This body comprises of 12 professional boards which include the Professional Board for Psychology. Psychological testing is similarly regulated by the HPCSA. The mandate of the HPCSA is to safeguard the public and indirectly the professions it represents by ensuring ethical and professional practice.

The Health Professions Act 56 of 1974 enacted a stringent regulation around the access to and use of psychological tests granting only Board-certified professionals such as psychologists and psychometrists the permission to use psychometric tests. In addition, the HPCSA publishes a schedule of classified and certified tests. This schedule provides information on which tests have been reviewed and certified as ethical for usage. The schedule additionally provides information on tests that are available to practitioners but are

however under development or adaptation. These tests are classified as not eligible for usage that enables financial gain but are most frequently promoted for usage for research activities.

As a measure to take precaution in ensuring that the schedule is composed of fair and valid tests, the HPCSA as part of the classification process appoints independent reviewers to review the test and submit a report to the Psychometrics Committee regarding their evaluation of the test's scientific properties. In addition to the HPCSA serving as a regulating body of psychological tests, a number of legislations have been promulgated to safeguard the interests of test-takers and for enforcing ethical testing practice.

Rules, regulations and the ethics of testing

Given the history of psychological assessment practice in South Africa, psychometric testing has often been associated with the socio-political developments in the country (Laher & Cockroft, 2014). From the history discussed in the previous section, evidence emerged that the first test used in South Africa was an adaptation of an imported test. Given South Africa's colonial history, most psychological measures were tests imported from other countries which were mostly relevant for the English and Afrikaans language populations (Foxcroft, 2011). As noted in extant literature, the administration of these test measures across cultural groups other than those for which they were intended introduced bias and served as discriminatory (Kgosana, 2012).

In this regard, an important point put forward by Laher and Cockroft (2014) was that psychological testing in South Africa cannot be discussed in a vacuum without a consideration of the country's socio-political history. The landscape of psychological assessment measures has to a large extent been tainted by the legacy of apartheid. According to Cooper (2014) during the pre-democracy period, psychometric tests that had no cross-cultural relevance were used as tools to draw biased conclusions and provide evidence for genetic racial superiority and inferiority. In addition, psychological tests were used to

promote apartheid ideology such as denying black persons access to education, limiting their participation in economic endeavours; thereby validating their exploitation (Ramaahlo, 2011). Thus, the role that assessment measures played during apartheid as a tool for exclusion, propaganda and exploitation resulted in negative views of testing and scepticism regarding their value especially among black South Africans (Foxcroft & Roodt, 2006; Ramaahlo, 2011). The socio-political climate of transformation that the country underwent during regime change in 1994, created an urgent need for tests that met the cultural and language groups of all South Africans.

Precautionary measures in psychological testing post-apartheid

Since the election of South Africa's first democratic government, a number of legislative measures have been implemented to safeguard the rights of all South Africans from being unfairly discriminated based on psychological measurement. The application, control, and development of assessment measures have been greatly guided by such measures as the Constitution, the Labour Relations Act, the Employment Equity Act 55 of 1998, and the Ethical Rules of Conduct for Practitioners registered under the Health Professionals Act 56 of 1974, Annexure 12, Section 48. These Acts protect individuals, workers and applicants from unfair discrimination. However, legislature that has drawn the most attention has been the Employment Equity Act 55 of 1998, and The Ethical Rules of Conduct for Practitioners registered under the Health Professionals Act 56 of 1974 which are binding to all registered psychologists and psychometrists.

The Employment Equity Act of 1998

The Employment Equity Act (Government gazette, 1998) serves as a legal framework for redressing apartheid injustices by promoting equal opportunity in organisations through the elimination of unfair discrimination and ensuring the equitable representation of previously disadvantaged groups across all levels and professions in the workforce. Chapter 2

of the Employment Equity Act focuses on prohibiting unfair discrimination with specific application to psychometric tests. The Employment Equity Act 55 of 1998, Section 8 (Government Gazette, 1998), stipulates that “Psychometric testing and other similar assessments of an employee are prohibited unless the test 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” thus placing responsibility in the hand of both the test publisher and the practitioner. By extension, this law prohibits organisations from using policies and practices that promote unfair discrimination. Test practitioners are therefore legally bound to scrutinise policies and procedures that apply to pre-employment, job assignments, training and development and promotional selections.

Health Professionals Act 56 of 1974

Ethics are central in the upright application of psychology. An examination of the definition of the word ethics, yields a sense of aiming to do what is right at all times and doing no harm. Lefkowitz (2017) defines ethics as conduct that is primarily focused on moral principles. Walsh (2015) provides a more comprehensive and practical definition. Ethics is defined as involving the evaluation of actions, social practices, institutions, and systems to determine whether they are good or bad, right or wrong, and why they are deemed so, and/or whether they should be promoted or reformed (Walsh, 2015).

The HPCSA has published a code of conduct that all registered practitioners are bound by. The purpose of the HPCSA ethics code of conduct is to educate registered professionals about what constitutes ethical conduct and to delineate the scope of the different health professionals. According to Act 56 of 1974, the use of assessment measures to assess mental, cognitive, or behavioural processes and functioning, intellectual or cognitive ability or functioning, aptitude, interest, emotions, personality, psychophysiological functioning or psychopathology (abnormal behaviour), constitutes an act that falls in the

domain of the psychology profession and is thus restricted as such. This legislation requires sensitivity to diversity in order to ensure fairness.

The history of psychological testing in South Africa necessitated the implementation of legislature, ethics codes and guidelines to protect the public from unfair and discriminatory psychological practice. This section discussed how the Labour Relations Act, the Employment Equity Act 55 of 1998, and The Ethical Rules of Conduct for Practitioners registered under the Health Professionals Act 56 of 1974 aim to safeguard the rights of all South Africans from unfair and unethical testing practice (Gregoire, 2018).

In the context of the present study, a consideration of the goals of these legislature aided understanding when examining experiences of test takers and how these experiences influenced their perceptions of assessment measures. If military personnel for instance, experienced psychometric tests as fair and non-discriminatory, the expectation was for SANDF members to hold positive views of psychological tests. However, if the opposite were true, in the sense that personnel experienced psychometric tests as unfair, and racially prejudice such that they followed the trajectory proposed by Fick (1929) this was expected to contribute to the development of negative perceptions.

Summary and Synthesis of Literature

Chapter two of the current report reviewed literature pertaining to the current study which aimed to investigate perceptions on psychological assessment measures in the SANDF from the perspective of military personnel, with the specific objectives of understanding what personnel viewed as positives or negatives and areas for improvement. As part of this investigation, the literature review commenced with providing an overview of the SANDF, from which these perceptions could be understood, and reviewed studies that gave insight into the mandate of the organisation, the manner in which one goes about in establishing a career within this particular environment, as well as the culture of the organisation. This

section of the review highlighted the SANDF's unique position as one of the majority employers in the country, one that has a culture that is rather complex and significantly divergent from civilian employment. Its organisational mandate, chain of command, and norms were found to have a significant impact on the lives of those who opted for service, even lasting after personnel had departed from service. This meant the need to be able to accurately identify personnel that can successfully adapt to military culture, withstand the physical and psychological demands of the organisation, and execute their roles with high levels of efficiency and meticulousness.

Literature concerning psychological tests in the military demonstrated that military organisations, such as the SANDF, have a long and extensive history in the utilisation of psychological assessment measures that enabled objective practical decisions during employment, recruitment, promotion, and personnel development processes. This review established that rather than solely relying on personal judgements, value was found in the quantifiable samples of human behaviour that assessment measures offered. Psychometric tests were employed for the purposes of evaluating behaviour, mental ability, personality characteristics and other aspects relevant to the needs and goals of organisations and employers. Cognitive ability tests were found to be particularly beneficial in the evaluation of ability to perform complex duties including decision-making under pressured environments, evaluating the quality of those decisions, establishing how one is likely to behave when facing critical situations such as high-pressure combat missions and immediate threat situations, among other. Personality assessment measures were similarly found to be an integral part of selection test batteries. In this respect, personality tests assisted organisations to measure qualities possessed by an individual that make up their character as these were often correlated with work related outcomes such as understanding how a person might perform on the job, whether they would be successful in a specific career and remain with an

employer for a measure of time and engage in organisational citizenship. Personality tests also added value in understanding motivational factors, leadership potential, and evaluating qualities such as resilience, team orientation, ingenuity, selflessness, and a commitment to serve among applicants. The literature review also showed that assessment measures such as work simulations have had a positive effect in the personnel selection process. Overall, these tests also improved the efficiency of the selection process in that they yielded valuable information about an applicant's personality and cognitive ability in a relatively short amount of time.

An issue very closely related to the current study pertained to the manner in which selection tools were perceived by test-takers. Given the current study's goal to understand perceptions of personnel undergoing assessment for occupational purposes in the SANDF, literature in the area of test takers responses to selection methods were reviewed. An evaluation of studies conducted in the United States, France, Singapore, Germany, Spain, Portugal, Greece, Italy and Netherlands explored selection methods which included interview, resumes review, work-sample test or simulation exercises, biographical information, cognitive assessments, values and motives, personality tests, integrity tests, personal contacts, and graphology shed some light into methods favoured by test takers. This examination revealed that test takers believed the selection interview was the fairest selection method whereas psychological assessment measures received moderate favourability. This finding was particularly interesting as the validity of selection interviews have been found to be significantly lower in comparison to assessment measures such as cognitive ability tests.

Literature reviewed in this study additionally explored issues of concern in psychological assessment practice. Studies indicated that in South Africa, psychological assessment measures had a long history of being used as instruments for unethical, unfair and discriminatory practice. This was evidenced by psychology's contribution in promoting racial

separateness during the 1915s to 1950s as psychology worked to establish its practice as beneficial to society. For instance, research carried out by Fick (1929) that attributed significant differences in tests scores between the African and White population as due to racial genetics tainted the objectives and uses of psychological assessment measures in South Africa. This narrative was further exacerbated under the apartheid dispensation where psychometric tests were employed to serve the agenda of the ruling government. Through the usage of these tests, Africans were said to be inferior in comparison to Whites and other race groups; which led to their assignments to sub-standard education; limitation of their economic participation thus only serving as labourers. This role of assessment measures being used as a tool for exclusion, propaganda and exploitation has had long lasting effects on the South African population as demonstrated in the review. Consequently, for a long time, psychological measures and tests have been viewed and treated with scepticism.

The review further highlighted other criticism that the practice of psychological testing had over the years faced criticisms. A common critique of ability tests noted was their predisposition to show adverse impact against diverse cultural groups. Personality tests were often critiqued for their susceptibility for test takers to manipulate answers through faking or responding in socially desirable ways. The review further demonstrated that psychometric tests used incorrectly, or within populations for which they had not been developed or adequately adapted, a perfectly scientifically sound test may result in bias, and in unfair and discriminatory results. This was an important point for consideration especially in contexts like our country South Africa, where the majority of psychological assessment measures were imported from external countries. Adhering to translation and test adaptation guidelines were shown to minimise bias potential. As noted by the test translation and adaptation guidelines, evidence needed to be provided that test instructions and item content have similar meaning in the new test from that which it is adapted; item formats and other aspects

such as rating scales, scoring categories, test conventions, modes of administration, and other procedures were suitable for the new population; statistical evidence about the construct equivalence and the norms, reliability and validity of the adapted version of the test was suitable for all intended populations. This comprised of good ethical assessment practice with reference to translated and culturally adapted tests. The review also showed that in countries where psychological testing needed to take place with culturally diverse individuals, multicultural assessments, those which account for test takers' cultural backgrounds were best practice. The benefits of multicultural assessments were that they produced results that have the same meaning across diverse racial groups. Through the use of construct equivalence the technical properties of an assessment measure become equal among people irrespective of their cultural orientation. Understanding the construct in the same way afforded test takers the opportunity for more just and fair testing conditions.

Post- apartheid, this gave rise to stricter legislation enacted to safeguard the rights of test takers from discrimination and exploitation. At the same time, the literature further reported on studies that showed that imposed regulations on testing practice have had a positive effect on testing and has led to greater reliability and validity of employment decisions and has also helped reduce discrimination despite the need for more culturally contextual assessment measures still being a priority. Literature further indicated in South Africa the profession of psychology was regulated by the HPCSA to safeguard the interests of the public and indirectly the professions it represents by ensuring ethical and professional practice. In line with these protective measures, several legal frameworks and ethics codes were promulgated. The most noteworthy have been the Employment Equity Act that aimed to promote equal opportunity in organisations through the elimination of unfair discrimination and ensuring equitable representation of previously disadvantaged groups across all levels and professions in the workforce.

CHAPTER THREE: CONCEPTUAL FRAMEWORK

Introduction

The preceding chapter of this report provided substantial evidence for the benefits of assessment measures such as cognitive ability and personality tests for the purposes of recruiting and developing an efficient workforce. Literature further demonstrated the critical mandate of arms of service of the SANDF which involved a high degree of responsibility, calling for defence, preservation, and protection of human lives. As the assignment of personnel to roles within the organisation typically involves psychological tests, there was value in understanding how those who completed these psychological measures perceive the tools used in their selection. Despite widespread literature research studies commenting on psychological assessment practice in South Africa, the majority has often approached the matter of assessment practice from the viewpoint of researchers and experts within the field, while the topic is seldom investigated from the perspective of test takers, particularly those from military organisations.

An inquiry of this nature was deemed valuable in providing insight into an area which at the time of conducting the present study, was an unknown, through the discovery undocumented viewpoints of test-takers. Understanding test takers views regarding psychological measures was significant, following their widely documented value for organisation selections and the tensions they have faced, such as their contribution to the promotion of apartheid ideology, and their subsequent rejection by certain interest groups post that era. Evaluating perceptions around psychological assessment measures was additionally forethought to highlight where the practice stands in terms of public perception by indicating if assessment measures were still associated with their problematic past or whether such perceptions had diminished. The evaluation also aimed to uncover any other perceptions that would emerge, both positive or negative and perceived areas for

improvement. The study further postulated that understanding favourable perceptions of psychological tests may help military psychologist understand “what is right” with psychometric tests, continue implementing those aspects, and reinforce positive messages around these areas to attain greater buy-in. The presents study was also concerned with understanding what servicemen perceived as areas for improvement. Understanding these would be valuable in providing “owners of knowledge” with insight into these perspectives, open room for discussion on these, and in instances where such recommendations were deemed both appropriate and feasible, enable such implementation. Given the above, the problem which this study set out to explore was the question about the nature of South African military personnel’s perceptions towards psychological assessment measures at SANDF.

The present research sought to explore the phenomenon through several theoretical underpinnings. These theories related to how people made sense of their subjective realities to form perceptions and discussed Gregory’s (1966) theory of perception; Gross (1994) models of public understanding of science; Roth and Jornet (2014) theory of experience and finally Gibbs Reflective Cycle (1988) as foundations for the conceptual framework. Later sections of this chapter provide a synthesis of the conceptual framework and graphic presentation to illustrate the relationships among these variables in relation to the present research.

Forming perceptions

Gregory’s (1966) theory proposed that people form perceptions to make sense of and understand their social realities. According to Gregory (1966) a perception is constructed through the processing of stimulus information from our social environment that often requires interpretation because of its ambiguous nature. Gregory (1966) further argues that

this process requires individuals to tap into information previously stored in order to make inferences about what is perceived or experienced.

Gregory (1966) theory follows a top-down approach which means that people use knowledge, expectations, or thoughts to influence their perceptions which is determined through dynamically probing through stored information to attain the best analysis (Gregory, 1966). In simple terms, humans are constantly using previously stored information to form a hypothesis between stimulus information and what the person already knows internally. This approach therefore sees the process of perception as a highly active process of extracting external stimuli, evaluating it, and interpreting it (Eysenck & Keane, 2020).

In describing how people form perception in common everyday language, Bohm (1977) describes it as follows, “Reality is what we take to be true. What we take to be true is what we believe. What we believe is based on our perceptions. What we perceive depends on what we look for. What we look for depends on what we think. What we think depends on what we perceive. What we perceive determines what we believe. What we believe determines what we take to be true. What we take to be true determines our reality”. This theory therefore posits that perceptions are ultimately informed by what is believed to be reality. When examining Gregory’s (1966) theory in relation to the present study, which has the central theme of exploring members’ perceptions on psychological assessment measures, this theory suggests that to formulate their views on the subject matter, military personnel may have had to engage in an active process of revisiting their experiences of test taking and evaluating these to arrive at their interpretations. For this reason, those who participated necessitated that they had undergone psychological testing in the military environment.

Public’s understanding of science

In forming perceptions on psychological tests, the presents study posited that extrinsic factors that may influence how military personnel perceived assessment measures may be

attributed to the manner in which those entrusted with the practice of psychological assessment communicate its value to their publics. Research in the area of the public's understanding of science, a research field that explores the inter relations between science and the manner in which people in the public arena understand it, notes that the main challenges that people often face in their engagement with science are related to epistemic cognition and motivated reasoning. Sinatra et al. (2014) define epistemic cognition as related to reasoning about information about science (provided by science) and the processes of knowing; whereas motivated reasoning refers to personal biases that people may hold concerning that science.

While some scholars postulate that in instances where the public rejects science, albeit the provision of scientific evidence, this is simply a matter of a lack of ability to understand it. Other studies, however, have argued that oftentimes people rejected science not because they failed to understand it but because it ran contrary to the way they preferred to think about the matter. Illustrating this point, Lewandowsky and Oberauer (2016) noted that even when substantial scientific evidence had been given that demonstrated that emission of greenhouse gases produced global warming, considerable sizes of the population rejected this finding despite well-established results. This finding, and others like it, highlight an important aspect of motivated cognition, that is, when people are provided with scientific information that threatens their core beliefs or worldviews, they are likely to reject it, whereas the opposite may also be true.

A major theory that has overarching relevance in the study of the perceptions of military personnel on psychometric tests is Gross (1994) models of public understanding of science which links up with rhetoric, the manner in which science is communicated to its publics. This theory was perceived as potentially informing how an understanding of "where members were coming from" in terms of their perceptions, what do they understand about

psychological assessment measures, how have those who practice psychological assessment in the military communicate the value of its science. The second component of Gross (1994) theory is of critical importance in the sense that while it evaluates rhetoric around assessment measures, it further suggests a course of action to assume to remedy and enhance the value of psychological assessment practice irrespective of personal beliefs, whether positive or negative, around psychological testing.

Gross (1994) theory is borrowed from the field of Public Understanding of Science (PUS), and holds plausibility as a framework that explains what informs the way in which the public and by extension, military personnel view science. According to this theory rhetoric has two distinct roles. It firstly serves as a model that can be used in the analysis of the public's understanding of science and secondly as a way of creating the same understanding. This theory purports that these roles are co-dependent and are of equal importance. In this sense, it can be said that lest we evaluate rhetoric, public interest cannot be adequately understood unless we turn analysis into activity, we cannot serve it. Gross (1994) describes rhetoric in this context as referring to elements that work together to determine what kinds of arguments will be most effective with a specific audience, under specific circumstances.

Gross' (1994) theory consists of two models. These are the deficit and the contextual models. As a proposition, the deficit model assumes that science is sufficient and the public is deficient. In the deficit model science is depicted as a unidirectional flow of communication from the holders of the knowledge to the public. Those practicing the science seldom attempt to engage with their audience to persuade them of the value of the science, under the assumption that its audience is already convinced of its value. Neither do they try to build trust as the assumption is that they already have the trust of their publics. The approach of the deficit model supposes that the public is passive by communicating in a way that serves to acclimatise them to the facts and methods of its discipline to the public's limited

experience and cognitive capacities rather than encouraging two-way engagement. Its goal is therefore for the public to reach a better appreciation of science. The communication is solely cognitive in the sense that what is conveyed is knowledge only and other issues of importance surrounding its science such as ethics and politics are considered irrelevant. The central focus of the deficit model is the state of the science and not the situation of the public.

The contextual model is a direct contrast to the deficit model. The contextual model implies a more collaborative stance between science and its publics. In this model, rather than communication being unidirectional, it takes the form of multi-directional flow between the two entities; with the practitioners of the science understanding the importance of communicating the value of its science rather than presupposing a public that is already convinced of its value. Given this, in the contextual model practitioners make the effort to establish and reinforce trust with their audience. Unlike the deficit model, the contextual model therefore views its public as active participants; using a rhetoric of joint construction in which public understanding is the joint creation of scientific and local knowledge. Through this process, the aim of this model is to better integrate both needs of science with those of its publics. Communication is not solely cognitive, ethical, and political concerns are always relevant. In this model the central focus is not the state of science, but the situation of the public.

Gross' (1994) theory was potentially beneficial in understanding how those who practiced psychological testing in the military communicated its value as this influenced members' perceptions. The second benefit of Gross (1994) theory was that it points towards a course of action, which was to improve understanding and perceptions of psychological assessment measures within this environment. Factors that influenced a person's motivation ranged from the degree to which what was communicated held relevance on a personal level, to how a person perceived the supplier of the communication, and whether what was

communicated resonated with their current attitudinal disposition. A second factor that played a role in determining which route persuasion will be employed; in addition to a person's level of motivation was a person's ability. This included their ability to process the message received, whether there were any distracting stimuli, how repetitive or complex the message was, as well as the extent to which the individual had prior relevant information on the issue.

The Role of personal experience

In addition to personnel's perceptions being influenced by extrinsic factors such as the manner in which the value of psychological assessment measures was communicated, the present study posited that military personnel would also be influenced by intrinsic aspects such as their personal experiences while undergoing the assessment and reflecting on it. In this regard, personal experience was perceived as a plausible factor in accounting for the perceptions of personnel as it has been shown to play an important role in the formation of attitudes.

Several studies have for example, demonstrated how direct experience can serve as a way of changing attitudes across a variety of domains and, can be seen as a path to inducing either more positive or more negative attitudes towards different situations (Nystrand, 2013). For instance, a study found that older adults' attitudes towards different social issues, like euthanasia were impacted by their own experiences throughout their life and the experiences and choices of their children (Stronegger et al., 2013). This suggests that past experiences have the potential to shape attitudes towards a phenomenon, how that phenomenon was perceived and a person's willingness and motivation to engage with it. Another study that similarly reflected the propensity for attitudes and perceptions to be shaped by personal experience was illustrated by Egan and Mullin's (2012) study on global warming. Egan and Mullin (2012) argued that the manner in which people experienced phenomenon, even something like the local weather, had the power to shape how people viewed the

phenomenon, including those that can be classified as abstract or even political such as global warming. In their study, Egan and Mullin (2012) relied on changes in local weather temperatures, rising above 3.1° Fahrenheit, what is considered normal, to analyse what people chose to interpret as evidence for or against global climate change. The study found that as residents experienced temperatures which rose above what they considered normal, they were likely to agree that there was “solid evidence” that the earth was getting warmer. This suggests that the experiences that this sample had with their local weather influenced their beliefs about evidence for global warming and their attitudes towards this concept. Considering the present study, a person’s experiences about psychological tests garnered from undergoing psychological testing was perceived to have a significant impact on forming perceptions around psychological assessment measures. Two factors that commonly impact a person’s test taking experience reported in literature pertained to how a test taker experienced the psychometric test itself from a face validity perspective and the manner in which the validity of the test was appraised, based on face validity, and influenced their personal motivation during the test taking process.

Face validity refers to the extent that a psychological test looks like an appropriate measure of what it aims to evaluate, based on face value, and has a direct link to the employment role for which they are being assessed. Notwithstanding that face validity isn’t a scientific validity, Mohajan (2017) noted that assessment measures that displayed high face validity were found to receive higher buy in from test takers. This was demonstrated in studies that explored test takers attitudes in several countries where selection methods like interviews, despite reportedly low validities, were rated with high favourability in comparison to assessment measures such as cognitive ability tests, which test takers attributed their high face validity. According to Ekuma (2012) face validity is tied to three main technical aspects of a test and this includes aspects such as design, content, and the way

the test was administered. The manner in which servicemen experienced the face validity of assessment measures which they completed during the selection potentially influenced their perceptions of psychological assessment measures.

Relevant to the manner in which servicemen experienced face validity of psychological tests, was the concern of motivation of which Wise (2017) indicated had a positive link with individual test-taking attitudes. Studies that have explored the link between face validity and the results of psychological tests suggest that face validity is important for motivation and can impact primarily how engaged or disengaged a person is from the task. For instance, if people don't believe that the task measures what it is meant to measure accurately, test takers might not engage fully with it and detach which may influence their performance. As noted by Wise and Kingsbury (2016) test taking motivation, a "willingness to work on test items and to invest effort and persistence in this undertaking" plays a pivotal role in a person's desire to achieve a positive outcome. If test takers are not adequately motivated while completing psychometric tests, the results may not reflect the true outcome of the person's ability, or personality characteristics or any other construct under measurement. Seen against the theme of the present study, this suggested that if members believed they could successfully achieve a positive result during testing, they would invest more effort during the test completion based on feeling they had enough control to influence the outcome. The degree to which military personnel believed they could impact test outcomes may have contributed to whether the experience of undergoing psychological testing was appraised as either negative or positive.

The way military personnel would experience psychological assessment measures were foreseen to take place according to Roth and Jornet's (2014) theory of experience which postulates that rather than experience being perceived as something belonging to someone, experience should rather be thought of as based on four dimensions that articulate the

transaction in and across time, that takes place between an individual and the situation. These dimensions are (a) how experience takes the form of passions; (b) the way it assimilates over space and time; (c) and as a moving force (d) as well as the transformative power it yields. According to Roth and Jornet (2014) this theory of experience has its foundations in the work of Dewey (1929, 2008), Vygotsky (1983, 1984, 2001, 2005) and Bakhtin (1935).

Roth and Jornet's (2014) theory suggest that to experience means putting oneself through risks, and continual exposure to something outside of a person's intentions and even control. When a person's subjects themselves to something by way of experience, they essentially become affected by conditions presented by the situation, which often involves unknown aspects as they cannot anticipate all that might take place. As noted by Roth and Jornet (2014) "we do not control events: we live through and undergo them." Romano (1998) further notes that the foundation of the term experience denotes that there is more to experience than a person can intend which exceeds what the person knows. Therefore, for Roth and Jornet (2014) "experience affects us in ways that we can come to understand only after the event has come to an end; and it affects us before we can understand what has happened." Experience cannot be viewed independent of the person undergoing the situation and the environment in which the experience occurs. In support, Waldenfels (2011) writes, "it is precisely because experience integrates across time and environments that it allows us to understand living through and undergoing an experience anew rather than repeating it under constraint." Experience therefore cannot be reduced to either the individual or their environment but should be understood within the integrated perspective of the situation which includes all contributing elements (Lidar, Almqvist & Östman, 2010).

Dewey (2008, p. 21) describes experience as having a value that can be judged "only on the ground of what it moves toward and into." A congruent sentiment is observed in Vygotsky's work (1983, p. 383) who proposed that "the total of which there is consciousness,

will be an experience.” According to Roth and Jornet (2014) these statements suggest that experience is a moving force which denote that experience involves movement thus offering an all-inclusive way of imagining cognition. Therefore, as a moving force, experience encompasses change. As noted by Dewey (2008b, p. 22) “every genuine experience has an active side which changes in some degree the objective conditions under which experiences are had.”

The fourth dimension proposed by Roth and Jornet (2014) was that experience consisted of a process of transformation that was beyond any intention. Citing Dewey (1929, p. 246), Roth and Jornet (2014) note that in the transformation process “the old self is put off and the new self is forming, and the form it finally takes will depend upon the unforeseeable result of an adventure.” This suggests that a person’s experience therefore shapes the attitudes that form about specific things and situations (Pugh, 2011).

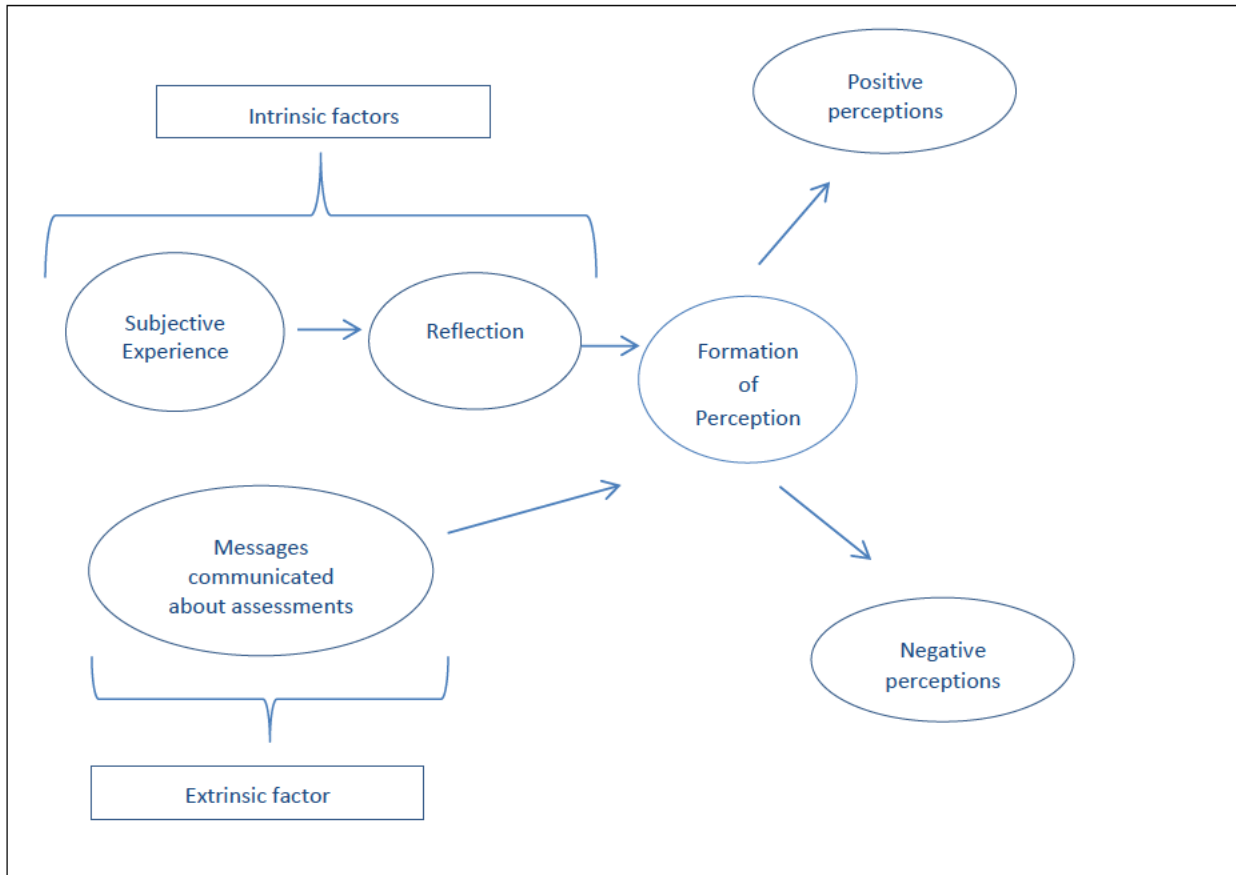
Personal Reflection

Roth and Jornet (2014) theory of experience provided an in-depth understanding of how military personnel were expected to experience psychological tests in their place of work. However, according to Gibbs (1988) simply having an experience without reflection is not adequate as this could result on losing the potential to learn from it. This section therefore discusses the process that military personnel were anticipated to engage with when reflecting on their test taking experiences in lieu of articulating their impressions to the researcher based on Gibbs (1988) reflective cycle.

Gibbs (1988) framework for reflection enables the individual to think systematically about the different phases of their experience. This process of reflection was developed in a cyclic pattern of behaviour where an individual’s previous reflection informs future actions (Heyer, 2015). According to Gibbs framework, this process follows six distinctive stages that bring into awareness several considerations of the experience. The process begins with 1)

description, whereby the individual recalls the event and draws on their memory of it; 2) feelings, in this phase reactions to the event are identified; 3) evaluation, positives and negatives of the experience are weighed; 4) analysis, where the individual reflects on other aspects that can come out of the experience; 5) conclusion, responses to the event are summarised in terms of what has been learned and what reactions or responses would be best in future; 6) and finally, the last phase of an action plan where an individual considers future responses they might make if the event occurs again.

Research studies reporting on personal reflection provide empirical support that individuals employ recall in evaluating their experiences, the event, feelings and accompanying reactions become drawn out, which enable the individual to evaluate and analyse the experience holistically. For instance, a study where pre-service teachers were requested to reflect on a teacher preparation program that they had participated in, revealed that when teachers reflected on their experiences of being a final year student at their respective universities, they were able to identify, with ease, the content of their program; to deduce feelings that accompanied the introduction of online learning, the challenges they faced and to evaluate the positives and negatives related to how they experienced the program (Munje & Jita, 2021). In addition, such reflection enabled teachers to reach conclusions and make recommendations for future action pertaining to program improvements such as the clarification of core subjects, participation in ongoing professional development for academic advisors as well as student empowerment regarding remote learning, and technological skills among other. The process of reflection typical of that expressed by Gibbs (1988) reflective cycle facilitated the reaching and narration of these teachers' experiences. Given the above, the present study postulated that by taking reflective action, military personnel would be in a position to provide in-depth narratives regarding their perceptions. The conceptual framework of the present study is illustrated in figure 4.

Figure 4*Conceptual framework of study***Summary and Synthesis**

In the sections above, elements of the conceptual framework were discussed. The present study postulated that military personnel's perceptions of psychological assessment measures, the main concern of the present research, would be influenced by both extrinsic and intrinsic factors. Extrinsic factors referred to the manner in which those who practice psychological testing communicate their uses and values to its 'publics' which consisted of test takers. The routes of communication could either be passive or active. Passive communication would have meant that practitioners did not communicate much about their tools; and that test takers were assumed to be knowledgeable on the processes of testing, the tools used and, how reliable and equitable these tools were. Essentially, from this route

because there was not much engagement with test takers, practitioners would not know how test takers viewed their instruments, and test takers may also be unaware of the value and benefits of psychological testing. This route was embodied by the deficit model of Gross (1994) theory. If practitioners used a more active communication approach, this would have meant that they engaged in deliberated actions to interact with the military community, engaging in communication, active listening and discussions about psychological testing in their environment. Through this interaction, test takers would have a greater buy in into testing and its benefits, and practitioners would understand the state or dispositions of their publics, as they would be aware of what test takers view as positives, negatives, and areas for improvement. This route was represented in the contextual model of Gross (1994) theory on the public's understanding of science. The way information around psychological assessment measures was communicated constituted of extrinsic influencing factor on military personnel's views.

The present research further postulated that intrinsic influencing factors would have constituted of personnel's personal experience and reflecting on that experience. Roth and Jornets (2014) theory of personal experience and empirical research in this area showed that the experiences a person is exposed to have an impact in shaping how they perceived that experience, their attitude, and their engagement with that specific experience in the future. Particularly, when it came to selection methods, the manner in which the face validity of assessment measures was experienced would have significant bearings on how test takers thought about it, and potentially influenced their motivation during test taking. When test takers experienced psychometric tests as valid, arriving at this evaluation through face validity, its item content, formats and the administration process, the assessment measure would be perceived favourably. However, if test takers did not believe that the assessment measure was an accurate measure of its construct, this may have resulted in a decrease to

their motivation to fully engage with the test, which would have contributed to their overall experience.

Following the experience of undergoing psychological testing, another intrinsic factor that could influence military personnel's perceptions on the same was personal reflection. The present study proposed that the process of personal reflection would enable those who had been through the assessment process to take time to think about, meditate and evaluate, their personal experience of the selection, which would include how they felt during the process, their thoughts on the assessment measures themselves, including face validity, item content as well as their personal motivation. As noted by Wilmot and Merino (2015), personal reflection is a deeper form of learning that enabled individuals to retain every aspect of any experience as opposed to just remembering that it occurred. Without self-reflection, one might simply move on from the experience of the selection without thinking deeply about the event, gaining perspective and engaging in learning and understanding.

As elaborated by Gregory's (1966) theory of perception which suggested that we as humans, actively organize our perceptions of reality from our environment, previous knowledge and stored information. For military personnel to articulate their views of psychological assessment measures in the military presupposes that they would have some previous knowledge and stored information on the phenomenon. Given that those who participated had been through the test taking process in the military pointed to the fact that part of the stored information that they drew on was based on all the elements discussed in this chapter, namely rhetoric they have been exposed to on psychometric tests, their personal experience of undergoing the assessment and reflecting on these experiences. This section has discussed four areas that contributed to the conceptual framework of the present research.

CHAPTER FOUR: RESEARCH METHODOLOGY

Introduction

Research enquiry requires that appropriate procedures are implemented to achieve study objectives. This chapter details specific procedures and techniques that were selected to investigate how military personnel viewed psychological assessment measures in their workplace. As part of this endeavour, this chapter answered questions such as which research paradigm was the study located within; which research methodology was used and why; who the study constituents were, how they were selected and their location. This chapter further presents details of the research instruments used to collect data and, how data were collected and analysed. Presenting information pertaining to these procedures aimed to promote transparency thus enabling a critical evaluation of the study's overall credibility; an area that has received much attention in qualitative research. While qualitative research has often been viewed as a 'soft' science (Cope, 2014), several criteria have been proposed to promote trustworthiness of findings. Criteria such as credibility, transferability, dependability, and conformability were additionally discussed, with reference to how they were implemented in the current study to improve rigour.

Another area of significant importance in research involving human subjects was ensuring that ethics principles were adhered to, meaning no harm, coercion and undue influence occurred. There exists a considerable body of research that suggests that military populations qualify for classification as a vulnerable population (Cohen & Lynch, 2014; Parasidis, 2016, 2019). Literature concerned with this area view service members as a group that may be subject to coercion and undue influence due to organisational cultural norms such as chain of command, hierarchical structures and prevailing beliefs around what duty entails. While military populations are not classified as vulnerable and certain research refutes its application to this group, in the present study, due consideration was given to

ensure that no undue influence that could potentially arise from the position of the researcher being both a member of a unit that conducts psychological testing in the DoD and the facilitator of the research process would occur. This consideration, along with ethics principles that were implemented in this research were unpacked in this chapter.

Research paradigm

The present research aimed to investigate how servicemen perceived psychological assessment in their work environment through the utilisation of a qualitative research design. The strength of a qualitative design for studying this particular phenomenon was based on its ability to facilitate the attainment of in-depth information. Several scholars have described the goal of a qualitative research design as one that makes it possible for the researcher to gain insight, explore depth, richness and complexity inherent in the topic under investigation (Cardano, 2020; Hennink et al., 2020; Kyngäs, 2020; Taylor et al., 2015). Being able to obtain such thick and rich descriptions was of key importance as this would aid the fulfilment of the objectives of the present study. It is this aspect of qualitative research, the enabling of the researcher to obtain a deep understanding of the phenomenon that made a qualitative design the most relevant for this specific research.

Given the objectives of the study, which were to understand the how military personnel viewed psychological tools used during recruitment, promotion and personal development processes in their work context, this study was located within the paradigm of social constructionism. According to Stage and Manning (2015), the social constructionist paradigm views the development of knowledge not as a process that occurs internally, but one that is socially constructed and occurs as a by-product of interaction when members of a social group come together. Furthering this point, Kukla (2013) suggests that this interaction provides a platform for group members to garner knowledge from each other, including those who are more knowledgeable than themselves with such an interchange facilitating the

constructing and shaping of their own realities as views, opinions and experiences are shared. Illuminating on this same point, Mertens (2014) notes that in this context, statements of what is true or false do not happen in isolation but become influenced by cultural, historical, and contextual factors. The result of a jointly constructed understanding of the social world is the creation of space for stories, belief systems and personal viewpoints to become legitimate knowledge as what is considered to be truth is believed to lie within the human experience (Klotz & Lynch, 2014).

Given the above, the social constructionist approach was thus perceived as a suitable paradigm for locating the present research in that it reflects what happened when personnel of the SANDF came together as in the present study and jointly constructed and shared a collective understanding of their experiences of the research phenomenon. This process of knowledge construction was further utilised in the present study through the employment of Interactive Qualitative Analysis (IQA) research methodology. IQA is a research strategy that is suitably aligned to social constructionism as it engages those participating in the research to come up with, originate or construct a representation of the subject under discussion through their personal viewpoints (Northcutt & McCoy, 2004).

In the present study, in line with IQA methodology, sampled military personnel constructed their understandings of the research issue through focus group discussions and further unpacked affinities that transpired from these discussions through semi-structured interviews. The verbal utterances of constituents were of particular importance as this enabled the researcher to arrive at a collective understanding of their perceptions on psychological assessment measures whilst at the same time unpacking these meanings through their own voices.

In the preceding chapter of this thesis, theories on which this research were founded were described. These were noted to be Gregory's theory of perception (1966), Roth and

Jornet (2014) theory of experience Gibbs Reflective Cycle (1988) and Gross (1994) models of public understanding of science. An examination of these theories as underpinning the present study was seen to harmonise with an investigation that was consistent with a social constructionist paradigm like the present study. This paradigm allowed for testing the theoretical foundations proposed by the study that, to arrive at the point of being able to share the perceptions that members working in the military have, around psychological assessment measures, they would draw on their personal experience of undergoing psychological testing in accordance with the processes highlighted in Roth and Jornet's (2014) theory of experience.

The present study further postulated that after members had recollected their experiences, the expectation was that they would thereafter draw on Gibbs Reflective Cycle (1988) model of reflection to think deeply and carefully about their experience. It was also assumed that the manner in which they would form their perceptions would be informed by Gregory's theory (1966) as well as from messages or communication they have been exposed to around psychometric tests, in line with Gross's (1994) models of public understanding of science serving as a foundation of how that communication may have been experienced by personnel. The last building block of the current research postulated that for the military as an organisation to reinforce and promote positive messages and perceptions on psychometric tests a route of communication could ensue in line with Gross (1994) theory, although with a focus on the contextual model.

Testing the relevance of theories mentioned in the paragraph above required a method of enquiry that was suitably aligned to the objectives and aims of the current research. The need to arrive at an understanding of a collective understanding of the perceptions of military personnel necessitated a methodology that investigated how this sample constructed this knowledge and their views of undergoing psychological testing within the organisation. This

construction of knowledge was adequately fitted within the social constructionist perspective which sees the development of knowledge as joint effort of a specific social group.

Research Methodology: Interactive Qualitative methodology

The present study adopted a research design known as Interactive Qualitative Analysis (IQA) in the execution of its objectives. According to the originators of IQA methodology, Northcutt and McCoy (2004), IQA is a participant driven methodology consistent to social constructionism, that aims to engage those participating in the research to come up with, originate or construct a representation of the subject under discussion through their personal viewpoints (Northcutt & McCoy, 2004). In IQA design, those participating in the research are referred to as constituents because they are “a group of people who have a shared understanding of the phenomenon” and who have additionally been selected based on the knowledge and power they possess about the phenomenon being studied (Northcutt & McCoy, 2004, p. 44).

Ontological assumptions of this method, according to Northcutt and McCoy (2004) view knowledge and power as largely dependent. In this research, the constituents were regarded as the holders of knowledge and power of the subject of inquiry by virtue of their shared group membership. Northcutt and McCoy (2004) further define the role of the researcher as being highest during the design phase while substantially decreasing during data collection and continuing to decrease to the extent of being at a relative minimum during data analysis. In addition, IQA views the researcher and the researched as mutually dependant (Northcutt & McCoy, 2004). This is a direct contrast to the widely known and accepted assumption of qualitative research which suggests that the role of those participating in research is primarily to produce data which only the researcher is qualified to analyse. IQA as a methodology, enables constituents to construct categories of meaning, while the researcher takes on the role of facilitator (Northcutt & McCoy, 2004). When the researcher

assumes this role, this reduces the inherent power dynamics that exist between the researcher and those researched (Anyan, 2013; Wallerstein et al., 2019). As further indicated by Northcutt and McCoy (2004) the point of departure of IQA which supports the use of focus groups is that those who are best suited to develop the graphic representation of the systems influences and outcomes are those are closest to the topic of study.

IQA approach was furthermore relevant for this study in that it enabled constituents who are involved in strong superior-subordinate relationships daily, as characterized by the military environment, the power to articulate and create their personal understanding of the phenomenon as they experienced it and to finally produce the resulting process model. This is of particular importance as research in critical military studies have drawn attention to concerns that voices of servicemen and veterans alike are often excluded from research processes to their appropriation by those conducting research or representing particular institutions (Bulmer & Jackson, 2016).

In describing processes involved in IQA methodology, Northcutt and McCoy (2004) note that successfully applying an interactive qualitative analysis design requires the identification of relevant and appropriate constituents, the conducting of focus group discussion to enable constituents to construct their understanding of the research phenomenon (in the present context, their experience of psychological assessment measures in the SANDF) and an unpacking of affinities produced during the discussions through conducting semi-structured interviews. In the sections that follow, a description of IQA methodology as used in this study was provided whereas the manner in which these processes were implemented in the study was detailed in the data collection and data analysis sections.

Identifying constituents to participate in the study, takes place, according to what Northcutt and McCoy (2004) refer to as a criterion of distance and power. What this essentially means is that those participating should be close enough to the phenomenon under

study while possessing sufficient knowledge and power to enable the construction of knowledge around the subject. In this research, constituents who were regarded as holders of knowledge and power of the subject of inquiry were members of the SANDF who had undergone psychological testing in this work context. Given that the study was concerned with identifying views and perceptions of psychological assessment measures in the SANDF, this sample was perceived to possess sufficient information on the topic.

Further to identifying the right constituents, IQA methodology required constituents to engage in the act of generating and interpreting the data they produce during the focus group discussions. To facilitate this, the steps of the methodology included brainstorming themes related to the research topic, conducting an analysis of the affinity produces, inductive coding, axial coding and defining relationships between the affinities, producing an interrelationship diagram and finally the construction of a system influence diagram. The successive way in which the process took place is delineated below.

The warm-up exercise

Northcutt and McCoy (2004) suggest that focus group session begin with a warm-up exercise to aid relaxation, and the clearing of any mental distractions as constituents prepared to share their viewpoints about the research topic. The warm-up exercise often consists of a guided imagery such as one described as part of the data collection, analysis and interpretation section of this chapter.

Brainstorming

Following the warm-up exercise, constituents were provided with an issue statement which was “used to deconstruct and operationalise the research question” (Mampane & Bouwer, 2011, p. 117). Each constituent was given several note cards and pens to write down their thoughts and feelings on the statement. In the present study, this phase took place in silence while constituents were encouraged to produce their thoughts on paper individually.

According to Northcutt and McCoy (2004, p. 91) working individually and in silence negates undue influence from other constituents and further serves to reinforce the authenticity of each person's thought around the topic.

Affinity analysis

The process of affinity analysis refers to a systemic analysis of the data that has been generated during the brainstorming phase. In the present study, this stage began with constituents being requested to read the affinities on the notes in silence. Following this, a process of clarification ensued where the researcher read aloud what is written on each note. This served the aim of ensuring all constituents understood the meaning of the contents of the notes. In instances where this wasn't the case, the notes were then clarified. The clarification was carried out within the group with other group members additionally commenting on affinities that they themselves may not have produced.

Inductive coding

The inductive coding phase of IQA required that constituents engage in the process of identifying all the notes which contained the same meaning and arranging these into affinities. As noted by Northcutt and McCoy (2004) this process continues until all constituents agree with where the note cards have been grouped. This process took a while in the present study to complete as constituents were not always in agreement always agree with the groups where some note cards were being placed however, the present researcher needed to allow constituents to re-arrange the cards until some consensus was reached. The aim of this phase, in the current study, was to enable constituents to review and categorise note cards into meaningful coherent affinities.

Axial coding

A process of deductive coding followed inductive coding whereby constituents generated titles for the affinity sets. This process required constituents to work out an affinity

name that encompassed and summarised the collective meaning of the cards in each set by referring to their index cards to clarify the meaning of words and sentences composed. In the present study, this process continued until constituents were satisfied with generated definitions. The final activity consisted of a phase of theoretical coding where constituents individually and silently defined the relationships between the affinities.

Affinity Relationship Table

During theoretical coding, constituents were required to justify or account for how they defined the causal relationship between the affinities. These relationships which were identified between affinity pairs were illustrated in an Affinity Relationship Table (ART) in which three possible relationships can exist between affinity pairs, (Northcutt & McCoy, 2004, p. 47).

- The first relationship is: affinity A influences affinity B and is denoted as (A _ B)
- The second relationship is: affinity B influences affinity A and is denoted as (B _A)
- The third relationship denotes that no relationship exists between the affinity pairs and is noted as (A< >B)

Following this, constituents were requested to write a short ‘if-then’ statement reflecting their conceptualisation of each affinity pairing. The ART could be determined either individually or in small groups. However, Northcutt and McCoy noted that if completed individually, this usually leads to a large volume of data being generated. The responses of the constituents were additionally taken at face value as the true meaning of how they viewed the affinity relationships.

Interrelationship Diagram

The Interrelationship Diagram (IRD) “is a matrix that illustrates all the perceived relationships in the system” (Tabane & Human-Vogel, 2010, p. 496). The IRD is also a summary of the affinity relationship pairing of the ART. As noted by Northcutt and McCoy

(2004), creating the IRD is the starting point in providing a detailed account of the system.

The IRD could be produced either for a group composite or on an individual basis. IQA uses the Pareto protocol to identify affinity pairs that provide sufficient power to be included in the IRD. The Pareto protocol is frequently cited as “20% of the variables in a system will account for 80% of the total variation of outcomes” (Northcutt & McCoy, 2004, p. 156).

From the IRD, drivers and outcomes are identified. Drivers are more fundamental elements of influence on the system. The outcomes are those affinities affected or influenced by the drivers. Drivers and outcomes are classified as either primary or secondary. A primary driver is an affinity that has no ‘ins’ and has a positive delta value. Correspondingly, a primary outcome has no ‘outs’ and has a negative delta. A secondary driver (+ve) is a relative cause or influence on affinities and it has both ‘outs’ and ‘ins’ although the ‘outs’ exceed the ‘ins’. Likewise, a secondary outcome (-ve) has both ‘outs’ and ‘ins’ but there are more ‘ins’ than ‘outs’. Delta is calculated by subtracting the number of ‘ins’ from the number of ‘outs’ and “is used as a marker for the relative position of an affinity within the system” (Northcutt & McCoy, 2004, p. 173).

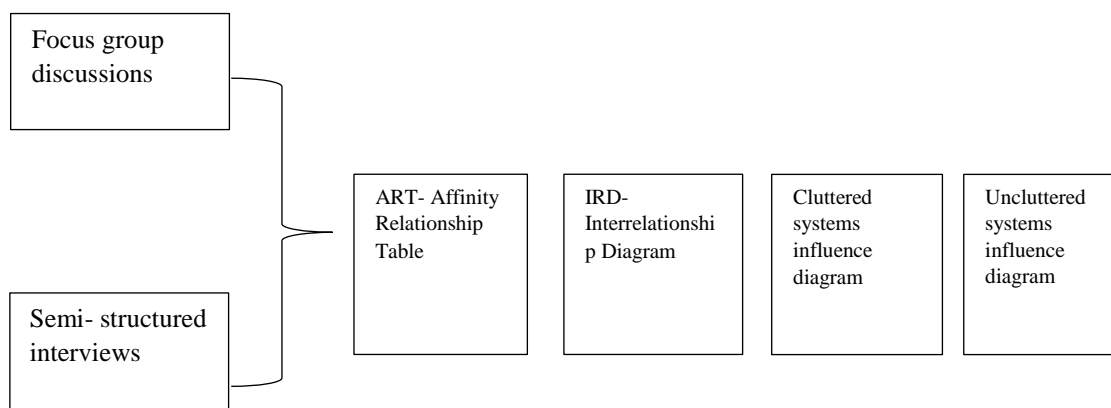
Systems Influence Diagram

According to Northcutt and McCoy (2004, p. 41) “the product of an IQA study is a visual representation of a phenomenon prepared according to rigorous and replicable rules for the purpose of achieving complexity, simplicity, comprehensiveness and interpretability.” This means that the final phase of analysis in IQA methodology was to produce a Systems Influence Diagram (SID) which “is a visual representation of an entire system of influences and outcomes” (Northcutt & McCoy, 2004, p. 48). The first version of the SID is usually cluttered and saturated with links resulting in a complex visual representation that consequently has limited efficacy in drawing conclusions pertaining to the model (Northcutt & McCoy, 2004, p. 176).

To facilitate better efficacy for the purposes of drawing conclusions, the process requires that redundant relationships be identified from the cluttered SID and eliminated thus rationalising the model. The process of reducing links follows a clearly defined order starting with links between primary drivers (highest delta) and primary outcome (lowest delta) then in ascending order of delta. A link is considered redundant if it can be eliminated without loss of association between two affinities (Human-Vogel & Mahlangu, 2009). The result of this is an uncluttered SID which is a mind map of the entire system containing the minimum number of links but maintaining the quintessential constructs of the phenomenon. A summary of IQA methodology as used in the present study is depicted in Figure 5.

Figure 5

Summary of IQA methodology



Location of the study

The location of the present study was in the Gauteng province and was conducted within the arms of service of the SANDF. This location was selected for its convenience as the researcher undertaking the study was similarly employed in a military unit located in the Gauteng province. In addition, the Military Psychological Institute which carries out the functions of occupational assessment and testing within the SANDF was located in Gauteng. This location was furthermore convenient in accessing those who were willing to participate

in the present research as all four arms of service are widely represented in numerous areas of this province.

Study population

The study population consisted of military personnel who had come into contact with psychologists for either occupational selection, promotion or development purposes. These constituents were from different ranks and divisions of the South African Military, including: the Navy, Army, Air Force and the SAMHS. Given the culture of command in the military, it was expected that the sample would mostly consist of junior ranks of the arms of service however during participant recruitment; senior ranking members were responsive to participation and made up the majority of the sample. The total number of senior personnel amounted to 18 constituents. These members occupied the ranks of full Colonel; Captain South African Navy (which is the equivalent of a full Colonel in other services); Lieutenant Colonel and Major. Unfortunately, the sample lacked representation from officials in the ranks of Generals as they have active decision-making power in the organisation and the authority to influence the continued use or discontinuation of psychological testing. Understanding their perceptions of assessment measures would have provided an even deeper understanding of the phenomenon from a decision maker perspective.

Nonetheless, a further 11 constituents were recruited from junior ranking members. These members occupied the ranks of Warrant Officer and Lance Corporal. The sample therefore consisted of a total of 29 SANDF personnel from both junior and senior ranks, with the highest rank representation being that of full Colonel and the most junior servicemen holding the rank of Lance Corporal.

Inclusion and exclusion criteria

All members within the SANDF that had been assessed by psychologists within the military setting for occupational reasons were eligible for participation. Limitations to

participation entailed that psychological testing constituents had undergone were for occupational purposes such as promotional, developmental or recruitment into the organization. Constituents who had been assessed for clinical and counselling purposes were not eligible for participation. This enabled the study data to yield results that spoke to the objectives of the study which was concerned solely with perceptions relating to occupational assessment measures.

Sampling technique and sample size

In most research studies, a randomized representative sample is preferable when the goal is to generate generalizable results (Edmonds & Kennedy, 2016; Montgomery, 2017). However, it was not feasible to include every subject in selecting the sample for the present study (Patten & Newhart, 2017). Rather, convenience purposive sampling was used to select constituents for the study. The researcher approached units within the different arms of service of the SANDF and requested permission from Unit Commanders to recruit constituents. The requested permission from Unit Commanders was in the form of a letter, in observance of military protocol; however overall authority to recruit constituents from the military had been requested and granted from the Defence Intelligence (DI) as per SANDF protocol (see appendix 3 and 4). During Communication Period which in SANDF units is customarily scheduled at least once a week for the Officer Commanding to address unit members, the researcher was given the opportunity to address constituents. During these sessions, constituents were informed about the study aims, their involvement, expectations should they opt to participate and the voluntary nature of their participation. Constituents were also given a letter requesting participation which provided an overview of the study and what their participation involved (see appendix 5). Interested personnel were requested to provide their contact details that could be used at a later stage to schedule and invite them to attend focus group discussions.

The number of those who responded to the invitation for participation was in line with the recommendation by Northcutt and McCoy (2004) who suggest that a sample size of between 12 to 20 constituents for IQA focus groups is sufficient. For this research, there were 18 senior personnel members in one focus group and the focus group conducted with junior members consisted of slightly less constituents which totalled 11 members.

Another point for consideration that Northcutt and McCoy (2004) caution against is that of conducting focus groups of less than 12 constituents. A sample less than 12 may skew the data due to influences that emerge based on a small group producing a smaller pool of ideas and opinions. It was unfortunate that the focus group with junior members only consisted of 11 constituents whereas the recommendation by Northcutt and McCoy (2004) is for a minimum of 12 constituents. However, given that this was only one person less, it was not seen to be too much of concern.

During the research process, the researcher had the help of three research assistants who had joined the unit as part of the research psychology internship program. The duties of the research assistants during participant recruitment included assisting with administrative duties such as the distribution of letters requesting participation. During the focus group discussion research intern psychologists assisted with the distribution and collection of informed consent forms and index notecards which were used by constituents for brainstorming affinities about psychological assessment measures in the military. During the semi-structured interviews research interns helped with the scheduling of interviews, as well as sitting in during some of the interview sessions. In the interview sessions where the assistants were present, only one assistant at a time was allowed to sit in. In all sessions constituents were be informed that the presence of the research assistant was for learning and observation purposes only and constituents were assured that the principle of confidentiality

still applied and would be upheld. Being a part of this research process served more as a learning and observation opportunity for the research assistants.

Research instrument

IQA research methodology makes use of issue statements to effectively begin data collection during focus group discussion (Northcutt & McCoy, 2004). Issue statements were used to introduce the topic to be discussed during the session (Bargate, 2014). According to Bargate (2014) the purpose of issue statements is to facilitate the generation of thoughts around the topic and to help constituents to structure their thoughts around the concept. For this research, seven issue statements were developed by the researcher which were guided by the theoretical foundations of the study. For instance, this study presupposed that constituents would draw on their experiences of undergoing psychological testing in the military to form their perceptions on the issue. A closely related theoretical premise suggested that for constituents to be able to narrate their perceptions based on their experiences, this would require reflection. In line with these theoretical underpinnings, issue statements 1 to 7 were formulated. These statements read as follows:

Statement 1: I'm interested in learning how people who work in the military perceive psychological assessment measures. What are your thoughts on psychological assessment measures at the SANDF?

Statement 2: Can you tell me about your experience of being assessed by military psychologists either as part of a selection process or for development purposes?

Statement 3: Was there anything you found particularly interesting about the psychometric tests that you had to do?

Statement 4: What do you perceive as advantages of using psychometric tests in the course of your military career?

Statement 5: What do you perceive as disadvantages of using psychological assessment tests at the SANDF?

Statement 6: How can the way psychometric tests are used in the SANDF be improved?

Statement 7: Is there anything else about yours or other peoples' experiences with psychological assessment measures in the SANDF that you would like to mention?

Following the focus group discussions was the individual in-depth interviews which aimed at obtaining thick descriptions of the affinities emerging from the focus group discussions. These interviews were conducted at the Military Psychological Institute on the basis of the constituent's availability and willingness to participate. In other words, the data collection schedule for the interviews was constructed by the researcher from affinities emerging from the data collected from the focus group discussion. Affinities that emerged from the focus group with senior ranking constituents below in the first column of Table 3, while those emanating from focus group discussions with junior ranking constituents are presented in the second column. The last column reflects affinities that emanated across both groups which served as a basis for the development of the interview guide.

Table 3*Affinities arising from focus groups with senior and junior constituents*

Group 1 (Senior constituents)	Group 2 (Junior constituents)	Combined (Across both groups)
Experience	Personal experience	Experience / Personal experience
Advantages		Advantages
Reflection		Reflection
Usefulness		Usefulness
	Positive mental state	Positive mental state
	Valid	Valid
Disadvantages		Disadvantages
Culture and language		Culture and language
Barrier		Barrier
Manipulation		Manipulation
	Bias	Bias
	Irrelevant	Irrelevant
Suggestions	Solutions / Awareness	Suggestions / Solutions / Awareness

After personal reflection, the researcher collapsed some of the affinities when developing the interview schedule, having seen that they could be integrated with others. For instance, the affinity of personal experience was combined with the affinity of reflection. The rationale behind this action emanated from the researcher's conviction that one had to reflect in order to narrate one's personal experience. The interview guide that follows in Figure 6 was developed by the researcher and served as a guide in unpacking and clarifying collected data.

Figure 6*Semi-structured interview guide*

The focus group discussion that we've had over these past few weeks has identified several common themes about how psychological assessments are perceived in the SANDF. During this interview, I am going to ask you about each of these themes in order to get a more in-depth understanding. Now let's look at each of these.

1. **Personal experience:** When discussing psychological assessments in the SANDF, a key theme was that of personal experience where members indicated that what they were relating was based on person experience. What has been your personal experience with being assessed in the SANDF?
2. **Advantages:** What would you say are some of the advantages that psychological assessments bring to the SANDF?
3. **How useful would you say psychological assessments are in the Defence Force?**
4. **Positive mental state:** Some members indicated that if a person has a positive mental state or outlook, that influences the outcome of the assessment, what is your view on this?
5. **Valid:** From your experience of being assessed in the Defence Force what is your view on the validity of psychological assessments?
6. **Disadvantages:** During the discussions there was mention that psychological assessments have some disadvantages. What is your view on this? What are some of these disadvantages if you agree with that?
7. **Culture and language:** Some members felt that cultural issues or language is a problem in psychological assessments at the SANDF especially if your home language is not English. Tell me your thoughts about this?
8. **Barrier:** What are some barriers to psychological assessments in the military?
9. **Manipulation:** The theme of manipulation was one that also came out in the discussions where some members felt assessments could be manipulated. Can you tell me more about this?
10. **Suggestions / Solutions / Awareness:** In terms of improving assessments in your work environment, what suggestions or solutions can you offer?
11. **Bias:** Some members felt psychological assessments can be biased. What is your view on this?
12. **Irrelevant:** Some members felt psychological assessments are irrelevant in the Defence Force. Can you share your thoughts on this?

The Gauteng metropolis consists of a mixed home language population that comprises of all eleven official languages of the country. Given this, the researcher decided that the most appropriate language for use was the official work language that all personnel of the SANDF are presupposed to be conversant with, which is English. For this reason, the issue statements and interview schedule were composed and conducted in English.

Trustworthiness

Qualitative research methods have been used for over centuries. According to Bailey (2014) the success of qualitative research to achieve full respectability within the academic world can be pointed to originate in the 1920's. Despite the utilisation of qualitative research in the investigation of numerous phenomena across a wide field of disciplines, qualitative research designs often face criticism that they lack rigour (Hadi & Closs, 2016). This is specifically seen when qualitative and quantitative research are compared, where quantitative designs which have clearly quantifiable measures of validity and reliability are touted as scientifically rigorous. In response to the trustworthiness debate of qualitative research, four principles have been established to guide the integrity of qualitative research.

In the section that follows, four aspects of qualitative research aimed at producing trustworthy data namely, credibility, transferability, dependability and confirmability were discussed with reference to how these were applied in the present study. Furthermore, the concept of researcher reflexivity is similarly discussed. As argued by Korstjens and Moser (2018), researcher reflexivity plays an important role in providing assurance with respect to the transparency and quality of the research study.

Credibility.

The concept of credibility in qualitative research refers to whether research findings can be confidently regarded as truthful (Cope, 2014). As such, credibility goes hand in hand with answering questions such as do the research findings lead one to believe that the

information presented was a result of the constituents' original data? Were the constituents' views accurately interpreted? According to Henry (2015) credibility is often ensured through prolonged engagement, persistent observation, data triangulation, and member checking.

According to Korstjens and Moser (2018, p.3), prolonged engagement refers to “investing sufficient time to become familiar with the setting and context, to test for misinformation, to build trust, and to get to know the data.” A second aspect of credibility entails the usage of varying data sources, as well as investigators and data methods such as “collecting data on the same phenomenon in multiple sites or test for cross-site consistency” and “gathering data from different types or levels of people” while investigator triangulation refers to making use of more than one person to generate data, code, analyse and interpret the data. Through persistent observation, researchers aim to identify characteristics and elements most relevant to the issue under investigation. Method triangulation on the other hand is concerned with the use of multiple data collection methods.

In the case of the present study, a number of efforts were made with the aim of ensuring credibility. For instance, to implement the principle of prolonged engagement, the researcher endeavoured to become familiar with the research topic through conducting a literature search on psychological testing and psychometric tests in the military, a review of literature pertaining to this topic and other relevant studies that pointed to how psychological assessment measures may be perceived in the military. This review was presented in chapter 2 of this thesis.

A second measure that was taken to implement the principle of persistent observation, was the effort that the researcher made to understand perceptions of constituents serving in the Defence Force through data triangulation that entailed the collection of data across both senior and junior military constituents. The constituents further served in different arms of

service. The varied ranks and military arms enabled the attainment of a vast and collective understanding that constituents held.

To implement the principle of methods triangulation, the two-fold data collection process of IQA served as a means of triangulating the research findings. Data collected during focus group discussions was clarified and unpacked during individual interviews. This process of collecting data on the same subject during different points in time, using different methods served not only to capture different dimensions of the phenomenon but also cross validated emerging affinities.

In this research, the principle of member checking, which aims to validate the credibility of research findings by returning research outputs to constituents for purposes of verifying accuracy and resonance with their experiences, was similarly accounted for through the IQA methodology. For instance, IQA required that constituents and the researcher jointly engage in the processes of affinity analysis, inductive coding, and axial coding. These steps were taken and enabled constituents to clarify thoughts around psychological assessment measure affinities that were individually produced on notecards jointly to ensure that everyone was on the same page, as well as collectively arrange these into affinities and work out affinity names that encompassed and summarised the collective meaning of all the cards. During theoretical coding, constituents justified and accounted for how they defined the causal relationship between the affinities. Up until this stage, research outputs were collectively produced thus suggesting that constituents were aware and in agreement with outputs. However, the production of the IRD and SID were done by the researcher only without the constituents, as these processes were time consuming; as such, IQA protocol does not require constituent participation.

Transferability.

The principle of transferability is synonymous with the generalizability of the results or whether the results could be transferred to other contexts. According to Gheondea-Eladi (2014), transferability is established through ensuring that sufficient descriptions of the result are provided. Providing such thick descriptions enables the reader to personally decide whether the results are applicable to the context or setting of which they wish to make inferences. In implementing this principle in the present study, the researcher devoted enough time and space to detail the methods and process of the research, to describe the context and sample in as much details as possible as well as to present findings from both focus groups and interviews to furnish the reader with detailed descriptions of the study condition and the findings. By so doing, the research was deemed to have fulfilled the principle of transferability.

Dependability.

According to Korstjens and Moser (2018) the third principle pertaining to ensuring credibility in qualitative research is dependability. Dependability refers to the consistency of the processes used in the research and involves providing a clear audit trail of the entire research process from conceptualizing the study, sampling technique employed, participant (constituent) recruitment, data collection methods and processes, interpretation of findings and the methods for reporting the findings. The aim of making clear and providing accessible information pertaining to research processes followed is to assess the appropriateness of methods used. As noted by Cope (2014) the more consistent the researcher has been in this regard, the more it will show that the findings are dependable. Furthermore, stating all processes that were involved in the research process serves to assess the transferability of the results. As such, Polit and Beck (2013) argue that the question a researcher should ask or

personally engage with in this regard is, would the findings be the same if the study were replicated with the same or similar sample in the same context.

In the context of the present study, the researcher made an effort to document all aspects of the research process from the conceptualisation of the study, to how the research paradigm of social constructionism fitted in with the aims of the study as well as how the research methodology aimed to support the paradigm from which the study was conceptualised. Additionally, the researcher responded to the dependability principle by detailing the sampling methods, techniques, and research context, as well as making available information around how the research instruments were developed, how data collection and analysis processes reflected the literal accounts from the field. To provide support for the research, all processes, particularly data arising from the field was documented and stored safely.

Confirmability.

The principle of confirmability ensures that research findings are grounded in actual data and not based on the researcher's own preferences and viewpoints of what the data should say rather than what it actually says. With regard to confirmability, the focus therefore centres on the transparency of the data analysis process. To improve confirmability in this research, the researcher relied on following the rigorous IQA methodology which significantly reduced issues of credibility as constituents were the main drivers of generating, analysing, and interpreting the emergent data.

Reflexivity.

Several scholars point to researcher reflexivity as an additional principle that can be applied to qualitative research to improve research credibility and trustworthiness. Reflexivity refers to a process of critical self-reflection whereby a researcher identifies and acknowledges their personal biases and preconceptions about a specific issue as well as

critically analyse the research relationships that they may become involved in during the study. In the present study, the researcher remained self-aware and reflexive throughout the research process. As a psychologist that served in a unit which conducted psychological testing across the recruitment, promotion, and development stages in the SANDF, the researcher was primarily concerned about the manner in which her dual roles could impact the research. Furthermore, the researcher, being a female in a male dominated environment, as well as occupying civilian status in an institution characterised by an hierarchical ranking system, was believed to have an impact on the research process. Through engaging in continuous researcher reflexivity and positionality and by acknowledging the research context and how outcomes may be influenced by her position, at every stage of the research process, the introduction of such self-reflection strengthened my commitment to conduct ethical research based on building relations of mutual respect as well as critically examining inherent dynamics. This process of researcher reflexivity pertaining to the present research was detailed later in this chapter in the section pertaining to ethical considerations.

Pilot study

A pilot study was conducted to explore the implications of the study design. An important use that the pilot study offered in this qualitative research project was to enable the researcher to test the design of the study including data collection protocols (Vaismoradi et al., 2013). In addition, the pilot study enabled the researcher to develop an understanding of the concepts and theories held by the people participating in the research regarding the value of psychological assessment measures in the military (Beins & McCarthy, 2017). This information was valuable in that, if these aspects were not understood, theories and ideas about the phenomenon or what was perceived to be occurring in the field, may have been incomplete or mistaken (Morse et al., 2002; Weber, 2017).

A second reason that the researcher carried out the pilot study was to explore the implications of the study design. Effort was made to recruit a minimum of 12 military personnel from the Defence Force to participate in the pilot study, in line with IQA methodology, as this session served as practice to become familiar with IQA data collection process and to anticipate potential problems that might interfere with data credibility. However, the researcher was only able to recruit 8 constituents owing to the availability of willing personnel within the time frames proposed for recruiting and piloting study processes. During the focus group discussions, several pointers emerged that the researcher needed to take note of for future focus groups. The researcher issued note cards on which constituents would write their notes during the brainstorming phase. The researcher thereafter explained that the process would open with a warm-up exercise and following the warm-up exercise, issue statements would be read out. It was explained that the issue statements were not questions that constituents needed to answer however they merely served to facilitate constituents' thoughts on the topic. Constituents were asked to think of words that reflected their thoughts and experiences around the topic. What transpired was constituents felt obligated to respond to the questions posed as they repeatedly requested the facilitator to repeat the questions during the brainstorming phase. According to Northcutt & McCoy (2004) the brainstorming phase happens in silence after the issue statements have been read as the aim of the statements was to enable constituents to think about the topic.

The researcher attributed constituents need to comment only on the positive aspects of psychological assessment measures to the culture of the organisation. As an organisation, the military is characterised by highly structured and authoritarian way of life with a mission focused approach. Personnel further, are expected to be patriotic and have clearly defined roles within which they are expected to adhere. In addition to this, chain of command was a salient feature of the environment which therefore enforces a strict sense of adhering to

military principles, rules and regulations. Members may have struggled to detach themselves from an approach of strictly following orders to engage in a free thought process. To counter this, the researcher encouraged constituents to simply speak freely and assured them of the confidential nature of the study. The researcher made a note of this and aimed to emphasise the confidential nature of the study when conducting future interviews with constituents.

Numerous studies have described the IQA process as that which provides a systematic framework characterised by rigor and accountability (Tabane & Human-Vogel, 2010). Commenting on the strength of IQA, the founders note that through enabling those involved in the research process, the “researched” to own both the process and the outcome through data generation, analysis and interpretation, the credibility and trustworthiness of the data becomes strengthened (Northcutt & McCoy, 2004). This was a key means of strengthening trustworthiness and dependability in this research project which aimed to achieve participant driven research (Tabane & Human-Vogel, 2010). Given that IQA protocols minimised the researchers influence over the data further enabled representation that was adequately methodical and replicable to the extent that any other researcher would arrive at an equivalent outcome (Northcutt & McCoy, 2004).

Data Collection, analysis and interpretation

In this section a discussion is presented of how the protocols of this methodology were implemented in the present study during data collection and analysis phases. As outlined in previous sections, IQA methodology were selected to facilitate a way to gain insight into the research topic through the lens of military personnel from the Defence Force (Northcutt & McCoy, 2004). Following IQA protocol, data were collected through a two-step process, the first of which was focus group discussion while the second was semi-structured interviews where data yielded by focus group discussions were further probed and clarified. The manner in which both these processes transpired is detailed in the sections that follow.

IQA Focus Group Discussions

In the present study, two focus group discussions were scheduled for data collection. One focus group was conducted with junior ranking personnel and another with senior ranking officials. These groups were separated because of the hierarchical military ranking system. Given the command function of senior ranking officials, it is frowned on to combine junior and senior ranks into one session whereby each person is accorded equal power. This may have additionally resulted in constituents that fell within the lower military ranks to feel confined, censored and inhibited during focus group discussions.

The first focus group discussion was held on a Thursday morning with constituents who held senior ranks in the military, as this was the most convenient time for many of the constituents who had willingly opted to participate. Even though the discussions were scheduled for 9 am these started slightly later to allow constituents who hadn't arrived sufficient time. This particular focus group lasted approximately 4 hours.

The second focus group with constituents that held junior ranks was held the following Tuesday, a week later from the focus group with senior ranking constituents. This discussion started around 9am and finished 3 and a half hours later.

The interactive focus groups aimed to gather feedback about constituents' perceptions of psychological tests in the military and understand the meanings that constituents attributed to their perceptions.

Warm up exercise.

Both focus group sessions commenced by following the suggestion by Northcutt and McCoy (2004) of starting with a warm-up exercise to help constituents relax, and clear themselves of any mental distractions as they prepared to share their viewpoints about psychological tests in the military (Northcutt & McCoy, 2004). The warm-up exercise is reflected in Figure 7 and was narrated by the researcher conducting the study.

Figure 7

Guided Imagery

Guided imagery used for warm up exercise want you to explore your experience of a time that you had to do a psychological assessment in the Defence Force for work reasons. The experience that you reflect on can be your own experience. This could have been at any stage of employment such as being recruited into the organisation, for promotion or development or deployment purposes. Try to be as comfortable as you possibly can. Close your eyes. Put aside any thoughts that might be on your mind and take a deep breath.

- ❖ I want you to imagine yourself sitting in the assessment venue
- ❖ Listening to the psychologist giving you test instructions
- ❖ Doing that psychological assessment
- ❖ Visualise yourself engaging in the activities required by the assessment
- ❖ Allow yourself to become aware of your environment with all of your senses.
- ❖ Focus on what it feels like to be totally absorbed in the assessment

Brainstorming.

During the second step following the warm-up exercise, constituents were provided with issue statements. The issue statements were “used to deconstruct and operationalise the research question” (Mampane & Bouwer, 2011, p. 117). Each constituent was given several index cards and pens to write down their thoughts and feelings on the statement. This phase took place in silence with constituents being encouraged to produce their thoughts (on psychological assessment measures in SANDF) on paper individually. This process continued for about ten minutes during which constituents reflected on their experiences. The facilitator assured the group that they could brainstorm their experiences without fear of being censored. Constituents were asked to think of words, phrases, mental pictures, or memories of their experiences while they were being assessed in the military either during the time of being recruited into the organisation, or for promotion and development purposes.

Constituents were further requested to write one experience per card and they were assured that they did not have to be concerned with what the rest of the group wrote down. Constituents silently brainstormed their experiences writing each thought on a separate note card. Each participant was handed 20 notecards while more were left at close reach to enable constituents to access these should they need more. This encouraged constituents to pour out their thoughts on the notecards without censorship or limitation.

Affinity analysis.

Following brainstorming, the researcher collected all note cards from constituents and stuck them on the wall in no specific order to enable all constituents to see and read the thoughts and ideas that emanated from the brainstorming session. Constituents were then asked to silently read the note cards displayed. The researcher then read each note card. For note cards where the meaning was clear, the researcher read the card and intently scanned the room to evaluate whether there were any constituents who seemed unsure of what the meaning was. In instances where the note cards were unclear, the researcher would read out the card and ask if there were any constituents who would like to offer what the meaning was behind the statement. This phase of clarification helped bring all constituents on par with the ideas and thoughts presented.

Inductive coding.

The inductive coding stage of IQA required constituents to arrange note cards with common meanings into different sets. This process continued until all constituents agreed with where the note cards had been grouped. This process took a while to complete as constituents did not always agree with where some note cards were being placed. The researcher allowed constituents to re-arrange the cards until some constituents conceded. The aim of this phase was to enable constituents to review and categorise note cards into meaning coherent affinities.

Axial coding.

The stage of deductive coding required constituents to generate titles for the affinity sets that were grouped together in the previous phase. Constituents referred to the notecards to develop an affinity name that encompassed the meaning of multiple cards. During the axial coding stage, constituents were requested to examine each affinity or group of note cards and comment on why they were placed together. This process formed the analysis and interpretation of the data through the development of common understandings of meaning. The aim of this interpretation was to produce or work out a name that encompassed and summarised the collective meaning of all the cards in each set. This collaborative process continued until all constituents were satisfied with generated definitions. Table 4 reflects affinities that were identified during both focus groups which were categorised based on military rank seniority. There was an overlap in these affinities between the two groups and a total of 13 affinities were identified. Affinities that emerged from focus group discussions with senior constituents are reflected in Table 4 while those that emerged from the second focus group with junior constituents is reflected in Table 5. Affinities that emerged between both discussions are collectively represented in Table 6.

Table 4

Affinities emerging from focus group discussions with senior constituents

1	Experience
2	Disadvantages
3	Cultural and language
4	Advantages
5	Manipulation
6	Barrier
7	Usefulness
8	Reflection
9	Suggestions

Table 5*Affinities emerging from focus group discussions with junior constituents*

1	Positive mental state
2	Bias
3	Valid
4	Personal experience
5	Irrelevant
6	Solutions/ Awareness

During the discussions constituents were influenced by each other's experiences as they agreed, reinforced, and added to each other's experiences. This was expected as Krueger and Casey (2014) define a focus group as a gathering of individuals who have a common interest who come together to share their ideas, experiences, and attitudes about a particular topic. As earlier mentioned, during the discussions, the researcher was especially cautious to occupy the role of facilitator from the onset of the process right until the end, to enable constituents to drive the process and outcomes of the research. This empowered constituents to produce data that was self-determined and was devoid of the influence of the researcher. Precaution was taken to ensure that data collection followed a set of "rigorous and replicable rules" that is required by IQA methodology (Northcutt & McCoy, 2004, p. 41).

Data arising from focus group discussion with senior ranking constituents

Affinity Relationships. As per IQA methodology, constituents were requested to record relationships between the affinities in order to produce the Affinity Relationship Table (ART) which consist ofed of an analysis of the relationships in each affinity pair. The researcher explained to constituents that one of three relationships may exist between the affinities. These possible relationships were described to constituents.

After defining the relationships, constituents were thereafter requested to write a hypothesis statement indicating a cause-and-effect relationship. This could be written in the

form of an “if/then” statement. Constituents were given the opportunity to work individually or in pairs. None of the constituents chose to work individually but chose to work in either groups of three or pairs, with the majority opting to work as a group consisting of three constituents.

While relationships between affinities were defined by constituents, the affinity relationship table was calculated by the researcher at a different time, according to IQA guidelines, due to the process being time consuming. The affinity relationship Table was calculated using Pareto protocol. Based on the Pareto protocol, the frequency of each relationship was calculated by tallying all the relationships and entering them into a spreadsheet. The total number of votes for each relationship was calculated and is reflected in Table 6.

Table 6*Affinity pair with frequency count*

Affinity Pair		Frequency count	
1	>	2	3
1	>	3	1
1	>	4	2
1	>	5	3
1	>	7	1
1	>	8	2
1	>	9	5
2	>	3	1
2	>	5	2
2	>	6	2
3	>	1	2
3	>	6	5
3	>	9	1
4	>	6	1
4	>	7	2
5	<	1	1
5	>	1	1
5	>	6	3
5	>	7	2
6	<	3	2
6	>	2	2
6	>	3	2
7	>	1	2
7	>	8	1
8	<	7	1
8	>	1	2
8	>	7	1
9	>	1	2
9	>	4	2
9	>	7	2

Following this, optimal relationships were then calculated using the Pareto principle - 20% of the variables in a system will account for 80% of the total variation in outcomes (Sarkar et al., 2013).

1. The cumulative frequency denotes the rate at which votes were cast for a specific affinity pair and is then added to the next pair
2. The cumulative percent (relational) denotes the cumulative percentage based on the total number of possible relationships. For the senior ranking constituents, there

were 30 relationships. This meant that each relationship represented 1/30 or approximately 3.33% of the total possible number. The cumulative percentage was one of the two factors used to calculate the power index.

3. The cumulative percent (frequency) expresses the frequency distribution by looking at the number of votes each affinity received (59). The percentage of the cumulative frequency was calculated at each interval so that each entry was the percentage of votes cast for an affinity pair, added to the previous total.

4. Power is an index of the degree of the optimization of the system and is obtained by calculating the difference between Cumulative Percent (Frequency) and Cumulative Percent (Relational).

When it came to determining the relationships to be included in the IRD, the Pareto principle was used. The Min Max criteria indicated the cut-off points for affinity to be included. To determine the cut-off point, the affinity pairs were displayed in decreasing order of frequency. The optimal number was reached at the maximum power value which was 16.44%. This information is depicted in Table 7.

Table 7*Affinities with Pareto protocol and power*

	Affinity Pair				Frequency Count	Cumulative Frequency	Cumulative% Relation	Cumulative % Frequency	Power
							Affinity Pair Relationship	Cumulative Percent (Frequency)	
1	1	>	9	5	5	3	8	5.142	
2	3	>	6	5	10	7	17	10.286	
3	1	>	2	3	13	10	22	12.041	
4	1	>	5	3	16	13	27	13.796	
5	5	>	6	3	19	17	32	15.550	
6	1	>	4	2	21	20	36	15.610	
7	1	>	8	2	23	23	39	15.670	
8	2	>	5	2	25	27	42	15.730	
9	2	>	6	2	27	30	46	15.790	
10	3	>	1	2	29	33	49	15.850	
11	4	>	7	2	31	37	53	15.909	
12	5	>	7	2	33	40	56	15.969	
13	6	<	3	2	35	43	59	16.029	
14	6	>	2	2	37	47	63	16.089	
15	6	>	3	2	39	50	66	16.149	
16	7	>	1	2	41	53	69	16.209	
17	8	>	1	2	43	57	73	16.268	
18	9	>	1	2	45	60	76	16.328	
19	9	>	4	2	47	63	80	16.388	
20	9	>	7	2	49	67	83	16.448	
21	1	>	3	1	50	70	85	14.813	
22	1	>	7	1	51	73	86	13.178	
23	2	>	3	1	52	77	88	11.543	
24	3	>	9	1	53	80	90	9.908	
25	4	>	6	1	54	83	92	8.272	
26	5	<	1	1	55	87	93	6.637	
27	5	>	1	1	56	90	95	5.002	
28	7	>	8	1	57	93	97	3.367	
29	8	<	7	1	58	97	98	1.732	
30	8	>	7	1	59	100	100	0.097	

Power reached a maximum (16.44%). Only these relationships were therefore included in the systems influence diagram. Figure 8 presents the cumulative percent of total relationships, while Figure 9 presents a graph of the power of the total relationships.

Figure 8

Cumulative percent of total relationships

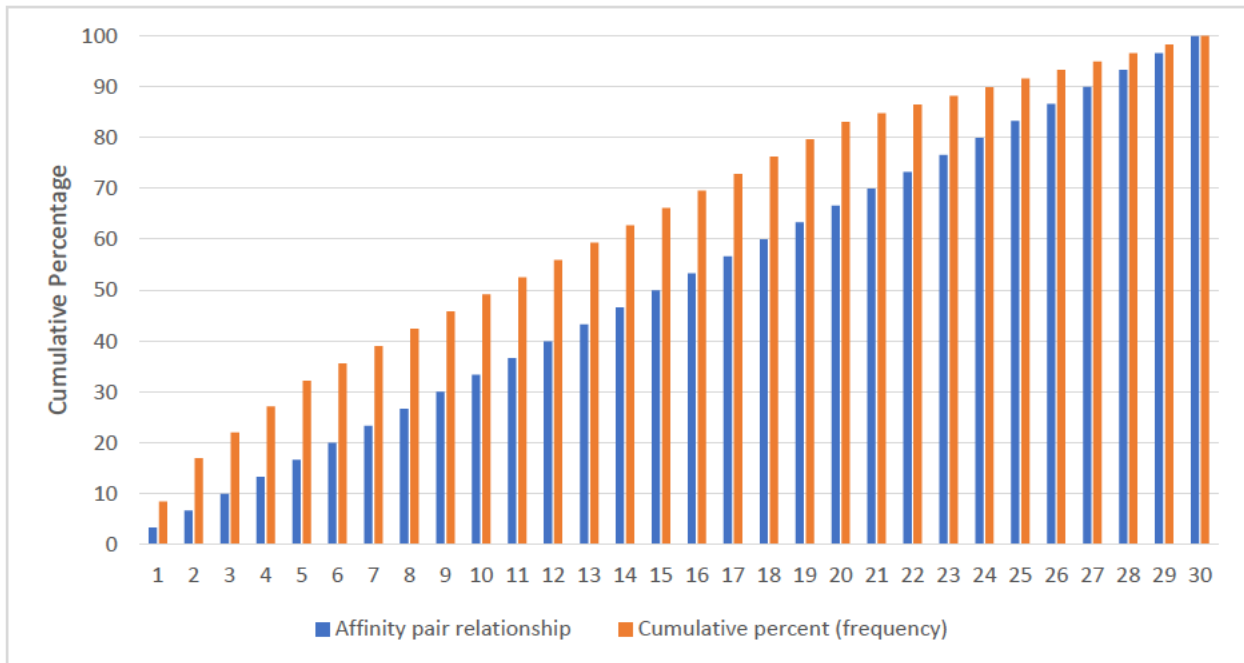
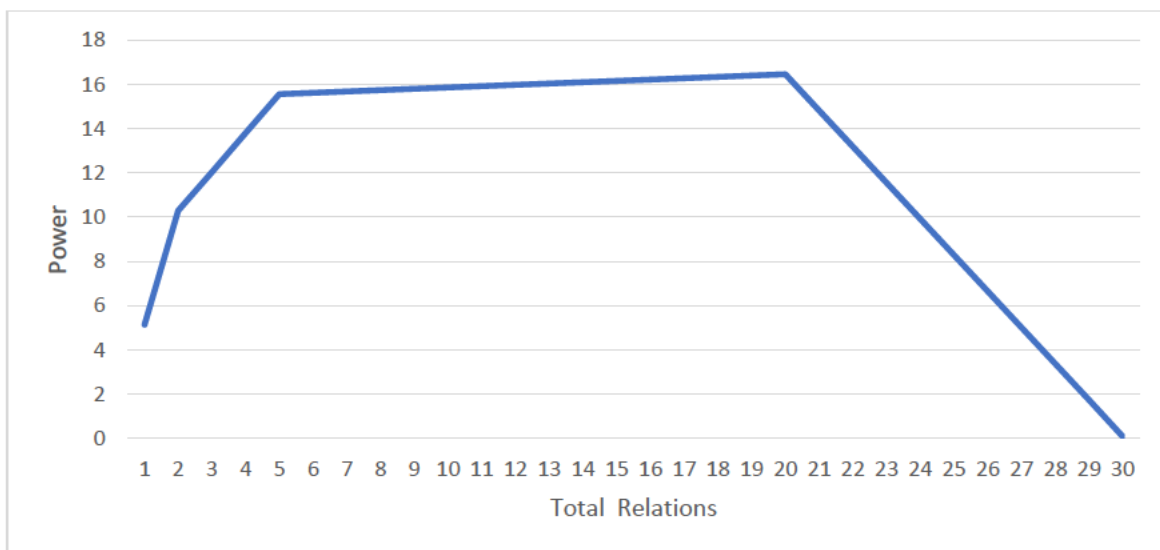


Figure 9

Power of total relationships



Inter Relationship Diagram. The interrelationship diagram (IRD) which is also referred to as a group composite is essentially a matrix that consists of all relationships in the system. In the IRD, the arrows represent the cause-and-effect relationship of the affinity pair. The arrows indicate the direction of the relationship. For example, if the arrow points from Affinity A to affinity B ($A \rightarrow B$) this indicates that the affinity A is the cause and influences B, which is the effect.

Northcutt and McCoy (2004) further indicate that the IRD can be created at either group level or individual level. For the present study, the findings were analysed at group level to arrive at an understanding of the group's composite. The mapping process required the arrows pointing up (\uparrow) to represent the row driving the column, and the arrows pointing to the left (\leftarrow) to represent the column driving the row. For example, the first affinity pairing 1 \rightarrow 2 signifies that affinity 1 (experience) influences affinity 2 (disadvantage). In the IRD table, the affinity 1 will have an up arrow (known as an out) on the row in column 2, and column 1 in row 2 will have an in (\leftarrow) arrow to balance the relationship. The Delta (Δ) is the difference between the 'outs' and 'ins' for each affinity. The position of an affinity within the system is determined by the value of delta. Affinities with positive delta are relative drivers or causes whereas those with negative deltas are relative effects or outcomes (Northcutt & McCoy, 2004). Table 8 represents the IRD for senior ranking constituents.

Table 8

Composite focus group tabular IRD for senior ranking constituents

	1	2	3	4	5	6	7	8	9	Out \uparrow	In \leftarrow	Delta
1		\uparrow	\leftarrow	\uparrow	\uparrow		\uparrow	\uparrow	\uparrow	6	1	5
2	\leftarrow				\uparrow	\uparrow				2	1	1
3	\uparrow					\uparrow			\uparrow	3	0	3
4	\leftarrow						\uparrow		\uparrow	2	1	1
5	\leftarrow	\leftarrow				\uparrow	\uparrow			2	2	0
6		\leftarrow	\leftarrow		\leftarrow					0	3	-3

7	←			←	←				↑	1	3	-2
8	←									0	1	-1
9	←		←	←			←			0	4	-4

Table 9

Composite focus group IRD - sorted in descending order of delta

	1	2	3	4	5	6	7	8	9	Out ↑	In←	Delta
1		↑	←	↑	↑		↑	↑	↑	6	1	5
3	↑					↑			↑	3	0	3
2	←				↑	↑				2	1	1
4	←						↑		↑	2	1	1
5	←	←				↑	↑			2	2	0
8	←									0	1	-1
7	←			←	←				↑	1	3	-2
6		←	←		←					0	3	-3
9	←		←	←			←			0	4	-4

Systems Influence Diagram. Based on the IRD calculated above, the tentative SID

assignment for senior constituents is displayed in the table below.

Table 10

SID assignment for senior ranking members

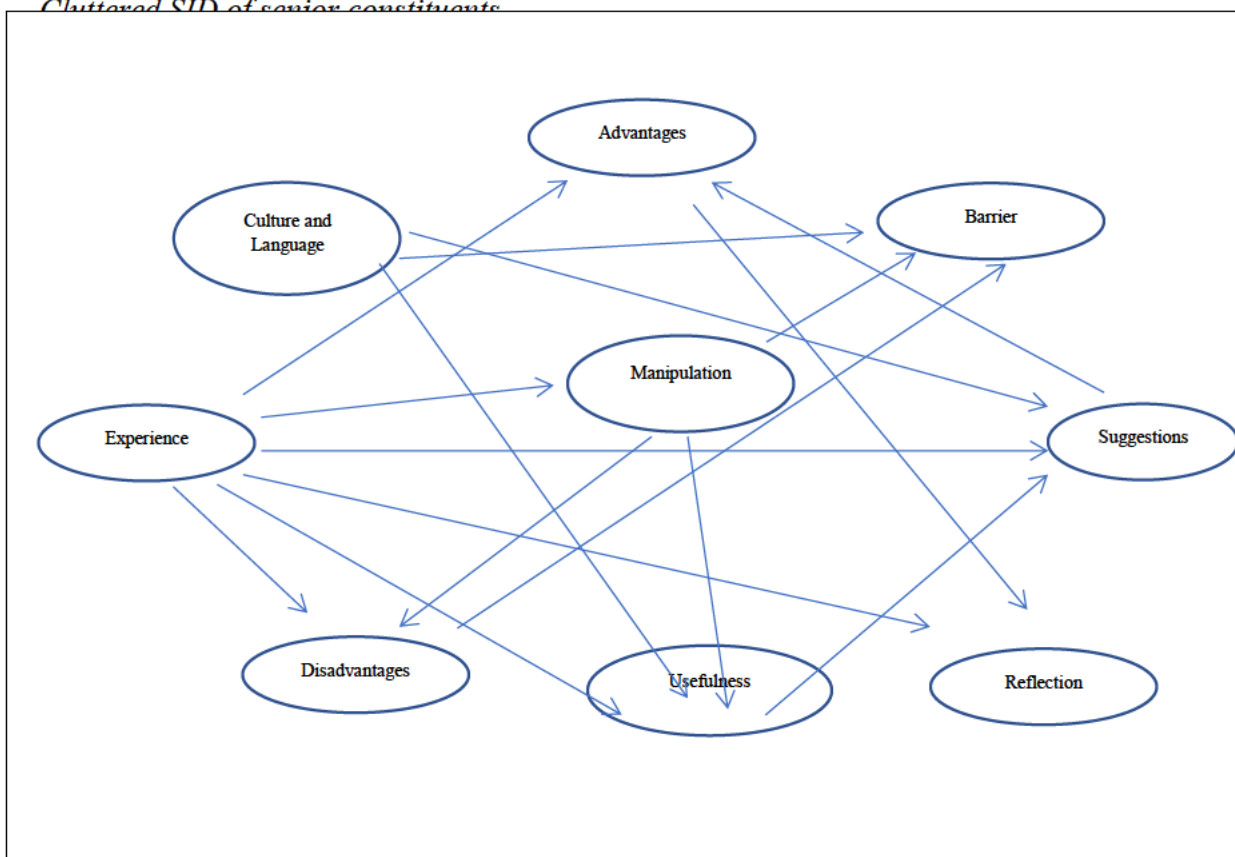
Affinity	Assignment
Experience	Primary Driver
Culture and Language	Secondary Driver
Disadvantages	Secondary Driver
Advantages	Secondary Driver
Manipulation	Pivot / Circulator
Suggestion	Primary Outcome
Barrier	Secondary Outcome

Usefulness	Secondary outcome
Reflection	Secondary Outcome

Cluttered SID. In the cluttered version of the SID, all relationships that were identified by constituents are represented. According to the guideline from Northcutt and McCoy (2004, p. 174) when mapping out the SID the primary drivers are placed on the extreme left-hand side and primary outcomes are placed on the extreme right-hand side. The position of the secondary outcomes and drivers are reflected between the primary drivers and outcomes with the drivers occupying the left-hand side and outcomes being placed on the right. For every relationship represented in the IRD an arrow is drawn between the two affinities indicating the direction of cause and effect. Northcutt and McCoy (2004) note that the cluttered SID has limited explanatory value as it is too complex for meaningful analysis. For the SID to have relevance, it is a precondition that it be uncluttered by removing redundant links. Following the protocol mentioned above, the cluttered SID represented in Figure 10 was produced by the researcher for senior constituents.

Figure 10

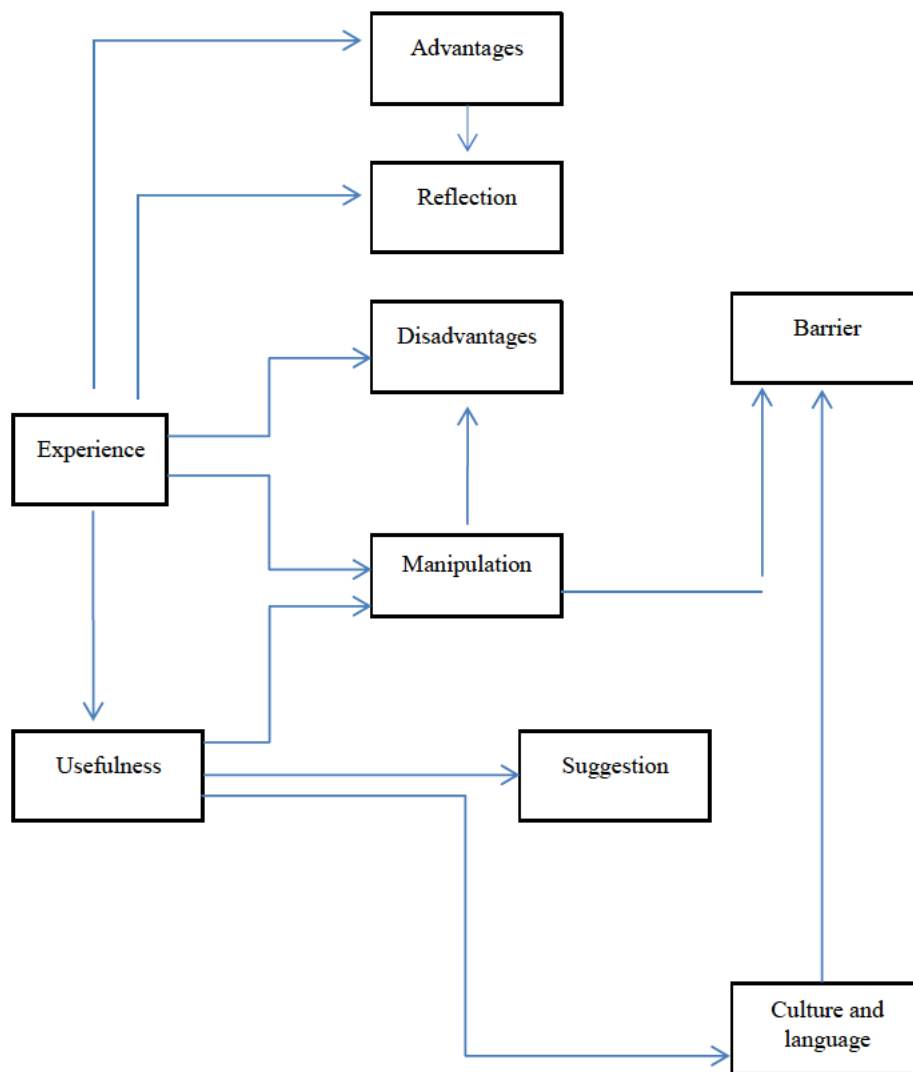
Cluttered SID of senior constituents



Uncluttered SID. To arrive at an uncluttered SID, all links with redundant relationships were removed to simplify the diagram. Redundant links were defined as those when they were removed, a path from the driver to the outcome could still be achieved through an intermediary affinity (Northcutt & McCoy, 2004, p. 177). Following the process of simplifying the SID, the uncluttered version emerged. This uncluttered SID is presented in Figure 11.

Figure 11

Uncluttered SID for senior constituents



A tour through the system. The uncluttered SID for senior members presented in Figure 11 suggested that psychological assessment measures in the Defence Force were driven by constituents' experiences. Constituents' experiences were in turn driven by the advantages or benefits that they perceived to exist in testing; the usefulness of the test; the disadvantages presented by the assessment measures as well as the personal reflection that results from undergoing a psychological testing. The usefulness of assessment measures was seen to be influenced by the culture and language of the assessment measure which in some instances could become a barrier. The experience of undergoing psychological testing further influenced the usefulness of the test which influenced the suggestions for improving psychological assessment measures in the SANDF. A person's experience with psychological testing was further seen to influence the degree to which one could manipulate the test and this was perceived to be a disadvantage to the testing process.

Feedback loops and zooming. According to Northcutt and McCoy (2004, p. 335), a feedback loop consists of at "least three affinities, each influencing the other directly or indirectly". Feedback loops can be renamed by reviewing the components of each subsystem. This process is referred to as "zooming" (Northcutt & McCoy, 2004, p. 335). The substitute name for the subsystems was generated by reviewing the axial coding and descriptions, together with the placements of the feedback loops within the overall system. Three feedback loops identified in this system included:

- Experience, advantages, reflection
- Disadvantages, manipulation, barrier
- Usefulness, culture and language, suggestion

This suggested that these affinities interacted with each other and they could therefore be renamed in a way that aptly described their interaction. When renamed, Northcutt and

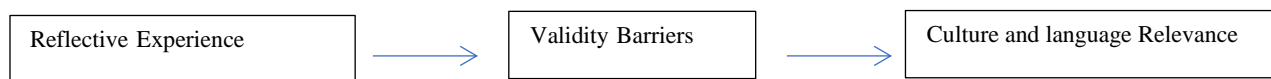
McCoy (2004, p. 335) refer to these as super affinities as they replace the feedback loops through zooming in. These affinities were renamed as follows:

- Experience, advantages, reflection were renamed to *Reflective Experience*
- Disadvantages, manipulation, barrier renamed to *Validity Barriers*
- Usefulness, culture and language, suggestion renamed to *Culture and language Relevance*

This new system was identical to the first, except that the nine affinities had been collapsed and zoomed out into summative terms. The final system generated from data originating from senior constituents was represented in Figure 12.

Figure 12

Feedback loops and zooming



Data arising from focus group discussion with junior ranking constituents

Affinity relationships. The second focus group discussions were held with junior constituents and followed the procedure stipulated by IQA methodology as outlined in the research methodology section of this chapter. To arrive at the affinities for this group, the researcher conducted the session in like manner to the first focus group discussion. Three affinities emerged from this undertaking. These affinities were presented in Table 3. As with the senior members affinity relationship Table, the Pareto Protocol method was used in developing a group composite (Northcutt & McCoy 2004, p.156). Based on the Pareto protocol, the frequency of each relationship was calculated by tallying all of the relationships with the total number of votes for each relationship being calculated. (Northcutt & McCoy 2004, p.157). These calculations are presented in Table 11 whereas Table 2 presents the

cumulative percent of total relationships, and Figure 13 presents a graph of the power of the total relationships' junior constituents SID.

Table 11

Affinity pair with frequency count

Affinity Pair			Frequency count	
1	→	3	3	
2	→	4	1	
2	→	5	1	
3	→	1	2	
3	→	4	2	
4	→	2	1	
4	→	6	1	
5	→	6	1	
6	→	1	1	
2	←	4	1	
2	←	6	1	
4	←	6	1	
5	←	6	1	

The Pareto principle was once again used to determine the relationships that were to be included in the IRD. For junior members, the optimal number was reached at the maximum power of 18.11%.

Table 12

Affinities with Pareto protocol and power

	Affinity Pair				Cumulative Frequency	Cumulative % Relation	Cumulative % Frequency	Power
	1	2	3	4		Affinity Pair Relationship	Cumulative Percent (Frequency)	
1	1	→	3	3	3	8	18	9.96
2	3	→	1	2	5	15	29	14.03
3	3	→	4	2	7	23	41	18.11
4	2	→	4	1	8	31	47	16.30
5	2	→	5	1	9	38	53	14.49
6	4	→	2	1	10	46	59	12.68
7	4	→	6	1	11	54	65	10.88
8	5	→	6	1	12	62	71	9.07

9	6	→	1	1	13	69	76	7.26
10	2	←	4	1	14	77	82	5.45
11	2	←	6	1	15	85	88	3.65
12	4	←	6	1	16	92	94	1.84
13	5	←	6	1	17	100	100	0.03

Figure 13

Cumulative percent of total relationships

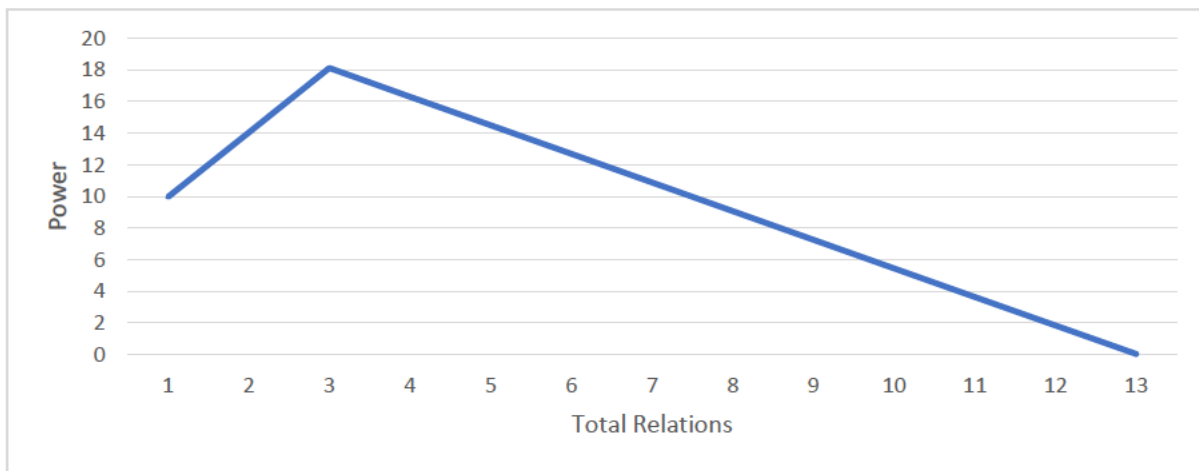
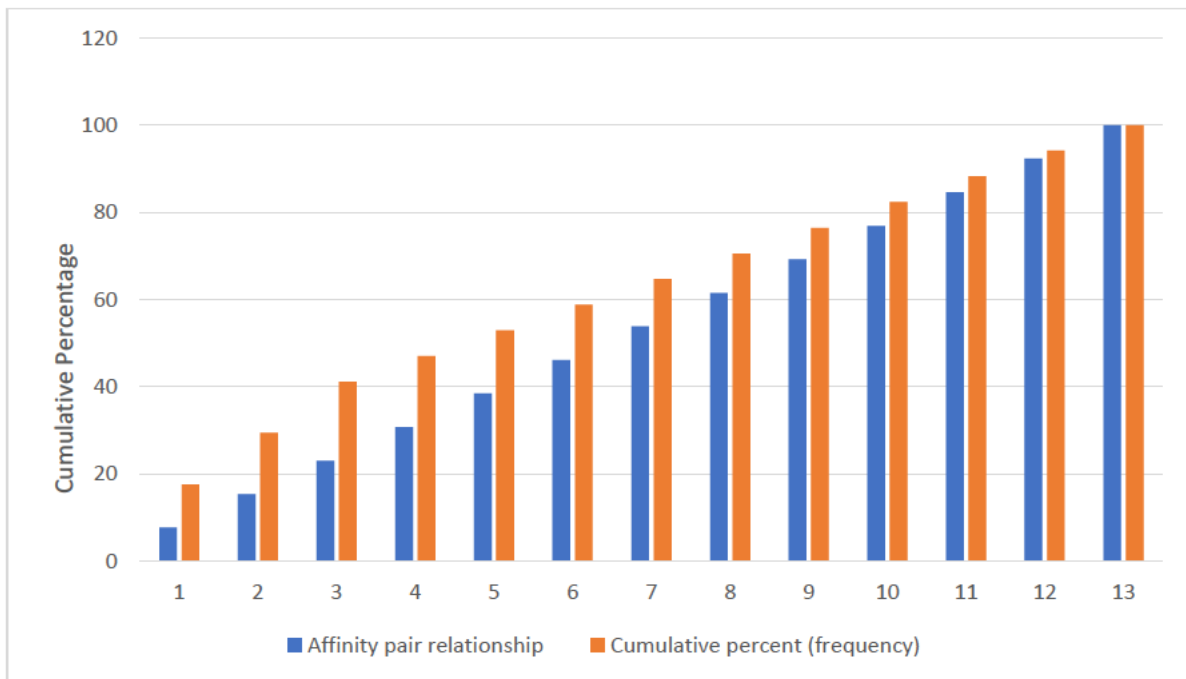


Figure 14

Power of total relationships



Inter Relationship Diagram. To calculate the inter relationship diagram for junior constituents, the same procedure that was followed for senior constituents was used. The resulting IRD for junior constituents is presented in Table 13.

Table 13*Junior Group Composite*

	1	2	3	4	Out ↑	In ←	Delta Δ
1			↑		1	0	1
2							
3	←			↑	1	1	0
4			←		0	1	-1

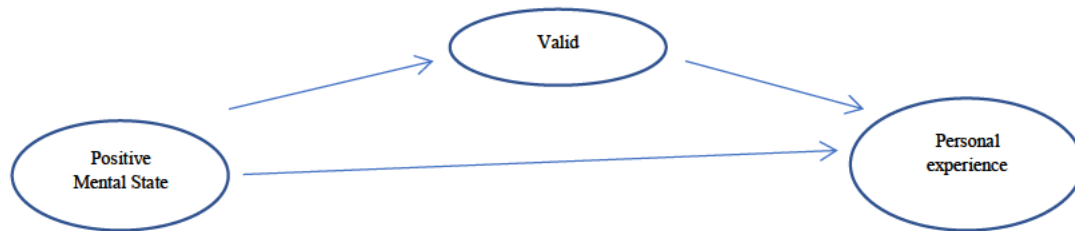
Table 14*Sorted Junior Group composite*

	1	2	3	4	Out ↑	In ←	Delta Δ
1			↑		1	0	1
3	←			↑	1	1	0
4			←		0	1	-1

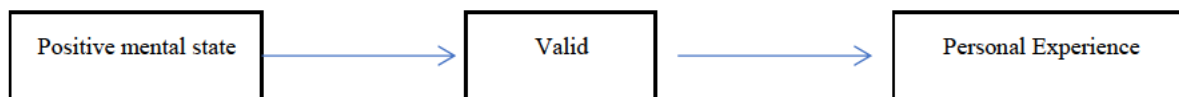
Systems Influence Diagram. Based on the IRD above, the tentative cluttered SID assignment for junior ranking constituents indicated that the affinity “positive mental state” was a driver in the system whereas the affinity “valid” was a pivot and “personal experience” the primary outcome. The SID for junior constituents is visually depicted in Table 15.

Table 15*SID assignment for junior ranking members*

	Affinity	Assignment
1	Positive mental state	Primary Driver
2	Valid	Pivot
3	Personal experience	Primary outcome

Figure 15*Cluttered SID of junior rank members*

Uncluttered SID. The systems influence diagram for the junior group was not as complex as that which emanated from the senior constituents. Given that the SID consisted of only four relationships, the only redundant relationship was positive mental state influencing personal experience. When this link was removed, the outcome was positive mental state influenced the affinity valid which influenced personal experience.

Figure 16*Uncluttered SID of junior rank members*

A tour through the system. Based on the system developed by junior members, psychological assessment measures in the SANDF were driven by a positive mental state. A positive mental state in turn influenced the validity of the assessment outcome. The outcome of the testing whether it was perceived to be either valid or lacking validity influenced the personal experience that a person had.

Feedback loops and zooming. Given that the SID contained few relationships, there were no relationships that formed feedback loops. The SID therefore remained the same.

Data collection and analysis of the semi-structured interviews

As suggested by IQA protocol, following the focus group discussions individual semi-structured interviews can be held with constituents to further explore the meaning of each theme and to obtain richer descriptions of each identified theme. For the present research, these interviews were conducted with 18 constituents. Those who participated were recruited after the focus group discussions was completed, based on their willingness to further unpack the affinities that emerged. From the first group, with senior constituents, there were 15 volunteers who indicated their desire to participate whereas with the junior group, there were 9 volunteers. However, during the time of scheduling dates and times for the interviews 3 members from the senior group withdrew their participation citing unavailability due to work assignments as a reason, whereas 1 of the volunteers was unreachable as their phone was continuously on voicemail and there were no replies to communication sent via email. From the 9 who volunteered from the junior group, 7 participated and 2 did not show up. The interviews were scheduled based on the persons availability and were held between 3 to 6 weeks after the first focus group had taken place.

As prescribed by the IQA protocol, questions that formed the basis of the interview schedule were garnered from the affinities that were produced in the focus group discussions. The interview schedule that was used and the manner in which it was developed has been discussed in section 4.7 of this chapter. Each interview lasted between 20 to 30 minutes and was audio taped.

The audiotapes were used for purposes of transcribing the interviews. According to Widodo (2014) the decision on the transcription method should remain congruent with the study's methodological design and theoretical underpinnings. While verbatim transcription is the commonly used method for qualitative research, due to its capacity to capture both vocalizations and nonverbal interaction in the present study, distracting verbal ties such as

“like”, “uhm” and “you know” were edited to improve readability. The rationale behind this decision lay in the fact that the interviews were conducted to illicit more information that added to the affinities already produced rather than aim to capture how information was communicated in the interview context.

In the context of the current research, interviews were coded and analysed in two ways. The first way was in line with the manner in which the originators of IQA methodology suggest. Guidelines by Northcutt and McCoy (2004) stated that the coding of interview transcripts should take place through associating the spoken word of constituents with affinities derived from the focus group discussions. By so-doing, evidence was obtained to support the affinities. This supported the basis of semi-structured interviews as a means of substantiating and solidifying the resultant affinities.

Coding interview data in this manner involved examining the transcripts for recurring affinities tied to the identified affinities. In the data analysis stage of this process, IQA methodology posits that each affinity and its relationship to others are then supported by extracts drawn from the interviews (Northcutt & McCoy, 2004). This analysis for senior and junior constituents is presented in chapter five of the present report.

A second way in which the interviews were coded and analysed was through the utilisation of thematic analysis. This was implemented as a way to improve credibility through the technique of persistent observation. As a technique that ensures depth of experience and understanding, thematic analysis was done as a way of looking at the same data from a different angle. By conducting thematic analysis, the researcher aimed to determine whether there were other themes that would collectively emerge from the interview data that had not emerged from the affinities. Engaging in this process of checking data from different angles further served to triangulate the research findings thus reducing bias that may be inherent in single data source (Creswell & Creswell, 2017).

Braun and Clarke (2006) define thematic analysis as “a method for identifying, analyzing and reporting patterns within data.” (p. 79). During data analysis, the researcher followed the six steps of Thematic Analysis described by the originators of the technique (Braun & Clarke, 2013).

According to Braun and Clarke (2006) the very first stage of thematic analysis is for the researcher to familiarise themselves with the data through reading and re-reading the data while noting down some ideas arising therein. With this in mind, the researcher opted to personally transcribe the interviews in order to immerse herself in the data. The process of transcribing 18 interviews of between 20 to 30 minutes enabled the researcher to become familiar with the data as it emerged. This further allowed the researcher to get an idea of the themes that linked to the affinities as they emerged as well as pick up newly emerging themes. Following data transcriptions, the researcher further read all 18 transcripts and began making notes as the reading continued.

The step of data familiarisation was followed with the task of data coding which was realised through the systematic coding and grouping of all data that collectively formed a theme. Braun and Clarke (2006, p. 87) define this stage as “generating initial codes: coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.” During this stage, the researcher began organising the data in a systematic and meaningful way. This was implemented by identifying and coding meaningful chunks of text into themes. Given that the present research was concerned with addressing the four research questions outlined in section 1.5 of chapter 1, the researcher analysed the data with this in mind, and coded data that was relevant to and captured something interesting with respect to the different research questions.

The third stage involved examining the data to discover potentially substantive themes for exploration. As described by Braun and Clarke (2006, p.87) this involved

“searching for themes, collating codes into potential themes, gathering all data relevant to each potential theme.” Braun and Clarke (2006) argue that there are no fixed rules regarding what a theme is; however, data that is characterised by its significance may be considered as a theme. During this stage the researcher examined the codes developed in stage 2 and collated these. The result of this stage ended with codes being sorted and assembled into broad themes that related to the research questions of the study.

Following the guide from Braun and Clarke (2006) that defines the fourth stage of thematic analysis as the review of themes aimed at checking that these are congruent with the coded extracts as well as the entire data set, the researcher reviewed themes that had been compiled in the third stage, in an effort to verify their alignment. This phase took place according to two levels; firstly, themes were verified against coded extracts. During the first level, the researcher read through the codes to establish if there were any patterns. When a pattern was established, the researcher felt comfortable to proceed to the second level. However, in instances where the codes did not fit, this required the researcher to determine the source of the problem whether it pertained to the theme itself or was the result of the codes and information for that specific theme. The second level of analysis required the researcher to read through the dataset in its entirety to establish whether the identified themes worked or fitted into the broader picture.

The fifth stage involved defining and naming resultant themes and refining these to offer an overall representation of the data as provided by the analysis (Braun & Clarke, 2006, p. 87). As noted by Braun and Clarke (2006, p. 92) the goal of this stage was to “clearly define what themes are and what they are not.” In the implementation of stage five, the researcher focused on evaluating identified themes in terms of which research question they answered. The researcher further assessed themes by interrogating their meaning; analysing

whether the theme itself contained underlying subthemes; and the manner in which the themes collectively related to each other.

The final stage of thematic analysis, stage six, involved producing a report of the findings which incorporated narrative accounts arising from the interview transcripts. Braun and Clarke (2006, p. 87) define this stage as the “final opportunity for analysis” which includes a “selection of vivid, compelling extract examples ... relating back of the analysis to the research questions and literature, producing a scholarly report of the analysis.” For the present study, the researcher aimed to present a narrative account by discussing the themes that emerged from the data and how they answered the research questions posed by the study. This report is presented in chapter six of this thesis.

Data synthesis and analysis

This study sought to examine how personnel who worked within the SANDF perceived psychological assessment measures in their work environment. As highlighted in the literature reviewed in chapter 2 of this dissertation, psychological testing is a common practice in military organisations around the world. However empirical studies pinpointing the exact views and perceptions around psychological testing within the SANDF at the doctoral level could not be found. It was to close this gap that the present study was designed.

The methodology employed by this study was most beneficial in exploring this topic. IQA has enabled the researcher to understand firstly, how personnel within the SANDF employment setting reached or formed their perceptions around psychometric tests in their work environment, and secondly, to unpack what those perceptions were. Understanding how constituents formed their perceptions was elicited mostly from the focus group discussions. However, the focus group discussions do not adequately attend to providing rich in-depth descriptions of what these perceptions were. More descriptive explanations were elicited from the semi-structured interviews which were held after the focus group discussions. The

aim of these interviews was to clarify and unpack themes that emanated from the focus group discussions. Furthermore, the interviews were conducted individually which provided the constituents opportunity to narrate a personal subjective views of the perceptions on the topic.

In line with understanding how military personnel formed their perceptions, the first focus group discussion revealed that the primary driver for this group was experience. As described in IQA methodology, a primary driver is an affinity or theme that directly affects all others. This therefore shows that any perceptions that senior constituents had around psychological assessment measures in the military were driven or were the result of their personal experience. Experience was the primary driver in the system. Members reflected on their experiences of undergoing psychological testing to describe how they felt about having to go through the process of being tested, how they felt about the assessment measures themselves and how they appraised assessment measures could be improved.

Senior constituents therefore also identified three secondary drivers which were affinities that have a relative influence on the study phenomena. In this instance the secondary drivers were culture and language, disadvantages, and advantages. This meant that members reflected that culture and language aspects had an impact in how they perceived assessment measures. Disadvantages were also a secondary driver in the system. Constituents' perceived assessment measures as having both advantages and disadvantages. In the SID, the primary outcome was the affinity, suggestion. Given that an outcome refers to the affinity that is influenced by the most affinities but has no effect on these affinities, this meant that based on their personal experiences, senior constituents perceived psychological tests within the SANDF to be influenced by aspects of culture and language, and as having both advantages and disadvantages. These aspects influenced the suggestions around psychometric tests in the Defence Force.

While this was the case for constituents in the first focus group, for the second focus group, the primary driver was a positive mental state with the primary outcome being personal experience. This meant that a positive mental state was seen to be the driver of a person's experience with psychological assessment measures in the SANDF.

In this section, data emanating from the data collection process particularly the two-focus group discussion has been discussed. This discussion mostly provided insight into how constituents formed their perceptions around psychological tests in their place of employment. The exact perceptions according to constituents' personal subjective experiences were elicited from interviews that followed the focus group discussions and the findings are presented in chapter five of the current report.

Ethical considerations

To safeguard the rights of constituents' ethical clearance (see appendix 6) was requested and granted by the University of KwaZulu-Natal Humanities and Social Sciences Research Ethics Committee (UKZN HSSREC) with protocol reference: HSS/0286/018D. In addition to this, the four principles guiding ethical research namely, informed consent, confidentiality, beneficence, and non-maleficence were adhered to throughout the research (Stunkel et al., 2010; Wassenaar & Mamotte, 2012).

Informed Consent

Fulfilling the principle of informed consent was critical to the current research as this principle informs ethical research. The practical application of informed consent necessitated that adequate information be provided to those who participated in research by detailing the nature of the study, their involvement, potential risks, if any, as well as any benefits that may accrue from participation (Hardicre, 2014). Such information is often articulated through a document known as the consent information sheet. As noted by de Vos, Strydom, Fouche and Delport (2009, p. 50) it is of critical importance that the consent form is robust, clear, and

well written and “ensures full knowledge and cooperation of subjects” as this may be helpful in resolving any areas of potential conflict should it later arise. The informed consent sheet that was used in the present research was developed by UKZN HSSREC and is the standard recommended form for research studies conducted within the human and social sciences at the University of KwaZulu Natal. Participation in this study followed the principle of informed consent and constituents were a part of the study voluntary (Wassenaar & Mamotte, 2012). Constituents were informed of their right to withdraw from the study at any point without suffering any harm if they wished to do so (see appendix 7).

Confidentiality

The principle of confidentiality aims to protect constituents from harm by keeping their identity confidential (Heggen & Guillemin, 2012). Implementing this principle goes beyond merely protecting constituent’s names but also includes ensuring research information does not contain self-identifying information and statements such that the identity of constituents could be discovered (Dube et al., 2014). In research studies, the identity of the constituents is often known to the researcher as they directly engage with each other during the research process, confidentiality in this situation meant de-identifying the constituent’s identity from the data (Kaiser, 2012). While it may not be feasible to completely keep identities of constituents confidential given that data collection occurred in focus groups, members within the focus groups were requested not to share information discussed within the group with mention of constituents’ names externally. Constituents were assured that no personal or identifiable information will be mentioned in any documentation whatsoever, including research publication or presentations (Beins & McCarthy, 2017).

Beneficence

In the context of research ethics, the principle of beneficence encourages the essence of making every effort to minimise risk that might come with participation while maximising

benefits to constituents and society (Wassenaar & Mamotte, 2012). For this study, there were no physical, emotional nor psychological risks that could be incurred due to participation as participation meant sitting in for focus group discussions and interviews and sharing personal views and experiences around the topic of psychological assessment measures. Moreover, there were no direct benefits for participation that military personnel received. However, constituents were informed that their participation was of benefit to military psychologists as the findings will be disseminated to them. The direct benefit will therefore be to the organization that they work for.

Non-maleficence

In line with the principle of non-maleficence which centres on the minimisation and prevention of harm in any form in the course of a research, adhering to this principle ensured that the study posed no harm to constituents in any way either psychologically, methodologically, or through issues pertaining to the subject matter (Beins & McCarthy, 2017). Due diligence was followed in the present study to ensure respect for constituents that included answering questions and providing information requested by members and remaining alert to constituents' state to monitor their emotional state throughout participation.

Positionality and researcher reflexivity

In qualitative research, central to transparency is for researchers to engage in self-reflection with a view to acknowledge, understand and disclose their position in the research process. This process is embodied by the concepts of researcher reflexivity and positionality. Soedirgo and Glas (2020) define researcher reflexivity as an approach which is both a necessary prerequisite and an ongoing process for the researcher to be able to identify, construct, critique, and articulate their positionality. A self-reflective approach of this level by the researcher enables her to critically reflect on her views and positions and how these

may have directly or indirectly influenced the design, execution and interpretation of the research (Rowe, 2015). Savin-Baden and Major (2013, p. 71) concur that a researcher's positionality "reflects the position that the researcher has chosen to adopt within a given research study" and as such it influences both how research is conducted and its outcomes.

According to Rowe (2015) researcher reflexivity and positionality involves three aspects. Firstly, the researcher needs to locate herself or himself about the subject, i.e., acknowledging personal positions that have the potential to influence the research. Secondly, the researcher needs to locate her or himself about the constituents, which entails considering how s/he personally views herself or himself, as well as how others view her or him, while at the same time acknowledging that as an individual s/he may not be fully aware of how s/he and others have constructed their identities. The third aspect pertains to locating oneself on the research context and process, which means acknowledging that research will necessarily be influenced by oneself and by the research context.

In the acknowledgement of my personal positions in the present study, I realised that there were a number of categories that could potentially influence the manner in which the focus group discussion unfolded and the outcome of the research. These were being a civilian member of the SANDF while conducting research with constituents who were uniformed members; being a female researcher in a predominantly patriarchal organisation (with slow gender integration processes); being both a researcher and psychologist in a unit that predominantly conducts psychological testing for the purposes of selecting individuals into the organisation, as well as conducting selections geared toward development and promotion opportunity. Furthermore, another aspect that I became aware of that had the potential to influence the outcomes of the research concerned working with military population which some scholars have argued should potentially qualify for vulnerable classification. All the

aspects mentioned above had implications for the researcher- participant dynamic which influences knowledge production.

This research journey started with having to critically reflect on the power dynamics that would transpire from the research. The military environment is made up of hierarchy structures which assign status based on rank. Being a civilian member of the military community meant that I did not feature on the rank structure. This difference in status meant that I could be perceived as an outsider, othered and the legitimacy about my knowledge and capability to interact with and understand their experiences could be questioned. As noted by Higate and Cameron (2006) insider – outsider dynamics based on status difference are common in accounts of military and veterans working with civilian researchers. While reflecting on this I felt that because of being a non-uniformed member I would have less legitimacy than a uniformed researcher would have. While IQA research methodology aims to balance power in the research relationship by establishing the researcher as a facilitator in the process of knowledge production rather than the owner of the process, this premise is based on the notion that researchers often hold much power over those participating in research while IQA methodology aimed to neutralise this dynamic. This meant I would need to engage in a continuous process of negotiating my legitimacy as a facilitator of the research process while not compensating for my perceived outsider status. During the research process however, as much as I remained conscious of the varying statuses particularly during focus group discussions with senior constituents, who on average also happened to be much older than myself, and myself as a civilian researcher fears of being “othered” and questions off my legitimacy did not occur. Constituents in both focus groups were by and large forthcoming and participated freely.

Rowe (2015) additionally describe reflexivity as helping in situating the research and knowledge production so that ethical commitments can be maintained. This was evident in

the present research where acknowledging the context of the research served to identify issues pertaining to ethical research practice that may arise and finding ways to manage these. Even though I have conducted a number of research studies with civilian populations, this research project made me aware of the unique situation of the military population. For instance, Pryer (2013) notes that to accomplish their missions, military leaders have the authority to command and exercise control over their forces towards any action required by the commanding official, where those in junior ranks must submit out of a sense of duty. The command structure and culture typical of military organisations was pre-empted to have an influence during recruiting servicemen for research participation. Prior to the research, it was forethought that some members may feel obligated to participate in the research or simply be assigned to participate by their officer commanding. Commenting on military hierarchy and culture and why military populations may be vulnerable in the research process, Parasidis (2019) notes that while vulnerability in research with human subjects tends to be defined on the parameters of information, access, status, power, or control, it is also context dependent meaning a person becomes vulnerable to something when placed in a specific situation. Being placed in a situation which you have been assigned research participation or feel obligated means one is not acting with autonomy and constitutes undue influence. An additional disadvantage of servicemen participating without autonomy may have resulted in disengaged and uninterested constituents which would have impacted the findings of the study. A reflexive approach enabled the pre-empting of the arising of such a situation and implementing measures that prevented a situation like this from occurring. To counteract this, recruitment was monitored very closely to ensure that participation was truly voluntary by ensuring that superiors were not present at any of the recruitment session. Further, recruitment of constituents was independently carried out by the researcher and research

assistants without any assistance from personnel within the military units where recruitment was taking place.

Given that military psychologists have the potential to contribute to both positive and negative aspect of career advancements when they are tasked with selection duties, being a psychologist in a unit that conducts psychological testing for the organisation, as well as a facilitator of the current study meant the duality of these role had the potential to influence the research process and outcomes. This was foreseen to influence constituents to censor their real feelings or thoughts about the topic for fear of being disqualified in future selections, should they articulate negative comments. This effect was particularly observed during the pilot study where constituents predominantly made mention of what could be termed as positives of psychological assessment measures thus responding in a socially desirable way. During the actual research study, the researcher endeavoured to make as clear as possible the neutrality of her role as a research psychologist (and not that of an assessor/ industrial psychologist) to the constituents and reiterated constituents' right to withdraw without negative consequences should they feel uncomfortable during any stage of the research process. The extent to which this was successfully implemented is unknown. While constituents spoke from personal experience about psychological testing none spoke about the tensions thereof, (some of which are discussed in chapter 2 of the present thesis) including highly publicised criticisms such as their boycotts by unions which was something in public domain. Perhaps constituents had predominantly good experiences with psychological testing within the Defence Force or as noted by Laher and Cockroft (2014) that feelings around the controversies of psychometric tests seemed to be diminishing.

Acknowledging that the research context, process, and outcomes may be influenced by myself required taking on a reflexive approach. Such self-reflection prior to commencing with the study, during data collection, analysis and interpretation strengthened my

commitment to conducting ethical research based on building relations of mutual respect and critically examining the varying relations and dynamics during all stages of the process.

Summary

This chapter has discussed the research methodology used to carry out the aims and objectives of the present study. The study used a qualitative design that was expected to produce in-depth rich information pertaining to the perceptions of the study population about psychological assessment measures in the military. The qualitative design used provided a means for exploring and understanding the collective views of a group of people with shared category membership and seeing the subject matter from their perspectives and the meanings they assigned to their experiences. The social constructionist paradigm from which the study was approached viewed knowledge as a socially constructed process, therefore the views shared by members were accepted and believed as the constituents "truth." The study used IQA methodology as the most appropriate strategy to "tone down" the dynamics of unequal power relations that may be inherent in some research designs by guiding constituents to produce self-determined affinities that they drew from personal experiences of being assessed in the military. A second positive of IQA methodology was that over and above placing power in the hands of the constituents, it comprised of dual data collection methodology. While the first part catered to produce participant driven affinities, the second part that of qualitative interviews served to unpack resultant affinities and display the raw multi voices of the constituents in their actual spoken words. The guiding research ethics principles that were upheld during the study were also discussed in detail as well as the precautionary measures that needed further consideration.

CHAPTER FIVE: FINDINGS OF THE STUDY

Introduction

Data for the present study were collected in two phases, namely IQA focus group discussions and semi-structured interviews. In the first section of this chapter affinities that emerged from focus group discussions are presented. The second part of the chapter aims to present data that emerged from semi-structured interviews that followed. While the semi-structured interviews served to confirm and provide support for affinities that emerged from IQA focus group discussions, data for the present study was additionally subjected to thematic analysis as a way to triangulate these focus group affinities. This was implemented in an effort to improve credibility through employing the technique of persistent observation. As a technique that ensures depth of experience and understanding, thematic analysis was done as a way of looking at the same data from a different angle. By conducting thematic analysis, the researcher aimed to determine whether there were other themes that would emerge from the interview data that had not arisen from the affinities. Engaging in this process of checking the data from different angles further served to triangulate the research findings thus reducing bias often inherent in single data sources. Additionally presented in this chapter is a descriptive analysis of research constituents. This description served to furnish the reader with background information of the demographics of those who participated which may have had a bearing on the results obtained. The chapter concludes with a summary of the findings.

Descriptive Analysis of Constituents

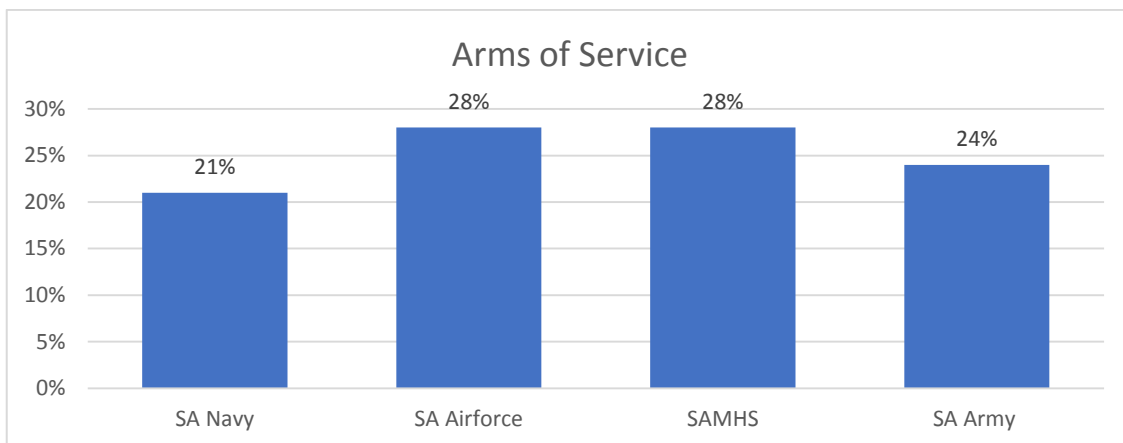
The sample consisted of military personnel of the SANDF located in Pretoria, a city in the province of Gauteng. Constituents totalled 29 military personnel. Most personnel worked at the headquarters of their services which meant that they were mostly officers. Due to limited resources for this study, it was not feasible to reach members who were soldiers

and members located in other regions of the country. This study was therefore not representative of the entire SANDF population but informed of the perceptions of members who participated in the process.

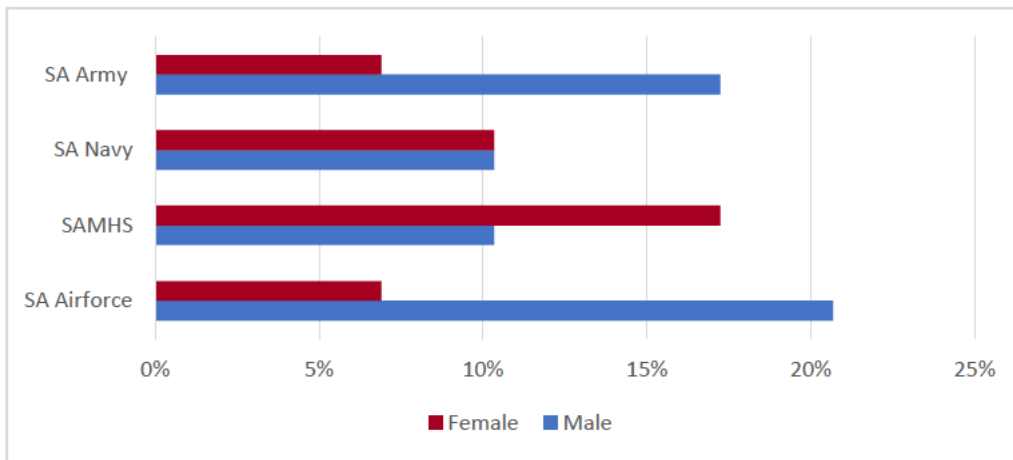
All four arms of service of the SANDF were represented from the data collected, with constituents from the SAMHS and Airforce being the majority, followed by the Army and the Navy consisting of the least number of constituents. Even though the arms of services were not equally represented, they were more or less within range from each other as all four arms consisted of at least 20% representation with those forming a majority being represented at 28%.

Figure 17

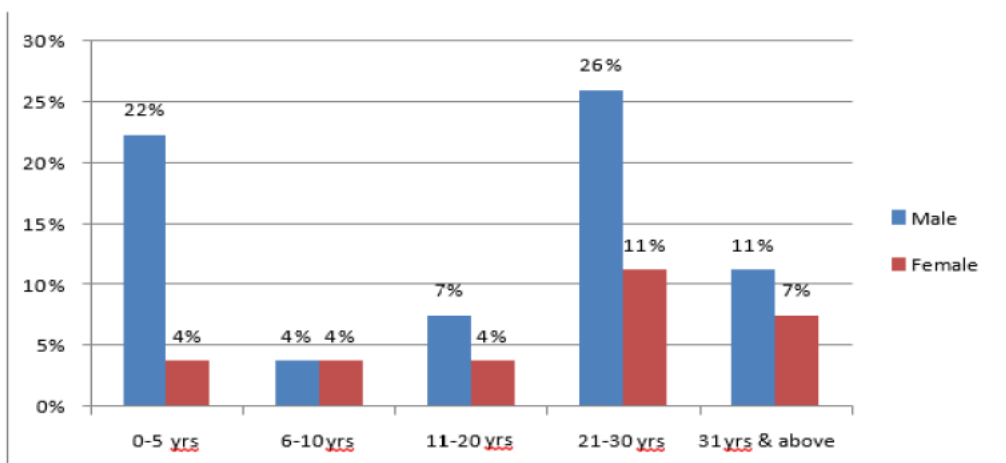
Arms of service represented in the sample



As expected from a military organisation, there were more male constituents than female. The Army and Airforce services consisted of a significantly higher male representation while the SAMHS consisted of the highest number of female representatives. Even though the sample is not representative of the population of the SANDF as constituents were drawn through convenience, purposive sampling, it does however suggest the strong male dominance inherent in the Defence Force. In like manner, having a significantly higher representation of female constituents from the SAMHS similarly reflected gender norms that assign women to roles closely associated with the helping professions.

Figure 18*Gender representation per service*

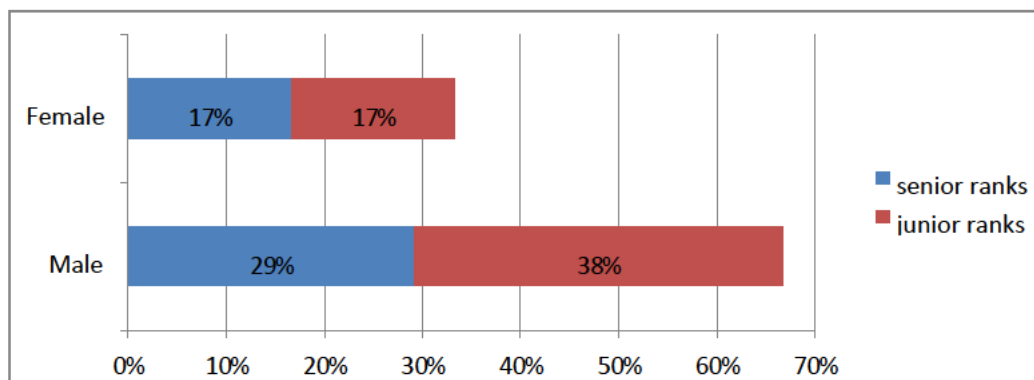
The majority of constituents had served in the organisation for 6 years or more. This meant that these constituents had been through a few selection processes for rank promotion within the military and were most likely familiar with undergoing psychological testing. The junior sample used recall from the selection that they underwent when they were first recruited into the organisation. Members who had been in the organisation for longer further had the opportunity to recall their experiences from undergoing psychological testing in instances where they had to deploy.

Figure 19*Years of service per gender*

The senior ranks consisted of Lieutenant Commander (SA Navy); Captain (SA Navy), Full Colonel, Lieutenant Colonel and Major. (An indication is made for ranks that pertain to the SA Navy as they are not the same as those of other services. For instance, a Captain in the Navy is considered a senior rank whereas in the other services it is positioned within the junior ranks). The junior ranks were made up of Captain Warrant Officer Class 1, Warrant Officer Class 2, Chief Petty Officer (SA Navy) and Lance Corporal.

Figure 20

Constituent rank level



The majority of constituents were African, followed by White then Coloured and Indians respectively. In this area, the sample was to some extent representative of the demographics of the South Africa population.

Figure 21

Representation of rank per racial category

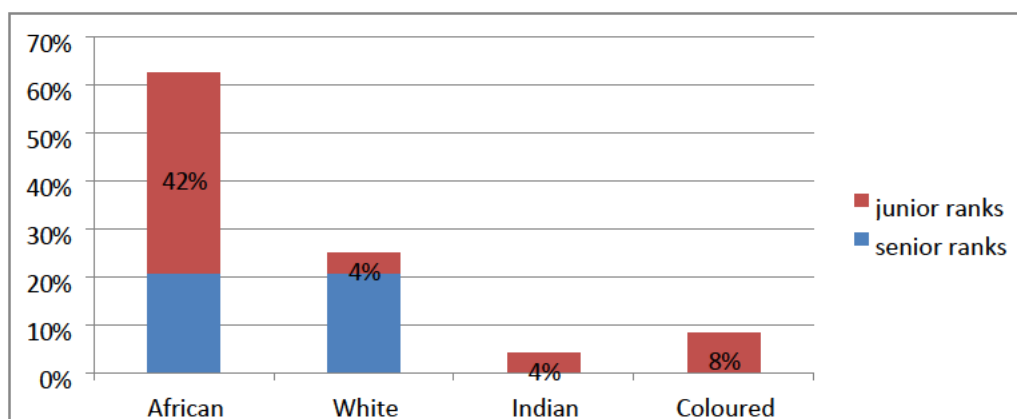


Table 16 presents a description of the 29 constituents who participated in the study, more specifically the focus group discussions. This description includes their arm of service, race, gender, rank and an indication of the seniority of the rank within the SANDF.

Table 16

Description of constituents who participated in focus group discussions

	Service	Race	Gender	Rank	Rank Seniority
Constituent 1	SA Navy	African	Male	Chief Petty Officer	Junior
Constituent 2	SA Navy	African	Female	Warrant Officer Class 1	Junior
Constituent 3	SAMHS	African	Male	Lance Corporal	Junior
Constituent 4	SAMHS	African	Female	Lance Corporal	Junior
Constituent 5	SA Airforce	African	Female	Lance Corporal	Junior
Constituent 6	SA Airforce	Coloured	Male	Lance Corporal	Junior
Constituent 7	SA Airforce	White	Male	Lance Corporal	Junior
Constituent 8	SAMHS	Coloured	Female	Captain	Junior
Constituent 9	SAMHS	White	Female	Captain	Junior
Constituent 10	SA Army	African	Female	Warrant Officer Class 2	Junior
Constituent 11	SA Army	African	Male	Warrant Officer Class 2	Junior
Constituent 12	SA Navy	African	Female	Captain (SA Navy)	Senior
Constituent 13	SAMHS	African	Male	Major	Senior
Constituent 14	SAMHS	White	Female	Lieutenant Colonel	Senior
Constituent 15	SA Army	African	Female	Lieutenant Colonel	Senior
Constituent 16	SA Army	African	Male	Lieutenant Colonel	Senior
Constituent 17	SA Navy	African	Male	Lieutenant Commander (SA Navy)	Senior
Constituent 18	SA Navy	White	Male	Captain (SA Navy)	Senior
Constituent 19	SA Navy	White	Female	Lieutenant Commander (SA Navy)	Senior
Constituent 20	SAMHS	African	Female	Colonel	Senior
Constituent 21	SA Army	African	Male	Major	Senior
Constituent 22	SA Airforce	White	Female	Major	Senior
Constituent 23	SA Airforce	African	Male	Major	Senior
Constituent 24	SA Airforce	African	Male	Major	Senior
Constituent 25	SA Airforce	African	Male	Major	Senior
Constituent 26	SA Airforce	African	Male	Lieutenant Colonel	Senior
Constituent 27	SAMHS	White	Female	Lieutenant Colonel	Senior
Constituent 28	SA Army	African	Male	Colonel	Senior
Constituent 29	SA Army	African	Male	Lieutenant Colonel	Senior

As it was noted in chapter 4, not all constituents participated in the semi structured interviews. Table 17 describes the 18 constituents who participated in the interviews that followed the focus group discussions.

Table 17

Description of constituents who participated in the interviews

	Arm of Service	Race	Gender	Rank	Rank seniority
Constituent 1	SA Navy	African	Male	Chief Petty Officer	Junior
Constituent 2	SA Navy	African	Female	Warrant Officer Class 1	Junior
Constituent 3	SAMHS	African	Male	Lance Corporal	Junior
Constituent 4	SAMHS	African	Female	Lance Corporal	Junior
Constituent 6	SA Airforce	Coloured	Male	Lance Corporal	Junior
Constituent 9	SAMHS	White	Female	Captain	Junior
Constituent 11	SA Army	African	Male	Warrant Officer Class 2	Junior
Constituent 12	SA Navy	African	Female	Captain (SA Navy)	Senior
Constituent 13	SAMHS	African	Male	Major	Senior
Constituent 14	SAMHS	White	Female	Lieutenant Colonel	Senior
Constituent 15	SA Army	African	Female	Lieutenant Colonel	Senior
Constituent 19	SA Navy	White	Female	Lieutenant Commander (SA Navy)	Senior
Constituent 20	SAMHS	African	Female	Colonel	Senior
Constituent 21	SA Army	African	Male	Major	Senior
Constituent 22	SA Airforce	White	Female	Major	Senior
Constituent 25	SA Airforce	African	Male	Major	Senior
Constituent 28	SA Army	African	Male	Colonel	Senior
Constituent 29	SA Army	African	Male	Lieutenant Colonel	Senior

Presentation of findings emerging from IQA focus group discussions

Focus group affinities of Senior Constituents

In chapter 4 of this thesis, the research procedures that were utilised to investigate the study aims were described. As part of chapter 4, IQA methodology was described as a research strategy whereby constituents were fundamentally involved in both the data collection and some aspects of data analysis. In this section, the findings that culminated from IQA data collection with senior constituents are presented.

The first step of data collection involved brainstorming themes that pertained to psychological assessment measures in the SANDF. This process entailed providing

constituents with notecards where they could pour out their thoughts on the issue in writing, following the guide of issue statements that were articulated by the researcher. During this process, constituents were encouraged to think of words, phrases and their experiences while they were being assessed in the military either during the time of being recruited into the organisation, or for promotion, development and/ or deployment purposes. This process yielded 13 affinities namely experience, advantages, reflection, usefulness, disadvantages, culture and language, barrier, manipulation, bias, irrelevant and suggestions. Affinities arising from this process from the first focus group with senior constituents are presented in this section with the intent to showcase constituents' individual thoughts, phrases and inputs inscribed on the notecards.

Experience / Personal experience

The findings under this affinity suggested that constituents in this study had varied experience regarding psychological testing in the Defence Force. Some had recent experiences of engaging with assessment measures while others spoke from their deployment experience when psychometric tests were administered to them. On the whole, most of them reported a positive experience in their encounter, but others appeared not to be so impressed. Consequently, the indication of mixed feelings regarding the experience of engagement with psychological assessment measures was reported. The constituents in general presented almost contradictory responses in this regard: that is, with some saying they enjoyed the opportunity of taking such assessment measures while others reported that such tests were challenging and seemed like they intended to trick test takers. A reflection of the varied and mixed nature of their responses in this regard can be detected in the following list:

- Experience: can't remember all of it but it was a new experience
- Yes, I did it while I was doing my CHA, and while I was entering SANDF
- They experienced it negatively. [But] I experienced it positively
- The experience was generally good
- It was interesting
- Some questions were simple but most of them were challenging
- Can't remember but it felt as though they wanted to trick me
- The experience has generally been good
- It was good tool that was used, it was well explained
- Multiple choice answers often all apply to my situation
- Many times, it's like you are being tricked
- A bit stressful
- Tests are personal
- They define a person (by indicating the kind of person they are)
- They are interesting
- They are fun
- Psychologists were professional in explaining how to complete
- Challenging
- Are necessary

Advantages

Perceptions garnered under the affinity “advantages” were not as exhaustive as the one in the preceding section. But in general, the responses under this theme were those that suggested that as far as insight from this study are concerned, personnel that work in the Defence Force were beginning to see the value or positive contributions of psychological assessment measures within the SANDF. For example, this affinity shows that constituents perceived assessment measures in the South African military as a method to determine whether the candidate was capable of positive thinking and not prone to negative thinking while being recruited into the organisation. In addition to this, constituents were of the view that it was through the use of such tests that psychologists could tap into candidates’ thoughts in order to help them or to understand their mental functioning. These positive trends in the constituents’ perceptions of assessment measures in the SANDF can be seen reflected in the following list:

- They [psychological assessments] are good to ensure that one can think positive not negative and they can fulfil their duties.
- They are necessary to help someone’s mind
- Advantageous to give psychometrics before you hire someone
- To understand a person’s way of thinking before rank promotion
- Mental stimulation

Reflection

Perceptions received under the reflection affinity, like most of the ones in the last section were very positive in perspective. They suggested that for the constituents in this study psychological assessment measures in the South African military should be seen as relevant tools to help personnel to get to know and understand themselves and their personal

characteristics as individuals. Hence, even though some accepted that some of the test processes administered under these psychological tests might seem a little bit intimidating, they tended to see these tests in the Defence Force as a necessary part of good practice for the South African military. Hence, overall, the constituents perceived psychological assessment measures in the SANDF as something to be encouraged. Some of their views that reflected these conclusions are listed below:

- Helps me understand my way of thinking which is an advantage
- Helps me learn about myself by thinking about the questions
- It gives me as the individual an opportunity to reflect on the answers I'm giving
- Learnt something about myself by reflecting on the assessment
- The feedback, if any, doesn't teach me much about myself (require feedback)
- Fairness; think so
- Seems intimidating but I know it was needed
- They help a person think

Usefulness

This affinity reflected that psychological assessment measures were perceived as useful. Their utility was seen in being an appropriate tool for identifying qualifying quality candidates for employment, promotion and deployment. They were also seen as a way to easily identify problem areas and anomalies, for providing direction and predicting future behaviour. Some constituent felt psychological tests were fair, valid, non-discriminatory and unbiased. Other constituents were inconclusive of their value and felt unsure whether they were useful or not. These constituents perceived some tests to be useful such as CHA, a test

used for pre-deployment purposes while other tests were perceived as not as useful. Other constituents perceived psychological testing as a useful aid that needed improvement.

- It is a useful tool in identifying the right people to be employed
- Yes, they are not discriminating but sometimes they are for higher rank promotions
- The test assist with the easy way of identifying what the problem is
- Fair and Valid: Yes
- Serves a purpose
- Gives direction specially to develop a soldier
- They are important, other people think it's a waste of time
- To identify anomalies before anyone can be employed
- Yes definitely necessary in the DoD
- Very Important for recruitment
- Specific tests are useful for pre-selection and those for CHA
- Grouping
- To get the right person for the appointment
- Don't think they are biased
- Necessary
- Valid
- To determine future behaviour
- Needed, worthwhile selection
- Yes and no, not sure whether useful

- Psychological tests are fair to read someone minds
- Yes, it is important
- In ideal situation will help with proper placement
- Advantage: Correct placement, sift out unbalanced people
- 90% advantage

Disadvantages

Although study constituents' perceptions received under the affinity disadvantage were not many and varied, like in most of the other themes earlier highlighted, but much that was garnered gives enough indication that personnel at the Defence Force have sufficient faith in the quality and practice of psychological testing in the SANDF. Some constituents perceived psychological assessment measures as not always effective or relevant for what personnel were being evaluated; and this was irrespective of whether the psychological tests were for recruitment, or personnel development, or promotion purposes. These sentiments can be found reflected in the list below:

- Not always effective
- Sometimes lacks relevance to the post
- It is sometimes not effective
- Don't always do what they're supposed to
- Sometimes they are not relevant

Culture and language

Perceptions received under this affinity are many and varied, but on the whole appeared diagnostic and corrective in perspective. The constituents' comments under this

theme suggested that they (the personnel at the Defence Force) were committed and interested and would like to see certain things changed about the quality and content of psychological assessment measures in the SANDF. These trends can be found reflected in the list below:

- More culture related
- There should be language options
- Useful; But yes; it's not addressing African perspectives
- Diverse nation needs African languages
- Loose potential candidates from culture and language problems
- They say it's not addressing SA context as a diverse nation
- African perspective to be taken into consideration (not to be Eurocentric, must address context)
- Very much in favour of whites
- English is a borrowed language, more representation

Barrier

The findings under this affinity suggested that some constituents harboured the impression that there were some definite constraints and obstacles surrounding undergoing psychological testing in the Defence Force. Such notions of the existence of barriers in psychological testing in the SANDF were linked with a conspiracy theory of such assessments tending to serve to prevent members from accessing deployment and promotion opportunities. The following list presents a summary view of the constituents' specific perceptions in this regard:

- If they find you in a bad space they can lead to bad label
- People perceive psych test as denying opportunities for deployment
- Barrier for promotion
- I know some soldiers who struggled with the tests
- I couldn't deploy because my CHA came out red

Manipulation

The trend from this affinity appeared to suggest that personnel were convinced that psychological assessment measures in the SANDF were not reliable but rather could be manipulated especially when they were being done for deployment purposes. The findings under this affinity further suggested that members who were intently focused on deploying were perceived as answering pre-deployment assessment measures in a way that was not necessarily honest but one that would ensure they provided socially desirable answers to the questions put to them. Another area in which manipulation was perceived to occur was during the administration process. In sum, under this affinity some constituents gave the impression, in their comments about psychological tests in the Defence Force that often when psychologists gave out test instructions they sometimes knowingly or unknowingly gave out tips that could assist some candidates to pass. These negative perceptions of psychometric tests emanating from comments offered by constituents are reflected in the following list below:

- They are biased will find that others know how to work but tests confuse
- Degree of necessary, but can be manipulated
- Soldiers are not really honest when answering since the aim is to deploy
- Disadvantage is that dishonest people can manipulate them

- It can be manipulated
- You are more focused when you are assessed to deploy which promotes dishonest answers
- When done for deployment people are not honest, since they want to deploy
- I have witnessed psychologist giving tips such as avoid too many neutral answers
- They want to answer to pass the assessment

Bias

What the findings showed under this affinity was that not all the constituents believed in the objectivity and fairness of the psychometric tests used in the Defence Force. The trend rather showed that a number of the constituents were still not confident that psychological assessment measures in the SANDF were objective and fair in the results that come from their use. Their feelings of dissatisfaction about these psychological tests can be clearly reflected in their comments as listed below.

- Biased for occupational reasons
- Disadvantage: biased; sometimes unfair
- Asks biased questions to throw you off
- Biased against African people for employment into SANDF

Irrelevant

Perceptions received under this affinity left much to be desired about psychological assessment measures in the Defence Force. Examining them, one detects obvious presence of general signs of resentment about psychometric tests in the SANDF judging by the sentiments expressed by the constituents under this theme. These sentiments are almost uniformly negative in direction as could be seen the following list below:

- Tests are outdated
- I really don't see psychological tests as something that should be at the forefront of recruitment. Skills assessments and basic training have more benefits
- Should be cancelled in the DOD
- Irrelevant
- The focus should be on training not testing
- The DOD can function without tests
- Testing is more of an add on rather than something essential
- Some of the questions have nothing to do with the job requirements

Suggestions / Solutions / Awareness

The findings under this affinity were many and varied. On the whole, they demonstrated that constituents were very clear in their minds about the areas where improvements were needed in the type of psychological tests, they experienced in their work environment. The spectrum of constructive suggestions for improvement that they offered in this regard are listed below:

- It must be specific for a purpose not a general assessment
- They can be bettered and improved for understandability for people of African cultures
- I don't know how they can be improved
- Using electronic tools will improve the assessments
- Remove elements that don't make sense
- Give more information about the test before you even get to be tested
- Be given time to prepare

- More time to finish writing the tests
- Assessments must be done correctly
- Before and after deployment soldiers must be assessed
- To improve the questions
- Workshops to educate members
- Have more in depth one on one facilitated interviews with psychologists
- Frequent processes
- One on one sessions
- Roadshows regarding psychometric tests
- Roadshows for educating members and unit visits
- Psychometric tests conducted bi-annually
- Applying different psychometrics for different mustering's
- Not precisely sure
- Improve: no thoughts

Focus group affinities of Junior Constituents

In this section, affinities arising from the focus group discussions with junior constituents are presented. These affinities were garnered through the same process as that used for data collection with senior constituents. The affinities of personal experience, positive mental state and valid, emerged from this process. This section showcases the development of these affinities by bringing to light thoughts and phrases that junior constituents wrote on the notecards.

Personal experience

Perceptions received under this theme came in multiple directions, very much mixed in perspective. Thus, while some constituents' experiences highlighted the notions of feeling challenged, being under pressure and being under time constraints while completing test items. Other suggested some positive experiences that included finding the assessment measure interesting and enjoyable; and allowed for self-reflection. Indeed, under this theme while some constituents reported experiences of feeling nervous others expressed that they felt calm and relaxed while taking psychometric tests.

- I found the questions difficult
- It was challenging because the time was short. There wasn't enough time to think. I just had to think on my feet
- The assessments were okay. There was a lot of pressure because I was so nervous
- I enjoyed the questions about myself. I liked reflecting and I learnt about myself
- Interesting
- The pressure was a lot since I wanted to pass
- I was calm and relaxed

Positive mental state

Perceptions received under this affinity were less mixed in direction than in the previous trends. Thus, under this theme psychological assessment measures in the Defence Force were perceived to be relevant for military members in that they had the ability to evaluate the mental state of personnel and the organisation would be enabled to know how their members were functioning mentally.

- Checks the mental state
- Very relevant for military members to know their mental space
- Necessary for deployment and afterwards to examine members
- DoD can know which members need help
- It's engaging different thoughts
- It's only fair to run psychological tests
- Keeps tabs on the mental states of members

Valid

Constituents evaluated psychological assessment measures as valid to a considerable extent as they perceived them as taking into account what the job requirements are.

Constituents similar viewed psychological tests as valid in determining whether candidates could cope with military service work, typically during recruitment into the organisation as one would not be acclimatised to military culture at that stage.

- Valid
- Perceive what are the requirements that have been expected
- To a greater extent valid
- They assess if a person has skills for the job
- To check if a person can survive in the DoD
- It is valid
- Assessments are valid in the DoD

Presentation of Findings Research Question by Research Question emerging from thematic analysis

Research Question 1: In what ways are psychological assessment measures for occupational purposes perceived by military personnel?

The first research question sought to explore the ways in which assessment measures were perceived by those who had been through the assessment process either during recruitment into the organisation or for promotion, development or deployment reasons. The main theme that emerged indicated that there was no single manner in which assessment measures were perceived. Members' perceptions varied. The following differential themes that emerged in response to the above question bear out this observation.

Theme One: There are varied perceptions of psychological assessments in the SANDF. The first theme identified from constituents' narratives related to their overall perceptions on psychological assessment measures. Extracts pertaining to this theme showed that member's perception varied from assessment measures being perceived as both enjoyable and challenging, with one constituent referring to psychological tests that they had completed during recruitment and deployment as interesting. The following extracts present members own spoken words in relation to assessment measures being interesting and enjoyable:

Constituent 14: "The experience was generally good, it was good tool that was used, it was well explained. I found doing the assessment interesting, thought provoking. It was also a lot of fun"

Constituent 12: "I can't remember all of it but it was a new experience, it was quite personal to do the assessment. I would say fun, interesting, insightful"

Constituent 3: "They (others) experienced it negatively but I experienced it positively, I enjoyed the process."

Constituent 21: “The tests are interesting, I’ve done a few of them here at the DoD when joining into the organisation and when I was deploying. They were interesting and challenging.”

Constituent: 1: “They are fun, I enjoyed doing the assessments even though they were complex”

Constituent 6: Psychological testing are helping in the military, I believe they are advantageous, my experience was positive and interesting.”

While some constituents perceived assessment measures as fun and interesting others perceived them as challenging. Some constituent expressed that these tests also intimidated them, were somewhat tricky and stressful. Psychometric tests completed for deployment were said to be difficult, challenging and tough. These perceptions are presented in the following texts:

Constituent 9: “Yes I did it while I was doing my CHA (an assessment for deployment), and while I was entering SANDF, it was definitely difficult. I was challenged and we had to do I think 3 rounds of tests ...I think three days. It was tough!”

Constituent 3: “I can’t remember but it felt as though they wanted to trick me, the questions were tricky, quite challenging.”

Constituent 6: “a bit stressful and quite challenging”

Constituent 11: “many times it was like, like you were being tricked, multiple choice answers often all apply to my situation so it’s hard to decide which one is the one you should go with. It’s challenging to do an assessment”

Constituent 22: “it seems intimidating but I know it was needed, it was a challenging experience.”

The above extracts show that assessment measures were not perceived in a single way instead constituents' depictions of them portrayed a broad and diverse representation.

Research Question 2: What are the major reasons of positive perceptions (if any) of psychological assessment measures in the South African military?

Five themes emerged in response to the major reasons of positive perceptions. The first was constituents view of psychological tests as providing an opportunity for learning about themselves, the second was their view of assessment measures were useful for identifying the right candidate for placement. The third theme related members perception that these tests could be used to identify problems, while the fourth theme relayed that assessment measures were perceived as having the ability to identify a person's mental state.

Theme One: Assessment measures perceived as providing an opportunity for self-reflection. Constituents felt psychometric tests provided them with an opportunity to learn about themselves and reflect on areas that they could improve on in the future. For some constituents, receiving feedback after completing a psychological test seemed to be something that they valued and perceived as facilitating the process of self-learning. This theme was captured in the following excerpts articulated by constituents:

Constituent 4: "It's an advantage because I get to know more about how I process information. I learn about myself and identify which areas to improve. I also learn things I'm not aware of like activities I prefer and those I don't particularly like, feedback helps ... it gives you the perspective of the psychologist on how to become a better person."

Constituent 2: "helps me understand my way of thinking which is an advantage. I learn about myself."

Constituent 25: "It gives me as the individual an opportunity to reflect... and the way I perform tells me if I didn't perform my best, I challenge myself next time I must

concentrate. It helps because I assess, why I didn't answer that question like this because I know the answer".

Constituent 20: "The feedback, yes if there isn't any, it doesn't teach me much about myself. I need feedback to perform better."

Constituent 28: "Assessments ... help a person think, the advantage was to learn something about myself. They show you how to improve."

Theme Two: Assessment measures perceived as helping the organisation to identify the right candidates. A second rationale conveyed by the study constituents was that psychological tests helped identify the right person prior to appointing them for employment into the organisation or for deployment. Assessment measures were presented as being able to verify information that indicated if a specific candidate was right for the appointment. Constituents' narratives in this regard were captured in the following points made by three constituents:

Constituent 29: "Specific tests are useful for pre-selection and those for CHA to get the right person for the appointment. They are helpful to identify the right persons as you can't always rely on what people say about themselves, they will tell you a lot of things and assessments can verify that, they are almost like a mirror of the truth"

Constituent 13: "they have the advantage of identifying the correct placement and sifting out unbalanced people"

Constituent 19: "It is a useful tool in identifying the right people to be employed, you can check if they have the skills to be a good soldier, yes there's training but you have to confirm before you appoint."

Theme Three: Assessment measures viewed as helping to identify problems that a person might have if recruited into the military. This theme presented the perception that constituents considered psychological tests as a helpful tool in identify problems, challenges and anomalies prior to their appointment into the SANDF. A comment made towards this point was that once a person had been hired, the process of their dismissal was difficult therefore assessment measures helped to safeguard the organisations interest in this regard. The following extracts from some of the constituents bear out this observation:

Constituent 19: “Some people think it’s a waste of time but I believe they help identify where the problem is. If a soldier is facing challenges, they can help that member by easily identifying that problem and helping them with that challenge, it’s worthwhile during the recruitment so you can identify anomalies before a person is hired.”

Constituent 2: “The test assist with an easy way of identifying what the problem is”

Constituent 22: “They serve a purpose, and I suppose they give direction. Overall, I would say they are important, other people don’t believe in them but I think they are useful to identify problematic people before you hire them and it becomes difficult to get them to exit the DoD.”

Constituent 4: “Psychometric testing is necessary for the defence. They assist to resolve the challenges felt by the soldier ... especially for deployment”

Theme Four: Assessments seen as helping to identify a person’s mental state. The fourth theme pertained to the view that measures could be used to evaluate and understand a person’s mental state and their mental functioning. In this way military personnel could be assisted when they experienced challenges or if they had underlying issues. This theme was captured in the following extracts from constituents:

Constituent 1: “for keeping tabs on the mental states of members but if they find you in a bad space they can lead to a bad label.”

Constituent 12: “Psychological tests are fair to read someone’s mind and are helping in the military, in the ideal situation they will help. But it also depends on a number of things. If you are testing dishonest people, you can’t trust that information. The test can work but the person in their dishonesty can make it to not work.”

Constituent 9: “For sure, no doubt it, 90% do what they are supposed to, they can ensure that one can think positively, not negatively and isn’t prone to mental problems. I mean, well, if you get assessed and you have this disorder you can be stigmatised and side-lined but especially in a place like the DoD, they are there to help understand someone’s mind.”

Constituent 21: “When members deploy a lot of things happen in the mission area. Sometimes the conditions are harsh even for seasoned soldiers who have been in service for a long time. In that case it helps to know that the member is ready and they can handle the situation. Sometimes members misbehave by drinking alcohol because maybe they already having a problem before deployment, it helps to check if the member can control themselves and be disciplined.”

Research Question 3: What are the major reasons of negative perceptions (if any) of psychological assessment measures in the South African military?

The third research question explored reasons that constituents ascribed to unfavourable perceptions. Three themes emerged from this question. The first theme made reference to assessment measures being susceptible to manipulation for personal gain. The second and third themes presented views of psychological tests as lacking African cultural perspectives and language options respectively.

Theme One: Assessment measures viewed as susceptible to manipulation.

Constituents felt that psychological tests could be manipulated to achieve a particular outcome such as promotion into a senior rank or access deployment opportunity.

Manipulation was said to occur through dishonest responding and responding in a socially desirable way. The following extracts illustrated constituents' thoughts on this.

Constituent 29: “If you’re really focused on passing the test, you know questions that will prevent you from deploying. Like the one that asks if you’re hearing voices. Obviously because you know the interpretation is you are sick, you are mentally unstable you won’t deploy, when it comes to that question, there’s no way you will say you hear voices even if you are hearing them.”

Constituent 15: “If someone really wants to deploy, they will manipulate the test especially when they’ve been through the process, they know the test and how to answer it. The test doesn’t help to see if the member is ready for deployment because it can be manipulated and most soldiers try and they succeed.”

Constituent 20: “I don’t think anyone just wants to manipulate a test, I think it’s when people see, oh if I answer like this, this is what they are going to think then one feels compelled to answer in a way that they think they psychologists want to hear, because we all want to move up the ranks.”

Constituent 4: “soldiers are not really honest when answering since their aim is to deploy”

Constituent 13: “the only disadvantage is that dishonest people can manipulate them for their own means.”

Constituent 9: “Assessments can be manipulated, and that’s a big problem, if they are manipulated, they don’t serve their purpose. The whole point is nullified. It simply becomes a box ticking exercise.”

Constituent 11: “when you are being assessed it’s to pass for whatever reason, so you do whatever it takes. That’s why you get some who will manipulate if necessary”

Theme Two: assessments were perceived as lacking in African perspectives.

Constituents felt that psychological tests in the military did not always take the cultural perspective of test takers into consideration. This theme more specifically revealed that the African perspective was omitted. This problem was said to be inherent or reflected in the test items which presented questions with different cultural interpretations. The extracts below present this trend.

Constituent 28: “but it’s not addressing African perspectives we’re a diverse nation. African perspectives must be taken into consideration ... not simply to be European, they must address context.”

Constituent 15: “If I am asked a question that conflicts with my culture, for example when we are deploying, there’s a question that asks about hearing voices, I know that is interpreted as a mental problem. That’s definitely a disadvantage because if I am hearing voices, I’ll be forced to answer and say no I’m not. This is why I’m saying sometimes the test favours other cultures and excludes others.”

Constituent 21: “some of the questions they ask for CHA, its exclusionary by its very nature. Culture is a big topic; its implications can determine whether you deploy or not and some of these questions have no relation to the African context ... I’m making reference to the question about hearing voices. You know what that means in our culture right, but what does it mean in white man’s culture”

Theme Three: Assessments were seen as lacking in language options. Some constituents perceived assessment measures as offering few language options when taking into account the diverse language groups of the country. The lack of language options was seen as a disadvantage to the organisation and a barrier to the candidate and the process of psychological testing in the military. This trend is reflected in the response of constituents on this theme shown below:

Constituent 28: “We (the organisation) lose a lot on candidates because of things like language. The person can do the job and they can perform better than most people but because they went to a school in a rural area, their language skills are not intact. They fail the assessment. Language is a disadvantage for most candidates. The job is not about the language, it’s about skill but language becomes a problem. It’s a barrier and it disadvantages those who are not privileged to go to English medium schools. We’re losing out a lot. You find the assessment is no longer relevant because by excluding other languages, it can’t tap into what is the critical thing, the skill.”

Constituent 20: “Not everyone who is recruited is proficient in English because of the schooling system. Those who attended the so called “good schools” are at an advantage because they can firstly understand the test medium well. And secondly, they’ve been taught to think critically so they can easily apply themselves to the test material. Those who come from disadvantaged schools firstly have to deal with the language problem and thereafter try to answer this psychometric test, probably something they’ve never ever seen or done in their lives before. On top of that they are expected to do well and they are competing with others from good schools.”

Constituent 25: “If an incumbent takes the test in their preferred language, it will be easy to determine whether they are appropriate for the job because you are sure they understand what the test is asking”.

Research Question 4: How can the perception of psychological assessment measures in the SANDF be improved?

The fourth research question investigated the ways in which perceptions of psychological assessment measures could be improved in the SANDF. Three themes developed, the first was making use of electronic formats for all selections irrespective of whether they are for recruiting candidates from civilians into the SANDF or utilised during promotion (including deployment) or development reasons. The second theme was a suggestion about providing more communication about psychological tests and finally the third theme proposed that the organisation made sure that tests used in selections had contextual relevance to the job candidates were being assessed for.

Theme One: The need to include electronic formats in testing. Theme one presented the first suggestion for psychological tests in the military, which was to use more computer-based formats during testing. Constituents conveyed that computerised tests may prove more beneficial in deterring test manipulation. Another member indicated that as more organisations were advancing towards technology-based test formats, the organisation needed

to remain on par with these technological advances. Excerpts from constituents on this theme are quoted as follows:

Constituent 15: “using more electronic type assessments will add to the benefits in that they might be harder to manipulate.”

Constituent 14: “I’ve done an assessment outside of the defence force as well which was a computer assessment. I remember receiving a link that went straight to the test. That sought of thing can be done here as well because the whole world is moving towards technology, doing things using technology. We should also do that we shouldn’t be left behind”

Theme Two: providing more communication on assessment measures. This theme related constituents’ recommendation around more communication on psychometric tests. Constituents felt they needed to be educated about psychological tests, and the processes involved to aid familiarisation. They suggested this could be carried out through avenues such as road shows, unit visits and workshops. These suggestions are presented in the following extracts by constituents:

Constituent 13: “We need workshops to educate us about psychometric tests, maybe roadshows or unit visits can create awareness for members about doing psychological assessments.”

Constituent 25: “Members need to understand the processes involved through familiarisation and testing must be done more frequently to understand what is involved. That can help members who aren’t familiar with assessments.”

Constituent 21: “Workshops to educate members about psychological test and also conducting psychometric tests conducted bi-annually for familiarisation.”

Theme Three: using assessment measures that are related to the job being tested for. The final theme that emerged from constituents’ narratives was the need for assessment

measures to have specific reference to the purpose for which they are being used.

Constituents felt that tests could be improved to show better relevance for the job a person was being hired for. Their voices are presented in the following:

Constituent 1: “I’ve written an assessment where I just couldn’t tell how this relates to my work. I can’t really say how they can be improved but it has to be at least relevant to your performance and the work you’re being hired for, there has to be some relation.”

Constituent 12: “The DoD must apply different tests for different mustering’s and testing must be for a specific purpose and not simply do a general assessment”

Constituent 11: “Questions tests must be improved so you can see the relevance of the questions to the job you are being tested for”

Summary and synthesis of findings

This chapter has presented results of the present research. This research aimed to answer four questions pertaining to psychological assessment measures in the military. This investigation inquired how psychological tests were perceived by military constituents; what major reasons of positive perceptions; and negative perceptions of psychological assessment measures were in the SANDF; and how these perceptions could be improved. The results presented within the present chapter were based on four assumptions. Firstly, that military members’ who had been subjected to psychological testing for occupational reasons had specific feelings towards psychological assessment measures which would be based on their experiences. The second assumption was that these perceptions could be discovered and understood through the method of inquiry that the study undertook, Interactive Qualitative Analysis (IQA) which falls within the qualitative paradigm. A thirdly was that uncovering these perceptions had the potential to inform psychologists on how perceptions of psychological tests and psychological assessment practice could be improved in the SANDF;

and lastly, that the study insights had the potential to make an original contribution to literature in the field of psychological assessment tests by revealing data of an unknown.

The first section of this chapter aimed to present the development of 13 affinities that emerged during IQA focus group discussions, as well as the thoughts generated on each affinity by constituents in response to their views on psychometric tests. The affinity of personal experience showed that constituents viewed their experiences with psychological assessment measures as interesting, enjoyable, and fun, and at the same time, they found these tests challenging and stressful. Part of constituents' experiences included feeling calm and relaxed during test taking, as well as feelings of being intimidated, challenged and being under pressure, particularly with timed psychometric tests.

Psychometric tests were further perceived as having both advantages and disadvantages. Among the advantages, assessment measures were seen to offer the opportunity for self-reflection and facilitating self-understanding. Their utility was additionally recounted for being an appropriate means to identify qualifying candidates; being able to identify problematic behaviour and anomalies; providing direction and predicting future behaviour. These psychological tests were further perceived as enabling psychologists to understand the mental functioning of personnel with efforts to provide assistance.

While constituents cited numerous benefits of psychological testing in the Defence Force, other thoughts that emerged pointed to constituents being inconclusive about their relevance, their value and being somewhat perceived as irrelevant and a non-essential in the military. Accompanying perceptions along this line of thought were, psychological tests also being perceived as not always effective or relevant for roles personnel were being assessed for.

Disadvantages of psychometric tests were perceived as serving as a barrier for deployment and promotion opportunities. Another disadvantage was the perception that assessment measures could be easily manipulated particularly by those seeking deployment posts. Test manipulation was cited as occurring through pre-emptying desired answers and responding accordingly rather than accurately. Further disadvantages related to aspects of culture and language where constituents felt there existed a gap between the perspective of psychological tests and language forms when put side by side with the diversity of the South African population. Such a discrepancy led to the perception that potentially high-quality candidates were being missed due to a lack of language familiarity.

Concerning suggestions and improvements, constituents felt they could benefit from gaining a better understanding of psychological assessment measures, being afforded opportunity to become familiar with these tests as well as more time to complete psychometric tests during test taking. Other suggestions included incorporating electronic test formats, as well as the use of tests which one could easily appreciate its relevance to the job role. This chapter has laid bare the affinities that emerged from IQA focus groups and in accordance with IQA methodology, themes that emerged from semi-structured individual interviews that were conducted afterwards to elicit thick rich descriptions on the phenomenon.

CHAPTER SIX: DISCUSSION AND CONCLUSION

Introduction

The extensive usage of psychometric tests by military organisations as highlighted in the literature reviewed for this study, indicated the important role they play in personnel selection, personnel development, and promotion decisions. As reflected in innumerable studies, there exists a consensus that the use of measures provided the benefit of objectively identifying and evaluating the abilities and preferences of those participating in selection processes (Chu et al., 2014; Haarhoff et al., 2020; Marimuthu, 2017). Notwithstanding their potential to yield reliable results, in predicting job performance in occupational settings, constituent perceptions of psychological tests remained unexplored, particularly in the South African military. Considering test takers perceptions was deemed valuable to come into an understanding of test takers perceptions to equip military psychologists to anticipate possible objections from those who do not see their value, particularly in South Africa where psychological tests have a history of involvement in discriminatory practice. Moreover, understanding the way assessments were perceived was further foreseen to yield insights which may serve as a foundation from which scientific evidence could be built in efforts to foster trust in their validity. The attainment of test takers perceptions was valuable as it aimed to empower the military community, particularly practitioners of psychological testing with insight into how instruments used in occupational decisions were viewed in their environment, thus empowering them with a holistic and current understanding of how their audience engaged with their science. The concern of the present study was therefore to establish overall perceptions of military personnel regarding psychological test use in the SANDF, as well as establishing aspects which were considered positives, and those perceived as negatives. The study additionally investigated areas of the same, which military personnel perceived as needing improvement.

This chapter presents the discussion and interpretation of the findings presented in the previous chapter. In discussing the findings of the study in this chapter we start with a discussion of how each of the research questions formulated to guide the study was responded to by the data emanating from the study. As answers to the research questions are discussed, this chapter also attempted to relate findings to relevant studies in the literature reviewed. Following this discussion, the summary and implications for policy and practice arising from the findings of the present study are presented. Finally, the study limitations and areas for further research are delineated.

Discussion of findings on the research questions

Perceptions of psychological assessment measures in the South African military

The first research question explored ways in which psychological assessment measures were perceived by military personnel in the SANDF. Findings pertaining to this question revealed that there were no uniform perceptions among the military personnel studied; rather their perceptions varied along positive and slightly negative directions. These variations ranged from tests being viewed as “fun”, “interesting” and “enjoyable” to being viewed as “challenging” and “stressful”.

The present study had postulated that constituents’ perceptions would be informed in part by intrinsic factors, which referred to their personal experience and reflecting on it, by evaluating how they experienced the tests, whether it was seen as containing sufficient face validity to persuade constituents of its accurate measurement of the construct by virtue of judging item content, design and the manner in which it was administered. Given that studies have established the significant role of face validity in influencing test takers motivation, the study further postulated that the way constituents experienced psychological tests would have an impact on how engaged or disengaged constituents would see the task. All these factors were anticipated to contribute to constituents’ overall personal experience which would then

inform how they perceived psychological tests. Rhetoric about psychometric tests which included both positive and negative messages around assessment measures was envisaged to account for extrinsic factors that would influence constituents' perceptions.

Findings concerning assessment measure perceptions in the South African military revealed that constituents drew primarily on personal experience rather than relying on external sources, such as rhetoric to inform their perceptions. This finding was supported by the SID generated by senior constituents (Tables 8 & 9), and that generated by junior constituents (Tables 13 & 14) as well as thematic analysis used to triangulate data. As constituents did not make reference to rhetoric, in accounting for their perceptions, whether it was positive or negative, suggested that the manner in which constituents personally experienced the tests they completed took precedence on how they viewed psychometric tests. This was a very interesting finding as it reflected a clear departure from the trend of past perceptions about the value of assessment measures in South African military. For instance, as highlighted by Kgosana (2012) many black South African employees have largely been negative about the place and value of assessment measures in the SANDF. According to Kgosana (2012) the severity of anti-psychological assessment sentiments in previous years, particularly at the onset of democracy, had reached a point where unions had gone as far as implementing bans on them during recruitment, promotion and development selections thus highlighting the depth of test distrust. Hence one cannot but consider the present study finding indicating that majority of the constituents now harbour a positive perception about the importance of psychological measures in the military as a move in the right direction. Such a new trend appears to be an encouraging testimony that the transformation efforts put in place after the 1994 transition for enhancing the quality and practice of psychological testing in the South African military were making the expected impact. Laher and Cockcroft (2014) noted that the route psychological testing practice

usually follows is the socio-political orientation of the country. This assertion possibly holds true regarding current political developments. Policies such as affirmative action that require a majority representation in the workplace may have also contributed to a decline in antitrust sentiments around psychometric tests and propelled constituents to evaluate them from the perspective of what one has personally experienced rather than past rhetoric. As redress policies are committed to aiding access to opportunity for all groups, particularly those who had been previously disadvantaged through implementation during recruitment, development, as well as personnel promotion, suggests that even when previously disadvantaged individuals scored lower on psychological tests, as may sometimes be the case due to issues such as adverse impact opportunity may be afforded to demographic groups according to stipulated quota.

Extrinsic factors such as narratives that related to the history of psychological testing were, at the beginning of this study, thought to have a contributing factor in the way psychological tests would be perceived in the military. However, in this study no references were made to the origins of psychological tests as tools used to discriminate against African cultural groups intentionally and unfairly. This further suggested that distrust previously directed at psychological tests had declined. This decline in anti-trust sentiment was attributed to efforts by the practice of psychological testing to distant itself from historic involvement in supporting discriminatory political ideology. Efforts such as the enactment of the Health Professionals Act 56 of 1974 which prescribes ethical psychological measurement practice; the publishing of a schedule that provides information on reviewed and certified psychometric tests eligible for selection decisions, as well as measures to protect the public from unfair practice through the provision of ways to report experiences perceived as unethical through various channels were perceived to contribute to improving the image of psychological testing in the Defence Force. Other measures such as the promulgation of the

Employment Equity Act 55 of 1998 that prohibits the use of unfair tests, by the government, that may have similarly contributed as these measures may have built confidence in test takers that unfair testing practice is prohibited and any experiences that are perceived to be discriminatory can be litigated.

This finding provides further encouragement for the reputation of the field of psychological testing in the SANDF. For instance, Laher and Cockroft (2014), note that at the dawn of democracy, the field of psychological measurement abandoned their support of ideologies of separateness which had been an agenda of the previous dispensation, in favour of inclusive and fair assessment practice. This period led to the discontinuation or adaptation of psychometric tests that were solely standardised and normed for white populations and the development of new measures that were culturally inclusive. For constituents in this study to have viewed psychological tests as interesting, fun and enjoyable reflected the long way that the field of psychological testing in the South African military has come towards undoing its negative reputation and the critical role it has played in the implementation of unfair assessment practice in the past.

Studies pertaining to test takers' reactions to selection methods are often framed from the perspective of organisational justice which have shown that positive attitudes towards assessment measures were related to motivation during test completion (Anderson & Witvliet, 2008; Bertolino & Steiner, 2007; Marcus, 2003; Moscoso & Salgado, 2004; Nikolaou & Judge, 2007; Phillips & Gully, 2002). The description of tests in the SANDF as 'interesting', 'enjoyable', 'fun', 'challenging' by the constituents in this study pointed to the motivational disposition that constituents may have experienced during testing. For instance, experiencing an event as interesting is linked to exploration, attention and learning as well as denoting a positive outlook toward a given object or event (Silvia 2003, 2005). This suggested that constituents in the present study who perceived psychological tests in the

South African military as interesting were receptive to the requirements of the tasks and may have experienced positive affect and engagement, being fascinated as well as being curious, as they went about with completing tasks. Ely et al. (2013, p.13) describe a person who experiences an event as interesting as positioning themselves to “increase receptivity to the task demands,” this suggests that undergoing assessment may have evoked feelings of excitement and anticipation in constituents which oriented them to approach the tasks at hand with considerable levels of motivation.

This finding which conveys the motivational aspects which constituents possibly experienced further departs from previous views of assessment measures in the SANDF. For instance, Kgosana (2012) found that due to the misuse of tests, many South Africans held views that corresponded with these measures being a deliberate way to prevent disadvantaged groups from accessing employment opportunity, at either recruitment or promotion stages. If such narrative still prevailed at the level in which they previously did, it is unlikely that constituents would feel engaged and motivated while completing psychological tests, irrespective of whether it was for recruitment into the organisation or for developmental purposes. In fact, the opposite would be true where constituents would have rather experienced disinterest and disengagement while completing tests and doing so only as a matter of formality. Hence, this positive perception is further encouraging as it shows that significant shifts have been made from previously negative narratives in favour of more positive views of assessment measures in the SANDF.

Of course, apart from describing assessments in the SANDF as ‘interesting’ and ‘enjoyable’, some constituents also perceived them as challenging and stressful. Experiencing an event as challenging is often accompanied by a state of uncertainty, in anticipation of a stressful situation, which the outcome is usually unknown like being assessed for selection purposes. This finding can be understood in two ways. Firstly, it suggests that constituents

who experienced a challenge state during testing may have been geared towards better performance particularly if they associated the outcomes issuing from the tests with the opportunity of positive gains such as gaining employment or progression opportunity. Several studies have offered support to this assumption particularly in respect of cognitive task performance (Jamieson et al., 2012). This perspective would therefore support the motivational aspects of test taking discussed in the paragraph above.

Another way in which this finding can be understood is with regard to concerns raised at the SANDF briefing meeting on psychometric tests (see appendix 1). For instance, some of the concerns reported by those in SANDF leadership pertaining to assessment practice in the organisation identified factors affecting test performance of black test takers, as emanating from cultural and language orientations; socio economic factors; and the quality of education the country offers, all of which were perceived to disadvantage test takers from African cultural backgrounds. One would then wonder what led some constituents to experience tests as challenging and stressful. Could this state be attributed to the normal and expected conditions of test taking such as being under pressure to perform as is often the case, or was this attributed to culturally ambiguous test items; elements that concerned language such as the internal translation process which second language speakers of English often engage in while completing test items or socio-cultural influences that test takers, particularly those from township and rural areas, may have to contend with during test completion. If the challenge and stress were the result of what is normally expected under test taking conditions for those who come from a position of privilege, this means that test takers from township and rural areas may have experienced a double fold challenge as there were additional issues to contend with. Further investigation of this trend may be useful in establishing reasons behind experiencing tests as challenging as it appears to suggest that despite the various efforts that are being made to improve the use of assessment measures in the recruitment,

personnel development and promotion at SANDF, more still needs to be done to level the playing field for all the organisation's members (irrespective of their race, gender or colour).

Furthermore, constituents' ability to provide accounts of their perceptions on psychological tests in the SANDF as 'interesting', 'enjoyable', 'fun', 'challenging' and 'stressful' indicated that they engaged in the process of personal reflection as described by Gibb's (1988) model that propose the process of reflection involved systematically recalling, evaluating and analysing the happenings of the event, the emotions that they may have experienced as well as the accompanying reactions. Such reflection proved to be deeper than merely recalling that they had participated in psychological testing. It involved thinking deeply about the event so as to gain perspective and to provide a holistic interpretation of how what they had experienced influenced the manner in which they viewed assessment measures long after the event had passed. Such an evaluation of psychological tests based on reflecting on personal experience, by constituents, to my mind, is again an important and very revealing finding which reflects the dawn of a move in the right direction as regards the use of psychological measures in SANDF. This is particularly so when seen against the finding that constituents' disposition has shifted from viewing these tools from the lens of their problematic political involvement. In this regard, there was need to take into account, the kind of experience that test takers will have with the psychological tests when assembling test batteries for either recruitment or development selections in the SANDF. Avoiding measures that contain biased items and any tests that may be classified as unfair will contribute to the development of positive perceptions in the SANDF.

Major reasons behind positive perceptions of assessment measures in SANDF

The second research question explored reasons that constituents attributed to their positive perceptions of psychometric tests in the military. Four themes encompassed these reasons, namely that:(1) they provided an opportunity for self- reflection, (2) military

assessment measures offered the organisation with a way to identify qualifying candidates, (3) assessment measures in the military were a way to identify problems in persons being assessed, and finally, (4) they helped the organisation understand a person's mental state.

Theme One: Psychological tests perceived as providing an opportunity for self-reflection.

During selection processes, psychological tests in the SANDF are administered to provide insights about an individual's abilities, such as their intellectual capability, personality traits, work preference styles, leadership ability and emotional intelligence (Anestis et al., 2019; Bang et al., 2017; Køber et al., 2017). The outcome of the evaluation is generally geared to provide insights for practitioners from which they apply their professional expertise to reach defensible decisions for appointing, promoting or pin-pointing areas of development for the candidates or employees (Ballantyne & Povah, 2017). The findings chapter, particularly under research question 2, highlighted that constituents felt that assessment measures provided them with the 'opportunity to engage in a process of self-reflection', 'to learn about themselves, their identity, identify areas that needed improvement', and 'the opportunity to understand how they personally processed information'; all of which suggested that the benefits yielded by the process of psychological testing in the military constituted additional benefits for the test taker, which were by-products of the selection process. This particular finding was important as it reflected a new emerging theme that the mere purpose of completing a psychological test can enable test takers to reflect on test items, and their responses to them to reach an improved understanding of themselves. This self-knowledge that can be attained was articulated from constituents from a position of self-introspection that was devoid of feedback as constituents relayed that receiving feedback provided additional benefits towards self-understanding.

Typically, while for development selections feedback is expected and provided since this is one of the foremost ways to make known to the candidate areas in which they excel and those that need attention, in volume recruitment selections where there are exceptionally large numbers of applicants in comparison to the opportunities advertised, as is the case in the SANDF, feedback on test performance may not always be provided to candidates. It is therefore encouraging that even in instances where feedback is not available, test takers who are self-introspective have the opportunity to reflect and gain improved self-knowledge. This reflection may have arisen from items in personality tests and situational judgement tests which typically pose questions where a person needs to identify their personal preferences and how they would respond in specific situations (Fisher et al., 2020; Tiffin et al., 2020). This theme also highlighted that feedback was seen as serving as a catalyst in becoming a better person and to anticipate how to approach completing psychometric tests in future. This sentiment is supported in literature where studies show that feedback serves as a mechanism for greater insight that facilitates learning (Watling & Ginsburg, 2019). Such self-knowledge has been found to be beneficial for transferring tacit knowledge into explicit plans for improvement (Knapp et al., 2017).

The finding that constituents believed psychometric tests provided an opportunity for self-reflection and can facilitate a deep and holistic understanding which involves critical thinking, enhancing professionalism and facilitating self-insight showed that something revolutionary appeared to be taking place in the way psychometric tests are perceived in the SANDF presently. It shows that assessment measures were being viewed as helpful, and as trusted tools which resulted in personal gain. In this regard, when compared to the situation of things before, such as during the apartheid period, as highlighted in studies by Kgosana (2012) and Laher and Cockroft (2014), it becomes easy to see that some of the earlier complaints against the crisis of bias in the use of psychological assessment measures in the

South African military, particularly as concerns the problem of racial discrimination of psychometric tests and how they were administered, are beginning to be successfully addressed. Given this, this finding therefore suggests that those who undergo testing for developmental purposes in the organisation and receive feedback seemingly trust the feedback and would be willing to implement the recommended suggestions as necessary for successful career development and progression in the military. The finding also suggests that even those who undergo recruitment selection where candidates may be too numerous to be provided with feedback, the opportunity for self-reflection remains present, albeit not as significant as it should be when expert feedback is given, but nonetheless beneficial.

Theme Two: Assessment measures perceived as helping the organisation to identify the right candidates.

A second positive perception provided by constituents for the value of psychological tests in the South African military was articulated in their purpose of giving direction in the identification of people who possessed the right skills for the job at hand. Most constituents studied agreed that psychological tests were useful for identifying good hires during selections such as recruiting, development, promotion and deployment missions, to aid decision-making process and being able to establish if a member would be able to perform well during their employment. While the use of assessment measures in this regard has been established over many years (Ellingwood et al., 2020), this finding was similarly significant as it reflected the extent of the positive image we need to take away from this study as regards the study constituents' perceptions of psychological tests as valid and reliable instruments for achieving crucial recruitment decisions and personnel development in SANDF.

The observation by constituents that tests assisted with the identification of good hires is even more so important for organisations such as the SANDF, whose mandate rests on

having a capable defence system that enhances national, regional and global security (Holmberg & Alvinus, 2019). Failure to identify capable servicemen, for the various demanding military roles, may threaten and introduce vulnerabilities in the country's perceived security. What is particularly interesting about this finding was the manner in which the views of constituents diverged from views of SANDF leadership reflected at the briefing meeting on psychometric test (see appendix 1). From the perspectives of SANDF leadership, the use of results from psychological tests, which produce lower scores for African people were perceived as denying those previously destitute and are trying to improve their lives by joining or progressing within the SANDF. If anything, this finding reflects that perceptions about psychometric tests in the SANDF have come a long way since the briefing meeting and tests now seem to enjoy more credibility, at least among constituents of the present study. While this finding reflects a move in the right direction towards positive developments, the issue of differential validity is one that still exists which suggests that more effort is needed to improve aspect of tests used at the SANDF for recruitment and promotion purposes, and even for personnel development within the Defence Force.

Commenting specifically with regards to differential validity in psychometric tests, it is important to take into account the point made by Helms (1984) in the proposition of the cultural bias hypothesis, who argued that score differences were the result of notions of culture that psychological tests produced between those who held majority group membership and minority groups and thus to improve on the important role of the use of psychological evaluation, the use of cultural equivalence in testing can work towards alleviating these concerns. In this regard, while this finding is encouraging, it would be useful for practitioners of psychological testing in the SANDF to improve believability of fair assessment practice by demonstrating how cultural equivalence is applied in assessment

measures, in all selections whether it is for recruitment, development or promotion, in ensuring dependability of score results.

Similarly, the finding that psychological assessment measures helped in the identification of good hires is interesting for another reason; namely, that even though psychological tests in the South African military were perceived as susceptible to manipulation, constituents still believed that they helped identify good hires. To my mind, this is an important and very revealing finding which reflects that despite perceived shortcomings of psychological tests, such challenges were not seen as nullifying altogether the value, and validity of testing in the SANDF.

Theme Three: Psychological tests viewed as helping to identify problems that a person might have if recruited into the military.

The third theme emerging from constituents' response to the question of major reasons for their positive view of assessment measures in the military was their view that psychometric tests were able to enable the identification of problems in individuals and providing direction for resolving those problems once identified. This finding is again important and significant when considered against the background of the presents study. It contrasts with views of SANDF leadership presented at the briefing meeting which held views that psychological tests were to the most part guesswork and had not demonstrated their benefit to the country or the organisation (see appendix 1).

Constituents' perceptions of psychological tests in the military as 'helping to identify problems that a person might have' are supported by studies that look into the assessment of counterproductive work behaviours. CWB or voluntary employee behaviours that are considered contrary to the legitimate interests of the organization are behaviours that typically violate workplace norms or those that may even threaten the well-being of the organization and its members. These are behaviours that are more often than not regarded as

unethical as these behaviours have negative consequences for those affected by them (Cohen, 2018; Trent et al., 2020). For instance, when servicemen engage in interpersonal deviance or employed manipulative social influence efforts designed to achieve self-serving aims, these behaviours when directed at other individuals may constitute of abusive acts, threats or violence whereas when directed to the organisation these acts may include elements of sabotaging the organisation or its processes. Within the context of military organisations, deviant behaviour may threaten state security as well as the security of civilian members during peace keeping deployment missions, all of which may have negative repercussions for the SANDF and the image of the country as a whole. It is therefore a noteworthy observation put forward by constituents that problematic behaviour can be picked up from psychometric test results. It is additionally interesting to note that among the innumerable benefits of assessment measures reported in literature, this particular theme emerged. The emergence of this theme supports Matsuda (2010) who noted that CWB have been found to be especially high within the military context, particularly the trend of toxic leadership, and in some instances has resulted in suicide attempts by servicemen reporting to commanders with destructive leadership styles in military organisations. In a military organisation like the SANDF, being able to decipher between people who possess CWB whether it is during recruitment or promotion selections is therefore particularly important as there are many aspects at stake, when the needed action is not taken to prevent such occurrence.

The observation by constituents that through psychological tests such as personality and integrity measures, individuals who may lean towards deviant workplace behaviour may be identified prior to being selected into the organisation or promoted into senior roles where their destructive conduct may cause harm, signifies an important and significant value of psychometric tests that provide benefit for the organisation and the country alike. This finding therefore reflects an interesting finding that unlike senior SANDF leadership who

questioned the contribution of psychological assessment measures for the organisation, and the country, constituents noted a tangible contribution made by these tests in their environment. Such a trend appears to be an encouraging testimony that effort for enhancing the quality and practice of psychological tests in the South African military is making the expected impact.

Psychological tests perceived as necessary for evaluating mental functioning. This was another theme that emerged from the response of constituents to the question of their reasons for seeing psychological assessment measures in the SANDF in positive light. In this regard, as presented in the chapter 5 which presents the study findings, constituents suggested that psychological tests were relevant for the military in helping the organisation assess the mental functioning of their members. As conveyed by constituents, assessment measures were seen as a necessary function to “keep tabs on the mental states” to ensure members can “think positively” to understand “someone’s mind” to know if someone is “mentally unstable”. The finding that these selection tools were necessary for evaluating mental functioning in the SANDF provided further testimony as regards the manner in which perceptions around psychological tests and their benefits have changed in the South African military over time. The trend of the present finding which further departs from previously prevailing views that psychological tests were of no particular benefit to the organisation and country (see appendix 1) to more positive appraisal where assessment measures were seen as playing a pivotal and beneficial role in evaluating mental health during military deployment, or assessing mental health prior to recruitment into the organisation shows that something profound appears to be taking place in terms of helping the employees at SANDF to develop confidence in the role of psychological tests in making proper and salient decisions about who is qualified or not, to get recruited into the military, or who should or should not get which promotion or be deployed on peace-keeping missions.

It might be interesting in the context of this discussion to note that prior to deployment the SANDF requires members to demonstrate that they are functioning at the mental health status that correlates with set standards for deployment. SANDF mental health standards are based on the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013) and additionally follow criteria stipulated by the United Nations (UN). According to the UN, members are prohibited from deploying if they have a history of substance dependence, situational maladjustment, anxiety disorder or are on chronic medication. For psychological tests to be deemed by the study constituents as able to determine a member's ability to cope with the conditions that may be encountered during deployment missions or to determine if they have pre-existing maladaptive behaviours such as an alcohol problem that would compromise their service while in deployment reflects a clear benefit in the measurement of servicemen's psychological well-being, identifying risk factors as well as protective factors pre and post deployment through the employment of psychological tests as those serving in the military have a significantly higher exposure to trauma, which have been known to lead also to high rates of post-traumatic stress disorder (PTSD) in some individuals. The trend of the findings particularly as seen from the views of the constituents on the role of psychological assessment measures in evaluating mental functioning raised during the focus group discussion showed that something positive was happening as regards helping to educate the employees on the relevance of the use of tests to improve the objectivity and accuracy of decisions made during recruitment and deployment processes.

Major reasons behind negative perceptions

The third research question explored in the present study aimed to discover what participants perceived as negative aspects of psychometric tests in the South African military. In this regard, findings revealed a number of areas that contributed to their negative

perceptions of psychological tests at the SANDF. Firstly, constituents believed that such psychometric tests appeared to be easy to manipulate in order to achieve the desired outcome; secondly, constituents raised concern that assessment measures were at times lacking in African cultural perspectives. The third aspect was related to the lack of language options of psychological tests which led to views that such tests tended to disadvantage other cultural groups while favouring others due to their limited language options.

Assessment measures in the SANDF perceived to be susceptible to manipulation.

This theme reflected constituents' perception that psychological tests were susceptible to manipulation when those participating in them were focused on attaining positive results. The development of this theme reflected that some of the study constituents are of the view that the issue of manipulation stemmed from pre-empting the correct answer based on estimation of what they believed the psychologists wanted to hear and then providing that answer. This particular finding was important in the context of the present study as it provided an element of moderation to the extent of positive perceptions regarding the study constituents' perceptions of psychological tests as standard instruments for achieving meaningful success in the practice of military recruitment, personnel development and promotion. Such a finding shows that while most of the constituents had many positive views around psychological tests in their organisation, some still had negative comments to share in this matter. Their point on the issue of possibility of faking or manipulating psychometric tests appeared to suggest that despite the various efforts that are made to improve testing practice in the SANDF there was still room for more to be done.

In this regard, the problem of possibility of faking in psychological tests is an issue of great concern given that when members faked or manipulated tests, this distorted the validity and reliability of scores yielded. Additionally, as enumerated by faking frameworks like those by Heggstad and Thornton (2006) and Ryan (2000), the process of manipulating assessment

measures tended to be elaborate (and potentially time-consuming during assessment completion) which may have implications for integrity of the test measure and the test takers' performance. For instance, these frameworks suggest that firstly members would make a discernment of the situation to evaluate if faking was firstly possible, which would involve evaluating the situation in order to understand what the ideal situation would be and what would be required to achieve it. This, on its own, suggests a situation that can be comparable to taking things apart, and trying to refit these to achieve the desired state. Such a doing would mean analysing and reanalysing test items and looking at them from every possible angle. Secondly, as emphasized in test faking frameworks, to successfully manipulate, military personnel would need to possess traits like general cognitive ability, emotional intelligence, knowledge of what was required, knowledge of what was being measured and the determining the right responses. As seen in constituents' narratives, those who felt psychological assessments could be faked did so by fearing or assuming that test takers could pre-empt what seemed to be the correct response. Of course, there is no doubt that the processes that members who manipulate would engage in would compromise the integrity of the test. What complicates the matter further was that constituents noted that faking responses by discerning what the appropriate answer could be was something relatively easy to do especially when one had been through the process before and had completed the same psychometric test.

In this regard, for constituents to observe that psychological tests may be subjected to manipulation, an area that has received considerable attention in assessment literature, suggested that the problem of faking was one that required continuous investigation concerning measures that may work toward ameliorating the effects of faking. As noted in literature, many efforts have been implemented by test developers which attempt to minimise manipulation such as the implementation of scales that record and measure inaccurate

responding, socially desirable responding and impression management. While these endeavours work toward improving the accuracy of test score results, it appears that such efforts may still not be effective in deterring test takers from attempting to manipulate psychometric tests. Further, such measures, as reflected in constituents' narratives contributed little towards improving perceptions of test validity.

With this in mind, it seems that there is strong need to take into account the suggestions made by the constituents in their response to the question of what they believe could be done to discourage test manipulation and improve things for the better regarding the continued use of psychological tests for purposes of successful recruitment, enhanced personnel development, and satisfactory promotion practices in the South African military.

The problem of omission of African cultural perspectives. The second theme that informed constituents to attribute negative perceptions concerned what was termed as a lack of cultural perspectives in the contents of psychometric tests. Some constituents raised concerns that tests in the military often failed to take into account the diverse cultural perspectives of the South African population. By omitting the African cultural perspective, assessment measures were perceived as largely Eurocentric in their orientation. To my mind, this is again, an important and very revealing finding which reflected that even though most constituents seemed happy with the quality of fairness and the objectivity that was currently being brought into assessment procedures in the SANDF not only in the recruitment but also in the promotion processes, yet this study showed that some constituents still had some concerns with regard to this matter.

An area of discontent in this regard pertained to the omission of African perspectives that were still being faced in the use of tests for making crucial decisions that influence military recruitment, personnel development and promotion practices at the SANDF. In the current study, some constituents during the focus group discussion made reference to test

items that in some instances flagged personnel from African cultures as exhibiting symptoms of what was considered mental illness in European culture. In this instance, the implication of answering positively to these items would mean that these constituents would be deemed as posing a risk for deployment assignments and would unlikely be afforded access to these opportunities. Even though these items were considered indications of mental illness in European culture, in African culture these symptoms were related to ancestral calling which was considered as a natural phenomenon thus, some constituents viewed items of this nature as unfairly discriminating as they accounted for a single perspective, and neglected the diverse cultural perspectives of the South African people. Without cultural inclusiveness, such assessment items, as argued by some of the constituents would result in potential discrimination by affording members from represented cultures an unfair advantage over unrepresented groups. Thus, while most constituents in the present study agreed that psychological tests in the military had their place and were useful, some constituents similarly were of the view that it was important that aspects of such tests addressed African viewpoints as well; highlighting the argument for cultural perspectives that has received extensive support in the literature (Foxcroft, 2011).

The emergence of a trend such as this one is useful especially in the SANDF where a number of positive shifts in perceptions have occurred as this theme reflects further work that is required to address issues that remain a cause for concern. In the background section of chapter one, one of the issues that arose from the SANDF briefing meeting (see appendix 1) was the need for an African model of assessments that could be implemented within the organisation. This theme tied in with what was viewed as a concern by SANDF leadership that psychometric tests used in the military were predominantly founded on Eurocentric models whilst being implemented in culturally diverse African societies, such as South Africa. Seen from the above perspective, in culturally diverse contexts, it becomes important

for psychological tests to have cultural relevance to the populations for which they are being used. This means that assessment measures that are culturally informed will improve understandings of behaviour by examining it from the test takers' cultural context. This conclusion suggests that the need for culturally inclusive tests arises from many angles; being, practitioners in the field (see HPCSA report), SANDF leadership (see minutes) as well as test takers, evidenced by this theme.

The proposition raised by SANDF leadership of the need for an African model of psychological testing, although not fully elaborated on, holds promise for the resolution of the concern where African perspectives have been omitted in such assessment measures. It seems that important groundwork needs to be done to reach an understanding of what would serve as an African model of assessment practice in the SANDF and how such a model should be applied in psychological tests as a departure from a universalist approach that is currently being followed to account for a uniform understanding and measurement of behaviour that can be applied across all populations irrespective of culture.

Lacking in language diversity. In relation to this theme, almost all constituents raised concerns that psychometric tests in the South African military lacked language diversity in that in most instances there were few language options. In this regard, most constituents noted that psychological tests in the Defence Force were predominantly administered in the English language. Here, most of the study constituents were of the view that by not providing test takers with more language options than has been the case, the organisation lost out on a lot of candidates given that in some instances a person would be able to fulfil the task requirements of the job however, the opportunity would be lost due to low performance on the test based on a lack of meaning and clarity. Limited language options were therefore seen as a disadvantage. In this regard, one central argument made by constituents was that job performance was about skill and not language proficiency however,

low language proficiency became a barrier to securing employment. This finding is of significant importance as it speaks to the theme that concerns the omission of African cultural perspectives. Here, when constituents mention a need for more language options to cater for the county's culturally diverse population, strategies such as translating assessment measures into local languages and adapting these for majority cultural groups come to mind.

According to Campbell and Young (2016) there have been instances where psychological tests have been translated into African languages. An example of one such assessment measure is the South African Career Interest Inventory which was translated from English into isiXhosa for purposes of accounting for culture-specific values that influenced individuals' career choices and presenting the assessment measure in a language readily understood by test takers (Rabie & Naidoo, 2019). While there is no doubt that such an undertaking may require considerations such as the question of whether there would be sufficient test translators and test administrators to cover the multiplicity of languages that exist in the country, notwithstanding issues around dialect given that even the same language may vary dependant on the area in which one resides, adapting and translating existing test measures into African languages raised by constituents may present a difficult yet a worthwhile endeavour towards fair assessment practice as language has consistently been found to impact test performance (Ercikan & Lyons-Thomas, 2013; Foxcroft & Aston, 2006; Foxcroft & Roodt, 2006).

To minimise concerns that relate to test translation into multiple languages, a strategy that can be implemented would be to translate major psychological tests, those commonly used across multiple selections in the SANDF such as the 16PF and DAT tests and others (see section on assessment measures used in the SANDF) into major South African language groups. According to most spoken languages in the country, isiZulu is South Africa's biggest language, spoken by almost a quarter (23%) of the population, followed by IsiXhosa (spoken

by 16%), Sesotho sa Leboa (9%), Setswana and Sesotho (both 8%) (South African Info, 2021). This would mean priority would be given to languages such as IsiZulu, IsiXhosa and Sesotho sa Leboa initially with subsequent translation phases attending to languages with fewer speakers.

The increase in black psychologists in the country may in addition aid translation efforts. When compared with previous years (2007) African psychologists increased from 6.2% to 10.5% in the year 2013 (Carolissen et al., 2015). The Psychological Society of South Africa (2017) further highlights the magnitude in the growth of black psychologists noting that in 2017, 41% of psychologists registered in the clinical psychology category were black Africans, which is a significant increase from the 7% representation that existed some 25 years ago. Such increases in the number of black African psychologists show the growth in the number of trained professionals who have the capacity to fulfil translation tasks. Towards achieving these goals, the SANDF may further capitalise on the organisations internal human resources given that as an organisation, the SANDF employs the greatest number of psychologists across specialisations in the country. The translation of psychological tests into local languages will help individuals with limited English language skills who apply to the SANDF by improving understanding of test instructions, and test items and may further alleviate concerns about disparities of the South African education system pre and post democracy.

Improving perceptions on psychological tests in the SANDF

The fourth question posed in this research was geared towards attaining insight into how constituents believed psychological tests could be improved in the SANDF. In the face of this question three suggestions offered by constituents that stood out during the focus group were firstly, in favour of test formats in the DoD moving beyond paper and pencil based medium thus putting g them on par with trends in industry by converting to electronic

formats. Secondly, constituents suggested the need for more communication around psychological tests to orient test takers on what assessment measures were about. This in turn would aid familiarisation especially for those who had never undergone testing in the organisation. The third suggestion highlighted by constituents, was for assessment measures to be tailored to the job role which candidates were being assessed for. These suggestions are further elaborated in the sections that follow.

Need for electronic test formats at the SANDF. Pertaining to this theme, constituents had suggested that using computerised tests may prove more beneficial in countering the problem of test manipulation. This was based on the assumption that compared to paper and pencil tests, computerised test would be difficult to manipulate. For this reason, constituents were of the opinion that even though pencil and paper tests were able to fulfil their utility, the electronic approach could do a much better job. The sentiments of most constituents in this regard correlated with the notion of the advantages of electronic testing reported by Rezaie and Golshan (2015), who observed that assessment measures that made use of electronic formats helped in reducing over exposure to items that result in manipulation through familiarity from exposure over time. This suggestion is of specific importance to the SANDF who rely on psychological tests during not only promotion and developments but also during internal recruitment for peace keeping deployments. Appointing the right servicemen for deployments of this nature is especially critical given that these are UN appointments and as such the manner in which servicemen perform and behave while on duty reflects on the global image of the country as servicemen represent the country on an international platform. More so, as in recent years there have been reports that as part of UN peace keeping missions SANDF soldiers have the highest recorded number of offences while on deployment pertaining to sexual abuse and exploitation in their host countries (Mail and Guardian, 2019). The utilisation of electronic tests, as suggested by

constituents, can work towards tightening the loopholes created by the problem of test manipulation.

Constituents referred to the problem of test manipulation occurring by test takers presupposing what the correct answers could be, and further mentioned that once the person had completed the CHA, a test conducted for purposes of deployment, the individual could manipulate the test with relative ease in subsequent evaluations.

Given this, the main reason behind constituents' suggestion for the use of electronic tests in the SANDF were the need to counteract test manipulation which was contributed to the manipulation of assessment measures in order to achieve positive personal outcomes. In support of this, most computerised tests make use of the process known as computer adaptive testing (CAT). In this regard, Rezaie and Golshan (2015) remark that electronic tests that make use of CATs contain a large pool of test items, referred to as an item bank, where the computer is designed to stop testing when a trait or ability has been measured to a satisfactory point. In addition, according to Qian et al. (2017) and Rezaie and Golshan (2015), CAT facilitates the estimation of test takers' ability by looking at the candidates' response time and then using these estimates for subsequent test items that match the test taker's ability. Here, the presence of a large pool of test items means that the chances of receiving the exact test items in subsequent tests is minimised thus reducing the problem of recall which promotes test manipulation through exposure of items over time.

Another area in which computerised tests improve accuracy, is that they have the advantage of presenting test items with precision, in their timing, recording of responses and scoring. When using computer-based tests, raw scores are automatically transformed into the required numerical form which prevents scoring errors (Khoshsima & Toroujeni, 2017). This is an important advantage given that scoring of psychological assessment measures has always presented the threat of measurement error when an assessor has to use their personal

judgement. Computer based assessments are therefore able to oversee the administration process, start the test, time it and stop it once test time has lapsed. An administration of this nature further removes distractions that might unduly influence a test takers performance. These distractions often pertain to the appearance of the person administrating the test such as their gender, race, age, and manner of communication. Depending on the sophistication of the test, computer formats may also be programmed to automatically produce a report of the test results (Vispoel et al., 2019). Adopting computer-based testing would be advantageous in putting the SANDF on par with global trends in testing. This assertion is in line with gains of advancing technology. When one considers these gains with respect to electronic test formats, support has been found for improved measurement, administration efficiency, increased convenience and counteracting human error (Khoshsima & Toroujeni, 2017; Vispoel et al., 2019).

However, despite the gains of this medium, due consideration needs be given to how to get the test takers' to become familiar with computers and their test sophistication. In a country like South Africa where a majority of the population do not have access to computers, these candidates may not be adequately equipped to successfully deal with computer-based tests, which may result in their being unfairly disadvantaged. This would be especially problematic when this disadvantage further curtails persons who had already faced significant marginalisation based on the previous social conditions of the country. The issue of test sophistication, a person's experience with test taking, also needs to be given due consideration. Given the extensive range in the kinds of tests that are available, a test taker may be very sophisticated and practiced in taking tests of one type in a given medium such as multiple-choice paper-and-pencil tests but not familiar with tests o in other formats such as those which are computer-administered. The findings chapter presented the observation that constituents lacked familiarity with testing and felt they could benefit from practice sessions

outside of actual test-taking during selection. This suggests that test sophistication may be at a minimal level for some test takers and heightening this aspect could result in an improved testing experience.

A second area for consideration was that of security for military organisations. While there may be legitimate security concerns around the utilisation of computer mediums, these can be countered by establishing measures that can counter these, as numerous other military organisations have successfully achieved this. The suggestion of using more electronic based tests is of significant importance for psychological testing in the SANDF to keep pace with global testing developments and implementing more sophisticated measures to reduce test manipulation during recruitment, deployment and promotion processes.

Need for educating members on psychological measures. The second suggestion presented by constituents in relation to the theme of improving perceptions of assessment measures in the military considered to the need to give members effective education on psychological tests and the test taking process. In this context, constituents expressed the view that they required workshops to educate them about psychological assessment measures and the testing process, and perhaps even roadshows and unit visits to create awareness. Constituents further equally suggested that there was a need to educate personnel about psychological tests in their organisation which would inform members about how these tools worked and how they could approach them so they could be better equipped to successfully handle the process. Constituents also noted that military members needed to understand the processes involved through familiarisation and would benefit from testing being done routinely to eventually understand the process involved which would help particularly when one was unfamiliar with these tests. These suggestions on the need for roadshows, unit visits and familiarisation point to the notion of psychological tests as something that those serving in the SANDF were not fully knowledgeable about.

This lack of understanding can be understood from the perspective of Gross (1994) model of the public's understanding of science. This model states that when it comes to understanding science there were two modes in which rhetoric takes place. These modes were the contextual and deficit modes which served as both a way of analysing how the public understands science and also how to communicate science to the public in a way that is capable of generating the most effective impact.

The themes that emerged from the present study regarding the improvement of psychological tests, namely the need for educating personnel on psychological tests suggested that military personnel's understanding of assessment measures was characterised by the deficit model of Gross (1994) theory. The deficit model describes communication as a one one-way flow from those involved with the science to the public where its practitioners have not expended much effort to try to persuade their audience about the value of their field. The practitioners operate under the assumption that the public was already persuaded of the value of science and therefore do not try to build trust; under the assumption that the public was already trusting. Gross (1994) further describes this mode of communication as one where the public were treated as passive recipients and were expected to readily accept its facts and its methods. The focus is also situated within the context of the science itself rather than the disposition of its publics. Constituents' conveyance of needing more information demonstrated that psychological tests were not entirely understood, at the very basic level, with respect to how they work and the best way around them and that practitioners of psychological testing needed to do more to persuade military personnel of their value.

On the question of providing more information to personnel about psychological measures, practitioners in the military might find value in approaching the matter from the contextual model of Gross (1994) which is the polar opposite of the deficit model.

Contextually, practitioners of psychological tests, according to Gross (1994) would make use

of communication from a two-way flow between themselves and those participating in testing in the military. In this regard, rather than treating military personnel as trusting and already persuaded of the value of psychological assessment measures, according to this model, practitioners would instead participate in trust building exercises aimed at garnering favourable views of tests and their benefits. In implementing this process, practitioners would take on the stance that they were engaging with an active public who have the ability to understand, consume and react to their persuasive messages. By engaging with members in this way, the rhetoric required by personnel would be reconstructed in a way such that the understanding of psychological tests was a joint creation between its practitioners and the end user. This joint creation would further result in better integration of the needs of both the scientific community and its publics thus making the genre deliberative. Knowledge and understanding would need to be approached from the perspective of military personnel's current positioning in terms of the level and depth of knowledge as far as psychological tests were concerned. In the context of the present study, to enable information exchange, while planning communication interventions, programs and messages, assessment practitioners would need to determine the cognitive effort required for each specific group to whom the value of assessment measures would be communicated in order to determine how to achieve persuasion for that specific group using a route that would be dependent on the motivation and level of personnel. Pitching the message at the correct cognitive level and with consideration of the complexity of the message, as well as any prior information on the subject that members might have would further enable personnel's ease of understanding during these endeavours.

Constituents' indication of need for more information comes as no surprise as studies that looked at the relationship between the public's knowledge of science and their attitude towards it have found that knowledge about scientific facts had weak correlations with

positive attitudes towards science (Guenther & Weingart, 2018; Kallerud & Ramberg, 2016). Perhaps one of the reasons are the approaches practitioners had used in communicating their science to the larger non- scientific community. Other studies, however, note that these correlations are relative and vary among specific technologies (Achterberg et al., 2017). To date, no studies could be located where the public was provided with in depth scientific facts and processes about psychological assessment measures. However, this seems worth exploring as research in this area shows that overall, the results tended to show that people who were more scientifically literate held more positive attitudes to science in general, but were not necessarily more positive about specific technological applications or specialized areas of scientific research (Pardo & Calvo, 2016).

Need for improving item relevance. With regard to this theme, constituents felt that the organisation needed to apply varied psychological tests that were specific to members mustering's rather than subjecting test takers to complete tests that were perceived as generic. This theme also illuminated that constituents felt that some of the test items did not reflect the relevance of the assessment measure to the job that members were being assessed for. Constituents' expressed sentiments such as "sometimes you write an assessment and you can't see how this relates to the work" and "it has to be relevant to your performance and the work you're being hired for, there has to be some relation" which shows that constituents had the expectation that the assessment measures would have high face validity in that the test would "look like" what it aims to measure. In this sense, face validity contributed to whether a test was perceived as relevant for its intended purpose or not. Seen against the background of the briefing meeting (see appendix 1) where some leaders in the organisation viewed psychological tests in their work environment as guesswork, the significance of this finding in the SANDF is that it highlights a critical need that is required for increased trust in the validity of psychological tests.

It is important to remember that face validity is not scientific evidence neither is it a form of true validity but is a subjective evaluation of non-experts where a psychological test looks as though it is valid by presenting items that look highly relevant to what is supposedly being measured (Loewenthal & Lewis, 2018). As asserted by Miller et al. (2013) some assessment measures are valid predictors of behaviour, job performance and other constructs despite exhibiting very low face validity. However, from the perspective of constituents, psychological tests that contain high face validity seem to build trust in the scientific validity of the test concerned.

One possible advantage, that increasing face validity of psychological tests particularly in the SANDF where assessment measures have not always been valued, is that if the construct being assessed can be readily identified by test takers their appraisal of the validity of the test is likely to be high thus resulting in high buy in, in the sense that they can use that context to help interpret the questions and provide more useful, accurate answers. In addition, members of SANDF leadership may be persuaded of the value and validity of tests which contain items whose constructs can be readily recognised. Having said this, assessment practitioners in the SANDF also need to keep in mind that items that contain high face validity may in contrast also pose a limitation. For instance, if test takers knew what information the test aimed to elicit, this could result in attempts to curate or shape answers to provide that answer even if it may not necessarily be true.

Despite limitations that may arise from increasing face validity in assessment measures, it is important to take into account the argument made by Ekuma (2012) who concluded that psychological tests must be deemed face valid if people are to have confidence in any inferences made, as illuminated by constituents' views. If assessment measure items are not face valid, the overall measure may be questioned by those taking the test as was the case with the present study constituents who questioned the relevance of some

of the measures that they had participated in. This argument suggested that face validity, although not being a sufficient condition for ensuring construct validity may be necessary in improving the perceived validity of psychological tests in the SANDF. Cohen and Swerdlik (2006) suggest that it is precisely because of this that some organisations have continued to use certain selection procedures such as selection interviews which have far less predictive validity over other alternatives that provide higher accuracy, because of their high face value. When test takers complete an assessment measure that presents items which they can relate to the construct, this provides test takers with the believability they need. In light of this theme, practitioners of psychological testing in the SANDF may benefit by using assessment measures that have high face validity in their selection batteries to enhance test relevance to the job role and contribute to perceptions of construct validity for both test -takers and those who do not see the value of psychological testing in the SANDF.

Summary of the Study

The major purpose of the present study was to explore perceptions that SANDF personnel held on psychological assessment measures in their organisation. The specific objectives were, inter alia, to discover attributions behind perceptions that were positive and those that were negative and to understand aspects of psychological tests that military personnel perceived as areas that need improvement. The majority of studies on psychological test have predominantly been approached from the perspective of practitioners and academics; few have investigated the subject from the perspective of test takers, particularly in South Africa. For any field to evolve, its practitioners need to maintain a holistic and constant understanding of their audiences and how they engage with their science. Such an undertaking enables practitioners to evaluate how their science is perceived, and whether it is valued and trusted, rather than presupposing the disposition of its public. Even though the benefits of psychological assessment measures have been well established,

and are well known, controversies around psychological tests in the country, that created tensions that threatened the very existence of the field of occupational tests warranted an investigation to determine the current standing of the field. This understanding was sought from perspectives of the people on the ground, that is, those who are expected to undergo psychological testing for opportunities related to gaining employment, development for increased performance and promotion possibilities.

Several benefits were envisaged to be garnered from this study. Firstly, resultant findings were foreseen to enable practitioners to understand, based on current knowledge, how the military community perceives tools instrumental in the procuring of occupational recommendations. Such an understanding would provide direction for collaboration between practitioners and their publics to engage on issues pertaining to psychological measurement in their organisation. Rather than communicating from a perspective that aims to acclimatise its publics to the facts and methods of its discipline, such an understanding would enable two-way engagement beneficial in encouraging trust with their audience. It would also establish in the same in areas where it was lacking thus serving to persuade personnel in the SANDF of the value of assessment measures in their workplace. The benefits of the present study were secondly seen to serve the utility of equipping psychologists to anticipate possible objections to psychological testing from those who did not see their value within the organisation by understanding what those concerns might be, thus enabling psychologists to build scientific evidence and appropriate communication strategies to build trust in their validity. A third benefit was assumed that the attainment of knowledge, on what aspects were considered as positive, those considered as negatives as well as opportunities for improvement may guide improvements, if required, in areas surrounding the practice of psychological assessment. The final benefit of this study was that it aimed to close a gap in literature by providing insights into a previously undocumented area as no studies could be

located that examined the current standing of psychological tests from the perspective of test takers in the South African military.

Literature pertinent to the research subject was reviewed. This included studies that gave insight into the SANDF as a military organisation, its functions, mandate, culture and the implications of these for the calibre of people that are recruited into service and those planning a long career within the organisation. The organisation was found to offer employment within a complex culture that was significantly divergent to civilian organisations. Aspects of military culture such as its hierarchical power-based structures of chain and command as well as its mandate, the primary function of which is to defend the Republic against external military aggression as well as its secondary functions meant that the organisation placed significant emphasis on ensuring that those who were recruited had the required abilities, motives and personality characteristics to adapt to military life and execute demanding tasks aligned to the organisation's goals with a degree of effectiveness. On this account, studies showed that the majority of military organisations relied extensively on psychological tests such as tests of cognitive ability, personality and work samples, among others, to evaluate interests, behaviours, attitudes, cognitive functions of military personnel and to predict job performance. Support was established, by extensive peer reviewed studies that psychological tests were able to measure these aspects with a considerable degree of accuracy which contributed to their utility as objective decision-making aids for selection processes. The evaluation of cognitive function, especially for specialised military roles, was found to be a critical endeavour according to studies reviewed on this topic. For instance, the review showed that roles such as that of combat officers, pilots and air combat commanders involved the operation of complex duties such as commanding multi-person aircraft, coordinating electronic systems and intelligence, and while simultaneously manoeuvring of equally complex machinery in environments that may be hostile. As such, personnel serving

in demanding roles need to possess good memory, attention, judgment, decision making, psycho-motor functioning and spatial perception, as these functions determine their everyday lives. An evaluation these abilities, depending on their relevance to the role, contributed to reduced risk of accidents and injuries and most importantly the loss of lives of pilots and passengers alike. The review further showed that appointing personnel with impaired cognitive ability significantly reduced individual and unit readiness and effectiveness, and decreased the likelihood of meeting mission objectives within operational environments. Thus, cognitive ability assessments were demonstrated to play a critical role in executing work functions. In like manner to cognitive ability tests, literature indicated that personality measures similarly aided military organisations by defining characteristics that are unique to individuals. Such characteristics, specifically those which are useful in this context included traits like a person's resilience, self-efficacy, interpersonal adaptability, coping with adversity and intensely stressful conditions which servicemen may be exposed to during combat and non-combat. Literature also demonstrates that certain personality characteristics predicted aspects of job performance and long-term career success in military samples, as well as detected individuals who may lean toward counter-productive work behaviours and destructive leadership. These studies demonstrated the unequivocal benefits of personality tests.

Garnering from literature, the review showed that despite their innumerable benefits, psychological tests have encountered several criticisms. Among some of the tensions that tests have had to contend with was their association with the problematic history of the country. As noted in the literature review, from the time psychological assessment measures were introduced in South Africa, psychological testing has been tainted with the view that tests followed the political order of the time (Laher & Cockcroft, 2014). Research in this area by Foxcroft and Davies (2008), Laher and Cockcroft (2014) and Kgosana (2012) shed light on

this issue. The inequitable contributions to separateness during the time, in which the profession aimed to legitimise itself, and its involvement in apartheid ideology in subsequent years, resulted in a tarnished reputation even beyond the apartheid years. The review also indicated that the tendency to use tests that were normalized and standardized in white populations on black populations to prove racial inferiority contributed to the profession's disrepute and distrust to the extent that at the establishment of democracy threats of discontinuing the practice ensued. In support of this body of literature, Kgosana (2012) noted that some leaders in organisations tended to show a predisposition that reflected a dislike of psychometric tests that resulted in recommendations from these tools being treated with reservations. In some instances, these tensions had far more severe consequences. For instance, test results were not taken into account and sometimes outright rejected by employees and unions, to the extent that sometimes people refuse to participate in them (Kgosana, 2012). Such accounts reflect the socio-political tensions encountered by the field of psychological measurement.

The issue of differential validity and its adverse impact was among commonly cited criticisms of cognitive ability tests in literature. An examination of literature revealed that cognitive tests were largely criticised for producing significantly different test scores between cultural groups which were seen as reproducing inequalities between disadvantaged and advantaged groups as individuals from underprivileged race groups tended to obtain lower scores in comparison. Meta-analyses such as that conducted by Berry et al. (2011) provided support for the existence of group differences as in their study, differential validity was found for Black and White subgroups in the prediction of both job performance and training performance. While different attributions have been given for score differences, such as the argument that they arise from social disadvantages, such as lower quality of education experienced by minority groups, and a lack of exposure to the cognitive skills measured by

psychological tests, also due to social disadvantage, literature showed that the consequences of group differences led to unfortunate occurrences. Among these were lower job selection rates for blacks and other minority groups as selection decisions were made by taking test scores into account. However, recommendations around ensuring test fairness and regulations prohibiting bias test such as ensuring cultural equivalence have worked towards ameliorating these concerns.

To explore military constituents' perceptions, a qualitative research design that followed IQA methodology was chosen. A purposive sampling technique was used in drawing constituents into the study. Two focus groups were conducted: one with senior ranking constituents and another with constituents in junior ranks in the military. For the focus groups, the instrument for data collection consisted of open-ended issue statements which were designed to facilitate thoughts around psychological assessments in their workplace. These focus groups were followed with individual interviews to unpack themes that emerged from the focus group discussions. During individual interviews, data were collected using a semi structured interview schedule which was adapted from the focus group issue statements. The data were analysed to generate multi-voiced impressions of the constituents' raw impressions of assessments. A key strength of IQA methodology was that it enabled those participating in the research to own the process, whereas the researcher occupied the role of a facilitator. As noted by Bulmer and Jackson (2016) voices of those in service such as veterans and military personnel are often left out of the picture or are appropriated in ways that limit their active participation in the research process. The result of which is that public representations of this population become defined by others thus this research aimed to build greater engagement and dialogue with military personnel as a key part of the research process. As commonly observed, the military command and control environment where personnel are often expected to follow and execute on orders often

deprives personnel the opportunity to voice their individual points of view. By virtue of conducting this research through a participant driven approach, the gain was that it enabled the voices of those who would otherwise not have the platform to be heard to voice their views.

Overall, the study established that the participating constituents held both positive and negative perceptions of psychological tests. The result garnered around the first research question showed that constituents' perceptions varied and did not merely constitute of one representation. These perceptions included the idea of assessment measures being perceived as fun, interesting and challenging. The second research question generated results that showed that some participating constituents viewed assessment measures in the military in positive light as in their view, they enabled them to engage learn about themselves; helped the organization identify the right candidates for placement, problems or challenges that individuals might have prior to being offered employment or being recommended for deployment; and having the ability to "check" and "keep tabs" on personnel's mental functioning. As explored by the third research question, negative perceptions emanated from views that assessment measures were susceptible to manipulation, were somewhat lacking in taking into account African perspectives and offered little in the way of language options. Suggestions for the improvement as explored in the fourth research question, related to the need for inclusion of computer-based test formats which were believed to improve accuracy and counter manipulation; participating constituents also suggested the need for provision of more information around tests and related processes for the purposes of familiarisation. This was followed by the third suggestion which emphasized the need to ensure the promotion of assessment measures that had clear relevance for the reason behind testing.

The use of a method of inquiry, which through its use of issue statements encouraged free thought around the topic, enabled the study to explore what would emanate from the

study without directing constituents towards a specific narrative. From this enquiry, several deductions were made. Firstly, findings of the present study found that military constituents in South Africa primarily drew from their personal experience of going through testing to inform their perceptions rather than drawing from extrinsic factors such as the historical perspectives of psychological tests. In conjunction with personal experience, narratives that related to the history of psychological testing were thought to contribute in the way in which psychometric tests would be perceived. However, in this study no references were made to the origins of assessment measures as a political tool. This finding suggests that feelings of scepticism and distrust of psychological tests reported in Kgosana (2012) may have diminished to a greater extent than that reported by Laher and Cockcroft (2014). Such a decline was attributed to current regulation around testing in the country and the promulgation of laws that prohibit unfair tests and discriminatory assessment practice. The presence of a regulatory body (HPCSA) that enables the reporting of practices that may be experienced as unethical may have contributed to building confidence in fair testing practice in the SANDF.

A second way to account for diminishing oppositional perceptions was by considering the current socio-political context of the country. In the same way that psychological assessment practice in the past followed trends of the current political climate, with the democratic government currently at the helm, policies such as affirmative action may have to some extent provided reassurance for previously marginalised groups that any attempts to exclude them from employment and progression opportunities through the use of psychological assessment measures may not succeed as affirmative action policies necessitate that the demographic profile of government department employees, such as the SANDF, are reflective of the demographic profile of the country; which mean that the majority personnel would be black South Africans. As noted by Frankel (2018), as far back as 2001 the SANDF

had significantly increased the employment of previously disadvantaged groups within the organisations to 84.7%; with 2019 reports showing further increases in this regard to 88.6%.

Findings pertaining to the second research question, which explored attribution of positives of psychological tests, suggested that the South African military personnel, in general, viewed tests in their organisations as fulfilling the functions they are intended for. Benefits included the perception that tests accurately identified good hires, were tools for screening problematic behaviour, evaluated mental functioning, and had utility in self-reflection, all these attributions are widely supported in literature. The emergences of these themes in the present study suggested that psychological tests in the SANDF were being used appropriately.

The third research question shed light on the negatives of tests as seen by some of the constituents, where concerns about faking, a lack of African language options, and the cultural relevance of item contents emanated. In like manner to assessment positives, issues such as incorrect responding with the aim to guess the correct answer, the tendency of psychometric tests to be predominantly offered in English with a handful only offered in African languages including the disadvantages that this posed to test takers from disadvantaged schooling, as well as tests that contained culturally insensitive items, have received considerable attention in literature. While studies point to test developers installing scales to detect socially desirable responding and impression management, from the perspective of the military personnel, that took part in this study tests in the Defence Force are still perceived as vulnerable to manipulation. This suggests that while these efforts may work toward improving the accuracy of score results, they do little to deter test takers from attempting to manipulate psychometric tests and contributed little towards improving perceptions of test validity.

Areas identified for improvement included the use of computer-based test formats in the military, the provision of more information around how psychometric tests worked and for the organisation to use of assessment measures that resonated with job characteristics, and as such with higher face validity. Suggestions for computer-based formats suggested that the military personnel that took part in the study viewed the South African National Defence Force as lagging from the rest of industry on the front of technological assessment practice. The view that migrating to computer-based formats may decrease test manipulation similarly holds true as technologically advanced tests include features such as adaptive testing which are designed to record detailed candidates' response time, and estimate test taker's ability thus ensuring that the test is of appropriate level for each person. This suggestion is of significant importance for psychological testing in the SANDF to keep on par with global technological developments and implement more sophisticated measures to reduce test manipulation.

Suggestions pertaining to familiarisation with psychological assessments through efforts such as road shows, unit visits and other means imply that there appears to exist a knowledge gap between the practice of psychological testing and military personnel that take the tests. In filling this void psychologists in the SANDF should engage with military personnel to develop appropriate communication strategy targeted at different levels of their audience. Also, there is need to consider test sophistication of their audiences as the SANDF recruits from all areas, both urban and rural, while also taking into account that the likelihood of those from urban areas are that they are at an advantage due to exposure opportunities to participating in previous testing and familiarity with technology such as computers, in the cases of computer-based test formats. The provision of familiarising military members with assessments could contribute to levelling the testing field through giving of information about testing as well as computer familiarisation where needed.

The final suggestion on improving psychological tests pertained to the use of assessment measures with greater face validity. Ekuma (2012) demonstrated that test takers in the wider context, evaluated the propensity of an assessment measure to accurately observe the construct it purports to measure based on face validity. Face validity, although not necessarily being a technical validity builds trust in the appropriateness of a test from a test takers perspective. This was by and large demonstrated by studies that explored test takers' preferences of selection methods where those with high face validity, with clear relation to what was being assessed cemented belief in the scientific validity of that specific selection method. This suggests that perceptions of test validity extended beyond the robustness of its scientific properties to how convincing the test was based on face value. This presents a challenge and an opportunity for test developers to come up with assessment measures that are both scientifically sound while possessing sufficient face validity to persuade test takers of their validity.

Conclusion / Implications of study

The present research sought to explore an area previously undocumented, namely, how military personnel in the SANDF perceived psychological tests in their work environment. The results of present study have several implications.

Firstly, it is encouraging to know that psychological assessment measures in the Defence Force were not associated, in the perception of the constituents, with the grim political history of the country but they were rather associated with emotions such as interesting, enjoyable, and challenging. This understanding is of particular importance as it suggests that those who underwent psychological testing was open to the experience rather than responding to these tests from the backdrop of the past history of the nation. Even though the study identified aspects that constituents viewed as negatives, as well as areas for

improvement, from a broad perspective testing in the SANDF seemed to evoke positive affect in the military personnel studied.

Secondly, the study established that there were many positives attributed to psychometric tests in the SANDF. Knowing the value associated with assessment measures contributes towards substantiating their integrity as credible psychological measurement tools used for the benefits of self-reflection, as well as evaluating ability and behaviour.

The third implication of the present study is related to aspects that call attention to unfavourable views of psychological tests emerging from the study. The major elements in this regard include the problem of test manipulation, the tendency of tests in the South African military to be contextually exclusive from a cultural and from a language perspective (Mayaba, 2016); all of which require the attention of scholars, practitioners and policymakers. This finding therefore reinforces the need to give further consideration to these areas.

The fourth implication relates to the need emerging from the study to establish better communication around assessment measures. Providing information about how tests work and sensitising personnel as to what is required of them prior to testing was suggested as essential as it will improve positive views and reduce negative perceptions around tests in the SANDF.

The fifth implication of the study arises from the fact that it demonstrated that personal experience was the main driver behind how members constructed their perceptions of tests in the SANDF. This implies that where possible, psychological practitioners should remain cognisant of the impact of factors within control that contribute to test takers' experiences. This takes into account factors like the environment, how well and clearly test guidelines are provided as well as how assessors present themselves personally.

Recommendations for policy and practice

This section presents recommendations for policy and practice based on the findings of this research. Three recommendations are made: firstly, for the development of more culturally contextual psychological tests using both emic- etic approaches. Secondly, for better communication of the value of psychological tests within the SANDF to obtain better buy in from personnel. Thirdly, for the integration of computer-based test formats to the current psychological assessment practices within the organisation.

Need for development of more cross-cultural assessments

The development of more tests that satisfy the needs of the South African population have long been recognised (Mayaba, 2016). Starting from the changes in the socio-political orientation of the country, this need was established with the call for tests that were fair and non-biased for culturally diverse groups (Mayaba, 2016). The Human Sciences Research Council needs survey of 2004 further provided empirical evidence for this need. The findings of the present study support the body of literature in this area. Research shows that practitioners and researchers have started to heed this call and that the number of cross-cultural tests has grown. Yet, there still remains a need for more alternative measures for assessing cognitive ability, personality, behaviour and attitudes in the SANDF. The work that has been done in this area such as the SAPI has added much value to the field. Such efforts need to continue as they contribute to fair non-discriminatory testing.

The need for use of emic-etic approaches in test development. Current research in the development of cross-cultural tests suggests that those developed using a combination of emic-etic approaches tend to have better success as tools that can be used across cultures. Yang and Bond (1990) found the five personality factors of the Big Five to be applicable across cultures. Research suggests that these five factors have importance to a greater or lesser degree across different cultures. Using such a model as a basis for cross cultural

personality test development, may prove advantageous in the same way it did for the SAPI. Rather than using either an emic approach that transfers what is true in Western culture into other cultures or an etic approach, one that singularly concentrates on a single cultural group, a combination has the benefit of not only being used in one culture but cultural transferability (Nwoye, 2015). As noted by Cheung et al. (2013) numerous personality assessment measures are following suit in their usage of emic– etic approaches given the benefits they provide in cross-cultural testing.

Need for translation of tests into South African languages

Given the schooling system of the country where not everyone has been afforded the same opportunities for development. The translation of both tests that are currently widely used as well as new tests being developed into South African languages is a point for consideration (Mayaba, 2016). Most South African languages are not adequately represented in the languages that tests available for use in the SANDF currently include. Addressing the problem will benefit those with limited language proficiency of the current test languages thus evening out the playing field. One cannot dismiss the enormity and complexity of this task given that there are eleven official languages in South Africa. However, as demonstrated in this study, a lack of language diversity of psychological tests was perceived as contributing to unfair testing and discriminatory practice. The translated versions, like all newly developed tests would need to be subjected to validity checks to ensure the assessment measure demonstrates reliability, validity and enables the appropriate interpretation of scores.

Need for advocacy for use of psychological assessment measures in the SANDF

This study has revealed that there is a gap in knowledge about psychological tests in the South African military and as such there is a lack of familiarity with these measures by the military personnel in the Defence Force. The manner in which the value of psychological tests is communicated does not seem to be adequate. A number of surveys and observers

(Janda et al., 1977; Furnham, 1983) have suggested that the public does not have a clear idea of what it is psychologists do and as indicated by the results of this study, this extends to a lack of knowledge about psychometric tests as well. A recommendation for public awareness campaigns is made to communicate to the public the value of tests in both the military and other human occupations within the country. As suggested in the study, this could be executed through roadshows, print material and other applicable, relevant, and dignified avenues.

As assessment researchers and practitioners, we also have a role to play in the promotion of policies that bring to light the challenges of conducting psychological testing in a diverse nation, like South Africa. This includes advocating for the integration of cross-cultural considerations in research, theory and assessment practice through participation in initiatives by government agencies and international bodies alike.

Limitations of the study

The present research has several limitations. The sampling technique used for this research was non-probability convenience sampling. Constituents were approached from units within the SANDF which could be conveniently accessed, as well as those who were within a geographic parameter that could be accessed with ease. This means that those who participated were solely from units within the Pretoria geographic location who were willing and available. The selection of constituents was therefore completely based on easy accessibility and as such does not represent the SANDF population. Consequently, this results in the limitation that the findings cannot be generalised to the entire SANDF population. As noted by Cohen (2007) purposive sampling by its very nature is deliberately and unashamedly selective and biased. To achieve accurate and generalizable results a randomized representative sample would be required (Edmonds & Kennedy, 2016;

Montgomery, 2017). However, for the purposes of this research, it was not feasible to have a fully representative randomised sample due to resource and time constraints.

Given that this was a qualitative study based on a convenience sample, the results may not be generalizable to the wider population as the results are context dependent by nature. The research achieved the aim of generating rich in depth, holistic and situated understandings of the military personnel who participated and not of those who were not part of the study. The result cannot be extended to members who were not present during the focus group discussions and interviews that took place as their subjective experiences of undergoing psychological testing cannot be accounted for.

Another limitation in this study pertains to rank representation. Within the sample that included high ranking members of the SANDF, it was intended to include members who were at General level. More often than not, given the seniority of the rank, Generals hold more decision-making power than others from ranks lower than them. The impact of having representation at this level could have had the benefit of understanding how senior decision makers viewed psychological assessment measures from a decision makers perspective. Unfortunately, at the time of the research, none of the Generals that were within the accessible geographical location were available to take part in the study.

Recommendations for future research

Given the above limitations and other implications arising from the present study the following recommendations are made for purposes of future research.

First, it is recommended that future research should be carried out on a wider scale than what was possible in the design and execution of the present study. This study did not have representation of all ranks of all the arms of service as it comprised only of military personnel who were willing to participate in focus group discussions. This therefore impacts the generalisability of the findings. A study that consists of a wider sample based on

probability sampling such as stratified sampling where every unit in a stratum has an equal chance of being selected, could yield findings that can be generalised throughout the South African military, across all available geographic and demographic categories.

Secondly, it is recommended that there is a need to replicate this study using other target population groups. Given that the military population is often described as different from civilian populations, replicating the study in other civilian populations could potentially have the benefit of establishing comparability of findings. Establishing this is envisioned to provide insights as to how psychological assessment measures can be improved in both military and civilian populations in South Africa.

Thirdly, another study is recommended which should try to explore what is needed, in terms of personnel, money and time for effecting a translation of available major psychometric tests in the SANDF. It is argued that it is by means of such research that more concrete impression of the costs of engaging in these translation processes could be determined. This will help in making practical plans toward a successful implementation of such a vision into a reality.

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Appendix 1: Minutes of Portfolio Meeting on psychometric assessment in the SANDF

PORTFOLIO COMMITTEE ON DEFENCE: PSYCHOMETRIC TESTING IN DEFENCE FORCES: DEPARTMENT BRIEFING

19 JUNE 2007

Chairperson: Ms T V Tobias (ANC)

Documents handed out: Psychometric Testing within the South African National Defence Force (SANDF) presentation

Audio Recordings of the Meeting: Part 1 Part 2

SUMMARY

The Department of Defence briefed the Committee on the psychometric testing carried out in the Department. The presentation by the Director of Psychology focused on the scope of psychometric testing in the Department, explained important terminology needed to understand psychometric testing, and highlighted the characteristics of assessment measures including the need for control within assessments in the SANDF. It also examined psychometric testing in post-apartheid South Africa and highlighted some factors affecting assessment results. It described the professional practices that assessment practitioners should follow and finally considered some of the basic statistical concept. The second presentation, by the aviation psychologist, considered the selection process, and the recruitment and selection process task organisation. It also looked at academic, physical, medical, psychological, and aptitude requirements. Benchmarking of the recruitment programme with other countries was compared. The subsequent discussion highlighted concerns such as the exclusionary potential of psychometric tests, the establishment of African referent norms, and consideration for underprivileged background conditions.

MINUTES

Psychometric testing in the Department of Defence (DoD)

Gen Sam Eygelaar, Director of Psychology, Defence Force Medical Services, looked at the scope of psychometric testing in the Department and explained important terminology needed to understand psychometric testing. He highlighted the characteristics of assessment measures, including the need for control within assessments in the South African National Defence Force (SANDF). He noted that in South Africa the use of psychological assessment measures were under statutory control. He gave an assessment of psychometric testing in post-apartheid South Africa and the impact of the Employment Equity Act. He noted some factors affecting assessment results. He gave an indication of the norms and professional practices that assessment practitioners should follow, and finally considered some of the basic statistical concepts, including the concepts of reliability, validity, and norms.

Mr O Monareng (ANC) argued that the presentation was too technical. He said that all that was required of the presentation was to illustrate the relevance of psychometric testing in post-apartheid South Africa. This viewpoint was shared by other Members of the Committee, including the Chairperson.

Lt General Vijay Ramlakan, Surgeon General of the SANDF, suggested that the whole presentation be tabled, but that the oral explanations should exclude the overly technical components. He suggested that the Committee should be taken through the final component of the application of psychometric testing in the Air force, to illustrate an example of the use of such testing.

Lt Col Greta Bath, Aviation psychologist, SA Medical Health Services, then gave an indication of the recruitment and selection process task organisation, which entailed eight phases. These phases included advertising, paper selection, call-up, orientation, psychometric assessment followed by a panel interview, an aviation medical exam, collation of medical records, and finally a consolidated selection board. The presentation also looked at academic, physical, medical, psychological, and aptitude requirements for those wishing to become pilots. Finally the presentation looked at the benchmarking of the recruitment programme with the United Kingdom, India, Israel, Pakistan, Germany and Singapore.

Discussion

The Chairperson noted that many South Africans were underprivileged and could not compete with privileged sectors of society in gaining access to positions in the DoD. She said that South Africa was currently engaged in transformation processes to achieve equality and

level the playing field. She argued that currently special consideration should be made for those underprivileged sectors of society. She said that language barriers might also be a challenge and said that language should be considered when conducting psychometric tests. The Chairperson asked if the administering psychologists were aware of and could understand the background of social conditions in township life. She argued that there was a need to be cautious of psychology, due to its role in the construction of the apartheid regime.

The Chairperson asked if there was an African Model for psychometric testing that could be used. She asked how many candidates in each demographic category had passed or failed, and how the department ensured that the tests were not exclusionary and sensitive to underprivileged life. She said she was cautious of external service providers of psychometric tests.

Mr J Phungula (ANC) said that in terms of transformation there had been change, but that this was lacking in the Air Force. He said that in the past black people could not drive government vehicles, and that the democratic South Africa was a platform in which to redress this. He said that some pilots from Mozambique were not very technical yet were still given the opportunity to become pilots. He emphasised that the method of imparting skills to trainees was most important and urged that no one should be excluded from opportunities.

Mr L Diale (ANC) said that rural areas in South Africa were designed for reserve labour during apartheid. He said there were also demobilised former MK and APLA soldiers who did not have access to the information provided. He asked if the DoD had considered the distribution of pamphlets to the constituency offices to increase their reach of communication.

Dr S Pheko (PAC) said that it was important to transfer theory to practice. He said research was required to establish our own and African norms. He asked to what extent psychometric testing was affected by social conditions and international exposure. He said that South Africa should move away from Euro-centric practices to deal with the African condition. He asked if research could be done to factor in specific South African social conditions. Demographics, the historical background of the pass laws and the pre-1994 position were all important.

Mr P Groenewald (FFP) argued that the credibility of psychology should not be undermined by allusion to apartheid conditions. He said that there were certain skills required to be a pilot and a method was needed to establish whether these basic skills requirements were adhered

to. He believed that it was not the task of DoD to hand out pamphlets at constituency offices. He asked for elaboration on validity and standardisation, and asked if the requirements complied with affirmative action.

Another member of the committee argued that psychology was partly guesswork. She said she was not happy with the principle of psychometric testing unless it was shown to add some benefit to the country. She also argued that African standards should be used and asked if any candidates who had received medical discharges by reason of mental disorder were treated.

Gen Eygelaar noted that the member was entitled to her opinion. However, he argued that strict empirical studies and scientific standards were used in the development of psychology. He noted that it was necessary to differentiate between psychiatric assessment and psychological assessment, and that in respect of all discharges on medical grounds a board was established to review the indicators in a scientific manner.

Mr M Shah (DA) cautioned that personal preferences should not be allowed to influence the decisions that were geared to efficient functioning of the SANDF. He said that academic qualification was only one component of getting a position in the Defence forces. He said that it cost millions of rands to purchase a military aircraft, and these were usually not built in South Africa. Arguments around Eurocentrism were irrelevant; it was vital to have expert technicians who could best to pilot these airplanes.

Mr Shah asked what was meant by collateral sources in collective information about candidates. He asked if the DoD had the human resource capacity to gather information from family members, if that was what was being implied by collateral sources. He also asked if any gender specific tests were being used, bearing in mind the biological differences among males and females.

Gen Eygelaar answered that collateral sources meant a pool or sources gained from curriculum vitae handed in during the acquisition phase. In regard to the differentiation between male and females, he said that there was no differentiation in the testing. However, differentiation could be made regarding certain physical competencies, due to the differing physical demands of some of the jobs.

Mr Monareng reiterated that the main issue of concern was whether psychometric testing was exclusionary and representative. He argued that there should be a drive to create more awareness amongst marginalised communities. He argued that interest was not shown

because it was not induced because of inadequate awareness. He argued that his own psychometric test results showed variance between those taken in South Africa and those taken in the former Soviet Union and Cuba. He said that ultimately the test had to be inclusive rather than exclusive. He also argued that in the aeronautical industry preference should be given to local industry to redress the issue raised by Mr Shah.

Lt Gen Ramlakan proposed that due to the nature of the questions posed and the time constraints, written responses should be given to any questions that could not be addressed adequately.

Lt Gen Ramlakan said that all the concerns raised by the committee members were valid, and they were issues that the Department grappled with on a daily basis. He said that given their integration experiences SANDF had to contest the intellectual grounding for some of the tests. He alluded to the example of psychometric testing for integration, which had to be amended to accommodate those previously disadvantaged who did not have strong academic qualification but were nevertheless competent for the respective posts. He said he agreed with the assertion that psychometric testing should be more inclusive rather than exclusive. The tests were scrutinised to ensure validity, but the testing was nevertheless a tool used with an advisory role.

Gen Eygelaar said that the establishment of African norms was a task that had already been taken on by the Department, which understood that it was necessary to establish norms based on specific context. He said that currently the norms concentrated predominantly on black participants. He said that ultimately validity and reliability related to the norms used. He highlighted the fact that in 2007, 50 000 candidates were being assessed for the Military Skills Development Programme and this number contributed to the establishment of norms. In regard to the comments on inclusiveness, he said that measurements were considered relative to peer group norms.

Brig Gen Maxwell Sitshongaye, Director, Human Resource Services, SA Air Force, said that 57% of the successful pilot candidates were black, but conceded that the black failure rate was also high. He said that 2006 statistics indicated that 226 of the 349 candidates were successful. 57 were white and 169 were black. He emphasised that the pilot selection was not purely based on psychometric testing. He pointed out that some candidates were excluded because of height restrictions in the cockpits of the training aircraft.

Lt Gen J Van Rensburg, Chief of Corporate Staff, SANDF, added that psychometric testing was one of many instruments used in the selection and appointment process, and these were accompanied by certain prescripts for candidates from the various sectors in the department.

Gen Eygelaar said it was inaccurate to assume that a person would pass or fail a psychometric test. The tests were used to establish functional requirements of the respective position, which was graded in terms of the norms established. Those norms were not inflexible and could change.

Mr Monareng noted that there had been a problem in integrating women from MK into the SANDF.

The Chairperson said that the problem was one of attitude and was based on previous patriarchal structures which excluded women from participating in traditional 'male' activities. She said that it was necessary to move away from such thinking and emphasised that females were quite capable of doing physically strenuous tasks.

The Chairperson asked what was being done by the small number of black assessors, a mere 11%.

Gen Eygelaar said that the aptitude test was part of the psychometric tests, which was a simple non-verbal test to determine aptitude for training. In regard to the 11% black assessors he said that a new initiative was being embarked on, where the Department would visit all tertiary institutions which provided psychological training, and provide internships and bursaries for black psychologists, coupled with contractual agreements to retain their skills for around five years.

Gen Eygelaar said that it was difficult to benchmark in Africa. However, he said that the Vienna tests were being used throughout Africa.

Brig Gen Sitshongaye said that awareness was being created in rural areas through collaboration with the Department of Education and certain rural schools especially in the Air Force. He said that in regard to the selection, priority was being given to black candidates, and this was particularly done with air traffic controllers. He said that discussion was also being done with SAA regarding cross utilisation of skills.

Brig Gen E Mathibe, Director: Human Resource Acquisition, DOD, said that the Department had received about 30 000 applicants in 2006, and recruitment was based on the requirements

in certain sectors of the department. Once again she stressed that psychometric testing was but one process. She said that surprisingly the psychometric testing process was being handled well by the rural candidates provided that they were reminded to remain calm. She said that candidates who did not succeed on the basis of the first tests were encouraged to reapply after six months. He said that there was a large number of applicants and keen interest was shown.

The Chairperson requested that if any question was not adequately answered, owing to the time constraints a written submission should be supplied as agreed.

The meeting was adjourned.

Appendix 2: South African National Defence Force Ranks

South African National Defence Force Ranks	
Army/ Airforce/ SAMHS Ranks	Navy ranks
Senior Ranks	
General officers	Flag officers
· Lieutenant-general	· Admiral
· Major-general	· Vice-admiral
· Brigadier-general	· Rear-admiral
	· Rear-admiral junior grade
Senior Officers	Senior officers
· Colonel	· Captain
· Lieutenant-colonel	· Commander
· Major	· Lieutenant-commander
Junior Ranks	
Company / junior officers	Junior officers
· Captain	· Lieutenant
· Lieutenant	· Sub-lieutenant
· Second lieutenant	· Warrant officer 1st class
	· Warrant officer 2nd class
Warrant officers	
· Warrant officer 1st class	
· Warrant officer 2nd class	
Non-commissioned officers	Petty officers
· Staff sergeant	· Chief petty officer
· Sergeant	· Petty officer
· Corporal	· Leading seaman
· Lance-corporal	· Able seaman
· Private	· Seaman

Appendix 3: Letter to the gatekeeper

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the sa military health service

Department:
Defence
REPUBLIC OF SOUTH AFRICA

Telephone: (012) 319 3241
Fax: (012) 319 3264
Enquiries: Ms. C. Z. Mthombeni

MPI/R/104/10/5
Military Psychological Institute
Private Bag X02
Gezina
0031
24 November 2017

Enclosure: Psychological Assessments: Perceptions of military personnel in the South African National Defence Force (SANDF)

REQUEST TO CONDUCT A RESEARCH STUDY ON PERCEPTIONS OF PSYCHOLOGICAL ASSESSMENTS

1. I am Research Psychologist at the Military Psychological Institute (MPI) and I am proposing to undertake a research study titled, Psychological Assessments: Perceptions of military personnel in the South African National Defence Force (SANDF).
2. The purpose of the study is to explore perceptions of military personnel on psychological assessments.
3. This research also forms part of my Doctoral studies at the University of KwaZulu Natal. The findings will be published in a Doctoral dissertation.
4. Authority is hereby requested for the above-mentioned study.
5. Your assistance in this matter will be greatly appreciated.



(M/M. S. GROABI)
OFFICER COMMANDING MPI: COL



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Appendix 4: Authority to conduct research

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Defence intelligence
 Department:
 Defence
 REPUBLIC OF SOUTH AFRICA

Telephone: (012) 3150210
 Fax: (012) 326-3246
 Enquiries: Col T.G. Baloyi

D/DDS/R/202/3/7
 Defence Intelligence
 Private Bag X367
 Pretoria
 0001
 6 December 2017

AUTHORITY TO CONDUCT RESEARCH IN THE DEPARTMENT OF DEFENCE (DOD): MS C. Z. MTHOMBENI

1. Telephonic communication between Ms C.Z. Mthombeni of the Military Psychological Institute (MPI) and WO1 K. Skweyts of the Defence Intelligence (DI) on the 04 December 2017 as well as a request letter dd 24 November 2017 and the Research Proposal attached is acknowledged.
2. Ms C.Z. Mthombeni is hereby granted permission from a security perspective to conduct research in the DOD on the topic entitled "Psychological Assessments: Perceptions of Personnel Undergoing Assessments for Occupational Purposes in the South African National Defence Force (SANDF)" as a prerequisite for an attainment of a Doctoral Degree under the auspices of the University of KwaZulu Natal as per request.
3. After the completion of the research, the final research product must be forwarded to Defence Intelligence (DI), Sub-Division Counter Intelligence (SDCI) for security scrutiny before it may be published or distributed to any entity outside the DOD.
4. Approval is however granted on condition that there is compliance with Section 104 of the Defence Act (Act 42 of 2002) pertaining to Protection of DOD Classified Information and the consequences of non-adherence.

[REDACTED]
 (E.S) SIZANI
 CHIEF DIRECTOR COUNTER INTELLIGENCE: MAJ GEN
 KS/KS (Ms C. Z. Mthombeni)

DISTR

For Action

OC Military Psychological Institute (Attention: Ms C.Z. Mthombeni)

Internal

File: D/DDS/R/202/3/7

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*SA Support
 Please R/L to not back the R/L to
 for CI and Ms Mthombeni
 20/12/17*

Appendix 5: Letter requesting participation



25 November 2017

Dear Participant

Re: Request for participation in a research study

I am a Doctoral student in Department of Psychology at the University of Kwa-Zulu Natal and I am conducting a research study as part of my research project. The purpose of the study is to explore the perceptions of personnel undergoing assessments for occupational purposes in the SANDF.

The research participants required are people working in the military who have come into contact with psychologists for occupational selection or development purposes. The participants may be from any of the arms of service such as the navy, army, air force and military health service providers and may be of any rank.

Insights gained from this study may help psychologists in the military gain an understanding into how psychological assessments are perceived in the SANDF.

This study will require you to participate in a focus group discussion that may take up to four (4) hours. You may additionally be selected to attend an individual interview sessions which will last between fifteen (15) to thirty (30) minutes, should you be available and willing to do so. Participation is completely voluntary and can be withdrawn at any stage of the study with no negative consequences.

Your help with this matter would be greatly appreciated and will be invaluable to the research study that is going to be undertaken.

Please feel free to contact either myself or my supervisor for any further clarification regarding this study.

Research Supervisor:

Prof. A. Nwoye

Contact: 0332605100

Research Student:

Ms Zinhle Mthombeni

Contact: 0813834545



27 June 2018

Ms Zinhle C Mthombeni 201501508
School of Applied Human Sciences – Psychology
Pietermaritzburg Campus

Dear Ms Mthombeni

Protocol reference number: HSS/0286/018D

Project title: Psychological Assessments: Perceptions of personnel undergoing assessments for occupational purposes in the South African National Defence Force (SANDF).

Full Approval – Full Committee Reviewed Application

With regards to your response received on 26 June 2018 to our letter of 10 May 2018, the Humanities and Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol have been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Prof S Singh (Chair)

/px

cc Supervisor: Prof A Nwoye
cc Academic Leader Research: Dr Maud Mthembu
cc School Administrators: Ms P Konan

Humanities & Social Sciences Research Ethics Committee
Professor Shenuka Singh (Chair)/Dr Shamila Naidoo (Deputy Chair)
Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 3587/8350/4557 Facsimile: +27 (0) 31 260 4609 Email: simbho@ukzn.ac.za / saymanm@ukzn.ac.za / mohung@ukzn.ac.za
Website: www.ukzn.ac.za

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Appendix 6 Ethics Approval for present study

Appendix 7: Informed Consent for Research Participation



Date:

Greeting:

My name is Zinhle Mthombeni from the Department of Psychology at the University of KwaZulu Natal in Pietermaritzburg. I am also a Research psychologist from the Military Psychological Institute in the South African Military Health Services (SAMHS).

You are being invited to consider participating in a study that involves research in psychological assessments. The aim and purpose of this research is to understand how people who have been assessed by military psychologists view psychological assessments. The study is expected to enroll between 16 and 40 participants in the South African National Defense Force (SANDF). Participation will involve attending a focus group discussion which will be possibly followed by an individual interview. The duration of the focus group is approximately four (4) hours and the individual interview is expected to be between fifteen (15) to thirty (30) minutes.

The study will provide no benefit for those who participate; however, we hope that it will create benefits for the SANDF by informing military psychologists how psychological assessments are viewed within the organization.

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (approval number_____).

In the event of any problems or concerns/questions you may contact the researcher at The Military Psychological Institute, Room W28, 185 Rose Street, Pretoria, 0001 or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557- Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

Participation in the research is completely voluntary and you may choose to stop participating at any time during the study. In the event of withdrawal you will not incur any penalty or negative consequences.

CONSENT

I (Name) have been informed about the study, Psychological Assessments: Perceptions of personnel undergoing assessments for occupational purposes in the South African National Defense Force (SANDF) by Ms. C.Z. Mthombeni.

I understand the purpose and procedures of the study.

I have been given an opportunity to answer questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at Room W28, 185 Rose Street, Military Psychological Institute, Gezina, 0186 or telephonically on 081 383 4545.

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557 - Fax: 27 31

2604609 Email: HSSREC@ukzn.ac.za

Additional consent, where applicable

I hereby provide consent to:

Audio-record my interview / focus group discussion YES / NO

Signature of Participant

Date

Signature of Witness

Date

(Where applicable)

Signature of Translator

Date

(Where applicable)

Appendix 8: Turnitin Report

PSYCHOLOGICAL ASSESSMENT: A STUDY OF PERCEPTIONS OF PERSONNEL UNDERGOING ASSESSMENT FOR OCCUPATIONAL PURPOSES IN THE SOUTH AFRICAN NATIONAL DEFENCE FORCE (SANDF)

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