Stress in the SA Navy: Piloting and evaluating the validity and reliability of a developed therapeutic recreation stress leisure and appraisal tool

Marlin Cozett

2021

Student Number: 9224261

A thesis submitted in fulfilment of the requirements for the degree of

Doctorate in Psychology in the Faculty of Community and Health Sciences, University of the Western Cape

Supervisor: Dr Marie Young

Keywords: Therapeutic recreation, assessment tool, coping, leisure, stress, support, stress management, instrument development, instrument evaluation, validity, reliability

DECLARATION

I declare that

STRESS IN THE SA NAVY: PILOTING AND EVALUATING THE VALIDITY AND RELIABILITY OF A DEVELOPED THERAPEUTIC RECREATION STRESS AND LEISURE APPRAISAL TOOL

is my work, that all the sources I have used or quoted have been indicated and acknowledged by means of complete references, and that this work has not been submitted previously in its entirety, or in apart, at any other higher education institution for degree purposes.

_____

MARLIN COZETT

December 2021

DEDICATION

I would like to dedicate this thesis to my wife Colleen and my daughters Amber and Erin. Thank you for your love and continuous support and for believing in me. Amber and Erin you are my heroes for your acceptance, understanding and tolerating this household where everyone is constantly working. Colleen, you have witnessed every good and bad experience that came with this journey and kept me focused on my goal. Every day we all made sacrifice and persevere to reach our dreams. Thank you for being my rock Colleen. You motivated, inspired, listened and understood what this meant to me. I know we are completing a remarkable phase in our lives that will be beneficial to our futures. I thank God every day that I am sharing my life with such remarkable people. God bless you all.

ACKNOWLEDGEMENTS

First, I would like to thank God for His continuous blessings and granting me the strength to complete the thesis.

I would like to thank my supervisor, Dr Marie Young for her commitment, guidance, support and encouragement. The words of wisdom, the many emails, telephone calls, and countless meetings always discussing the way forward, are appreciated. I could not have come this far if it has not been for your guidance.

It was challenging to balance a full-time job, with completing this thesis but I met some remarkable people along the way who made this experience worthwhile.

Thank you also to the SA Navy for its support during the data-collection process. I am also highly indebted to the organisation for allowing me to conduct my study. Thank you to the SAN members, especially; your support was instrumental in completing this journey.

I appreciate my parents Elizabeth Hutton and Terence Cozett and my brother and sisters for their support and encouragement.

Finally, to my wife Colleen (my rock) and my children (Amber and Erin), thank you for all the sacrifices, together we have made this dream come true.

LIST OF ABBREVIATIONS

NBS	Naval Base Simons town
SA	South Africa
SAN	South African Navy
SANDF	South African National Defence Force
TRSMIM	Therapeutic Recreation Stress Management Intervention Model
TRSLAT	Therapeutic Recreation Stress Leisure Appraisal Tool

TABLE OF CONTENTS

Page

CHAPTER 2: LITERATURE REVIEW

CHAPTER 3: THEORETICAL FRAMEWORK

CHAPTER 7: RESULTS

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The nature of naval member's job demands is that they experience high levels of stress. Stress is introduced in military training to familiarize sailors with real life stressors. This study is located in piloting and validity theory. It focuses explicitly on validating an existing tool, the Therapeutic Recreation Stress Leisure Appraisal Tool, to measure stress in the South African Navy. This study aimed to pilot and evaluate the validity and reliability of the developed tool in an African context in the South African Navy. A multi-stage procedure of instrument development using the instrument development model will be used, consisting of the following steps: 1) preliminary phase, 2) questionnaire development, 3) pilot testing, and 4) evaluation. The scope of this study, is only focused on stages three and four. The current study followed an explanatory sequential mixed-method design. In this study, the qualitative phase was done first, followed by the quantitative phase. The mixed-method design is used to build upon the same research questions. PHASE 1, the pilot-testing phase (qualitative, *n*=50), explored if the developed appraisal tool is interpreted correctly and contains the necessary applicable questions. This population and sample were purposefully selected from the navy. Data were collected in focus groups taking place at a naval base. Five focus groups of ten members each were completed using interview schedules. Recorded data was transcribed verbatim. Data were analysed using thematic analysis with data coding to extract themes. This study is an extension of from a masters study linked to the current study, which contributed towards the finalisation of the questionnaire. Iterative exploratory factor analyses were used at the item and scale levels to select and reassign the items and scales. PHASE 2, the evaluation phase (quantitative, *n*=1000), determined the validity and reliability of the refined, developed appraisal tool. The population (N=7000) and sample (*n*=1000) consisted of senior and junior ranks from the officer core, conveniently selected from a naval base. PHASE 1 informed PHASE 2, the evaluation phase. Second-order factors were explored to evaluate the extent to which the instrument

measured the theoretical framework. The instrument was evaluated based on the applicability of the pilot-testing phase to provide a final Recreation Therapy Stress and Leisure Appraisal Tool using the steps in validity theory. Descriptive and inferential statistics were calculated using SPSS version 24. Factor analysis, data cleaning, factor extraction, and rotation will be computed. Participants were informed about the study's aims, objectives, procedures and voluntary participation. Anonymity and confidentiality were ensured using pseudonyms and confidentiality binding forms for focus group discussions and their written consent to participate in the study. All participants' information was treated with the utmost sensitivity. The best items were selected for the TRSLAT based on their item-total correlations, item distributions and factor loadings. The results had a 99% confidence level, meaning that the variables' relationship was significant. Using the results of the factor loading, the construct validity and the reliability were confirmed in the study.

DEFINITIONS AND TERMS

Definitions and Terms

The topics related to the research revealed several concepts which needed to be clarified and included:

Therapeutic recreation/recreation therapy:

The term refers to the enhancement of leisure to maximise the individual's overall well-being, health, or quality of life. It is carried out by engaging people in planned recreation, developing written goals, and targeting outcomes while focusing on the person as a whole and the changes needed in his or her living environment (American Therapeutic Recreation Association, 2015). Therapeutic recreation (TR) uses treatment, education, and recreation to improve individuals with illnesses, disabilities, or other conditions and leisure to enhance their overall health and well-being (American Therapeutic Recreation Association, 2015). Recreation Therapy is a treatment service designed to restore, remediate and rehabilitate a person's level of functioning and independence in life activities. It further aims to promote health and wellness and reduce or eliminate the activity limitations and restrictions to participation in life situations caused by an illness or disabling condition (American Therapeutic Recreation Association, 2015).

Coping strategies:

According to Van Zyl, Surujal, and Singh (2009: 75), "coping strategies are purposeful and contentious actions that are taken in response to events that threaten psychological harm." Coping strategies thus involve self-corrective behaviour to reduce the impact of stressful events in one's life (Beech, Burns & Sheffield, 1982).

Sport:

Sport is an activity governed by a set of rules or customs and often engaged in competitively. It is commonly referred to as an organised, competitive and skilful physical activity requiring commitment and fair play (Wattanasit, 2009).

Stress:

Stress is frequently referred to as the physiological, psychological, emotional and behavioural response of a person to a situation of physical or psychological tension or to the internal and external demands which originate when a situation requires so much from a person that it becomes a threat or a challenge (Patching & Best, 2014).

Stress management:

Stress management is a strategy to reduce stress arousal or to cope ultimately with specific stressors, such as divorce, separation, or a high workload (Enshassi, Waity, Arian, 2016).

Appraisal tool:

In the context of this study, the appraisal tool refers to assessing the individuals' level of stress, stress coping and leisure behaviour. Appraisal tools differ from questionnaires in that it is not developed for research purposes but to aid the therapist in assessing the individual with the aim of developing interventions to alleviate stress.

Preliminary appraisal tool:

Preliminary means preceding or leading to the central part or in preparation of something more substantial. For this study, the appraisal tool developed would be the initial appraisal tool and might need further refinement before final implementation. It is therefore referred to as a *preliminary appraisal tool*.

Evaluation:

Evaluation refers to the process of making a value judgement based on the data produced during the assessment of a student's academic development (Quinn, 2000).

Ethical acceptability:

Ethical acceptability refers to the adherence of the researcher to the professional, legal and social obligations to the respondents to protect their rights. An example of ethical acceptability is ensuring that respondents participate voluntarily in the study (Polit & Beck, 2004).

Factor:

The term will be used in describing the results of the factor analytic procedure.

Factor analysis:

"It reduces the multiplicity of tests and measures the greater simplicity.**"** It tells what tests or measures belong together, which ones virtually measure the same thing, and how much they do so (Kerlinger, 1986).

CHAPTER ONE

CHAPTER ONE

1.1. Introduction

The military environment can be seen as the foundation of growth and purpose to build a sense of belonging instead of psychological suffering and feelings of isolation (Tasseron, 2001; Duxbury & Higgins, 2002; Rego & Cunha, 2008; DeCarvalho & Whealin, 2015). Nevertheless, military professions are conducted in highly stressful environments. Stress in the military has multi-dimensional facets, that impact soldiers mentally (Bartone, 2005; Bartone, 2006; DeCarvalho & Whealin, 2015). Military life requires balance between physical, emotional, spiritual, and psychological well-being (Yanovich, Hadid & Erlich, 2015). Maintaining national security is seen as the primary function of the defence force. Therefore, military members are constantly exposed to physically demanding conditions. The effectiveness of operations is largely depended on the mental hardiness of its members (Sudan & Hackey, 2011; DeCarvalho & Whealin, 2015). The defence forces carries out tasks and exercises under a variety of stressful conditions. Military readiness and awareness are primarily related to proficiency in weapons handling. Although psychological and physiological factors do not play an inferior role (Yanovich et al., 2015). During battle, it is how the sailor meets the severest physical and mental stresses that define the extent of success or defeat (Du Bois, 1989; Gant, Neely, Villafana, Chun & Gharabhli, 2008; Carter, Loew, Allen, Osborne, Scott & Markman, 2015). Sport and recreation is seen as a vital outlet to overcome stressors in military environments. Military members are given sport and recreation as a means to de-stress. By engaging in sport and recreation, military members are motivated to attain socially desirable attitudes, habits, and values. Furthermore sport and recreation activities provide a constructive platform and satisfying outlet for idleness and mischief. The South African Navy members

participate in inter-unit and local-league competitions, which include 27 sporting codes: soccer, netball, bodybuilding, tennis and table tennis, cricket, road running, squash, rugby, volleyball badminton, judo, rock and surf angling, sailing, surfing, golf, canoeing, cycling, mountain biking, kickboxing, service and practical shooting, hiking and endurance walking, swimming, blackball pool and chess. Members of duty times on board ships are largely spent pursuing hobbies, exchanging films and sleeping (Schwerin, Glaser & Farrar, 2002; DeCarvalho & Whealin, 2015).

Deployments onboard naval vessels typically extends from three to six months at a time, during which the separation from family and loved ones can be rather demanding (Carter et al., 2015). When members are not deployed, they are normally engaged in sport and recreation activities with their families (Young, 2013). Times with family and friends are normally used to relax and rejuvenate mentally and physically in preparation for their next deployment. It is crucial to understand the working environment where SAN members find themselves (Tasseron, 2001; Duxbury & Higgins, 2002; DeCarvalho & Whealin, 2015). For the military to function effectively, it must achieve a high degree of reliability. Military members depend on and trust each other on what they were trained to do. This high degree of conformism and detailed training is critical in life-and-death situations. Hence, discipline in the military is necessary to manoeuvre effectively. The rules are clear and consistent at every level (Department of Defence, 2004; DeCarvalho & Whealin, 2015). The following ethical principles govern service in the SANDF: service before self; obey and support lawful authority; and respect the dignity of all persons (Department of Defence, 2004; DeCarvalho & Whealin, 2015). Military members must therefore take personal responsibility despite a decreased sense of autonomy and assertiveness.

For the purpose of this study, the researcher, as a member of the SAN, observed that the work environment consisted of working aboard SA ships where they performed their sea trade in

both local and international waters (Cozett, 2012). As part of the naval environment members are constantly exposed to extensive deployments. The SA Navy conduct surveillance operations to protect the sovereignty of our coasts and defend South African waters against illegal fishing and ecological damage (Cozett, 2012). Furthermore, the SANDF supports international initiatives for peace and humanitarian assistance. The unique naval working environment differs from other military elements such as the SA Army, SA Air Force, and SA Medical Health Services.

The current study is a continuation and builds on the Therapeutic Recreation Stress Management Intervention Model developed by Young (2013) and the Therapeutic Recreation Stress Leisure Appraisal Tool developed by the researcher (Cozett, 2015). The study of Young (2013) looked at a therapeutic recreation intervention that could lead to stress reduction and contribute to psychological well-being. The study contributed to the development of a model which addressed the main aspects of Therapeutic Recreation, which are assessment, planning, implementation, evaluation and documentation (APIED). This is referred to as the Therapeutic Recreation Process, which is a cyclical process.

Cozett's (2015) study used two of the four phases of the instrument development of the Farnik and Pierzchała (2012) model. The four phases were structured in Cozett's (2015) Master's dissertation. The preliminary phase consisted of initial questions, reasons for creating the instrument, identification of participants to which the instrument is addressed, identification of needs and the operationalisation of variables. The questionnaire development phase was used to develop questions and scales. Phase one and two were already completed, while phases three and four build on continuing the current study. Thus, the pilot-testing and evaluation phases three and four will be completed and the current study's focus. The emphasis of the current study is the piloting and validation of the instrument called the Therapeutic Recreation Stress and Leisure Appraisal Tool (TRSLAT). The pilot testing will consist of an assessment for

feasibility, comprehension, ease of use, and the usefulness of the TRSLAT instrument in the context of the current research. The evaluation phase will be used for the validation process, including reliability, reproducibility, internal consistency, and responsiveness. The study will inform this instrument's content validity by exploring the possible factors associated with stress. The main objective is to explore the usefulness of the newly piloted tool qualitatively.

1.2. Rationale and Problem Statement

The primary function of the defence force is to maintain national security. Therefore the effectiveness of its operations depends on the mental hardiness of its members (Sudam & Hackey, 2011). It is understood that naval personnel live on the limits of society. They usually are confronted with stressful, confined, stark, noisy, and dangerous conditions at sea (Schwerin, Glaser & Farrar, 2002; DeCarvalho & Whealin, 2015). Physical demanding conditions at sea are normally sources of high stress levels which influence day-to-day working conditions. Irrespective of these conditions men and women still go to sea for the opportunity to see the world. Deployment onboard ships typically extend for months at a time. The quick turnaround of many modern ships, spending only a matter of hours in port, limits naval personnel's free time ashore. Restrictions onshore, coupled with reduced time in port by many ships, translate into more extended periods at sea. Cozett (2013) conducted a qualitative study with naval staff and found that most naval staff members reported that extended periods at sea and working with shipmates is something to get used to. Although recreational opportunities have not improved on board SA Navy ships, staff members' off-duty time is mainly spent pursuing hobbies such as reading, watching films, sleeping and being seasick.

With various operational demands, the military must develop, maintain and promote the health and wellness of its members to sustain force readiness (Patel, 1991). Well-being in the military is linked to several aspects of health, including the psychological, spiritual, environmental, occupational, cultural, and physical components of force readiness. Demands from work may

often influence home life and contribute to stress-related behaviours. Stressors can negatively affect an individual's physical and mental health.

No specific standardised appraisal or recreational therapy tool exists to measure stress and leisure behaviour in the African or South African military context. Stress appraisal tools and leisure appraisal tools that exist were based on international literature from European and American countries. Moreover, these internationally developed tools were not readily available and were costly to use. Therefore, the appraisal tool in this study will be unique. It will be the first appraisal tool developed and evaluated measuring stress and leisure behaviour in a South African military context. It will further be framed within the Therapeutic Recreation Stress Management Model (TRSMIM) developed by Young (2013), managing stress in the military.

1.3. Overview of the larger study

This study is within a more extensive study that has qualitatively explored the impact of stress, stress coping and leisure behaviour in the SA Navy. This more extensive study ultimately tests the validity and reliability quantitatively by measuring stress, stress-coping, and leisure behaviour in a military environment. The research conducted on this project has highlighted the need for an appropriate instrument to measure and investigate these factors. The instrument, called the Therapeutic Recreation Stress Leisure Appraisal Tool (TRSLAT), focuses on the current study. The more extensive study thus far has informed the content validity of this instrument by exploring what the possible factors are that are associated with stress, stress coping, and leisure behaviour, whether the target population agrees that these are relevant factors, and how these constructs can be accurately measured (ie, the items). Figure 1.1 (p. 7) graphically demonstrates the current study's contribution to the more extensive study.

Figure 1.1: Flow diagram to illustrate the instrument development and evaluation of the current study

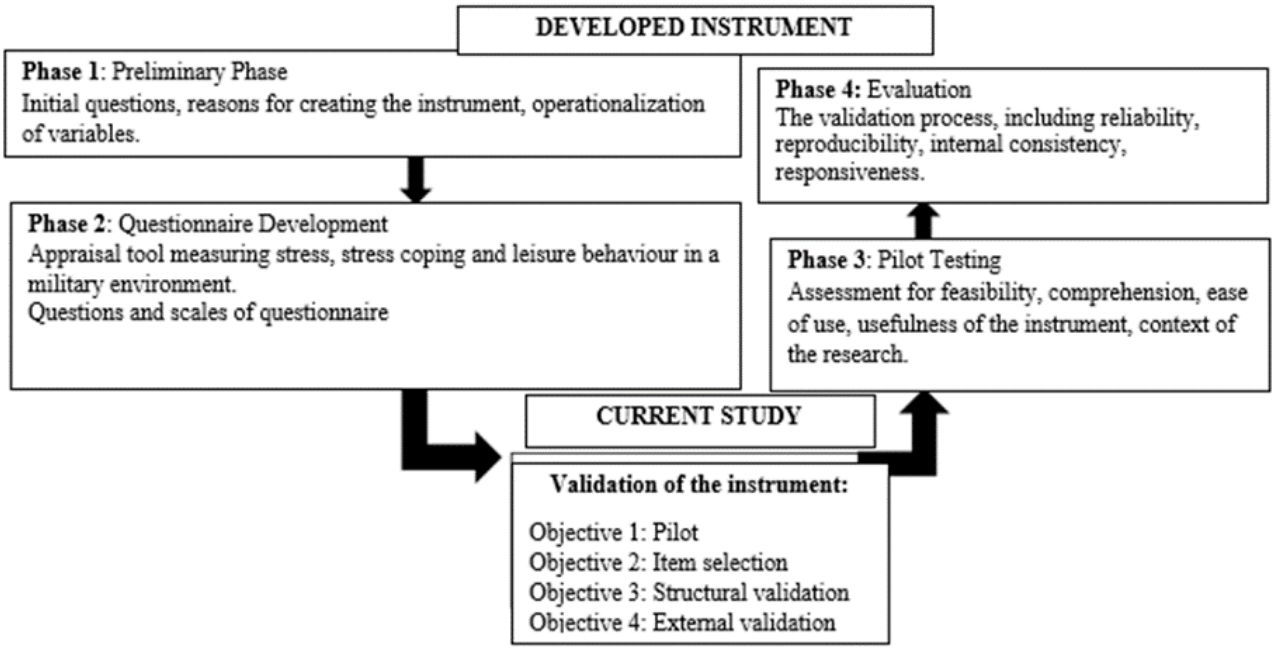

Figure 1.1: Flow diagram to illustrate the flow of information between the more extensive study and the current study

The steps in developing the instrument and their relation to the more extensive study are outlined in full in Chapter 5. The first steps, up to the writing of the items, were conducted in the more extensive study. These processes were informed by qualitative data collected in the military environment of the factors that impact stress, stress-coping and leisure behaviour. Focus group discussions were conducted to determine the accuracy and usefulness of the instrument and were refined based on a thematic analysis of these focus-group discussions. The themes were presented to the members to confirm the accurate interpretation of the discussions. The instrument included all these items, which were organised into the theoretical framework and constituted the instrument's scales. The operational definitions of the factors and the item

content were based on the data from the focus-group discussions. The relevance and representation of the themes/scales were assessed as content evidence towards the instrument's validity. The current study was concerned with the piloting of the items and the further validation and reliability of the instrument. It applies to construct validity procedures to the instrument to assess its appropriateness for the target population. This instrument will then be used for further research in the more extensive study.

1.4. Aim of the study

This study aimed to pilot and evaluate the validity and reliability of the Therapeutic Recreation Stress Leisure Appraisal Tool (TRSLAT), measuring stress, stress-coping, and leisure behaviour in the South African Navy (SAN).

1.4.1. Research question:

Is the Recreation Therapy Stress and Leisure Appraisal Tool (RTSLAT) a reliable and valid instrument, measuring stress, stress-coping and leisure behaviour in the South African Navy?

1.4.1.1 Sub-questions

1. Is the appraisal tool measuring stress, coping, and leisure behaviour in a military environment set at a well-understood level by participants?

2. Do the participants interpret questions in the appraisal tool measuring stress, coping, and leisure behaviour in a military environment similarly?

3. What questions, question types and responding options would be appropriate to include in the appraisal tool measuring stress, stress-coping and leisure behaviour in a military environment?

4. Do the questions relate to the objectives of the appraisal tool measuring stress, stress-coping and leisure behaviour in a military environment?

1.4.1.2 Objectives

1. To pilot the items and format of the appraisal tool measuring stress, stress-coping and leisure behaviour in a military environment;

2. To select the best items based on item characteristics; measuring stress, stress-coping and leisure behaviour in a military environment,

3. To assess the construct validity of the instrument, using procedures of structural evidence;

4. To assess the construct validity of the instrument, using procedures of external evidence.

Each of the above objectives will contribute to the argument for the construct validity of this instrument. Together with evidence from the more extensive study, these aims will all contribute towards evidence for the validity argument for the newly developed instrument in answer to the central question of this study, which is whether the instrument measures what it is intended to measure.

1.4.1.3 Hypothesis:

The Therapeutic Recreation Stress Leisure Appraisal Tool would be reliable and valid in measuring stress, stress-coping, and leisure behaviour in the South African Navy.

1.5. Significance of the study

This study was unique in understanding the stress management of military members working in a military setting. There are limited studies in the literature looking at participation in sport and recreation and recreation to prevent stress in military settings, since this is an area of study with little or no data available on the stress management of the South Africa military naval

population. Thus, this study aimed to make a significant contribution to naval information systems. This study is distinctive from others because it included stress management among naval members of both sexes. Military members serving at sea are an untapped source of information.

1.6. OVERVIEW OF THE THESIS

Validity theory has guided the current study in its purpose to validate a newly developed instrument. The guidelines given by this theory were used in the building of a validity argument for the TRSLAT. Some of the validation processes were supported by the validity theory, TR Intervention Framework and Vitamin Model. These frameworks were used to conceptualise the scales in its systems levels and the empirical analysis towards structural evidence for the instrument.

Chapter 1 The chapter contextualises the importance of stress in the SA Navy. This will be done by evaluating the reliability and validity of the developed Therapeutic Recreation Stress Leisure Appraisal Tool.

Chapter 2 provides a literature review of current information about stress. This chapter addresses wellness and stress within a military context. It also investigates stress-coping which is contextualised within a military setting.

Chapter 3 will thoroughly describe these theoretical frameworks and demonstrate fully how they have been applied in the current study.

Chapter 4 will critically discuss the methodological issues to consider when conducting instrument-development studies to demonstrate how other such studies have made decisions regarding the appropriate techniques to use. The discussion will include a theoretical discussion of the applicability of these techniques, the trends in recent instrument-development research,

and how practical the techniques have been in those studies. An argument in support of the techniques employed in the current study will be formulated in this chapter based on reports in the studies reviewed.

Chapter 5 presented the research methodology used in this study. It outlines the research approach followed by an explanation of the methods of data collection, including a selection of participants, the research setting, and an overview of the data-collection setting, including procedures adopted, trustworthiness and reflexivity, a description of data, and finally ethical considerations are mentioned.

In **Chapter 6** the objective was to pilot the instrument and to explore if the developed appraisal tool was interpreted correctly.

Chapter 7 presents the empirical findings of the current study. These findings, along with the literature explored in Chapter 2 on the factors associated with stress, stress-coping, and leisure behaviour and substance use, will contribute to the validity argument for the TRSLAT and inform decisions regarding its usefulness.

Chapter 8: the findings are summarised and discussed.

Chapter 9: in the last chapter, the limitations of the study and some recommendations for further research are summarised.

1.7. Chapter conclusion

The objective of this chapter was to provide a better understanding of the stress military personnel are exposed to and formulate the rationale, problem statement, research questions, aim, and objectives and clarify the terminology used in this study. The researcher introduced and contextualised the topic under investigation of stress, stress-coping and leisure behaviour in a military environment. The scope of the study was therefore outlined and clarified.

The next chapter focuses on literature related to stress in the military, support, and personal and occupational stressors to create a contextual framework to guide the study in the validation and reliability of the TRSLAT.

CHAPTER TWO

THE LITERATURE REVIEW

2.1 Introduction

A literature review in a dissertation intends to inform a planned study (Maxwell, 2006). The literature review for this study provided the framework for the data collection and for validating and inferring the findings. The literature review will thus focus on topics related to military conditions and revelation to stressful situations.

One of the most essential factors in the military is military readiness as members are repeatedly exposed to life-threatening situations. This high levels of stress is based on the job demands of military members. Failure to manage these stressful job demands could affect employee wellness and job satisfaction (Rendick, 2009; DeCarvalho & Whealin, 2015). The chapter begins by discussing stress. Emphasis was placed on the stress phenomenon and how it applied to the military environment. Focus was also placed on stress in the military and exposure to stressful situations.

A third section discussed the impact of employee wellness, symptoms of stress, military stressors, and sport and recreation in the military, which will provide the background of research and lay the foundation of familiarity with the topic being researched. The primary responsibility of the military is to maintain and promote a high level of combat readiness among its members (Rocco, 1998). The components of military readiness include unit cohesion, fitness, technical competence, organisational citizenship behaviour, preparedness and commitment (McGonigle, Casper, Meiman, Cronin & Harris, 2005). Military readiness can be guaranteed by promoting health and wellness within the military environment. This can be achieved by looking after the psychological well-being of military members. This includes reducing the stress that can harm their physical and mental well-being. It is therefore essential to recognise the stress and the stressors experienced by members (Bartone, 2005). Employee

wellness will be addressed and its relationship to stress discussed. Emphasis will be placed on the phenomenon of stress and how it relates to the military environment.

2.2 Employee Wellness

People perceive well-being as happiness and satisfaction (Rego & Cunha, 2008). Wellness is thus created through the empowerment of employees and is positively associated with job performance and job satisfaction and the ability to cope with stress (Stander & Rothman, 2009). It is referred to as psychological fitness in the military environment and is a vital component of military readiness. Psychological fitness is defined as the integration and optimisation of mental, emotional and behavioural abilities and the capacity to optimise performance (Bates et al., 2010). It further strengthens the resilience of soldiers, which is vital to force preparation. Resilience refers to when a person remains healthy despite the high-stress levels he or she may be experiencing. The pathway to resilience is personality hardiness (Bartone, 2006). Hardiness leads to better health and fewer symptoms in soldiers exposed to various stressors (Bartone, 2005).

The impact of stress comes in different forms and affects each person differently and at different times. Bagne-Walsh (2008) and Miller and Foster (2010) investigated the term "wellness". In this context, wellness was seen as a positive approach to living rather than the absence of illness (DeCarvalho & Whealin, 2015; Bagne-Walsh, 2008; Watson, 2008; Adams, 2003). Wellness is thus defined as the experience of optimal health, good relationships with others, being emotionally and cognitively well stimulated and experiencing significance and purpose in life (Bagne-Walsh, 2008). In principle, wellness is seen as the integration of body, mind, soul and addition to everything a person does, thinks and believes (Bagne-Walsh, 2008; Watson, 2008). Its most common dimensions, wellness is seen as physical, intellectual,

spiritual, occupational, environmental, cultural, economic and climatic (Rego & Cunha, 2008; Corbin & Pangrazi, 2001).

High employee productivity within the workplace is as a direct result of the implementation of wellness programmes (Rego & Cunha, 2008; Corbin & Pangrazi, 2001). Good workplace ethics are characterised by five dimensions: credibility, respect, fairness, pride and camaraderie (Rego & Cunha, 2008). The dimension of credibility in an organisation refers to being trusted, believed in and admired due to your abilities, qualities and achievements. The term *respected* refers to being held in high regard. Dimensions such as pride, fairness and camaraderie are instilled in the military ethos (Rego & Cunha, 2008). This implies that organisations can be a source of meaning and growth for people rather than leading to psychological suffering and feelings of alienation (Watson, 2008). This forms the anchor for employees' health and psychological well-being (De Carvalho & Whealin, 2015; Watson, 2008; Panelli & Tipa, 2007). Thus, the workplace climate is critical to reducing job stress and maintaining employees' good health and well-being (Pfanz & Olge, 2006; Corbin & Pangrazi, 2001).

Employee wellness is the extent to which one can express values and gain personal satisfaction and enrichment from paid and non-paid work. Hettler (1980) and Anspaugh, Hamrick and Rosato (2004) defined employee wellness as the level of satisfaction and enrichment gained by one's work and the extent to one's occupation allows for expressing one's values. Hamrick and Rosato (2004) stated that employee wellness is one's attitude about work and the amount of personal satisfaction and enrichment one gains from work. Thus, organisations would be well advised to understand ways to lessen the stress and illness experienced by their employees through the implementation of wellness programmes (Adams, 2003; Dolbier, Smith & Steinhardt, 2007). Employee's morale is the starting point of measuring employee wellness (Castro & Martins, 2010). Military training contributes to building morale by focusing on team cohesion and providing support to the troops. The four basic dimensions of morale in the

military are confidence in commanders, equipment, unit cohesiveness and perceived legitimacy of the mission. Research indicates by investing in the health of workers, health promotion and wellness programmes results in higher productivity and earnings for the organisation and significant reductions in health-care expenditures and utilisation (Castro & Martins, 2010). By investing in worksite health and wellness programmes, ways are created to lessen the stress and illnesses experienced by employees, assisting them in coping with work-related stress and life balance and facilitating their psychological well-being (Dolbier, Smith, Steinhardt & Novack, 2007).

Through good supervisory relationships, positive employee health and wellness could thus be promoted (Sieberhagen, Rothmann & Pienaar, 2009). It is essential that these issues need to be addressed for soldiers to be productive, stay mentally fit, and maintain their health and wellness (Bagne-Walsh, 2008). Military work is perceived as society‘s most stressful occupation (Louw & Viviers, 2010). Stress and stress-related illnesses are significant causes of occupational ill-health (Sieberhagen, Rothmann & Pienaar, 2009). They are associated with various biological reactions leading to compromised health or, in extreme cases, to death (Smith, 2011). Job stress may directly influence an organisation, resulting in low productivity and increased errors and accidents, a high labour turnover, increased absenteeism, increased medical costs or even injury (Sieberhagen, Rothmann & Pienaar, 2009).

2.3 Occupational Stress

Occupational stressors or job stressors are defined as occupational stress that is the interaction of work pressures and the characteristics of the worker and how the demand of work exceeds the ability of the worker to cope (Cooper & Straw, 1998). Recognising the cause of such pressures and developing coping strategies can relieve a person of stress (Vagg & Wasala, 2003; Cooper & Straw, 1998; Spielberger). Many stressors in military environments overlap

with those in civilian environments. In contrast, specific military stressors include sudden changes in roles and responsibilities, confusion regarding role identity, confusion regarding rules, restrictions and mission goals, and feelings of physical or psychological threat (Shimazu & Kosugi, 2003). Job stressors in the military environment, such as work pace, job demands, control, supervision, conditions, long working hours, and shift work, are comparable to many other workplace environments (DeCarvalho & Whealin, 2015; Shimazu & Kosugi, 2003; Bogg & Cooper, 1995).

However, military job stress does not exist in isolation. Military staff in non-operational roles are subject to conditions of a kind with which civilian workers are generally not confronted. Working conditions such as crowding and a lack of privacy; excesses noise, heat or cold; the presence of toxic chemicals or radiation; air pollution; safety hazards; inadequate or excess light; and poorly designed or a poor physical setting of the workplace are typical examples of working conditions. In addition to these factors, sailors may be intensively confronted by these environmental factors (Sherman, Bohlander & Snell, 1998). Military members are also subjected to military law and discipline as well as to civilian law. They also work irregular hours without remuneration for overtime, do not have the right to engage in industrial disputes, and experience increased work responsibilities and difficulties with supervisors (Bartone, 2006). Stress can be kept to a minimum point when a person's role in an organisation is clearly defined. When a worker does not have any clear picture of his/her work, he/she takes upon much strain. Therefore, managers in organisations are responsible for reducing or eliminating role ambiguity (Bartone, 2006). In addition to role ambiguity, role conflict may occur when things are not considered part of the job. A high level of responsibility for people also brings a high level of stress. Therefore, managers must maintain a balanced responsibility for their employees (Michie & Williams, 2001). People, in general, can also be significant sources of stress in the organisation. Relations with the boss, relationships with subordinates, and

relationships with colleagues are essential. Workers want their boss to be interested in their problems.

A lack of job security and an appraisal system has two essential points that can create pressure and strain. On the one hand, they do not want to feel under pressure from their boss. On the other hand, the boss has to establish mutual trust and a warm climate among subordinates. Managers also have to be careful to identify stress among co-workers, especially from the competition and role conflict (Michie & Williams, 2001). They have to balance the roles and have to decrease the competition. Performance appraisals made by managers or commanders may exert much more stress, depending on the rater's attitudes and the organisational climate (Williams, Michie & Patani, 1998). In the operational environment, military members may face lengthy separation from family and friends. They are liable for frequent postings at short notice, which disturb their social, educational and other ties, and may also encounter fear of death, illness, boredom, isolation and powerlessness while engaged in these operations (Louw & Viviers, 2010; Brooks, Byrne & Hodson, 2000; Pflanz & Ogle, 2006; Bartone, 2006).

Occupational stress has the same typical characteristics, except that it appears specifically within the parameters of the work environment, is caused by work-related factors, and has consequences for the work situation (Rothmann & Cooper, 2008). It implies that a person cannot effectively handle work-related demands, such as work overload, workplace role conflict, and poor working conditions. Stress affects individuals and organisations in many ways. Employees under stress at work may cost much money and time for the organisation (Michie & Williams, 2001). Job stress costs businesses more than $150 billion every year in the form of "workplace injury, workers' compensation, illness, absenteeism, tardiness and poor productivity (Michie & Williams, 2001). Because it is an inevitable result of work, relationships and personal life, people are always subject to stress on and off the job, affecting productivity and job satisfaction (Williams, Michie, & Patani, 1998). However, well-managed

stress can promote performance as well as the health of employees. Managers in the workplace must understand the main elements of stress; the causes of stress; how it occurs; and how to reduce or prevent it by using managerial tactics (Williams, Michie & Patani, 1998). They also must observe the symptoms of employees to identify stress occurrences. To increase performance, managers must also learn how to create healthy stress for employees. The importance of this association to business and industry is illustrated by studies in which stress emerged as one of the most costly risk factors in health-care expenditures and utilisation (Karasek & Theorell, 1990). By investing in healthier workers, health promotion and wellness programmes result in higher productivity and earnings for the organisation and significant reductions in health-care expenditures and utilisation (Karasek & Theorell, 1990). Thus, organisations would be well advised to understand ways to lessen the stress and illness experienced by their employees through wellness programmes (Heany, Price, Refferty, 1995). A framework developed by Lazarus and Folkman (1984) provides an understanding of how certain factors may serve a protective function in the experience of stress. There has been a growing recognition between the interdependence of the work environment and one's personal life (Lazarus & Folkman, 1984). Typically, research in this area has focused on the negative impact one's work environment can have on the quality of one's personal life, explained by spill over theory, as the extent to which involvement in one life domain influences involvement in another (Heany, Price & Refferty, 1995). For instance, adverse work conditions such as job stress can negatively spill over aspects of one's personal life, such as poor physical and mental health (Michie & Williams, 2001).

2.4 Stress

Several definitions of stress have been offered over the years. Stress is derived from the Latin word "stringere". Stress in the 17th century was used to describe "hardships or affliction", and, up to now, its meaning was denoted as "force, pressure, strain or strong effort" (Carwriht &

Cooper, 1997). Stress is defined as an individual's physiological, psychological and behavioural response to emotional or physical threats and includes either imagined or actual threats (Carter et al., 2015; Besser & Scheckelford, 2007; Van der Merwe, 2004; Higgins & Endler, 1995). Stress could thus affect a person mentally or physically. In essence, stressors are generally subjective and the impact on the individual depends on how the event is interpreted as stressful and the ability of the individual to cope (Cox & Griffiths, 1995). Hans Selye made one of the first scientific attempts to explain stress in 1956 (Randall & Altmair, 1994). Hans Selye was the first to describe human stress. His early works were on the response and adaptation of the body against any demand. Selye believed that this response was "non-specific", which means that the person's response to stress follows a universal pattern whatever the external and internal demands of the body (Randall & Altmair, 1994). Modern stress researchers give attention to the psychological and behavioural dimensions of stress. Stress can thus be labelled as "psychogenic" (psyche: mind; genesis: origin), mental origin (Allen, 1993). According to these theorists, the mind perceives first and the physical response follows. There is always a link between mind and body (Carter et al., 2015; Besser & Scheckelford, 2007; Van der Merwe, 2004; Higgins & Endler, 1995). A modern definition of stress looks at stress in the capacities of the mind and body (Fontana, 1989). He defines stress as "a demand made upon the adaptive capacities of the mind and body". If the capacities exceed the demands, then stress is a "life-saver"; otherwise, it is a "life-destroyer".

The term *stress* will be understood in this study as having a negative impact on the individual unless otherwise specified. Stress can be divided into eustress (positive stress) and distress (negative stress), according to Dolan (2007) and Luis Gaviria & Associates (2008). Stress is not always bad. Eustress or good stress enhances an individual's physical or mental functioning. Eustress experiences include stressors such as an athlete's perceived stress before an event. It is the kind of stress needed in order to function appropriately (Dolan, 2007). Therefore, efforts

to treat stress are utilised to help return individuals to healthier states of functioning to reach personal or job-related goals (Carter et al., 2015; Lee-Baggley, Preece & DeLongis, 2005). Understanding stress requires looking at, first, external demands to identify whether these demands can be altered or lessened. Then, it is necessary to look at personal reactions to these demands, whether a human being can balance or not. Since the capacities can vary from person to person, it can readily be understood why some people react differently from others, although they face the same stressors.

Alternatively, even why the same person can react differently from one year or month or day to another (Carter et al., 2015; Lee-Baggley, Preece & DeLongis, 2005). Although stress is inevitable and often necessary for human survival, degrees and forms of appraised stress may have repercussions. On the other hand, distress is associated with high levels of stress, which are heightened by an individual's vulnerability and resiliency, both of which contain innate and environmentally mediated components (Dolbier et al., 2007; Sarason & Sarason, 2005). More resilient people tend to handle stress more productively and experience less personal distress when faced with difficult circumstances (Sarason & Sarason, 2005; Dolbier et al., 2007). Simulations of traumatic events during military training will prepare military members to be resilient (Dolbier et al., 2007; Sarason & Sarason, 2005). Everyone experiences stress caused by daily hassles or life events. Continuous stress may lead to anxiety and other psychological or physical symptoms (Dolbier et al., 2007).

2.5 Symptoms of stress

Stress symptoms is psychological, physical and behavioural. According to Pflanz & Olge, 2006) stress symptoms consist of: survival stress, environmental stress, work stress, internally generated stress, family stress and stress generated from social relationships. Stress in the work place, also known an as work stress has a substantial occupational hazard that impact military

members, emotionally and physically (DeCarvalho & Whealin, 2015; Pflanz & Olge, 2006). Military members can be incapacitated for future deployments with debilitating and permanent incapacity due to stress (Pflanz & Olge, 2006). Thus, by identifying stressors that impact the individual allows the SAN to put preventative measures in place.

2.6 Personal stress

Physical, Psychological and Behavioural Symptoms of Stress

It is vital to understand how each individual perceives, copes and experiences a given stressful situation whether physically, mentally, emotionally or behaviourally. The stressful situation should be explored and investigated in relation to the meaning an impact on the individual (Schlebusch, 2000; Patel, 1991). Stress can be interpreted as stressful or a threat to a person's well-being. A stressful situations arises when the environment drives a person to use his or her coping resources. Thus stress is a person's physiological, psychological or behavioural reaction, adaptation, adjustment to internal and/or external pressures with which the individual cannot cope. External demands are generated through the individuals own hopes, fears, expectations and beliefs. Consistent stress long-term stress can lead to the individual experiencing physical symptoms

2.6.1 Physical symptoms

High levels of stress can cause an individual to suffer from physical symptoms which they find hard to understand or relate to. The body's immediate biological action due to stress, is that adrenalin is released into the bloodstream, the digestive system shuts down , blood thickens, and a rapid heart rate could lead to clotting. Furthermore other physical symptoms due to stress include hypertension, heart attacks, strokes, gastrointestinal diseases such as ulcers, diarrhoea and respiratory diseases (Yanovich et al. 2015; Ramchand, Rudavsky & Grant, 2015).

Post-Traumatic Stress Disorder (PTSD) are often described as a military. Military environments are hazardous to member's health (Ramchand, Rudavsky & Grant, 2015). A strong relationship exist between PTSD and physical symptoms such as cardiovascular disease. An example of these relationships were observed in Iraq war veterans from the 1991 Gulf War. These veterans experienced physical symptoms for years following post-deployment. Furthermore symptoms were more prevalent among injured veterans compared to uninjured veterans returning from the war (Hodge, 2007). This study confirmed the evidence of a relationship between PTSD and the indicators of physical symptoms among these veterans. A Danish Study conducted by Nissen, Marott, Gyntelberg and Guldager (2011) echoed the findings of Hodge et al. (2007) in terms of multiple physical symptoms post-deployment, linked to increased psychological discomfort.

2.6.2 Psychological Symptoms

Mental health is extremely dangerous for military members as the onset stress can promote mental illness (Perera, Suveendran & Mariestella, 2004). Psychological symptoms of stress are related to psychological disorders. The stressors experience by members in the military are anxiety, PTSD, adjustment disorder, substance abuse and personality disorders (Jones, Greenberg, Fear, McAllister, Reid & Wessely, 2008). Military stress is most often described as post-traumatic stress disorder (PTSD). This has been identified as a psychological disorder resulting from stress. Job stress are normally related to psychological symptoms and emotional problems. Related to the context of this study, it was established in the literature review that PTSD is one of the most typical psychological stress disorders faced by soldiers because of their involvement in military activities. The knowledge about trauma stemmed from concern about soldiers who developed PTSD after military activities or activities outside the normal range of human experiences (McLauchlin, 2006; Gallimore, 2002). Depressed moods, burnout and irritability, can be given as examples of job stress.

2.6.3 Behavioural symptoms

Behavioural symptoms of stress in the military include increased alcohol and drug use, poor nutrition, fatigue, aggression towards fellow workers and family members, accident proneness and interpersonal problems in general (Yanovich et al., 2015; Ramchand, Rudavsky & Grant, 2015). They may leave a person emotionally upset, worried or tearful, irritated by others, feeling misunderstood, powerless, unable to cope, restless, a failure, unattractive and demotivated. As a result, various abnormal behaviours may occur, such as waking up at night thinking about work, difficulty concentrating, loss of creativity or interest in oneself and other people, loss of appetite, and increased alcohol consumption, smoking or eating. A person's response to stress depends on personality, upbringing and life experiences (Cooper & Straw, 1998).

a. Anxiety

Anxiety is a typical reaction to stress response, which may lead to further stress (Smith, 2011). The origin of anxiety is not always known or recognised. However, it is a unique mix of subjective and physiological events in everyday-life situations, resulting in apprehension, tension, or uneasiness arising from the anticipation of danger. Anxiety is an everyday occurrence but becomes a difficult when it affects living effectiveness and emotional comfort. Stress can induce a state of anxiety and can be perceived as life threatening if left unresolved. Smith, 2011; Schlebusch, 2000). Nash (2007) noted that soldiers could develop anxiety when they perceived a situation to be hopeless or when they felt threatened. Heighten anxiety normally occurs as a result of personal loss or separation from family and friends. Poor eating habits, fatigue and sleep deprivation during operations can lead to anxiety (Figley & Nash, 2007). Exposure to life threatening and terrifying conditions can lead to psychological arousal and feelings of fear and anxiety when reminded later of those events (Nash & Baker, 2007).

Stress can have good and bad levels of anxiety which can be harmful to individuals. Thus the objective is to overcome unwarranted or devastating levels of anxiety that might lead to disorders such as PTSD (Schlebusch, 2000). PTSD is very evident among military veterans and the slightest sights, sounds, and memories that might trigger their fear responses should be avoided at all cost to reduce their anxiety and loss of control (Nash & Baker, 2007). Soldiers experiencing physical injuries should be removed from a stressful situation and placed in a safe and protected environment to prevent further traumatisation, heightening anxiety (Koren, Hilel, Idar, Hemel & Klein, 2007).

b. Depression

Depression is a common stress reaction to combat, which is caused by war exposure and daily stressors. In the military environment increased work and family responsibilities, family problems, or even problems with peers or senior staff can lead to depression (Miller & Rasmussen, 2010). Depression in particular is brought on by exposure to violence or sexual abuse. High levels of depression were diagnosed among soldiers who had been sexually assaulted during combat (Miller & Rasmussen, 2010; Drescher, Smith & Foy, 2007). Following the loss of a loved one or after failing to reach a specific goal, often results in pessimistic and doubtful behaviour which is associated with feelings of depression. A Significant variation of symptoms can be identified within depression, but when it reaches the level of clinical depression it possess a concern. Sadness is often considered to have passed into depression and the mood becomes pathological or abnormal (Schlebusch, 2000; Louw & Van Jaarsveld, 1989). Such depression can become a risk factor for cardiovascular disease (Kubzansky, et al., 2007). Depression also associated with burnout, an individual experience related to the overload that occurs when the demands faced become excessive, particularly those specific to the work context (Maslach, Schaufeli & Leiter, 2001). These demands force the person to exceed his or her average level of optimal functioning and move into a negative

phase of stress, leading to mental and physical fatigue. This often happens in demanding work situations and results in reduced productivity, efficiency, creativity, and interpersonal communication problems (Schlebusch, 2000). Burnout has mainly been observed in the military on members with high professional demands and ideals. In military training is often a requirement to spend considerable time under intense conditions with other people (Morgan, Cho, Hazlett, Coric & Morgan, 2002). Burnout is characterised by the following symptoms that could lead to depression, emotional exhaustion, depersonalisation, a reduced sense of personal accomplishment and hopelessness (Smith, 2011). Depression is a secondary symptom of PTSD, military members diagnosed with PTSD often shows signs of depression (Smith, 2011).

Furthermore, depression also intensifies the risk of suicide (Grenier, Darte, Heber & Richardson, 2007). Suicidal behaviour is not always related to psychological disorders but is instead an indication of something more insightful. The impulse is not about wanting to die per se but rather to escape from the aspect causing the psychological pain or depression (Schlebusch, 2000). Nevertheless, in some countries, cultures and religions, suicide is seen as an act of bravery. For example, Iraq, Iran and Palestine have a history of people deliberately destroying themselves, and sometimes their whole families, as an act of planned war and terror, often on innocent civilian locations (Hamden, 2002). In most western other countries, however, suicide is not an acceptable course of action but instead seen as related to stress and depression, resulting from domestic and family problems. Crawford, Sharpe, Rutter and Weaver (2009) offer evidence that, although suicides among the military are fewer than in the general public, an estimated 672 suicides were recorded between 1984 and 2006 among British armed forces. The suicide rate among male soldiers aged 16-20 during this period was 50% higher than in the general population. Most of these suicides or self-harming actions were impulsive and involved firearms preceded by alcohol consumption.

c. Post-traumatic stress disorder

Post-traumatic stress disorder (PTSD) is a psychological stressor that would be traumatic for almost anyone. It occurs often as a result of exposure to a traumatic event that is perceived to be life-threatening or threatens the well-being of the person concerned or another person (Lew, Otis, Tun, Kerns, Clark & Cifu, 2009). PTSD would be distressing for anyone, and it is more than just the conventional experiences of mourning, chronic illness, financial losses or marriage conflict. The symptoms of PTSD follow exposure to an extreme traumatic stressor involving direct personal experience (as an individual or in a group) or a life-threatening event involving intense fear, shock and feelings of helplessness (American Psychiatric Association, 2000). Stress is usually the primary cause of the onset of PTSD but is not the only factor to consider. Pre-existing physical and psychological factors in an individual‘s life, as well as events that follow the trauma, also need to be considered (Ekblad, 2002).

Inadequate psychosocial support systems play a crucial role, along with other factors (Schlebusch, 2000). PTSD further differs from acute stress disorder in that acute stress occurs within the first month after a traumatic experience, while PTSD is symptomatic of the re-experiencing of a traumatic event, increased arousal and the avoidance of reminders of the event (Hovens & Drozdek, 2002; Hamden, 2002; Schlebusch, 2000). Victims, for example, of terrorism, often suffer changes in their core beliefs or basic assumptions, have developmental arrests, symptoms of dissociative discourse and personality changes. Chronic PTSD links to a spectrum of personality changes or the adoption of a personality, damaging the core beliefs and other chronic post-traumatic stress symptoms. In its extreme form, traumatisation can lead to psychotic regression, ego-changes, extreme introversion and resignation or conservation-withdrawal (conserving a minimal amount of energy to stay alive, trying to avoid any activity in order to remain invisible and avoid any further danger; Hovens & Drozdek, 2002). It is further associated with an increased risk of cardiovascular disease (Kubzansky et al., 2007).

PTSD normally develops as a result of trauma experienced after military activities or activities outside the normal range of human experiences (McLauchlin, 2006; Gallimore, 2002). Such activities for the SAN include being involved with foreign peacekeeping and anti-poaching missions (Mclauchlin, 2006; Bemak & Chi-Ying Chun, 2002; Gallimore, 2002; American Psychiatric Association, 2000). Unresolved PTSD have severe psychological concerns which can destroy military member's sense of coping.

d. Adjustment disorder

Adjustment disorder was first identified during the Vietnam War. The anti-war movement among American citizens didn't always welcomed back the troops post-war as they had expected. Similar was the case of the Iraq and Afghanistan military campaigns which were also not regarded as popular universal campaigns among British communities (Alexander & Klein, 2009). Adjustment disorder is a stress-related, short-term, non-psychotic disturbance that occurs under conditions of overwhelming stress. Its symptoms are time-limited and occur within three months after the stressful event. It manifests as an emotional or behavioural reaction to an identifiable psychosocial stressor (Benton & Bienenfeld, 2010; Perera, Suveendran & Mariestella, 2004). Adjustment disorder shows symptoms of overreaction to the stressor in a manner not expected such as the inability to function socially or in the work environment. It is also referred to as a *nervous breakdown* (Smith, 2011). Adjustment disorders is often referred to as a *nervous breakdown* which cause physical, social, occupational or academic harm. How the adjustment disorder is perceived should be considered as well as the person's level of vulnerability. Adjustment disorder is often the cause of anxiety and depression but may also be broad and vague. However, it is normally resolved when the stressor is eradicated or when a new level of adjustment is achieved (Schlebusch, 2000). In the study by Perera, Suveendran and Mariestella (2004), stressful experiences were normally the cause of adjustment disorder among military members. However, these military members did not

experience any significant impairment in their social or occupational functioning. It was eminent that 61.8% of members diagnosed with adjustment disorder were not deployed in war area at the time of being diagnosed. It was found that most psycho-social situations referred to as ordinary or non-combat operational circumstances was the cause of adjustment disorder.

e. Substance-related disorder

A substance-related disorder is a self-destructive behaviour and is normally associated as the inability to stop using a substance. It is often used as a vehicle to numb the pain of trauma experienced (Smith, 2011). A connection was found between various forms of substance abuse and PTSD, as well as with burnout (Clayton & Nash, 2007; Maslach, Schaufeli & Leiter, 2001). The substances involved could be anything from alcohol to drugs or even nicotine. During the 1995 American Department of Defence survey of health-related behaviours it was found that substance abuse and high levels of stress were prevalent among active duty personnel. It was reported that male soldiers were more prone to alcohol consumption, whereas female soldiers were more prone to illicit drug and cigarette use (Bray, Fairbank & Marsden, 1999). Mehlum (1999) also reported drug and alcohol abuse as self-medication measures for stress among Norwegian United Nations soldiers during peacekeeping missions in South Lebanon. Substance and alcohol abuse in the military are often viewed as behavioural and disciplinary matters which are punishable under military code of justice. This could lead to further increase stress levels of soldiers (Grenier et al., 2007).

2.6.4. Workplace symptoms

Most people spend a significant part of their lives at work, and, if they are under severe stress, it could effective then badly within the workplace. Stressors in the workplace are physical, emotional, and mental (Siyanqoba Seminars, 2007). Workplace stress, also referred to as occupational stress, is perceived as an imbalance between an individual‘s hopes or perceived

professional demands and the reality of workplace conditions and the ability to cope with or carry out these demands (Smith, 2011; Dolan, 2007). Severe stress in the workplace is often the result of burnout, crippling a person both physically and psychologically. Burnout in the workplace can be overcome if addressed early enough (Siyanqoba Seminars, 2007). In a military environment, staff members are repeatedly exposed to stressful and unpleasant traumatic life events, which often produce mental and emotional stress (Philpot, 2006). This is often a career stopper for a soldier since it can be related with cowardice or malingering. When soldiers dedicated their life's to the military, this inability to cope with mental and emotional stressors could be psychologically crippling (Philpot, 2006).

Workplace disorders involve a wide variety of conditions and normally include physical disorders (for example, illness, cardiovascular disease, and compromised health), psychological disorders (for example, depression, anxiety and/or PTSD), emotional strain (for example, fatigue, dissatisfaction and tension), maladaptive behaviours (for example, aggression and substance abuse) or cognitive impairment (for example, concentration and memory problems). These conditions may often lead to poor job performance and job satisfaction (Smith, 2011). Stress will lessen job satisfaction and reduce performance. The changes leading to occupational burnout need to be recognised and acknowledged to prevent the long-term consequences of stress in the workplace. The consequences can be assessed in terms of the individual's health, performance, and productivity (Cooper & Straw, 1998).

2.7 Stress in the military

A definition of stress is derived from the work of Bartone (1998), who conducted extensive research in the military environment. Bartone (1998) refers to the importance of distinguishing between two very different meanings of the word *stress*. In the first instance, reference is made to environmental stimuli (both physical and psychological), which impinge upon the organism,

and secondly to the physical and psychological response of the organism to such stressors. Bartone (1998) describes stress within the military context as originating from forces in the environment. Stress is not an environmental event, a situation, or mental anxiety. It is a reaction to these forces. Nevertheless, as Allen (1983) says, a stressor is an agent that triggers a stress response within the body. The stressor is the cause, and stress is the effect.

In a study of stress, Furnham (1997) found that employees perceived a clear contradiction regarding workplace stress in that the cause of stress is viewed to be organisational. In contrast, the outcomes and alleviation are the burdens of the individual. Military history is littered with evidence of changing views on why military members suffer psychological breakdowns on operations (Ramchand et al., 2015; Harrison, Sharpley & Greenberg, 1998). Before World War II, the prevailing opinion was that those who suffered psychological injuries were inherently weak. The aim of commanders, medics, chaplains, welfare services and, finally, mental health practitioners was to increase the resilience of individuals to stress and to quickly and effectively manage individuals once they have been seen to suffer from the effects of stress. Stress is subjective to every individual but is often patterned by one's social background, including gender, social class, and the availability of coping networks and resources (Carter et al., 2015). What one person may interpret as a very stressful event, another may not. Many events and experiences can cause stress, some depending on the individual, and some are shaped by social structure and environment. Stress can be a positive response, by increasing alertness and stimulating senses (DeCarvalho & Whealin, 2015). However, stress can also be negative and debilitating, by causing exhaustion, burn-out, and depression (Altamirano, 2001). In the military, sources of stress normally include inadequate staffing, long working hours, duty schedules that conflict with family time, deployments, the threat of military discipline, problems with supervisors and a wide variety of other job-related issues (Pflanz & Olge, 2006). Military personnel are at risk of being exposed to traumatic events. This makes them vulnerable

to suffering from psychological distress and mental-health problems, including depression, family violence, substance abuse, and Post-Traumatic Stress Syndrome (PTSD), (Gould & Greenberg, 2007). Military personnel are constantly exposed to work-related stress, such as the length of deployment or exposure to adverse living conditions onboard a ship. The demanding characteristics of the military environment are such that most stressors are inherent (Hourani, Laurel, Williams & Kress, 2006). The level of stress felt by naval personnel is reflected by the nation's attitude towards the military and unit morale. Lubuc (1991) argues that, when morale is high, stress casualties are low. In particular, the military is a challenging environment, and members need an outlet in sport and recreation. There are many factors that research suggests contribute to stress. Stressors may include deployment, often moving to new locations and ambiguity (Knox & Price, 1995). One of the most significant stressors in the military family is separation due to military deployments (Padden et al., 2011b). Stress affects individuals and organisations in many ways. Employees who are under stress in work may cost a great deal of money and time for the organisation. Because it is an inevitable result of work, relationships and personal life, people are always subject to stress on and off the job, affecting productivity and job satisfaction. However, well-managed stress can promote performance as well as the health of employees. The primary function of the military is to maintain national security. Armed forces carry out missions and training under a variety of stressful circumstances. Military personnel are expected to perform their duties fully; therefore, the training and preparation of military personnel become crucial. Allen (1983) states that personality makes people more prone or more resistant to stress. Military personnel are often required to spend considerable time under intense conditions with other people in training and their work. Due to the performance demands and the intensity of the situations, the interactions between individuals may become charged with negative feelings of frustration, anger, and a sense of being without support. Military operations across the entire range of conflict expose military

personnel to a multitude of stressors. Military operations always entails various stressors for members involved in deployments. These days, most of the SA military is involved in several operations, including peacekeeping, peace-making, humanitarian, and other operations. More frequent deployments often involve more family separations, a recognised stressor for soldiers (Bell, Bartone, Bartone, Schumm & Gade, 1997). One obvious way to reduce the stress associated with military operations is to lessen the frequency and duration of deployments. The military environment has unique stressors. Many job stressors in the military environment, such as work pace, job demands, control, supervision, conditions, long working hours, and shift work, are comparable to many other workplace environments (Bogg & Cooper, 1995). However, the military environment has additional stressors, such as the risk of injury or death that collectively make military work environments unique (Bourg & Segal, 1999; Castro & Adler, 1999). Stress is a major threat to the health and well-being of individuals and society as a whole (McBride-King & Bachmann, 1999; Robinson & Godbey, 1997; Zuzanek & Smale, 1997). For military personnel, sources of stress may include domestic or work concerns, or stress as a result directly from deployment such as the discomfort of unfamiliar surroundings and combat. Argyris (1957) noted that employees work in an environment in which they have minimal control over their working lives. They are expected to be subordinate, passive and dependent. They work with a short-term perspective and people are treated more like infants than competent human beings.

2.8 Stressors in the military environment

Stress is very personal, coming from different directions and affecting each person differently and at different times. Recognising the cause and effect of such pressures and developing coping strategies can relieve a person of stress (Cooper & Straw, 1998). These pressures are referred to as *stressors*. Daily stressors include traumatic experiences such as physical and sexual abuse of children, spousal abuse or criminal acts which are not directly related to armed

conflict (Miller & Rasmussen, 2010). Stressors in the military can be powerful and unrelenting compared to stressors in civilian life (Nash & Baker, 2007).

Internal stressors originates from within from unknown behavioural responses, attitudes, negative thoughts, frustration and low self-esteem (Killion, et al., 2009). Other factors include general health and fitness, emotional wellness, and the amount of sleep (Luis Gaviria & Associates, 2008; Siyanqoba Seminars, 2007; Van der Merwe, 2004; Schlebusch, 2000). External stressors refer to factors a person perceives as stressful and has difficulty coping with, resulting in negative stress. External stressors in the military are classified as environmental stressors (Killion et al., 2009). These could include any event, situation, condition, psychological environment (work or home), an abusive relationship, person or object, loneliness, aggressiveness, health conditions or psychological problems (for example, worrying about problems), noise, pollution, trauma (for example, being burgled or being threatened), injuries, unknown bacterial viruses, poisons, or daily life situations and problems (Luis Gaviria & Associates, 2008; Siyanqoba Seminars, 2007; Van der Merwe, 2004; Schlebusch, 2000). Both internal and external stressors experienced by soldiers are intensified by energy demands, sleep deprivation, technological complexity and the toxic chemicals used in modern military forces. They could influence a soldier's performance if not treated (Killion et al., 2009). Bartone (2005, 2006) identifies six primary stressor dimensions distinctive of modern military forces: isolation, ambiguity, powerlessness, boredom, danger and workload. Nash (2007) further classifies military stressors into four categories: cognitive, emotional, social, and spiritual. The stressor domains identified by Bartone (2005, 2006) were organised as sub-stressors within the four categories of Nash.

2.8.1 Cognitive stressors

For military personnel, sources of stress may include domestic or work concerns. Stress can be as a direct result from deployment's, such as the discomfort of unfamiliar surroundings and the unknown combat zone (Lazarus & Folkman, 2002). Military members work in an environments in which they have minimal control over their working lives; they are expected to be subordinate, passive, dependant and work with a short-term perspective (Lazarus & Folkman, 2002). The uncertainty of unfamiliar surroundings, boredom, ambiguity and feelings of senselessness increase the likelihood of cognitive stressors. The individual's cognitive ability and behavioural efforts are constantly changing. The ability of the individual to handle particular demands, whether internal or external, is taxed and this increases the likelihood of cognitive stressors (Lazarus & Folkman, 2002).

Cognition plays two essential roles in the intervention process between person and situation. The first role concerns the appraisal of the situation and, second, the choice and regulation of coping strategies. One's initial construal of a stressor indicates how severe the stress is and what is at stake. The most often used application of this cognitive approach to stress and coping is the so-called transactional model (Lazarus & Folkman, 2002). This model specifies that an individual's response to a stressor is a function of two sequentially linked cognitive processes: primary appraisal and secondary appraisal. Once this cognitive interpretation is determined, a second appraisal is made in which the individual decides whether they have the coping resources to deal effectively with the stressor. Coping is an activity we do to seek and apply solutions to stressful situations or problems that emerge because of our stressors. The term “coping” is reactive, because we see coping as a response to a stressor.

2.8.2 Emotional stressors

Exposure to stress has generally been associated with many adverse outcomes, such as post-traumatic stress disorder, generalised anxiety disorder, and major depression (Compare, Zarbo, Shonin, Van Gordon & Marconi, 2014). However, some individuals do not develop psychological disorders even when exposed to high levels of stress. It appears, therefore, that when faced with the same stressor, some individuals demonstrate impaired functionality, while others show remarkable resilience. Stressful events typically elicit significant emotional responses. Accordingly, emotional regulation capacity has been proposed as a mediator of stress adjustment. Exposure to emotional stressors leads to eliciting adverse psychological and physiological health outcomes (Compare et al., 2014). How individuals manage personal experiences appears necessary to mental health. Military personnel are often required to spend considerable time under intense conditions with other people in training and their work. Due to the performance demands and the intensity of the situations, the interactions between individuals may become charged with negative feelings of frustration, anger, and a sense of being without support. This can lead to feelings of helplessness, shame or guilt, loss of comrades, and fear of making mistakes, all of which can lead to stress. Military operations across the entire range of conflict expose military personnel to a multitude of such stressors. Although the extreme stressors of combat and all-out war have received significant attention, the military is also involved in several peacekeeping, peace-making, humanitarian, and other operations. Military members experience a bond that is s equivalent to that between mother and child. Therefore, when soldiers experience the loss, injury or death, they lose hope, feel helpless, and lose control (Young, 2013).

2.8.3 Social stressors

Members in the military every so often struggles with adjustment problems, such as alcohol abuse and others (Deahl, Srinivasan, Jones, Thomas, Neblett & Jolly, 2000). Deployment is very stressful and takes soldiers away from family and friends. Family and friends are often the social support in the soldier's life (Young, 2013). Social support is a coping strategy that can vary from person to person depending on how much support is needed (Young, 2013). Soldiers experience feelings of isolation and loneliness, further escalated by poor communication and occupational stressors. Normally a sense of group coherence is established among soldiers on deployment.

Although soldiers are lonely, they share experiences and a sense of group cohesion and camaraderie. Soldiers share available spaces and partake in occupational and recreational activities. The cramped, confined spaces and the absence of personal space lead to additional stress (Nash & Baker, 2007; Saltzman, Lester, Beardslee, Layne, Woodward & Nash, 2011). A lack of trust, a sense that fellow soldiers do not care, and a lack of camaraderie lead to feelings of isolation and that seeking treatment may adversely affect the soldier's career. Socialisation leads individuals to develop a preference for what is familiar and helps explain the long-standing traditions held in the military. Socialisation is a process whereby individuals become part of a group that ultimately confines their behaviour and prepares them for the roles they are expected to play in their careers and personal life. Thus, the importance of identifying the social-risk factors and the individual's risk profile within the military will help increase wellness within the military community. Stress is an everyday occurrence among military personnel and has been associated with various mental health and job performance outcomes (Nash & Baker, 2007; Padden, Connors & Agazio, 2011).

2.9 Coping with Stress

Military member's exposure to combat and long deployments away from home and family, leads to life stressors. Coping assists in buffering the effects of overall stress levels associated with, depression and physical symptoms of stress (Dolan, 2001). Failure to cope with work stress and/or the use of ineffective coping strategies was linked to more negative physical and psychosocial outcomes in a Canadian military sample (Day & Livingstone, 2001). Understanding these stressors and their coping techniques is vital for future treatment, management, and prevention (Griffith, 2013). According to Nash (2007), coping is seen as a conscious effort to solve personal and interpersonal problems and minimise stress. Stress is an inevitable feature of work and personal life, although it can be managed. Nash (2007) states that eliminating or minimising these stressors at the beginning is a crucial way to manage stress. Research has shown that military members cope better in predicted stressful situations. When a traumatic event is simulated, military members are more likely to avoid dangers in similar future situations (Aldwin, 2007). This is because unpredicted stressful situations influence a person's security. Stress levels also decrease if the person is more informed about the situation, providing time to prepare him or herself. Stress levels can be lowered if a person has the power to manage the duration of the situation (Young, 2013). Military members' training is designed to give strategies for survival and resilience. Training includes rehearsals and simulations of armed conflict, hostage-taking incidents, terrorist attacks, and mass casualties (Borders & Kennedy, 2006). There are many factors associated with how people perceive stress. Perceptions differ from individual to individual. Personalities make individuals more prone or resistant to stress (Allen, 1983). It is vital to bear in mind that individuals react differently to situations, depending on the nature of the event and the personality traits of the person (Smith, 2011). Although stress is an inevitable feature of work and personal life, it can be managed.

Some organisations have low stress, whereas other organisations have high stress, which affects their employees adversely. Some precautions can be taken by organisations to eliminate

or reduce stress. For Schaubroeck and Merritt (1997), a lack of job control is the cause of poor coping techniques within the job environment. Effective coping has been linked with workplace performance and adaptating to demanding and stressful situations (Folkman & Moskowitz, 2004). Dolbier, Smith and Steinhardt (2007) emphasised that not everyone exposed to potentially stressful situations becomes stressed or ill. An individual's dispositional characteristics of hardiness and coping style may influence an individual's experience of stress or illness. During the Persian Gulf War, hardiness was identified as a potential protective variable or a measure of protection among army reserve personnel (Eid, 2006; Bartone, 2005). The primary underlying mechanism in hardiness is resilience. This involves understanding how stressful experiences are interpreted or made sense of in the context of an individual's entire life and how the person can stay healthy despite high levels of stress (Bartone, 2006). Hardiness can also be referred to as the power of endurance, resoluteness (firmness), self-assurance, toughness, stamina, durability and robustness (forcefulness). It predicts better health and has a direct buffering effect on symptoms of stress, especially under high- or multiple-stress conditions, including job disruption and family separation. Both of these factors are relevant to the situation of the SAN being constantly deployed or separated from their families. It further contributes to increased cohesion in military units after intensive training exercises as well as being exposed to the experiences of war (Eid, 2006; Bartone, 2006).

Coping strategies such as self-corrective behaviour ever so often reduces the stressful impact of the events in one's life. Military members often depend on alcohol, social support, family and leadership to help them cope with stressors in the military environment. Alcohol is deemed acceptable to relieve stress but may lead to substance abuse (Dolan & Endler, 2008). Sutherland and Cooper (2000) hold that one should attempt to manage one's stress by engaging in adequate exercise and fulfilling social or recreational activities. Coping strategies are only to assist a person to control or cope with the symptoms of stress. It cannot take the stress away; instead, the source of stress which caused the problem in the first place needs to be identified (Leatz &

Stolar, 1993). Coping strategies will not reduce stress but instead provide a person with enough energy to deal with the problem and eventually reduce stress. Coping strategies have been shown to act as buffers of the effects of stress on physical and psychological health, and the strategies used are often a reflection of the appraisal process (DeLongis, Folkman & Lazarus, 1988; Williams, Wiebe & Smith, 1992). Research has identified negative coping styles that can exacerbate the effects of stress on physical and psychological health (Day & Livingstone, 2001; Dolan, 2001). In the military context of a study on coping and health among army personnel, it was found that the less experienced, lower-ranking junior-enlisted soldiers reported higher levels of passive coping than non-commissioned officers (NCOs) and officers. Passive coping was associated with high family-related stress, lower psychological well-being, and more reported physical illness symptoms.

How a person attempts to respond to and resolve stress is known as *coping*. According to Pearlin and Aneshensel (1986), there are four coping functions: prevention of a stressful situation, alteration of a stressful situation, changing the meaning of a situation, and management of the symptoms of stress. Major life events for which one can plan, such as marriage, becoming a grandparent, or moving, are often perceived as less stressful than other life events because one has a sense of control and can head off potentially stressful consequences of the event in advance (Pearlin & Aneshensel, 1986).

Often, stressors cannot be prevented or eliminated, so another coping technique is to alter the meaning of the situation. This is done when the individual changes their perceptions, beliefs, and knowledge about the situation to be less harmful and threatening (Pearlin & Aneshensel, 1986).

Soldiers who fight in a war zone appear to engage in health-compromising behaviours as a means of coping with the stress of combat. One study showed that 39% of military members returning from wars were identified as having "probable alcohol abuse" (Eisen, 2012).

However, it is unclear if this is intended to be a form of coping or reflects some other socio-cultural norm, such as constructing an identity as a soldier or a masculine man. The military has many programmes and resources for soldiers experiencing stress, related to combat. One of the most common programmes is called resiliency training. The military has spent a lot of time and money over the past decade trying to enhance "mental resilience" (Kippler, 2010). The military has recognised the toll that recent and past wars have taken on soldiers' mental functioning and are reacting by increasing awareness and teaching coping skills. Soldiers also have access to mental-health counsellors, psychologists and chaplains, at no cost to them. However, the military also recognised that soldiers often do not seek out these resources. According to the Medical Department of Behaviour Health, soldiers do not seek help for mental issues because having psychological problems could be seen as a weakness. Displays of emotion are often reacted to with a "suck it up" attitude. Soldiers feel that getting help will negatively impact their careers. They also fear their commander has full access to their medical and mental health records. Also, the command climate often discourages getting help.

The military tries to focus on preventing combat stress from happening and teaching commanders the signs and symptoms of stress. However, the military mainly focuses on combat-related stress rather than daily or generalised stress (Guy, 2013). Arguably, the military member uses more positive coping techniques, such as physical activity and hobbies. Soldiers are entitled to the same quality of life as the society which they protect. It takes more than hard work and training to keep them ready to fight and win. A balance needs to be kept between work and play, with leisure activities to revitalise them mentally and physically (Phillips, 2006). In conjunction with the loss of choice and control, a lack of activity can lead to isolation, loneliness, helplessness, and boredom, followed by a withdrawal from the environment, instrumental passivity and depression (Dupuis, Smale & Wiersema, 2005). Therapeutic recreation services form an essential part of addressing a person's needs, taking into account

the goal of protecting and promoting health (McGhee, Groff & Russoniello, 2005). Such recreation helps people cope with physical or mental health problems or disabilities by promoting a personal sense of control and decision making. It could be defined as engaging people in planned recreation and similar experiences to improve functioning, health, well-being, and the quality of life while focusing on the person as a whole and the changes needed in their living environment (Daly & Kunstler, 2006). Sport and recreation involve pleasurable and satisfying activities that are freely chosen and that motivate people to participate in them (Daly & Kunstler, 2006). Including such activities in treatment programmes enhances a person's self-esteem, improves time management, prevents relapse and reduces the stress associated with recovery (Malkin, Benshoff, Beck & Toriello, 1996). Various models exist for therapeutic recreation. The most appropriate and practical model should be chosen, one which will guide the types of activities and services that should be offered (Daly & Kunstler, 2006). Military members in the SAN can participate in sport and recreation activities, as the infrastructure is available to them in the form of programmes and facilities. The importance of sport and recreation participation should thus be emphasised and promoted to these members, empowering them with the knowledge to enter into self-directed and self-managed programmes.

2.10 The role of sport and recreation participation in the military

Sport and recreation in military settings mainly focus on the promotion and maintenance of military efficiency and morale. It was believed that one could not send tired soldiers back into the line of duty, as they could be a danger to themselves and their entire units (Rice, 1998). Military recreation programmes are established as a source of readiness during deployment. Sport and recreation impact virtually all the dimensions of a human being. It must, therefore, be applied as an integrated mechanism that constantly contributes to total well-being (also called *wellness* or *positive health*) (Department of Defence instruction: SG NO 7/2000). Total well-being is

reached by striving for optimal quality of life in social, mental, psychological, spiritual, and physical. The primary purpose of sport and recreation opportunities in the SANDF is to build character through rich, satisfying and creative outlets for individuals by focusing on attaining socially desirable attitudes, habits and values. These programmes were introduced to provide soldiers with the opportunity to relax and rejuvenate (Rice, 1998). Readiness is an essential factor in military forces and is a function of the ability of a person to perform his or her duty (Lauder, Baker, Smith & Lincoln, 2000). It also implies that both the soldier and the unit are fully equipped and motivated to perform tasks. Sport and recreation are thus used as vehicles to create military readiness. In order to keep the soldier focused, a holistic approach should be taken (Rice, 1998). This includes being able to relax under stressful circumstances or attend to activities that can help with relaxation. Sport and recreation serve as vehicles to achieve relaxation, as participation puts the personnel into another context. Due to the burn-out of both individuals and units, decreased readiness would be the result if these valuable sport and recreation activities were not provided (Phillips, 2006; Yanovich et al., 2015). Military members may have a very demanding schedule or may find themselves with much free time, depending on their location and duty station. When they have free time, they can participate in sport on either a recreational or a competitive basis (Lauder, Baker, Smith & Lincoln, 2000). Sport and recreation programmes are thus a significant part of their daily lives (Mull, Bayles, Ross & Jamieson, 1997). Programmes are how sport and recreation benefits are made available to military personnel and their families.

Programming is the process recreational programmes such as the Morale, Welfare and Recreation programmes introduced by the US Armed Services Division are offered to soldiers in these compounds (Rice, 1998). They provide support and leisure activities designed to enhance the quality of life for service members (Phillips, 2006). The current study utilised the TR model. Although the TR forms a vital component of treatment, with recreation as part of a

planned intervention for improved physical, social, emotional and cognitive functions, there is very little literature on TR programmes in military settings. The only evidence is of only a few programmes offered in the United States Army. Traditionally, the effect of leisure participation per se on stress and coping has not received as much research attention as the protective factors described earlier (for example, Garmezy, 1987) in influencing stress-resistant responses. Even though participation in leisure activities has been identified as providing a unique set of protective factors to help individuals cope with stressful situations (for example, Caldwell, 2005), more research across the lifecycle is required to better understand the influence of leisure participation in enhancing a resilient response and promoting stress resistance in the face of adversity.

The role of sport and recreation in the SAN guarantees individuals' prosperity by building up a sound body and psyche through the collaboration of innovative recreational exercises. Engaging in physical activities guarantees the production of serene recreational opportunities for all individuals. Sport also builds character through rich, fulfilling and inventive socially desirable attitudes, habits and values. It also opens up satisfying outlets for individual interests, through recreational relationships of individuals for the value and pride of people-based activities. Sport and recreation create aptitudes in expressions of the human experience of recreation time that raises the level of individuals' refinement culture and joy. Through active participation, members of the military community can strengthen and develop their social relationships. Expanding leisure time interest within the military community can strengthen morale and thus improve social living conditions.

The objectives are reached by creating the following sport and recreation opportunities for sailors.

The SAN Sport and Recreation programmes include the following: sports codes are offered to boost morale and esprit de corps. Wellness days and mass sport-participation days are offered.

Sports days are hosted to allow members to participate. Recreation activities are practised to combat idleness and boredom. Recreation activities include choirs, board games, and sports activities that are practised regularly. Weekly sports days on Wednesdays from 12:00 to 16:00 usually are arranged for members. Subsidised transport and accommodation on sports excursions locally and internationally. Inter-unit, inter-force and inter-services sports days are arranged as a means of keeping members fit.

CHAPTER THREE

THEORETICAL FRAMEWORK

3.1 Introduction

The chapter highlighted the theoretical framework of a measuring stress and instrument development. The current study utilises three theoretical frameworks intermittently to reach the objective of the current study. These are the Validity Theory (Goodwin, 2000), TR Intervention Framework (Williams, 2008; Daly & Kunstler, 2006; Baldwin, Hutchinson & Magnuson, 2004; Austin, 1998) and Vitamin Model (Warr, 1987). The application of each framework will be delineated in the following paragraphs.

The TR Intervention framework will support the validation processes. It will provide a framework within which to organise the themes extracted from the pilot study and examine the loadings in the factor analysis. This theoretical framework will be used to synthesise the empirical analysis of structural evidence for the appraisal tool. The developed appraisal, viewed stress as a contextual problem and measured a broad range of levels and factors from the sample. This study was contextualised in the construct validity of a newly developed tool, the TR Intervention framework will be used to identify the measurements for inclusion in the questionnaire and to guide the analysis and interpretation of the data. The TR Intervention Model provided a framework to explore the structure of a valid instrument. The construct significance and depiction selected for the instrument could be measured against the components of the validity theory. Thus, the validity of an instrument, for a specific purpose, with a specific population, within a specific setting, became important (Goodwin, 2000). Construct validity was introduced and defined based on a theoretical framework measuring what the theory says it should (Cronbach & Meehl, 1955). Validity theory will be applied in the building a validity argument for the Therapeutic Recreation Stress Leisure Appraisal Tool (TRSLAT).

The aim of the Therapeutic Recreation Stress Management Intervention Model (Young, 2013) was to apply it in a military setting to reduce stress. TR models provide a conceptual basis for directing TR practices in a professional setting. They build knowledge through research on TR models to develop theory-based programming (Williams, 2008; Daly & Kunstler, 2006; Baldwin, Hutchinson & Magnuson, 2004; Austin, 1998). The study of Young (2013) looked at a possible therapeutic recreation intervention that could lead to stress reduction and contribute to psychological well-being. This study contributed to the development of a model which addressed the main aspects of the Therapeutic Recreational models: assessment, planning, implementation, and evaluation. This is referred to as the Therapeutic Recreation Process. The Therapeutic Recreation process is a four-step cyclical process designed to assist the Therapeutic Recreation (TR) specialist in developing a purposeful intervention. These could be applied in any setting where recreation is used as a means of therapy to achieve specific goals (Daly & Kunstler, 2006). The TR process is used to design programmes and services in line with the objectives established for the participant (Daly & Kunstler, 2006). It establishes the individual's strengths, interests, goals, and needs to systematically develop and document an individualised support plan appropriate to the person's ability (Long, 2008). Documentation is required when any future treatment is needed. The TR process in an inclusive community-based recreation programme will differ from physical rehabilitation or a mental-health setting. The TR professional must understand the processes involved and apply it in different settings or groups of participants (Long, 2008).

3.2 Validity theory

Validity theory of an instrument was regarded as valid for whatever it correlated with (Cronbach & Meehl, 1955). The validity of an instrument was only criterion and content validity related were the establishment of the validation of the instrument was concerned (Goodwin, 2000). It was found that these validity procedures when assessed was difficult to

define. Constructs were generally observable but instead were theoretical entities that was hypothesised or inferred. It was postulated that the construct validity was only as adequate as the adequacy of the construct. This realisation led to the next phase in the acceptance of the validity assessment. According to (Goodwin 2000) the validity of an instrument, need to have a specific purpose, with a specific population, within a specific setting and must turned out to be significant. Construct validity was defined as the extent to which the instrument based on a theoretical framework measures what the theory says it should (Cronbach & Meehl, 1955). Multiple approaches to assessing construct validity were also introduced during this period (Campbell & Fiske, 1959). They introduced convergent validity (the extent to which a measure correlates with other measures that it is theoretically predicted to correlate with) and discriminant validity (the extent to which a measure does not correlate with a measure that it is theoretically predicted not to correlate with). Convergent and discriminant validity were both introduced as components of construct validity. After this, Messick and Cronbach (in Wainer & Braun, 2013) introduced modified definitions of validity that point towards the inferences drawn from instrument scores. They argued that inferences drawn from instrument scores require different procedures of validity evidence, rather than different types of validity.

While validity was traditionally divided into content, construct, and criterion-related validity (Leech, 2007; Kitto, 2006; Cronbach & Meehl, 1955; Messick (1989) proposed instead that validity should be conceptualised as a unitary concept, namely, construct validity, which refers to the extent to which the scores of an instrument can be used for the proposed purposes. Therefore, all the above procedures should be seen as aspects of construct validity, and we now refer to procedures of construct validity instead of types of validity. Goodwin and Leech (2003) argue that the traditional notion of validity masks the unitary nature of validity and compartmentalises thinking about validity, and promotes the incorrect notion that all validity procedures are equal. According to Messick (1989), construct validity includes content

relevance and representativeness and criterion-related validity procedures. Thus, construct validity embraces all forms of validity evidence of the construct that the instrument is assumed to be measuring (Messick, 1995). All these sources of evidence support the meaning and interpretation of the scores.

The validity, therefore, includes any evidence that has a bearing on the interpretation and meaning of scores. Six aspects of validity or procedures of validity evidence was introduced by Messick (1989), namely: 1) content (construct relevance and representativeness); 2) structure (the internal structure of the instrument has to be consistent with the internal structure of the construct domain); 3) external factors (the extent to which the relationship between the instrument score and other measures or behaviours reflects relations in the construct); 4) generalisability (representative coverage of the content and processes of the content domain); 5) substantive (appropriate domain content and processes), and 6) consequential aspects of validity (accumulation of evidence in support of positive consequences). The features for validity criteria is positioned for educational and psychological measurements (Messick, 1995). These measurements are set out in The Standards for Educational and Psychological Testing (American Educational Research Association, AERA, American Psychological Association. APA, & National Council on Measurement in Education, NCME, 1999). These interdependent and complementary forms of evidence are gathered to support the construct validity of an instrument. The different processes address the issue of the approximate truth of the conclusion that the operationalisation accurately reflects its construct in various ways. This evidence is then integrated into the validity argument to demonstrate the extent to which the instrument is or is not a valid measure of the construct. Procedures are used based on whether they yield evidence for or against the validity of the instrument. Not all the procedures mentioned can be employed in every validation study or even every group of studies (Messick, 1989). Only relevant procedures should be elected to gather evidence for or against the proposed use and

interpretation of the instrument. However, the standards warn that solid evidence supporting one procedure of validity evidence does not diminish the need for other sources of support, and multiple sources of evidence are preferred (AERA, APA & NCME, 1999). Cook and Beckman (2006) also warn that instruments that demonstrate evidence from limited sources should be used with caution.

The process of validating an instrument exists to seek and gather evidence and then use this as a basis for arguments to discount threats to construct validity. Messick (1996) argues that the process is scientific and rhetorical in that it requires evidence and argument. Scientific enquiry and rational argument are combined to justify score interpretation and use (Messick, 1995). A validity argument may call for a revision of the instrument, of the administration of the instrument, or the theoretical construct underlying the interpretation. If any revisions are made, the instrument must be further validated, thus making the process iterative, an ongoing cycle of assessing and revising different aspects of instrument interpretation. An instrument can become more and more valid as adjustments are made, but it will never be perfectly valid as validity can never be proven; one can only provide arguments towards validity (Cook & Beckman, 2006). More validity evidence is needed for high-stakes tests. Different types of instruments will rely more heavily on specific categories of valid evidence. Evidence for measures of observable behaviours is also gathered differently from evidence for measures of latent or theoretical traits. This continuous validation of instruments is the responsibility of all instrument users, not, as previously understood, only that of the instrument developer (Cook & Beckman, 2006).

3.2.1 Procedures of validity evidence

Generally, construct validity refers to the extent to which the operationalisation of a construct measures what the theory says it does. It is the assessment of the theoretical and applied

usefulness of a measure. The theory and measure are assessed concurrently. This is to determine the adequacy of the measure concerning the theory in which the construct is rooted. Construct validity includes all types of measurement-related evidence and all other validity evidence, including design-related validity evidence and statistical inference validity evidence (Dellinger & Leech, 2007). The Standards for Educational and Psychological Testing (AERA, APA & NCME, 1999) emphasise the shift from interpretations of the instruments themselves to interpretations of instrument scores required by proposed users. Thus, validity is a property of the inferences, not the measure itself (Cook & Beckman, 2006). We validate the meaning derived from the instrument score. Messick (1996) explains this through the example of instrument preparation and coaching. He points out that coaching can improve instrument scores without improving the skill being assessed. This kind of coaching would not compromise the instrument's validity but would jeopardise the interpretation and use of the instrument scores. On the other hand, instrument familiarisation and anxiety reduction might increase validity by decreasing irrelevant variance. To clarify the difference between procedures of validity evidence and types of validity, the standards define validity as "the degree to which all of the accumulated evidence supports the intended interpretation of the instrument scores for the intended purpose" (Messick, 1996).

3.2.2 Content evidence

Procedures of validity evidence include the extent to which the instrument's content matches the content domain associated with the construct. This match between the content of the instrument and the domain's content is the essence of content evidence. It is also a significant contribution to the construct validity of an instrument. Content evidence is based on the subjective judgements of experts in the field regarding the degree of relevance of the constructs in the instrument (Bowman, Lannin, Cook & McCluskey, 2009). Content-evidence is generally a non-statistical systematic examination of the construct being measured. However, content

relevance and representation have also been conducted quantitatively, using frequency distributions to analyse the data (Carels, 2012). Instrument reviewers test for sufficiency, clarity, relevance, the match between items, the definition of the construct, and often even bias. Bias is the extent to which the instrument measures more or less than the proposed construction would have given an unfair advantage to some users (Haynes, Richard & Kubany, 1995). This procedure of validity evidence is crucial to the validity argument of almost all measures. Most instrument-development studies employ experts to assess the content validity of the instrument's dimensions before writing the items (Butt et al., 2009; Dückers, Wagner & Groenewegen, 2008; Guyonnet et al., 2008; Barret, Plotnikoff, Raine & Anderson, 2005). Some have even employed a content validity index (a measure of the proportion of items judged to be valid) to assess the relevance of the instruments (Bowman et al., 2009; Cramer, Atwood & Stoner, 2006). Very few studies have consulted the target population in assessing content validity (Ullman & Forbes, 2006; Zillich, Doucette, Carter & Kreiter, 2005). Content validity involves systematically examining the content of a measure to determine whether the items adequately represent the construct being measured (Anastasi & Urbina, 1997). Subject matter experts are typically employed to evaluate the items against the instrument specifications. Thorough examinations of the subject domain is necessary before writing valid items to measure a particular construct. This will improve the instrument's content validity by ensuring that the items cover a representative sample of the item domain (Foxcroft, 2004). This aspect of validity assumes a good, detailed definition of the construct checking the operationalisation against this definition. The operationalisation is measured against a relevant content domain. For some constructs, it is challenging to decide on the criteria (or definition of the construct) that constitutes the content domain. The technical quality of the instrument consist of validity evidence, namely, formats, phrasing, and reading level, guidelines regarding administration, and scoring. These were traditionally assessed as part of the face validity of an instrument. Face

validity refers to whether the operationalisation seems like a good rendition of the construct. It is the appearance of validity in the absence of empirical evidence. Face validity is seen as a weak measure because it relies on subjective judgements, but ca make a valuable contribution to the construct validity.

3.2.3 Structural evidence

Concerning structural evidence, the internal structure of the measure is examined to see whether the internal components of the measure match the construct. The theory normally guides the selection of items as well as the development of scoring criteria. Scoring should be guided by how the processes underlying a behaviour combine to produce an effect. Structural evidence is gathered by looking at the relationships between the items as well as the relationships between the items and the scale totals. The internal structure of the instrument must resemble the internal structure of the construct domain for the instrument to be valid. When several related constructs measuring an underlying construct are included in a measure, correlational methods such as factor analysis, path analysis, and structural equation modelling are employed to examine the internal structure of the measure (Messick, 1989). Path analysis and structural equation modelling assess the direct contributions of one variable to another in correlational analyses. Exploratory factor analysis tests a limited number of underlying component variables, while confirmatory factor analysis derives a postulated pattern of item loadings on hypothesised factors based on theory (Kitto, 2006). Cook and Beckman (2006) argue that reliability, which can be measured by examining the internal consistency among the items as discussed above, while essential to the validity argument, is not sufficient evidence on its own. The instrument can demonstrate variations in reliability if used on different samples. Instrument-development studies use exploratory and confirmatory factor analyses to assess the factor structure (Bowman et al., 2009; Haidet et al., 2008; Zillich et al., 2005). Many studies

use principal component analysis for item selection to assess the factor structure (Guyonnet et al., 2008; Kristjansson et al., 2007; Maclellan-Wright et al., 2007; Fok & Tsang, 2005).

3.2.4 Substantive evidence

These procedures of validity evidence involve verification of the domain. Substantive evidence involves the tasks or types of responses required to match the construct (Messick, 1995). This ensures appropriate sampling of the domain content. An example of domain processes would be scoring criteria and rubrics. The scoring model should be in line with the structural relations inherent in the behavioural manifestations of the construct (Embretson, 1984; Messick, 1996). The accumulation of empirical evidence must confirm the engagement of these. A theoretical rationale for the observed performance is needed, along with the empirical evidence that response competencies and performance regularities reflect the domain processes. Evidence is obtained by observing respondents as they perform the tasks, or by interviewing them to determine why they responded as they did, or what their performance strategies are, or any other evidence of processes such as think-aloud protocols (respondents think aloud as they respond to items and these are recorded), eye movement records (to track direction and duration of visual attention) and correlational patterns among part scores. When observers are involved in recording responses, an investigation is needed to rate the evaluated and recorded performance without the accumulation of unrelated and unnecessary factors. Substantive evidence, like content evidence, involves representative sampling, of the domain processes. This is done by the correct choice of tasks to simulate the construct's engagement. Messick (1989) concludes that experimental controls or correlational studies can show the differences between scores based on instruments using different response formats, scoring keys, administration procedures, and measurement contexts. Discourse analysis is generally conducted on verbal reports.

3.2.5 Threats to construct validity

According to Messick (1989) there are many threats to construct validity, they fall into two major types. The first is referred to as construct under-representation, which is defined as the inability of the instrument to tap all aspects of the construct. The second type is constructed irrelevance, which can be defined as the nuisance variance in an instrument. Both of these depend on psychological domain and character being measured. The development of a valid measure is established by construct representativeness and relevance, both of these threats are present in all assessments. In the validation process, the evidence is gathered to counter these two threats to construct validity.

3.2.6 Construct under-representation

This refers to the instrument construct being too narrowly defined and conceptualised (Messick, 1995). If this is the case then, the instrument will not be a true and accurate measure of the construct. Construct representativeness specifies the characteristics to be exposed by the measure. The boundaries and structure of the construct are based on the domain theory. The nature of the domain processes and how these combine to produce an effect has to be well understood. An adequate sample of domain processes has to be selected for inclusion in the measure. When an instrument score does not thoroughly sample the instrument content, this narrows the meaning of the instrument score (Kitto, 2006). Validation involves careful consideration of these possible distortions.

3.2.7 Construct irrelevance

Construct irrelevance refers to the inclusion of excess variables in an instrument (some irrelevant to the interpretation of the construct) or the systematic influence of components that do not form part of the construct. When the variance differs systematically across the groups,

the instrument can be regarded as biased. These are the factors that produce a variance in instrument scores, when the variance in the instrument scores is irrelevant to the construct being measured. These construct-irrelevant instrument variance constitutes a contaminant concerning scoring interpretation (Messick's, 1989) Criterion prediction refers to instrument content that provides validation evidence. Construct irrelevance includes things like response sets and guessing propensity (Messick, 1996). A respondent could answer an item without having given serious consideration to the actual content of the item, for instance, in deciding to answer consecutive items in a particular pattern.

Construct-irrelevant refers to the extraneous clues that could be present in items that permit some individuals or groups to respond appropriately (easy) or inappropriately (complex) in ways irrelevant to the construct being assessed. These extraneous clues could cause respondents to score higher (easy) or lower (difficult) than they would under normal circumstances. An example of construct-irrelevant difficulty is the reading ability of respondents, since this can affect the responses in a way that is not relevant to the construct being measured. This is, however, not the case if the reading ability is part of what is being assessed. Construct irrelevance is a significant source of bias in scoring and interpretation and unfairness in instrument use. Construct-irrelevant variance is substantial in richly contextualised assessments because of the contextual clues present in the items (Messick, 1995). These clues could be constructed relevant but could also represent construct-irrelevant difficulty or ease.

3.3 Application of validity theory

Validity theory was appropriate for this study as the study aimed to assess the extent to which validity evidence, based on empirical evidence and theory, supports the interpretation of the instrument score for this measure. Because modern validity theory reorganised classical

validity into procedures of validity evidence, this study has collected evidence supporting a valid argument in line with validity theory. According to Cook and Beckman (2006), validity theory informs the development and use of instruments. The current study has used validity theory to frame all the stages of the development and validation of the instrument by employing procedures of construct validation, according to Messick's (1989) understanding. The constructs' conceptual exploration, the defining and operationalising of the constructs, and the writing of the items were informed by validity theory. The theory holds that the validity of an instrument depends on the clarity of the theoretical construct and a good description of the content domain. An assessment of the content validity of the dimensions was conducted to ensure content relevance and representation. A pilot study was conducted to support the argument for content evidence. The internal structure of the instrument was assessed to confirm whether the structure of the instrument represents the structure of the construct being measured. These procedures should confirm the instrument's adequacy of the ecological theoretical framework if the instrument validly measures the construct it is assumed to be measuring. At this point in the development of the instrument, generalisability evidence could also not be assessed. Validity theory has informed the choice of the ecological theoretical framework for identifying and operationalising the instrument's dimensions and ensuring construct relevance and representativeness of these dimensions (Carels, 2012). Throughout the construct validity procedures, relevant literature and theory were consulted to assess the extent to which the instrument's scales include the relevant domains of the ecological theoretical framework. It is important to note that the results of the different analyses conducted for this study are meaningless on their own. However, together they build towards evidence for the validity argument.

3.4 Therapeutic Recreation Intervention Framework

The Therapeutic Recreation Intervention framework is to apply the selected TR model and apply it in a military setting. Such models provide a conceptual basis for directing TR practices and ensure clarity in applying the professional practice. They necessitate building knowledge through research on TR models to develop theory-based programming (Williams, 2008; Daly & Kunstler, 2006; Baldwin, Hutchinson & Magnuson, 2004; Austin, 1998). A model directs types of intervention programmes and services that could be offered and that are most appropriate to the client or participant to meet their needs and goals and the organisation offering the service within a specific framework (Williams, 2008; Daly & Kunstler, 2006). It is important to explore various models. High-quality TR services are organised and respond efficiently to the needs of the participants. The following models were explored:

3.5 Leisure Ability Model (LAM)

The Leisure Ability Model (LAM) was the first and primary TR model used for many years and has a strong leisure orientation. This implies that the outcome is related to leisure behaviour, building on the existing body of leisure knowledge to ensure that services improve independently and satisfy the participants' leisure functioning. With a more medical or therapy-oriented model, the focus is on improving functional behaviours as the desired outcome. It is drawn from the medical, psychiatric, psychological and human development body of knowledge (Stumbo & Peterson, 1998). The outcome of this model is the development of a satisfying and appropriate leisure lifestyle (Ross & Aston-Sheaffer, 2009). The rationale for TR services, according to the Leisure Ability Model, is based on a logical set of assumptions concerned with typical adult leisure behaviour (Stumbo & Peterson, 2009; Stumbo & Peterson, 1998): every human being needs, wants and deserves leisure, as it provides opportunities to try new behaviours, experiences, learn new skills, meet new people, deepen existing relationships, and develop a clearer sense of self. Many people experience barriers to full and satisfying

leisure experiences. Individuals with disabilities, illnesses or crippling conditions may experience even more barriers to leisure than their non-disabled counterparts. They may need additional help from TR specialists to overcome or reduce these barriers.

The LAM is used as a basis for service delivery to reduce the barriers to involvement in leisure. It is based on the principle that, in order for the client to develop an appropriate leisure lifestyle, TR is provided along a continuum of three types of services. These are treatment (intervention), leisure education, and recreation participation services (Williams, 2008; Daly & Kunstler, 2006; Stumbo & Peterson, 1998). The Leisure Ability Model is not conducive to use as the sole model for developing the intended objectives of this study.

3.6 Health Protection / Health Promotion Model (HP-HP)

Therapeutic recreation plays a significant role in the healthcare industry as a treatment modality, using recreational activities as interventions and for the partial treatment of specific health problems. In the 1980s, there was a shift towards health promotion and reducing healthcare costs. This led to the Health Protection and Health Promotion Model, developed by Austin in 1997 and revisited by Austin in 2009 (Ross & Aston-Sheaffer, 2009; Daly & Kunstler, 2006; Austin, 1998). The main goal of this model was to assist people to recover from health threats, to assist with health protection, and to achieve as high a level of health as possible through the use of activity, recreation and leisure (Williams, 2008; Daly & Kunstler, 2006; Austin, 1998). The HP-HP model emerged from four significant concepts/theories related to the humanistic perspective to high-level wellness, stabilisation and self-actualisation tendencies, and health (Williams, 2008; Austin, 1998). According to Murphy (as cited by Austin, 1998, p. 110), those who believe in the "*humanistic perspective seek to promote the capacity and ability of groups and individuals to make self-determined and responsible choices in light of their needs to grow, to explore new possibilities, and to realise their full potential".* The humanistic perspective provided a foundation for a *high-level wellness* perspective. This

follows a holistic approach, dealing with health enhancement beyond traditional medicine. It helps individuals achieve a high level of wellness. The Health Promotion model was not used because it did not link with the study objectives. Although the HP-HP model's outcome is optimal health, with recreation and leisure as a means towards this outcome, it is not conducive to being used as the sole model for developing the intended objectives of this study.

The HP-HP model differs from the LAM in that it focuses on optimal health as an outcome rather than as a satisfying leisure lifestyle. However, it also shows similarities in having three service components offered along a continuum (prescriptive activity, recreation, and leisure). It focuses on the protection and restoration of an individual's health and then on their potential to achieve optimal health in a favourable environment, an approach that is more in line with modern-day health care (Williams, 2008; Daly & Kunstler, 2006; Austin, 1998). Participants move along the continuum, aiming to reach higher health levels and enhance their feelings of self-efficacy. They feel more confident in their ability to succeed and more in control of their lives as they progress on the illness-wellness continuum. The TR specialist's role is to guide them along the continuum to attain increased levels of independence. In cases where the participant is totally reliant on help, the need for stability will be evident. A TR specialist will need to be prescribed to assist the subject. As the subject progresses along the continuum, the actualisation tendency increases and the participant become more responsible for his or her own recreation experiences (Austin, 1998). The Health Protection/Health Promotion model is not conducive to being used as the sole model for developing the intended objectives of this study.

3.7 Optimising Lifelong Health through TR model (OLH-TR)

As stated previously, TR services can contribute to health enhancement. The Optimising Lifelong Health through Therapeutic Recreation Model (OLH-TR) is grounded in Baltes and Baltes' developmental theory of human ageing/adaption (as cited by Wilhite et al., 1999). Other

TR models further influence it. The primary purpose of this model is for people to achieve and maintain leisure lifestyles that enhance their health and well-being across their life course (Ross & Aston-Sheaffer, 2009). These members need to maintain their leisure lifestyles to enhance their health and well-being throughout their careers. The Optimising Lifelong Health through Therapeutic Recreation Model is not conducive to being used as the sole model for emerging the intended objectives of this study.

3.8 The Leisure and Well-being Model (LWM)

The Leisure and Well-being Model (LWM) is a contemporary service-delivery model of TR, supporting the role of TR in adapting to well-being as the desired outcome of TR services. Service-delivery models define how TR should be practised and help practitioners make decisions about needed services. It reinforces the value of TR to participants, their family members, and other health professionals. The LWM is embedded in the literature of psychology, human development, strength-based practice, and the leisure behaviour theory that enhances the sophistication and effectiveness of the professional practice and facilitation of programme evaluation. It recognises that the resolution of problems does not necessarily result in an increase in personal growth, which is central to the dimensions of well-being, but rather facilitates the development of the content and experiences that increase positive emotions and in the development of resources and capabilities in support of well-being. In a military context, the aim would be to develop hardiness to build resilience and well-being. The Leisure and Well-being Model is not conducive to being used as the sole model for developing the intended objectives of this study.

3.9 Leisure-Spiritual Coping model

The focus on spirituality as a component of health, well-being and quality of life is not new. It is one of the dimensions identified with wellness and is believed to play an essential role in recovery from mental illnesses. When coupled with leisure, it can assist people to cope with stress, especially when they have been subjected to traumatic events such as war (Ross &

Aston-Sheaffer, 2009; Drescher et al., 2007). A relationship exists between leisure and spirituality. Spiritual well-being benefits leisure participation, especially in natural settings, while leisure motivation, rather than the leisure activity itself, plays an essential role in influencing and maintaining spiritual well-being (Heintzman & Mannell, 2003; Heintzman, 2002). According to Drescher et al. (2007), spirituality contributes to developing personal values and beliefs in terms of the meaning and purpose of life. According to Heintzman and Mannell (2003), people use positive religious coping strategies (for example, prayer, faith in God, or guidance from ministers/priests) or receive spiritual support from other church members or those sharing the same spiritual beliefs. Spirituality is embedded in the military tradition, in which soldiers are provided with various religious services. The Leisure-Spiritual Coping Model, a reasonably new TR model, introduced by Heintzman in 2008, was developed to believe that spirituality could play a vital role in recovery from mental illnesses, with the focus more on spiritual than on mental health. Heintzman (2008) conceptualised spiritual health as a component of holistic health and secondly as an integrated dimension of health, with optimal wellness dependent on spiritual wellness as it interrelates with the other dimensions of wellness. This model was designed for TR specialists and leisure service providers to use when working with people who experienced stress, to help them cope and deal with life challenges (Ross & Aston-Sheaffer, 2009; Heintzman, 2008).

3.7.6 Therapeutic Recreation Stress Management Intervention Model (TRSMIM)

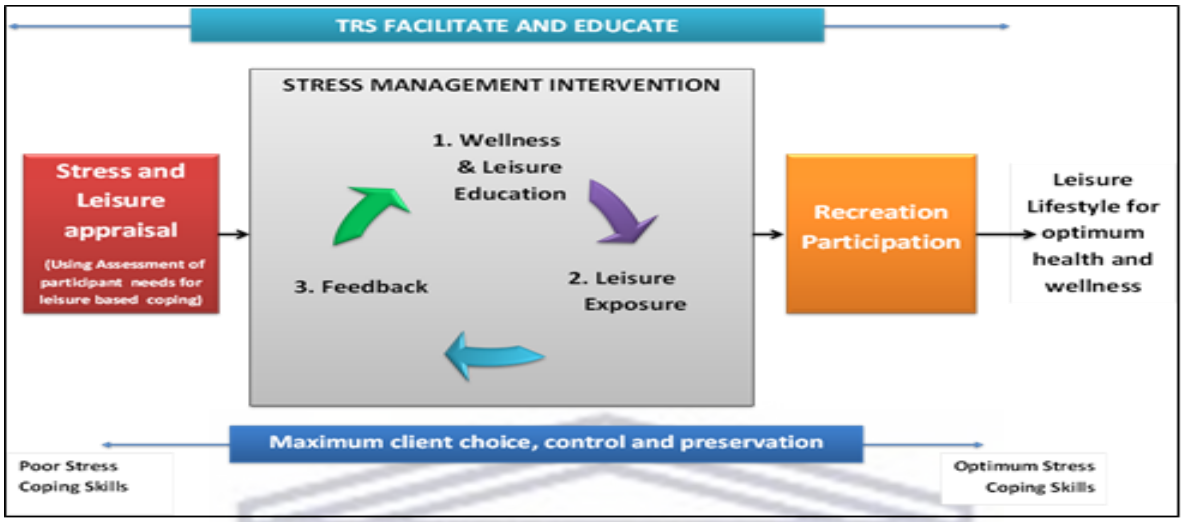

Figure 3.1: The Therapeutic Recreation Stress Management Intervention Model (Young, 2013: 323)

The study of Young (2013) looked at a possible therapeutic recreation intervention (Figure 3.1), which could lead to stress reduction and contribute to psychological well-being. The study contributed to the development of a model which addressed the main aspects of the Therapeutic Recreational models: assessment, planning, implementation, and evaluation.

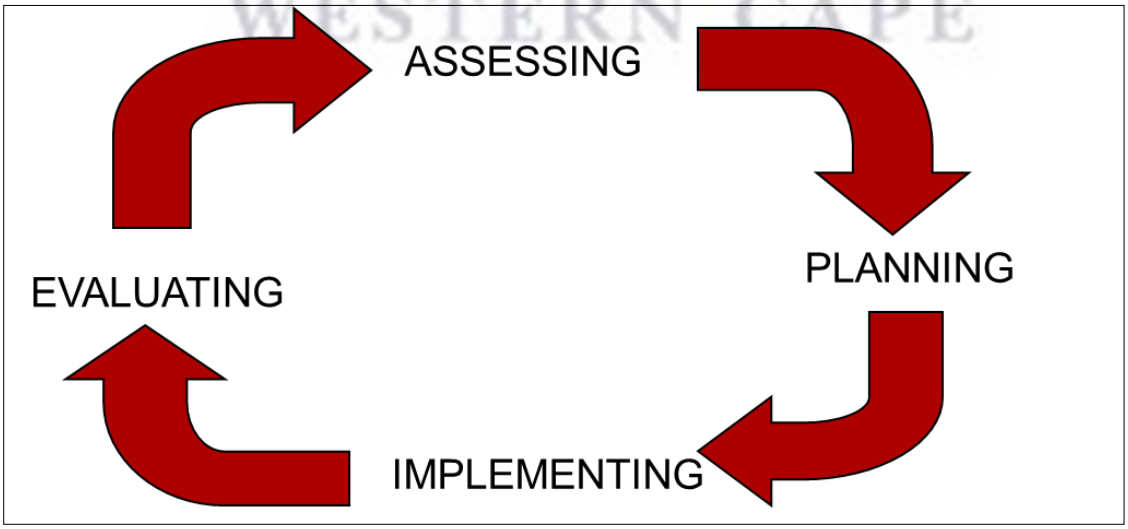

Figure 3.2: Cyclical nature of the Therapeutic Recreation process (Austin, 1998)

The Therapeutic Recreation process (Figure 3.2: 66) is a four-step cyclical process designed to assist the TR specialist in developing a purposeful intervention. The four steps are: assessment, planning, implementing and evaluating. These could be applied in any setting where recreation is used as a means of therapy to achieve specific goals (Daly & Kunstler, 2006). The TR process is used to design programmes and services in line with the objectives established for the participant (Daly & Kunstler, 2006). It establishes the individual's strengths, interests, goals, and needs to systematically develop and document an individualised support plan appropriate to the person's ability (Long, 2008). Documentation is required when any future treatment is needed. The TR process in an inclusive community-based recreation programme will differ from physical rehabilitation or a mental health setting. The TR professional must understand the process and apply it in different settings or groups of participants (Long, 2008).

However, the intervention model of Young (2013) was stress-specific, making use of the different wellness dimensions. The model suggests using a Therapeutic Recreation Specialist (TRS), which aims to assist clients or military staff to reach an optimal stress-coping leisure lifestyle. The Therapeutic Recreation Stress Management Model (TRSMIM) could follow a multi-disciplinary approach in facilitating treatment programmes for the suffering of depression, stress addiction and or other mental and physical disabilities. However, findings from Young's (2013) study did indicate that military staff used physical activities for recreational purposes, mainly to benefit their well-being. Further findings showed that although soldiers participated in these activities, they had high levels of stress-related to the military environment. The Therapeutic Recreation Stress Management Model will assist in assessing and identifying soldiers stress levels and leisure involvement while at the same time educating soldiers about health and well-being and the benefits of leisure as a stress-coping mechanism.

3.10 Leisure Coping Beliefs and Leisure Coping Strategies

A considerable body of evidence exists to support the contention that leisure can be an essential resource for coping with acute and chronic life stressors (Iwasaki, 2001; Iwasaki, 2003). Iwasaki and Mannell (2000) developed a leisure-coping model that distinguished leisure coping beliefs from leisure coping strategies. Iwasaki (2001, 2003) determined that people's beliefs about leisure contribute most significantly to the buffering effects of stress on psychological well-being. The model gives specific attention to individual differences in leisure influences in coping with stress and the effects of different leisure activities and experiences in developing guidelines. Research indicates that leisure can be a stress buffer in times of high perceived stress. Leisure can reduce the adverse effects of stress on people's mental or physical health (Iwasaki & Mannell, 2000). Iwasaki, Mannell, Smale, and Butcher (2005) determined that leisure contributed to immediate health outcomes and mental and physical health in a sample of adults in high-stress roles. Passive forms of leisure were necessary for helping people recuperate from work-related stress despite reducing stressors associated with juggling multiple role responsibilities in adulthood (Iwasaki, 1998). It was believed that, for example, regular participation in hobbies and crafts, visiting friends, and swimming were all associated with better psychological well-being and lower levels of stress. Hutchinson, Klieber and Bland (2008) explained the role of leisure in coping with and adapting to adverse life events. In addition to stress, Patel (1991) proposed that leisure can contribute to self-restoration following an adverse life event. Another form of intervention that is proving to be effective is the inclusion of leisure-coping goals in recreation participation programmes. It gives many opportunities to support leisure-based coping in which participants can experience a sense of solidarity in structured programmes, facilitating meaningful connections (Hutchinson, Bland & Kleiber, 2008).

Hutchinson, Bland, and Kleiber (2008) noted that Iwasaki and Mannell developed the Leisure Coping Beliefs and Leisure Coping Strategies scales in 2002 to assess leisure-based coping. However, these scales have not been validated within therapeutic recreation settings. These tools are also not regularly available to use. Hutchinson, Bland, and Kleiber (2008) elaborated that the following questions should guide standardised assessment tools: '(1) How stressful do people perceive the event/situation that brought them into TR services?, (2) How stressful do clients perceive leisure to be in the context of their current life situation?, (3) To what extent do clients perceive that leisure has helped them in the past or will currently help them cope with stress in their lives?, (4) How have clients used their leisure to cope with stress in the past?, (5) To what extent do clients feel they possess the personal or social resources to be able to use their leisure to cope with stress?' (Hutchinson, Bland & Kleiber, 2008, p. 17). They developed a framework for assessing client needs for leisure-based coping interventions. The framework is based on determining an individual's perception of a situation perceived as stressful or not, the availability of resources to manage the stressful situation, and the perceptions of current and past leisure and leisure-coping beliefs to develop a leisure-coping treatment for the individual. Leisure-based coping is warranted within this framework if individuals perceive their current life circumstances as stressful (Hutchinson, Bland & Kleiber, 2008).

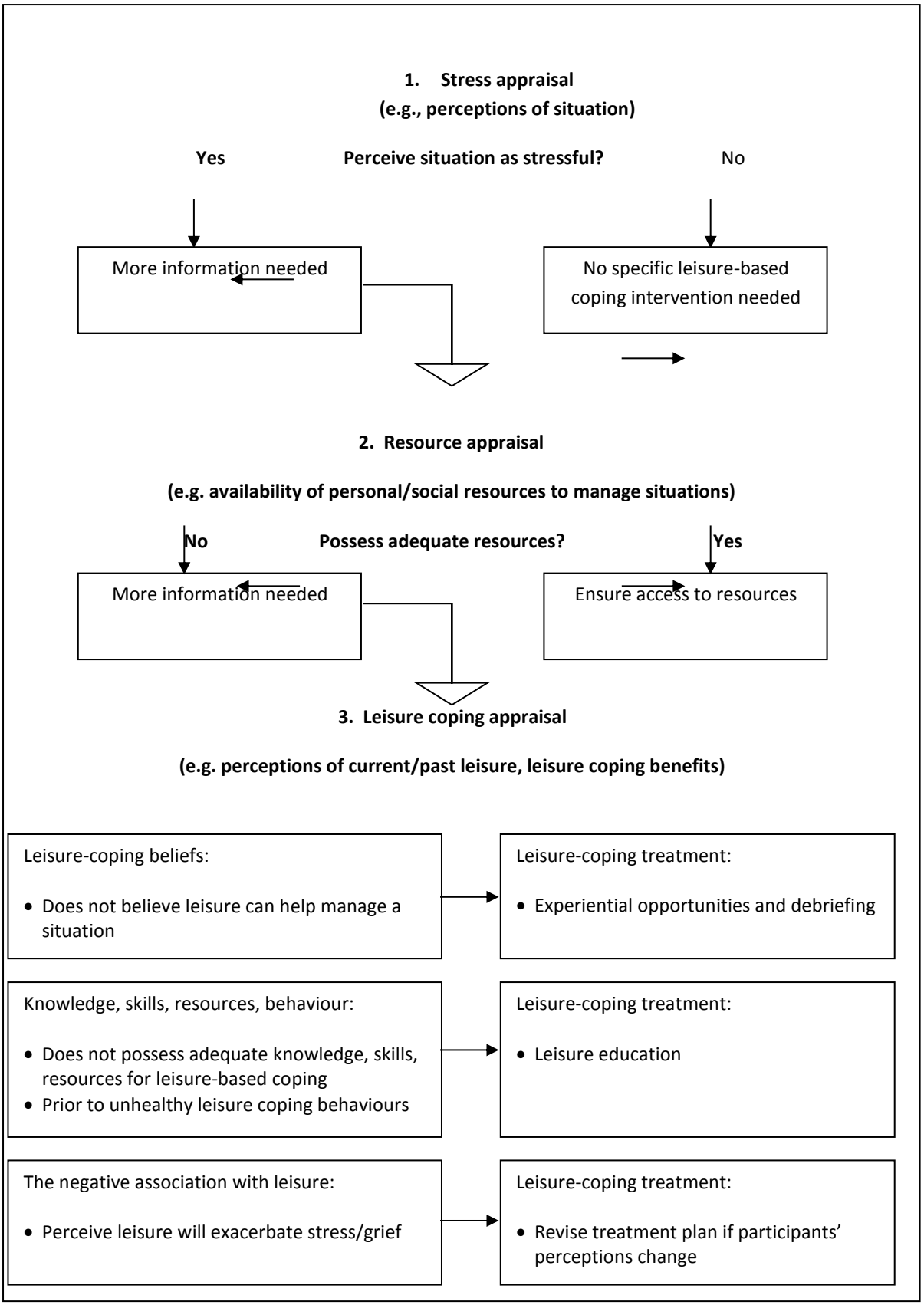

Figure 3.3: Assessing participants' needs for leisure-based coping interventions (Hutchinson, Bland & Kleiber, 2008)

3.11 Application of Therapeutic Recreation Stress Management Intervention Model

The Therapeutic Recreation Stress Management Intervention Model (TRSMIM) is a way forward in providing the necessary skills and ability for SAN members to cope with stress. The TRSMIM Model is applicable in facilitating the reduction of stress levels of military staff. The model also focuses on developing and maintaining increased participation in sport and recreation to enhance the quality of life and overall well-being of staff members. The finding of the model highlighted the need to assist soldiers in coping with stress. This goes beyond the training they receive during basic military training, which is focused on preparing them for military stressors and developing military hardiness. Thus, the objective of Therapeutic Recreation Stress Management Intervention Model is seen as a possible recreation intervention that could lead to stress reduction and contribute to the psychological well-being of military members. The difference in this model is that the intervention will be stress-specific, making use of the wellness dimensions as identified by Miller and Foster (2010) (physical, emotional/psychological, social, intellectual, spiritual, occupational, environmental, cultural, economic, and climatic well-being), as they relate to the military workplace. The Therapeutic Recreation Stress Management Intervention Model could follow a multi-disciplinary approach to facilitating treatment programmes for those suffering from depression, stress addiction and other mental or physical disabilities. This model attempts to include leisure as an intervention to create pleasure and maximise the hedonic experience, with happiness as a significant health outcome of the intervention.

The main aims of this intervention model were to assess the soldiers' stress and leisure involvement, to educate soldiers about health and well-being and the benefits of leisure as a stress-coping mechanism, both in their personal lives and in the military, to develop a leisure-coping strategy to treat and/or prevent stress, and to facilitate the development, maintenance and expression of an appropriate leisure lifestyle for soldiers.

The outcome of the intervention is in line with the ultimate outcomes of the Therapeutic Recreation Services, with the main focus being on improved health, well-being, and quality of life through psychological, physical, social and other benefits received from an appropriate leisure lifestyle in order to manage the everyday life stressors of members in the military.

3.12 The Vitamin Model

Warr's Vitamin model incorporates nine work environment features that he believes influence both job-related and context-free mental health. The components are an opportunity for control, skill use, goals and task demands, variety, environmental clarity, availability of money, physical security, the opportunity for interpersonal contact and a valued social position.

Warr aligns this model to vitamins, where different weights can be attributed to various factors. These will vary according to the individual concerned and the presence or absence of the other factors. Warr believed that these factors were not related to mental health on a linear scale, suggesting the occurrence of a plateau after certain levels of these 'vitamins'. Furthermore, similar to vitamins, some features may have a detrimental effect upon individuals if there is too high a degree of exposure.

Warr stated that humans could adapt to a broad range of environmental conditions and only experience problems at extreme levels. Briefly, Warr suggested that all factors are harmful at deficient levels. Nevertheless, extremely high levels of these factors (money, physical security and a valued social position) are unlikely to affect negatively. However, high levels of the remaining six factors can produce environmental overload and an inability to cope with environmental pressures.

Opportunity for control refers to the control an individual has over his working environment. A low level of control over the working environment is generally psychologically harmful, while high levels of control tend to be associated with higher levels of well-being. Low levels

tend to result in psychological ill health, while high levels tend to result in psychological well-being. *Opportunity for skill use* concerns the capacity for an individual to utilise their skills in the work situation.

Goals and task demands can be divided into intrinsic job demands, task identity and traction, and time demands. Intrinsic job demands refer to the level of jobs an individual is required to complete/perform. Too few demands have been found to produce both psychological (low motivation) and physiological (adrenal hormone secretion) changes. At the same time, too high demands have been found to result in low levels of job satisfaction, job-related anxiety and job-related exhaustion (Frankenhaeuser & Gardell, 1976). *Task identity* refers to the structure and coherent nature of the job, while *traction* refers to the rhythm or swing of the job. Baldamus (1961) believed that the existence of traction generally produced a positive effect upon well-being.

Task variety refers to a continuum, with task variety at one end and repetitiveness at the other. Warr believes that highly repetitive tasks are deleterious to mental health, affecting levels of irritation and calmness (Johanson, Aronsson & Lindstrom, 1978). Environmental clarity is based upon the uncertainty/certainty of the environment and the predictability of future events. Detrimental environments are those that are low in clarity and highly uncertain. Environmental clarity is determined by three factors: availability of feedback, future information, and required behaviour. This vitamin is similar to role ambiguity (Kahn, Wolfe, Quinn, Snoek & Rosenthal, 1964).

Availability of money is the sixth vitamin, where an absence produces considerable psychological problems, reducing the opportunity for personal control and seriously influencing extra-work circumstances. Yinon, Bizman and Goldman (1976) found a positive relationship between reward magnitude and job satisfaction. In addition, Farrell and Rusbult

(1981) believed that this 'effort-reward bargain' was the primary factor determining job satisfaction. *Physical security* refers to the need individuals have to feel secure from any physical threat and be adequately protected by the organisation. This can include physical working conditions, such as heating, food, shelter, and an area for private territory and security of tenure. Physical security is a classic hygiene factor (Herzberg, 1966), where its presence is comparatively unimportant, but its absence can produce profound dissatisfaction and anxiety.

Opportunity for social contact refers to the opportunities for friendship in the work environment and the potential support. It is directly linked to individual well-being (Oldham & Brass, 1979), in addition to job satisfaction, stress reactions, role (Ganster, Fusilier & Mayes, 1986), communications and contacts. Finally, a valued social position is the extent to which a particular job is valued by society or within the organisation. Individuals gain a sense of identity and self-respect from their jobs, carrying this to all aspects of their lives. Thus, those who gain a low social value from their job generally experience lower levels of job satisfaction.

3.13 Application of Vitamin Model

Warr's model of occupational stress is frequently cited in the literature and is favoured when describing the determinants of occupational stress and job satisfaction. Two of the criticisms directed at the model refer to the concept of non-linearity and causality. A curvilinear relationship between well-being and the nine factors has been reported by some studies (Warr, 1990b, Edwards & Cooper, 1990). However, Warr (1994) does acknowledge that the methodological requirements to establish curvilinearity are high. Warr believes that sample sizes of approximately 1000 are needed, in addition to a wide range of occupational measures, which are sensitive enough to detect the extremes of each job characteristic. As such, the majority of studies have focused on a linear relationship. The direction of causality is also cited as a weakness in the model, where relationships are assumed in a uni-directional manner

between job characteristics and mental health. However, there is evidence from many studies illustrating the effect of well-being on some of the occupational factors (Kohn & Schooler 1982; James & Tetrick, 1986).

Furthermore, the model does not illustrate the pathways between job-related and non-job-related well-being. However, Warr (1994) states that job-related mental health is a mediating factor between job characteristics and non-job mental health. Thus, despite some weaknesses, WaIT's model for occupational stress provides a reasonable basis for understanding the multi-faceted nature of stress in the workplace. It can also illustrate the positive and negative aspects of occupational characteristics, with researchers able to identify any changes occurring to the principal factors.

3.14 Chapter conclusion

This chapter introduced the theories that frame the development and validation of the TRSLAT. It discussed the different types of evidence that can be gathered to build a valid argument and gave ideas of how these are usually measured. The chapter also demonstrated how validity theory was applied in the study. The conceptualisation of the constructs and the empirical analyses conducted to gather valid evidence were organised around the ecological theoretical framework and the systems levels within it. The next chapter will explore the phases relevant to this study in the process of instrument construction. The methodological considerations will be linked to empirical studies to demonstrate either appropriate or inappropriate application of the decisions involved in these instrument-development studies.

The following chapter will unpack the methodological concerns involved with conducting instrument-development and validation studies.

CHAPTER FOUR

METHODOLOGICAL CONSIDERATIONS IN INSTRUMENT DEVELOPMENT

4.1 Introduction

This chapter will focus on methodological issues and concerns when planning, developing and validating an instrument. In the construction of instruments various steps have been documented to ensure that the instruments are valid construct measures (Walsh & Betz, 2001). These processes include planning, item writing, and piloting the instrument's initial version (Foxcroft & Roodt, 2005). After these processes, the instrument is administered to a representative sample to analyse the items and assess the validity (Allen & Yen, 1979). Studies on instrument development mostly do not report all the steps in the process. This is because many instruments have not been so thoroughly constructed (Benson & Clark, 1982) or because validation is an ongoing process across studies over an extended period (Clark & Watson, 1995). These studies also generally do not address any of the methodological concerns that need to be considered. This chapter will discuss all the phases relevant to this study in the process of instrument construction, with particular emphasis on the validation process, since this is the main aim of the current study. The methodological considerations will be linked to empirical studies to demonstrate either appropriate or inappropriate application in these instrument-development studies.

4.2 Planning phase

The overall plan for the instrument development was identified that will serve as a guide for the rest of the phases in the instrument's construction. Foxcroft (2004) points out that possible test bias can be addressed already during this phase, along with other design issues. It is essential to clearly understand the construct before developing a blueprint (DeVellis, 2003). This clarity can be reached with the aid of an appropriate theoretical framework (Gregory,

1996). Clark and Watson (1995) maintain that there can be no construct validity without an articulated theoretical framework, referred to as "the nomological net" by Cronbach and Meehl (1955). The theoretical framework allows instrument developers to think about the data in advance and justify their selection of items. Instrument-development studies use the theoretical model to inform the development of the domains to be included in the instrument (Van Heerden & Roodt, 2007; Zillich et al., 2005), while some use it for the domains and the item writing (Bowman et al., 2009) and reducing the number of items (Anderson et al., 2004). After this, operational assessment areas are identified and clearly defined, based on the theoretical framework selected (Delport, De Vos, Fouché & Strydom, 2005). These constructs are thoroughly conceptualised by the process of refinement and are then operationalised. The operationalisation of the construct includes defining the independent variable in terms of the procedures that will be performed to facilitate the measuring process. Items are then content-validated against these operational definitions. Clark and Watson (1995) state that the scope of the construct is the critical issue during this phase of development and that a precise and detailed conceptualisation of the construct and its theoretical context is needed. They suggest writing out a formal description to crystallise the conceptual model. Benson and Clark (1982) agree that a statement of this nature is necessary and should include a specification of the construct to be measured and the target population for which it is intended.

A review of the literature can be examined to see how the construct has been defined and measured. Further, how can it assist in articulating the conceptual boundaries of the construct? The review involves an investigation of existing scales and concepts expected to be related to the construct. It has also been suggested that this review can help to ensure that an appropriate instrument does not already exist (Benson & Clark, 1982; Clark & Watson, 1995; Maclellan-Wright et al., 2007). The literature review also assists in formulating operational definitions, which involves the spelling out of the components necessary to measure the construct. It can

also help to identify the most appropriate types of items to measure a particular construct. Most instrument-development studies consult the literature to examine, refine and ultimately define the construct (De Bruin & De Bruin, 2011; Kristjansson et al., 2007; Zillich et al., 2005; Anderson et al., 2004). In some studies, the domains of the construct are also defined using the literature (De Bruin & Taylor, 2006; Ullman & Forbes, 2006; Fok & Tsang, 2005). Representativeness and relevance of the construct domains are measured in consultation with the literature (Guyonnet et al., 2008). In most studies, the content and face validity of the instrument was assessed using expert reviews (Bowman et al., 2009; Dückers, Wagner & Groenewegen, 2008; Maclellan-Wright et al., 2007; Barret et al., 2005). Nonetheless, some studies use expert and target population reviews to do the assessment (Guyonnet et al., 2008; Ullman & Forbes, 2006; Zillich et al., 2005). Bowman et al. (2009) use the content validity index, which measures the proportion of items judged to be content-valid.

4.3 Item writing phase

Items should be carefully worded since there are no techniques for remedying deficiencies in the item pool. The point during this phase is to systematically sample all potential content that is relevant to the construct. Clark and Watson (1995) suggest that the construct should be over-sampled. They argue that the pool should be broader than the theoretical view of the construct and should include items that are barely related or even unrelated to the construct. This is because analyses can pick up weak items but cannot detect items that should have been included but were omitted. While there are definite disadvantages to developing too many items for a scale, scales with too few items will not display adequate reliability. When writing items for the initial version of the scale, it must be kept in mind that the number of items will be reduced by validating the instrument. It is vital to ensure that each of the primary content domains has an adequate sample of items. This will guard against the under-representation of that content domain in the final instrument. Comrey (1988) suggests that subscales be created

within instruments to represent these content domains. Before the pool of items can be reviewed it must conform to the selected format for the target population. During the item-writing stage, it is important to have adequate knowledge about the target population since this will have an effect on the chosen items. Responses that need to be considered on items should focus on the reading ability, the length of time that the respondents are able to respond.

Items should be based on the literature, self-descriptions, educational curricula, and anecdotal evidence (Foxcroft & Roodt, 2005). The specifications should guide the writing of these items in terms of the content, the quality, and the format of the items (Linn & Gronlund, 2000). Items should be clear, succinct, and unambiguous so that they are easy for respondents to interpret. The language used should be appropriate for the target population (De Coster, 2000). Biased language should be avoided, and items should not be structured to point towards a particular response. The language and format must remain neutral. Multiple-choice items are difficult to construct since the distracters should be as attractive as the correct responses, and negative expressions should be avoided. Linn and Gronlund (2000) suggest that three distracters per item are enough, even less for children. Generally, De Coster (2000) argues that items should be written so that respondents require minimal instruction to answer an item.

4.3.1 Piloting of initial items

Once the initial set of items is written, these are piloted. Piloting may include informal opinions but generally involves the more formal testing processes. Foxcroft and Roodt (2005) advise that this process should include both a quantitative and a qualitative collection of information regarding the performance of each item. This information should be used in the refinement of and selection of items. Qualitative data can be collected of the instrument about the items that respondents generally struggle with. In piloting, the instrument is administered to respondents to determine how long it takes to complete the instrument, whether the items and instructions

are clear, and to allow respondents to comment on the overall quality of the instrument (Benson & Clark, 1982). They recommend that the pilot is followed up with a qualitative debriefing to allow respondents to comment on the appropriateness of the instrument. Piloting provides the opportunity to try out techniques and specific instructions for the administration of the instrument. The appropriateness and clarity of the item wording are also measured through this process. Maclellan-Wright et al. (2007) conducted a pilot study to assess further the face and content validity of the Community Capacity to Address Health Issues measure by using interviews with experts and the target population, while Beglar (2010) used a pilot study to assess the representativeness and technical quality of the Vocabulary Size Test. Mischel, Shoda, and Peake (1988) indicate that some item analysis and validation rounds can also be conducted iteratively during this phase. Items can then be revised based on these results. Rattray and Jones (2005) agree that item analysis is one way to pilot an instrument, assuming that the sample is big enough to perform specific analyses.

4.4 Item analysis and validation phase

There are different procedures for validating an instrument. This section will highlight some of the deliberations raised in the literature about some of these procedures.

4.4.1 Item selection

Analyse of item involves a quantitative analysis to determine whether each item serves the intended purpose of the scale (Izard, 2005). The interaction between the items are measured on a scale. This process highlights items that are not performing satisfactorily. The characteristics of each item are examined in terms of their difficulty and discrimination power. Item difficulty is indicated by the spread of scores on an item. Item difficulty level is indicated by an even distribution of scores instead of mostly high, low, or neutral responses (Walsh & Beltz, 2001). Item discrimination refers to how well an item distinguishes between high and low scorers.

This is calculated by measuring the correlation between the item and scale scores. The higher this value, the better the item can distinguish between high and low scorers (Foxcroft & Roodt, 2009). In addition to using the items characteristics for item selection, many studies also use exploratory factor analysis (EFA) to select items. According to Gorsuch (1997), several problems can arise when using factor analysis at an item level for item selection because these methods were developed to analyse scale data. Construct scales are more reliable than individual items. As a result, scales will show higher intercorrelations than items because correlations can only be high if the two variables have similar distributions. This is less likely with items than scales. Despite their content, items with similar distributions tend to load together in factor analysis (De Bruin, 2004). Psychological tests, when observed at the item-level often fail to meet the assumptions of linearity and normality De Bruin (2004). Even when items are measured using Likert-type scales, the data they yield cannot be considered continuous and are non-normally distributed (Floyd & Widaman, 1995). The impact on items effects the item distribution leading to lower intercorrelations as opposed to continuous scores like scale totals. The most likely explanation is that items can contain confounding factors that may affect the respondent's interpretation of the item, though unrelated to the item (Gorsuch, 1997). This can profoundly impact the performance of individual items. It is recommended that item response theory is used as an alternative because it was designed to use non-linear relationships between ordinal variables (De Bruin, 2004). In a brief South African instrument items was reduced to measure self-directedness in the workplace developed by De Bruin and De Bruin (2011). During pretesting and piloting the instrument, and item-response theory items are normally reduced. Meads et al. (2009) also used Rasch analysis to reduce items and assess the dimensionality of the Fatigue Impact scale. In Rasch analysis it is a claimed that tool development is useful in improving scales, more so than factor analysis and classical test theory. To develop a depression-screening tool a combination of Rasch analysis and structural

equation modelling was used (Forkmann et al., 2009). Until a good model fit was achieved items were excluded from the model based on indicator reliabilities and modification indices. Some studies use only item characteristics to select items (Butt et al., 2009). It is ideal for conducting factor analysis in conjunction with an exploration of the item characteristics should one decide to conduct factor analysis. Item selection using item characteristics is normally done before and during the factor analysis. Items with loadings of < 0.50 (explaining 25% of variance) for every factor across a set of solutions were removed. Although it is not as widely used as one would expect, item-response theory is more appropriate for analysing ordinal-level data. Factor analysis is still more popular in item- and scale-level analysis (Butt et al., 2009; Bowman et al., 2009; Van Heerden & Roodt, 2007). Factor analysis in the item-reduction phase of developing a measure of health-related quality of life was used with liver-disease patients Younossi, Guyatt, Kiwi, Boparai, & King, 1999). PCAs were conducted in conjunction with other item-reduction criteria, such as impact scores. The target population was asked to rate items based on their importance. The impact score is the proportion of respondents who felt the item was important. Items that were endorsed by more than .50 of respondents were retained and later factor analysed. General considerations in factor analysis will be discussed in more detail in the next section.

4.4.2 Structural evidence

Concerns with how validity studies are conducted were brought to light during several studies. Empirical studies have employed a host of techniques and have made different decisions regarding applying these techniques. Factor analysis is used in many studies for item selection (as discussed in the previous section) and exploring and confirming the nomological networks proposed in the theories informing the construct. For this study, the focus will be on the methodological considerations relevant to the use of factor analysis, whether as a method to gather internal or structural validity evidence or item selection. The terms “external and

structural evidence" will be used interchangeably throughout the thesis to refer to procedures that examine the internal structure or the instrument as a whole. The following considerations will be discussed: 1) selection of a factor-extraction method; and 2) criteria used to decide on the number of factors to retain when using factor analysis. Other issues are mentioned in the literature, such as rotation methods in factor analysis and sample size. However, this discussion will be limited to the two major issues listed above. Many studies have reviewed and evaluated the use of factor analysis in measurement research (Conway & Huffcutt, 2003; Cook & Beckman, 2006; Costello & Osborne, 2005; Fabrigar, Wegener, MacCallum & Strahan, 1999; Floyd & Widaman, 1995; Ford, McCallum & Tait, 1986; Henson & Roberts, 2006; Laher 2010; Reise, Waller & Comrey, 2000), but few have affected good practice. These decisions leave researchers unable to generalise factor structures across samples. Factor analysis involves a series of decisions that affect the interpretation of the results. This multi-step process has few absolute guidelines and several options at each of the stages. Subjectivity creeps into the process when a researcher makes these decisions because different decisions yield different results. Researchers argue that informed decisions need to be made and recommend good practice at each stage (Henson & Roberts, 2006; Rattray & Jones, 2005). In reviewing the use of EFA in instrument development, it became clear that most studies use EFA to reduce items (Berger, Ferrans & Lashley, 2001; Hills & Argyle, 2001; Milfont & Duckitt, 2004), while a few studies have employed the technique at a second-order level to explore nomological networks (De Bruin, 2006; De Young, Peterson & Higgins, 2001). Studies are much more likely to employ confirmatory factor analysis at this level (Butt et al., 2009; Gotay Blaine, Haynes, Holup & Pagano, 2002). When a theoretical framework is applied for the first time, however, it is advisable to employ an EFA at first to determine whether the factors do load as hypothesised according to the selected framework. An EFA is used to identify inter-relationships between items that form part of a unified construct. With EFA, assumptions are

made concerning these relationships. Confirmatory factor analysis determines the number of factors and how items will load on these factors before the analysis is done to confirm the appropriateness of the theory on which the constructs are based (DeVellis, 2003). As was pointed out before, in performing an EFA, informed decisions must be made about the extraction method and the criteria used to decide on the number of factors to retain. The considerations in making these decisions in an EFA will be discussed next.

4.4.2.1 Selection of a factor-extraction method in factor analysis

Most factor-extraction models are categorised into either a common factors model or a components model (Gorsuch, (1983). The most common components model is principal component analysis (PCA), while the most popular common factor analysis (CFA) models are principal axis factoring (PAF). Some researchers do not consider PCA as factor analysis (Costello & Osborne, 2005), while others argue that there is no difference and that PCA is more suited to instrument-development research than CFA (Rattray & Jones, 2005). Velicer and Jackson (1990) believe that PCA can examine the latent construct and will yield almost identical results. They argue that PCA can be successfully used to reduce items (through a process of iterative analyses) as well as to identify underlying domains in a set of items. PCA and CFA differ concerning their purpose and conceptualising sources of variance (Conway & Huffcutt, 2003). While CFA only analyses shared variance, components methods such as PCA do not discriminate between shared and unique variance (Kline, 1994). Studies caution that this can lead to inflated estimates of variance accounted for by components when using PCA (Gorsuch, 1997; Reise, Waller, & Comrey, 2000). When used at an item level, such inflation can make items look better than they are, which necessitates combining the use of EFA with, for example, item characteristics or the contribution of items to internal consistency (Berger, Ferrans & Lashley, 2001). Generally, PCA is recommended for item reduction, though, and CFA for understanding the latent structure of a set of variables. By analysing different datasets

using CFA and PCA, it was found that most of the results were similar, another study demonstrated that the two methods could significantly affect the outcome of the analysis (Fabrigar et al., 1999). When items have low communalities and factors have few salient loadings, the results of PCA and CFA can differ substantially (Widaman (1993). The difference in results yielded by PCA and CFA is minimal when there are enough variables in the analysis and when the commonalities are high (Gorsuch, 1983). Items tend to have low commonalities, when applying PCA as opposed to CFA to item-level data (Floyd & Widaman (1995). When the focus is on the latent construct, CFA is the more accurate factor-extraction method. In systematic reviews of the literature to evaluate the use of EFA in research, Ford et al. (1986) and Fabrigar et al. (1999) reported that PCA was over-used in research between 1975 and 1995 and recommended greater use of CFA. Their explanation for this trend was the limited capacity in EFA technology and computing power during that period, since CFA requires greater computing power. In a later review by Conway and Huffcutt (2003), they reported no real shift in the extraction methods employed by researchers. They urged researchers to make greater use of common factor models. They also claimed that researchers rely too heavily on the default settings in statistical packages, owing to a lack of training in the appropriate use of EFA. For this and other reasons, few studies use CFA in the development of instruments. This analysis was performed using PAF as the extraction method. Van Heerden and Roodt (2007) also used CFA to assess the internal structure to measure high-performance culture. The instrument was developed around a twelve-dimension theoretical model of the construct that was based on literature. PAF was performed on the items as well as on the dimension scores. De Bruin and Taylor (2006) developed sources of work-stress inventory. The items were subjected to CFA using maximum-likelihood extraction. Bowman et al. (2009) developed an instrument to measure clinicians' readiness to measure outcomes. The dimensions and items were based on the stages of the trans-theoretical model. Items were selected using CFA with the maximum-

likelihood extraction method. EFA and confirmatory factor analysis were used to assess the factor structure of the items. PCA, however, is still more commonly used in measurement research. Anderson et al. (2004) developed a scale to measure beliefs, confidence, prior action, and desire to promote health. PCAs were conducted on the items of each dimension to verify the dimensionality of these theoretically predetermined scales and reduce items. Barret et al. (2005) used PCA to assess the dimensionality of theoretically determined scales to measure organisational leadership for health promotion. PCA was also used to assess the factor structure and underlying dimensions of the measure of physician-pharmacist collaboration based on a conceptual model (Zillich et al., 2005). Confirmatory factor analysis was followed to evaluate model fit. Dückers, Wagner, and Groenewegen (2008) used PCA to assess the dimensionality of a measure of conditions for successful implementation of quality-improvement collaboration. Guyonnet et al. (2008) used PCA for item selection and factor structure to develop a food-benefits-assessment questionnaire that assessed the impact of food on health-related quality-of-life domains. This process led to the development of a conceptual framework that experts in the field further validated. Mclellan-Wright et al. (2007) developed a measure of community capacity to address health issues. Scale dimensionality was assessed using PCA. Forbes, While and Ullman (2006) developed a measure of learning needs assessment for the continuing professional development of specialist nurses. Correlational analysis was used for the analysis of the items because the sample was small. PCA was done on pairs of domains to get a sense of the underlying structure. As demonstrated above, both PCA and CFA have been used at both item and scale levels. The trend, however, seems to be to use PCA at an item level (with some caution around its use) while using CFA at the scale level to assess dimensionality and nomological networks.

4.4.2.2 Criteria used to decide on the number of factors to retain in factor analysis

In informed decision-making is crucial to decide about the number of factors to retain. The technique used to decide the number of factors to retain could lead to varying results (Fabrigar et al., (1999). Factor extraction aims to identify the number of latent dimensions needed to account for the common variance among a set of items. Too few factors can cause the researcher to miss essential distinctions between the items, while too many can cause some factors to be ill-defined, with too few salient loadings (Reise, Waller & Comrey, 2000). The more popular techniques will be discussed.

4.4.3 External evidence

External validity procedures include criterion-related validity procedures such as concurrent and predictive validity and construct validity procedures such as convergent and discriminant validity. Convergent and discriminant correlation patterns should be present in a valid instrument (Smith & McCarthy, 1995). They suggested that this was important to measure in the initial stages as well as later in the process. The concurrent validity of this instrument was assessed using the Pearson correlation. Validity was assessed using Kruskal-Wallis and Mann-Whitney Wilcoxon tests for a food benefits assessment questionnaire developed by Guyonnet et al. (2008). The predictive validity of instruments have used comparative methods, such as analysis of variance (Van Heerden & Roodt, 2007). In their study, Van Heerden and Roodt (2007) developed the High-Performance Organisational Culture scale. Among other tests to assess the face and content validity, they used ANOVAs to assess whether there were any differences between genders, age groups and job levels on the scale. No significant differences were found, and they concluded that the scale lacks differential validity.

De Bruin et al. (2005) assessed whether scores on an intelligence test (The Raven's Progressive Matrices, RPM) and scores on a personality questionnaire (The Five-Factor Non-verbal Personality Questionnaire, FF-NPQ) could predict functional and academic performance in an

adult basic education programme that catered for adults with limited reading skills. These intelligence and personality tests were selected because they both require limited reading skills. The study found that the RPM correlated significantly with the practical and academic components of the training programme. Only one of the five scales of the FF-NPQ correlated with the practical component of the programme, while none of these scales correlated with the programme's academic components. The absence of external evidence of the validity argument for individuals in the workplace scale was a limitation (De Bruin & De Bruin, 2011). Further research was recommended on the predictive, discriminant and convergent validity of the instrument. The initial validation of the sources of a work-stress inventory also recommended that the external validity of this scale be assessed (De Bruin & Taylor, 2006). The advantage of including external validity evidence in a validity argument is that it can demonstrate that the constructs represented in the instrument account for the external pattern of correlations. In this scores is substantiated externally by assessing the degree to which relationships with other measures are consistent. Constructs are estimated to operate predictably concerning constructs based on the same theory.

4.5 Chapter conclusion

The following chapter will highlight how the current study addressed the concerns raised in the discussion above and describe all the methods and procedures used to develop and validate the TRSLAT.

CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 Introduction

The methodology is the guidelines in which we approach and perform activities. Research methodology provides us with the principles for organising, planning, designing and conducting proper research. Hence it is the science behind philosophy and all research studies (Legesse, 2014). This study was located in the field of measurement and validity theory. It specifically focused on developing a valid instrument, the Therapeutic Recreation Stress Leisure Appraisal Tool - TRSLAT, that can identify stress in the military.

This study focused further on the exploration of the construct validity of the instrument. Therefore, the study's overall purpose was to explore and assess the validity of the TRSLAT. The specific objectives of the study were as follows:

Objective 1: To pilot the items and format of the instrument.

To refine the item content, the response categories, and the format of the instrument.

Objective 2: To select the best items based on item characteristics.

To select the best items based on their discrimination value, factor-stability criteria, and their relationships to other items in the theoretically defined system levels and the total of the scales they were initially placed in.

Objective 3: To assess the construct validity of the instrument, using procedures of structural evidence.

To assess the instrument's validity using procedures of internal construct validation, as well as to assess the internal consistency of the components of the instrument.

Objective 4: To assess the construct validity of the instrument, using procedures of external evidence.

To compare members with stress and members without, see whether they perform significantly differently on the scales and the factor scores.

Each of the above objectives will contribute to the argument for the construct validity of this instrument. This argument is to demonstrate that the instrument can be used for the purpose for which it was developed.

A preliminary appraisal tool, TRSLAT, was developed by Cozett (2015). The tool consists of a range of scale items structured in parts one and two on a rating scale (1-10). Part 1, consists of the following leisure activity sections: A. Personal Stress, B. Occupational Stress, C. Wellness, and D. Operational Deployment, with a range of 30 questions on the scale. Part 2 consists of four sections: A) Social Activities, B) Passive Activities, C) Physical Activities, and D) Outdoor Activities. The focus of this study was to further refine and develop the tool through phases of piloting and validating the tool following an explanatory sequential mixed-method approach, to maximise the relevance and utility that may guide the operational readiness of military members. For this study, qualitative and quantitative data were collected and analysed to understand how the data converged, confirmed, or corroborated the findings. This type of research is well suited to the military environment, supporting operational efficiency and rigorous procedures. A multi-purpose approach is a suitable method as it facilitates the reliability, validation and evaluation of research instruments (tools) and techniques (Burns & Grove 2003; Lo-Biondo Wood & Haber 2002; Polit & Hungler 1999; Wilson, 1993).

A multi-method approach allows the researcher the advantage of several philosophical paradigms. In this study, the researcher adopted a "pragmatic" philosophical perspective, which draws on several diverse approaches and values, both objective and subjective

knowledge (Tashakkori & Teddlie, 2003), reflecting value in the different approaches to how knowledge is claimed. Pragmatism is increasingly accepted as the best philosophical basis of mixed-methods research (Hanson, Creswell, Plano Clark, Petska & Creswell, 2005; Tashakkori & Teddlie, 2003). Greene and Caracelli (2003) express that one of the benefits of using multiple methods within a single research study is that it capitalises on the objective strengths of quantitative findings and the richness and depth of qualitative findings. Combining these two methods provides a means of approaching the research question from different angles, increasing inferential leverage (Tarrow, 2004).

Mixed-method designs are increasingly popular in the social sciences and are legitimate, standalone research designs (Cresswell, 2002; 2003). The proposed study design had two distinct phases. Phase 1: the piloting phase (qualitative design) explored if the developed appraisal tool is interpreted correctly and contains the necessary questions applicable to the study objectives using cognitive pretesting. Phase 2: the evaluation phase (quantitative design) determined the validity and reliability of the refined developed appraisal tool. The researcher's needs are translated into a set of questions that participants are willing to answer. The sequential phases in this study were added to the objectives and strengths of quantitative findings as well as the richness and depth of qualitative findings. Herewith find a brief outline of each phase.

5.2 Phase 1: Pilot-testing phase

Pilot testing is a process by which the draft of a translated tool is tested on a sample of people who belong to the instrument's target population. In this phase, the tool was administered and, after that, participants were interviewed about the instructions, response format and items. The process of cognitive debriefing and cognitive pretesting was used to reach the objectives of the phase. The objective of the pilot-testing phase was to explore if the developed appraisal tool is interpreted correctly. Piloting may include informal opinions from colleagues but

generally involves the more formal testing processes. Foxcroft and Roodt (2005) advise that this process should include both a quantitative and a qualitative collection of information regarding the performance of each item. In piloting, the tool was administered to respondents to determine how long it takes to complete the instrument, whether the items and instructions are clear, and to allow respondents to comment on the overall quality of the tool (Benson & Clark, 1982). They recommend that the pilot be followed up with a qualitative debriefing to allow respondents to comment on the appropriateness of the instrument.

Cognitive debriefing helps the researcher ensure they are asking the right questions to elicit meaningful answers. In the cognitive debriefing process, the respondent is instructed before completing the instrument to think aloud as he or she answers the questions. Therefore, cognitive debriefing is conducted mainly as the think-aloud method or verbal probing techniques. The value of the think-aloud method is avoiding interviewer bias (Dovepress, Farnik & Pierzchała, 2012: 3). Once the initial set of items is written, these are piloted.

Cognitive pretesting was conducted to ensure that the quality of the data collected in the tool measures what it says it measures. This contribution will ensure that participants are interviewed and actively probed; insight is given into answering questions, how information is retrieved from the tool, how participants arrive at answers, testing of the comprehensibility of questions, and generating suggestions and the individual testing questions. Techniques such as probing, thinking aloud and sorting are evident in the process (Beatty & Willis, 2007.

5.2.1 Population and sampling

Recruiting participants within the military was a rigorous process due to the unique community environment and a rigid work schedule. The researcher's experience of recruiting participants corroborated with other studies indicating that "obtaining a sample was not simply a matter of recruiting people into the research but, rather, a complex social process of

gaining access into the community itself" (Sixsmith, Boneham & Goldring, 2003). Sampling was therefore purposefully done based on shifts, deployment schedules and the availability of participants. A sample of *n*=50 was purposefully selected from a population of naval members. The sample was purposefully structured into five focus groups of ten members each. The focus groups consisted of male and female commissioned and non-commissioned officers from a variety of age groups. The last step in the sampling process was to purposefully select ten naval members for interviews from the original sample (*n*=50), based on members' availability.

5.2.2 Data collection

The data collection in phase 1 was conducted by administering the TRSLAT tool to participants who gave consent. It also explored if the questions, question types and responding options would be appropriate to include in the appraisal tool. Moreover, it was appraised if participants interpreted the questions in the appraisal tool in a similar manner. Lastly, it became clear if the questions related to the objectives of the tool. The data-collecting procedure used in the present study was as follows:

The focus-group discussions using a discussion schedule took place at a military base in Simon's Town in a venue secured and assessable for the participants. The research supervisor assisted as a facilitator with the focus-group discussions because of the researcher's direct involvement with the military. Of the original sample, ten participants were invited to participate in interviews. Semi-structured interviews were used to investigate various organisational phenomena, offering rich content to understand perceptions from the bottom-up about the TRSLAT (Mallak et al., 2003). The interview questions were designed to elicit a narrative response concerning naval members' experiences at work to provide an understanding and context to the survey data. To maintain the credibility of the interview data, both field notes and audio recording were used during the interview sessions. Focus-group

discussions and interviews were recorded and transcribed verbatim. Interviews were conducted with ten members only. This is based on face-to-face interviews focused on particular categories of cognitive probes, such as comprehension and interpretation probes; paraphrasing; and general probes, such as whether the participant has found the question to be difficult and whether the scale allows the participant to answer in the way they would have liked to. The instrument was revised based on the results of cognitive debriefing. Interviews were recorded verbatim and transcribed.

5.2.3 Data analyses

Qualitative processes were used to analyse the data collected. The data collected were recorded using ethical practices after participants had given consent. Recordings were transcribed verbatim. Data coding was used to categorise transcriptions using qualitative means. Data coding is central to the process of thematic analysis. Thematic analysis was used to categorise the generated themes into knowledge units (De Vos et al., 2001). Thick descriptions and member checks were employed to verify the data analysed. For verification purposes, the analysed data were screened using the following qualitative means: reflexivity and trustworthiness. Part of the data-coding process includes refinement and finalisation of the TRSLAT. The interviews and focus-group data were audio-recorded, transcribed verbatim and checked for accuracy before analysis. Thematic analysis is one of many methods used to analyse how participants talk about their experiences. It is a recursive method by which the researcher can move back and forth between the phases of analysis (Braun & Clarke, 2006). The researcher also made use of a coding system using Bodgen and Biklen's (2003) three steps for thematic analysis: (1) data were read and re-read to identify regularities and patterns, (2) recording the words and phrases that represented the topics and patterns (these were the coding categories), and (3) sorted the descriptive data under each category.

5.2.4 Reflexivity

It is essential to acknowledge that the researcher influences and shapes the research process, both as a person (*personal reflexivity*) and as a theorist/thinker (*epistemological reflexivity*; Willig, 2013). Reflexivity allows the researcher to reflect on how the researcher might influence the research and its findings. As a researcher, I will find ways to make sure that I reflect on my role in the research and how this has affected the research process. In reflexivity, the researcher needs to apply vigilance of self, which Carey (2012) described as a way by which one's assumptions [are recognised] as potential sources of bias. In this case, the researcher developed an interest in the topic based on work experience in the field. The research supervisor assisted as the focus-group facilitator, to prevent biases.

5.2.5 Validity and trustworthiness

The researcher needs to conduct verification of data within qualitative research to ensure that the data are trustworthy. To enhance the trustworthiness of the data, the researcher's supervisor examined each category and quotes for a suitable fit. Furthermore, the participants were invited to a peer-debriefing focus group (Lincoln & Guba, 1985; Radford, 2006). They will review the results of the interview analysis and participate in an exercise to discuss how the themes and categories resonated with their own work experiences. This process helped identify the researcher's biases and for interpreting the data through the participant's eyes. Member checking is described by Cresswell (2007) as when the researcher takes the final report or specific descriptions or themes back to the participants and determines whether the participants feel that they are accurate. Creswell (2007) argues that, when the researcher uses detailed, thick descriptions to convey the findings, this will ensure that the results become more realistic and richer. Trustworthiness also enables the reader to make their judgments about the validity of the interpretation.

5.3 Phase 2: Evaluation

5.3.1 Study Design

This phase of the study is quantitative and is located within measurement construction theory, specifically validity theory. The nature of the study was primarily descriptive and exploratory, but it also made use of correlational and comparative statistical techniques. Descriptive techniques were used to explore the items by examining the item discrimination. The objective of the evaluation phase was to determine the validity and reliability of the already developed appraisal tool. The achievement of standards of validity and reliability requires time and includes rigorous methods of data analysis. Validity is the measure's ability to provide accurate measurements or is defined as the degree to which an assessment measures what it is supposed to measure (LoBiondo-Wood & Haber, 2002; Polit & Beck 2004; Wilson, 1993). Validity, in turn, refers to the relevance of a measure (Polit & Hungler 1999; Wilson, 1993).

5.3.2 Population and sampling

During the evaluation phase, participants were selected from a population of N=1000 reserve force members and N=6000 permanent force members. A sample of n=1000 participants was selected to participate in the study, more than 10% of the population. The sample was conveniently selected from the core member base of senior, junior rates and officer core. The convenient sample was clustered according to rank, age and gender. The reason convenient sampling is an appropriate method in the current study is as follows: it provides a solution for cases in which the sample is away on deployment and a rigid duty schedule can be overcome by selecting members based on availability. The sampling method was selected for ease of access in the SA Navy.

5.3.3 Data collection

The current study was concerned with the piloting of the items and the further validation of

the instrument. The piloted instrument was adapted according to the responses from participants in phase 1. After that, the modified tool was administered to participants (*n*= 1000) in the evaluation phase. The phase aimed to evaluate the reliability and validity of the tool. Data collection took place at a military base where access was granted to administer the tool. The completed appraisals were collected and kept in a secure place in the researcher's residence. The tool was administered at the military base in an environment that puts the participants at ease. The researcher, as a member of the organisation, was not involved. Instead, a qualified research assistant administered the appraisal tool.

5.3.4 Data analyses

Inferential and descriptive statistics were used to illustrate the characteristics of the sample, including designation/rank, age, gender, education level, marital status, number of years in the navy and level of employment. Descriptive statistics were run for each variable used in the appraisal tool. The mean and standard deviation were calculated for each variable. The Social Sciences Statistical Package (SSSP) version 24 was utilised to analyse data**.** This packaged program was used for generating frequencies, factor analysis, and correlation analysis, which were determined. Cronbach's alpha coefficient was used to test for internal consistency and reliability. The quantitative procedures in this study emphasised descriptive analyses of survey data to investigate relationships between variables.

Factor analysis is the statistical method used in this study to describe variability among observed correlated variables in terms of a potentially lower number of unobserved variables called *factors* (Creswell, 2004). Moreover, factor analysis was used to determine the causal effects of the newly developed instrument. The selection of a factor-extraction method in factor analysis Gorsuch (1983) categorises most factor-extraction models into either a common factors model or a components model. The most common components model is principal components analysis (PCA), while the most popular common factor analysis (CFA) models

are principal axis factoring (PAF) and maximum likelihood. Velicer and Jackson (1990) believe that PCA can examine the latent construct and will yield almost identical results. This was done in the current study to reduce items (through a process of iterative analyses) as well as to identify underlying domains in a set of items. According to Gorsuch (1983), the difference in results yielded by PCA and CFA is minimal when there are enough variables in the analysis and when the commonalities are high.

The next point at which informed decision-making is essential is when the researcher has to decide about the number of factors to retain. Criteria are used to decide on the number of factors to retain in factor analysis. Factor extraction in this study aimed to identify the number of latent dimensions needed to account for the common variance among a set of items. For more clarity, it was used to see if the variables within the appraisal tool can be explained in terms of more minor variables referred to as *factors*. The factor analyses thus highlight correspondence between variables and assist in reducing the factors into more linear factors. This aligns with Objective 2, assisting with selecting the best items based on item characteristics. To assess the instrument's construct validity (objectives 3 and 4), this study made use of exploratory factor analyses. Exploratory factor analyses assisted in identifying the constructs of the instrument based on the correlations of the variables or appraisal tool items. This method was seen as a more reliable method to evaluate an instrument (Costello & Osborne, 2005). The internal consistency reliability of the instrument was tested using Cronbach alpha.

5.3.5 Validity and reliability of the instrument

Validity theory was appropriate for this study as the study aims to assess the extent to which validity evidence, based on empirical evidence and theory, supports the interpretation of the instrument score for this measure. Because modern validity theory reorganised classical validity into procedures of validity evidence, this study has collected evidence supporting a valid argument in line with validity theory. According to Cook and Beckman (2006), validity

theory informs the development and use of instruments. The current study has used validity theory to frame all the stages of the development and validation of the instrument by employing procedures of construct validation (Messick, 1989). Validity is the relevance of a measure. A valid instrument measures the concept or constructs it claims to measure (Burns & Grove 2003; LoBiondo-Wood & Haber, 2002; Polit & Beck, 2004; Wilson, 1993). The concept of validity refers to the appropriateness, meaningfulness and usefulness of the specific inferences made from test scores. Construct validity refers to the degree to which an instrument measures the construct under investigation. A construct is an abstraction or concept deliberately invented or constructed by researchers for a scientific purpose (Polit & Beck 2004: 425, 714). Polit and Beck (2004: 425) stated that constructs are explained in terms of other concepts; researchers make predictions about how the target construct will function about other constructs. In this study, construct validity was tested. Various steps in the construction of instruments have been documented to ensure that the instruments are valid construct measures (Walsh & Betz, 2001). These processes included planning, item writing, and piloting the instrument's initial version (Foxcroft & Roodt, 2005). After that, the instrument was administered to a representative sample to analyse the items and assess the validity and, finally, norms were established for the instrument where necessary (Allen & Yen, 1979). The evaluation phase focused on item writing and refinement, item analysis and validation, and instrument construction, emphasising the validation process since this was the main aim of the current study.

5.3.6 Reliability of the instrument

The process of determining the reliability of an instrument is primarily focused on reducing errors in the measurement process. Reliability estimates evaluate the stability of measures, internal consistency of measurement instruments, and reliability of instrument scores. Reliability estimates are used to evaluate (1) the stability of measures administered at different

times to the same individuals or using the same standard (test-retest reliability) or (2) the equivalence of sets of items from the same test (internal consistency) or of different observers scoring a behaviour or event using the same instrument (inter-rater reliability). Reliability coefficients range from 0.00 to 1.00, with higher coefficients indicating higher levels of reliability. Quantitative statistics were used to evaluate validity and reliability by using Cronbach's alpha. Validity is the most vital characteristic to consider when conducting a test or measurement. It is said that reliability is a test of consistency of respondents' responses to all the items in a measure. Reliability refers to how accurate the estimation of the actual score is in a population. Reliability is the degree to which a measuring procedure gives a consistent result (Cohen, 2013). In this study, reliability was computed using internal consistency. This is believed to be the most popular means of estimating reliability and measuring the degree of variation among the scale items.

5.4 Objective 2: Item selection

The data were analysed according to the steps and techniques presented below. These steps and techniques will be discussed in detail in the next section. These analyses involved descriptive and inferential statistics using SPSS 20 (SPSS Inc., 2012) and Microsoft Excel (2010).

Table 5.1: Aims, Steps and Techniques 2-4

Aims	Steps	Techniques
Objective 2: Item selection	**1.** Explored items using internal consistency and item characteristics	**1.** Item-total correlation **2.** Item distributions (item "difficulty")
	2. Examined the factorability of data and applied iterative process of selecting and reassigning items	**1.** KMO measure of sampling adequacy **2.** Bartlett's test of sphericity **3.** Item and scale distributions **4.** Exploratory factor analysis: (principal components analysis) using principal components extraction and direct rotation **5.** Factor stability criteria **6.** Item total correlations and item distribution
	3. Finalised and renamed scales	**1.** Exploratory factors analysis with the final number of items **2.** Named scales using item content and theory
	4. Calculated reliability coefficients and totalled scale scores	**1.** Cronbach's alpha **2.** Summed scores per scale
Objective 3: Construct validity using structural evidence	**1)** Examined the factorability of data at the scale level	**1.** KMO measure of sampling adequacy 2. Bartlett's test of sphericity
	2) Explored the second-order factors at the scale level	**1.** Exploratory factor analysis (common factor analysis) using principal axis factoring extraction and direct rotation
	3) Selected final scales and final second-order factors	**2.** Iterative exploratory factor analysis (common factor analysis) using factor stability criteria
	4) Named the second-order factors	**1.** Theory and literature
Objective 4: Construct validity using external evidence	**1)** Assess external validity evidence: -	

5.4.1 Exploration of items

Item characteristics were explored using three exploratory approaches, namely, item-total correlations as a measure of item discrimination (using the Cronbach's alpha coefficient to calculate and evaluate this), item distribution as a measure of item difficulty, and exploratory factor analysis (EFA) as a measure of item contributions to the proposed scales (Allen & Yen, 1979). An attempt was made to ensure that 1) items that distinguish well between high and low

scorers on a scale (value of > .3) be retained, as well as 2) items with an even distribution of scores. Item discrimination is a measure of how well the item correlates with the scale total. The higher the correlation, the higher the level of discrimination value of the item. It measures whether an item discriminates between those who score high on the scale and those who score low. A good item should discriminate well between the high and low scorers on a scale. Positive item-total correlations indicate strong discriminatory power, while a negative correlation score indicates a lack of discriminatory power (Foxcroft & Roodt, 2009). Item distribution involves an investigation of the shape of the score distribution per item and scale. Even distributions of scores indicate appropriate difficulty levels, meaning that respondents were not likely to respond primarily in the extremes or on the neutral option. However, there will be a spread of answers for the item (Walsh & Beltz, 2001). Item analyses of this nature can be considered one of the essential aspects of test construction. They help select the items that discriminate best between the high and low scorers (Kaplan & Saccuzzo, 2009). Items that did this were retained in the TRSLAT.

Cronbach's alpha coefficient analyses were used to explore the contribution of individual items to the total scores of the scales. Cronbach's alpha coefficients demonstrate to what extent items in a scale are positively related to each other, as well as to the total for that scale, by testing the inter-correlations between items in each of the scales (Allen & Yen, 2002; DeVellis, 2003). Internal consistency is the consistency between the items on a scale. Cook and Beckman (2006) state that if the items are all measuring the same construct, they should be highly correlated. Cronbach's alpha coefficients allow for multi-level responses and take into account the size of the sample and the number of potential responses to an item. Iterative item analysis was conducted to produce Cronbach alphas that are an indication of the internal consistency of the different scales of the instrument to confirm that the items are measuring a similar construct (Mouton & Babbie, 2001; Walsh & Betz, 2001). While it has broadly been accepted that a

Cronbach's alpha of .7 or more indicates good internal consistency (Nunnally, 1978). Cortina (1993) argues that, because the equation includes the number of items squared in the top half of the formula, the number of items in the scale affects the Cronbach's alpha value. She suggests that this be kept in mind when interpreting alpha, especially if further scale modifications are going to be made, which is the case with the TRSLAT. Kline (1999) also warns that alphas have to be interpreted with this in mind and that it has to be interpreted in context and in consultation with the relevant literature. The impact that each item had on the Cronbach's alpha of the scale of the TRSLAT was one of the considerations whether to delete an item or not. Studies warn that a significant alpha does not mean that a test is uni-dimensional (Cortina, 1993; Gliem & Gliem, 2003). Miller (1995) agrees that a uni-dimensional test will be internally consistent, but just because it is internally consistent does not make it uni-dimensional. They recommend that a factor analysis be conducted first to establish whether the scale is uni-dimensional or not. Alpha can then be used as confirmation of the uni-dimensionality or a measure of the strength of the dimension. The current study has made use of Cronbach's alpha in this way.

The alpha coefficient ranges from 0 to 1. The closer the value is to 1, the greater the internal consistency of the items. George and Mallery (2003) recommend the following rule of thumb: > .9 excellent; > .8 good; > 0.7 acceptable; > .6 questionable; > .5 poor, and < .5 unacceptable (p. 231). Gliem and Gliem (2003) conclude that .8 is a reasonable Cronbach's alpha. Anastasi and Urbina (1997) believe that satisfactory Cronbach alphas should range between .8 and .9.

5.4.2 Selection of items

Before the final data set was analysed, it was examined to establish that conditions and design requirements and assumptions had been met for an EFA at an item and scale level. A Kaiser-Meyer Olkin measure of sampling adequacy (KMO) was calculated. The KMO measures the amount of variance in the data that can be explained by the factors (Brace, Kemp & Snelgar,

2003). A KMO of at least .5 is acceptable; up to .7 is mediocre; between .7 and .8 is good; .8 to .9 is outstanding, and higher than .9 is superb (Hair, Black, Babin & Anderson, 2010; Van Heerden & Roodt, 2007). Bartlett's test of sphericity, which tests multicollinearity, was also conducted. This is a measure of the significance of the correlations between at least some of the variables. It tests the null hypothesis that the correlation matrix is not an identity matrix (a matrix where all the correlation coefficients are 1 and the partial correlations are 0; (Hair et al., 2010; DeVellis, 2003). The distribution of scores on each of the items and the scale totals was examined to test whether these scores were normally distributed.

During this phase, EFA procedures were used iteratively to select items. Important theoretical considerations in factor analysis will be discussed first, after which the procedures used in this study will be explained. Factor analysis assesses how the measure is related to criteria derived from an established theory or construct. The steps in the process are specifying a factor-extraction method, deciding on the number of factors to retain, deciding on the rotation method; interpreting the factor matrix; factor model re-specification, and naming the extracted factors (Hair et al., 2010). Factor analysis is typically used to explore an instrument's internal structure, which, according to validity theory, contributes to the structural evidence of the construct validity of an instrument. The theory holds that the internal structure of an instrument must closely resemble the internal structure of the theoretical construct being measured (Messick, 1989; Cook & Beckman, 2006). An EFA can be used to understand the structure of a set of variables, construct an instrument to measure an underlying variable or reduce a dataset (DeVellis, 2003). It is used to identify inter-relationships among items and groups of items that form part of a unified construct. Assumptions are made about these relationships as in confirmatory factor analysis. While confirmatory factor analysis determines the number of factors and which factor each item will load on before the analysis, as a way of confirming or rejecting the theory on which it is based, EFA draws this information from the statistics (De

Vet, Adèr, Terwee & Pouwer, 2005). When an EFA is conducted at an item level, problematic items will either not have salient loadings on any of the factors or will load on the same factor with items that have factor loadings that indicate opposite directions, that is, positive and negative loadings on the same factor (Hair et al., 2010). EFA extraction methods can be divided into either standard factor analysis (CFA) or principal components analysis (PCA) methods (Hair et al., 2010). The decision to use one or the other should be based on the reason for conducting the factor analysis and the amount of prior knowledge about the variance in the observations. PCA is used to summarise the original observations into a minimal number of factors.

In contrast, a CFA identifies the underlying factor that reflects what the observations have in common. The main difference between these two methods lies in the use of the explained versus the unexplained variance. If we know that the specific and error variance represents a small portion of the total variance, PCA is more appropriate. However, if the researcher lacks information about the number of specific and error variances, CFA will be more appropriate, since it will eliminate this variance (Hair et al., 2010). In CFA, factors are estimated based on a mathematical model, whereas in PCA, the data are organised into a set of linear variants (DeVellis, 2003). PCA considers total variance and derives factors that contain unique and error variance. The factors affect the correlations between the items (Reise, Waller & Comrey, 2000). A PCA starts with a correlation matrix of the relationships between all the items. For all the variance of the observed variables to be represented in the factor matrix, unities (1.0s) are inserted on the main diagonal of the correlation matrix (Floyd & Widaman, 1995).

On the other hand, CFA seeks the least number of factors that can account for the expected variance of a set of observed variables. In CFA, the latent (hypothetical) variable is the cause of the item scores. In this case, the factor thus represents the cause, not the effect, of the item scores (DeVellis, 2003). The method searches for joint variations among observed variables

that reflect the variation in fewer unobserved variables. Linear combinations of the observed variables and error terms are produced. Regression modelling techniques are used to test hypotheses producing error terms.

5.5 Objective 3 – Construct validity using structural evidence

The application of CFA in the current study will be discussed under the exploration and selection of the final scales and second-order factors in order to demonstrate how the data were analysed at scale level using this technique. CFA uses different communality estimates to PCA and sometimes yields commonalities out of range (> 1 or < 0). Communalities measure the variance that variables share with the latent variable underlying a set of practical measures. In this case, the variable cannot be included in the analysis. The factor model produced by CFA also does not yield a single, unique solution for any individual respondents. This is due to factor indeterminacy in CFA, which refers to the fact that the factors are not uniquely constructed. The indeterminate nature of the scores makes it possible to compute infinite scores for the same individual, which would be consistent with the pattern coefficients (Mulaik & McDonald, 1978). Using the PCA extraction method for this study, EFA explored the number of factors represented by the items. It was also used to explore the contribution of items to the scales and reduce the number of items. The items to represent each of the scales were selected according to the factor-loading patterns. Factor analysis can be used in this way to establish whether a set of items are unidimensional (Allen & Yen, 1979). In factor analysis, eigenvalues, scree plots and residuals are used to decide on the number of factors to specify and retain. Conway and Huffcutt (2003) recommend that more than one criterion be used to determine how many factors to extract (Conway & Huffcutt, 2003). Eigenvalues represent the substantive importance of a factor. Eigenvalues are a measure of the condensed variance in a correlation matrix. Various criteria have been recommended for determining whether or not to retain a factor (Velicer & Jackson, 1990). Kaiser (1960) recommends that factors with eigenvalues

greater than one be retained, whereas Jolliffe (1972, 1986) recommends .70. Factors that affect which criteria to apply are the number of variables, the sample size and the average commonalities. When communalities are low, the sample size is small, and few variables are loading on each factor, the more stringent criterion should be applied. A scree plot is a graphic representation of each eigenvalue against the factor associated with the specific variable. This demonstrates the relative importance of each factor. The scree plot is also affected by sample size. Stevens (2002) recommends that scree plots be used for samples of more than 200. Regarding residuals analysis, fewer non-redundant residuals with absolute values more than .5 indicate that the model is a good fit, which implies that the correct number of factors have been specified. The residuals are the difference between the observed correlations and the correlations predicted by the model. The rule of thumb is that less than 50% non-redundant residuals with absolute values more than .5 is an indication of a good fit (Floyd & Widaman, 1995).

The theoretical underpinnings of the constructs that are being measured also contribute to the decision-making about the number of factors to retain (Laher, 2010; Preacher, Zhang, Kim & Mels, 2013). The residuals were first examined to judge if they meet the criterion of less than 50% non-redundant residuals with absolute values greater than .5. If the percentage of non-redundant residuals is more than 50%, scree plots and eigenvalues would be used to determine how many factors to specify. During this process, the eigenvalue more-than-one rule of thumb was used. The patterns of salient-factor loadings also assisted in determining how many factors to specify in subsequent iterative analyses. The interpretability of the factor structure was the final consideration in deciding on the number of factors to retain. Direct rotations were used as a rotation method. Reise, Waller and Comrey (2000) What is considered is that oblique rotation is a more realistic modelling of psychological phenomena as it allows for factors to be correlated (Reise, Waller & Comrey, 2000). Generally, rotation methods are employed to

achieve more interpretable and theoretically meaningful solutions. Rotation involves the turning of the reference axes about the origin. The rotation's purpose is to redistribute the variance from earlier factors to later ones since the first factor accounts for most of the variance, with the rest based on the residual variance.

In interpreting the factor matrix and the decision-making about re-specification, there are guidelines regarding the factor loadings of items (the measure) on the factor. These guidelines are used to select and/or reassign items and play a role in deciding the final items. The guidelines are that 1) a factor is only stable if it includes sufficient significant factor loadings; 2) the researcher can give a name to the factor; and 3) the commonalities are sufficient (Hair et al., 2010). If an interpretable solution is reached, decisions must be made about whether any variables should be deleted, whether the correct number of factors have been specified, and if the correct rotation method was employed. Re-specification is then based on these decisions. The factor loading refers to interpreting the role that each variable plays in defining each factor (DeVellis, 2003). It is the correlation of each variable with the factor. Therefore, the higher the factor loading, the better the variable representation of the factor. Communalities refer to the variance that the variables share with the latent variable. The following procedures guided the item selection and selection of the final scales. Items with loadings of less than .30 on any of the factors were deleted (Hair et al., 2010). A variable with too many high factor loadings on different factors should be deleted and a variable that does not have a salient factor loading on any factors. Variables that have salient factor loadings on more than one of the factors can be problematic when the factors are uncorrelated.

When the factors are correlated, these cross-loadings are not unexpected, though there should be a distinct difference between the loadings. Anderson et al. (2004) argue that the item should be retained if the difference between the loadings is at least .2. However, in addition to using factor stability criteria to decide about deleting an item, the researcher also examined the

distribution of scores on the items and the item's contribution to the reliability of the scale. Items were reassigned to different scales based on an examination of their factor solutions. When items loaded on a factor different from the proposed scale, they were moved to the other scale if related to their content and the literature. In addition, the item analysis results (mainly item total correlations or item discrimination using a discrimination value of 0.3) and internal consistency calculations were used. As a final step, the content of the reassigned items was examined to decide if they had anything in common with the other items in the scale. Items that demonstrated a more even distribution of scores or higher discrimination values were more likely to be retained than items that were positively correlated with the scale totals.

5.5.1 Finalisation and naming of scales

A final PCA at item level on the selected and reassigned items was conducted in finalising the scales. This was done to accept the final factor structure of the remaining items in each of the system levels and to assist with naming the factors (now the scales). Again, the direct oblimin rotation method was used; the number of factors was specified based on the iterations conducted. Again, factor stability criteria were used to assess the factor solution at this level of analysis. Using the content of the items as well as theory, the scales were renamed. Where items from different scales were reassigned and combined, scales were examined for standard content used to inform the naming of the scales; the content of the items with the highest loadings and theory was used to guide this process.

5.5.2 Reliability of scale scores

Cronbach alphas were calculated for the final scales as an indication of their psychometric property. Based on this information, a decision was made that the scores on the items per scale could be summed up to produce the scale scores. As mentioned, construct validity procedures include identifying the internal patterns relating to the construct to be measured by the instrument (Messick, 1989; Cook & Beckman, 2006). In instrument development, an EFA is

often used as a construct-validity procedure to support structural evidence. While many researchers regard confirmatory factor analysis as more appropriate at the level of theory testing, according to Henson and Roberts (2006), confirmatory factor analysis is only employed when the rationale regarding what factors should be represented and what variables should define each factor is sufficiently strong. EFA was therefore regarded as the appropriate technique to use for this aim of this study because, although there was some conceptualisation of what factors should be present, there were no definite theoretical expectations regarding the structure of the data, as this has not been tested previously. Exploratory factor analysis using CFA was employed to identify the latent variable that underlies the responses to the manifest variables, in this case, the scales. CFA is the appropriate method for this study since it can identify the common underlying factors among the variables (Hair et al., 2010). The distribution of total scores on each of the scales was examined for multivariate normality. Principal axis factoring (PAF) was employed as the standard factor analysis extraction method because most scales' scores were not normally distributed. PAF does not require the assumption of multivariate normality (Floyd & Widaman, 1995). It is observed that the violation of normality is only problematic when other assumptions, such as sample size and independence of variants and errors, are also violated (Hu, Bentler & Kano, 1992). The data should also be examined for factorability and discriminatory power. All these considerations formed part of the current study and have been considered in the choice of techniques for analysing the data. Since the second-order factors were expected to be correlated, direct oblimin rotations were employed. Factor stability criteria were again used to evaluate these results.

Residuals were then examined to establish whether the correct number of factors was specified. If the residuals indicated that the model was not a good fit, scree plots and eigenvalues were examined to establish how many factors should have been specified. Subsequent iterative

analyses were conducted until an acceptable pattern of loadings was achieved. In interpreting the results of this analysis, the content of the scales and information about the coding of items was used. After deleting some scales, another CFA was conducted without these scales.

5.6 Ethical Considerations

Permission to conduct the study was obtained from the University of the Western Cape Biomedical Research Ethics committee (BM18/1/10). Ethical issues pertinent to the acceptability and applicability of the instrument are informed consent and a guarantee of privacy. A guarantee of privacy entails the principles of anonymity and confidentiality. Ethical acceptability refers to the adherence by the researcher to the professional, legal and social obligations to the respondents so that the rights of the respondents are protected. Thus, ethical acceptability might have enhanced the validity and reliability of the study. The participants were informed verbally and in writing that their participation was voluntary, that they would not be compromised should they not consent to participate in the study and that the interviews would be recorded. The participants were informed of the aims and objectives of the study, ethical criteria and what procedures would be followed. Participants who gave consent were given an information sheet about the study (Appendix A). Written consent and focus group confidentiality binding forms were gained before the focus-group discussions (Appendix B). After that, participants were given a schedule to indicate where and when the focus-group discussions would occur.

5.7 Chapter conclusion

This chapter outlined the methodological procedures used in this study. The sections were discussed in line with the aims of the study. The next chapter will present the findings of the analyses presented above and discuss these findings. These will be discussed with relevant literature presented in Chapter 2 and the theory presented in Chapter 3.

CHAPTER SIX

PILOT STUDY/ PHASE

6.1. Introduction

The research team conducted the pilot study of the Therapeutic Recreation Stress Leisure Appraisal Tool (TRSLAT) on 10 May 2018 in Simon's Town at a naval base. The pilot-testing phase aimed to determine if the developed appraisal tool was interpreted correctly and contained relevant questions.

The pilot study was conducted to reap the advantages of pilot studies, including the following: it can warn where the primary research project can fail. It indicates where research protocols might not be followed. The pilot study can also identify practical problems of the research procedure. It indicates whether the proposed methods or instruments are inappropriate or too complicated. Some of the advantage points listed above are relevant to the pilot study of the current research project.

A pilot study is a mini-version of a full-scale study or a trial run in preparation for the complete study. The latter is also called a *feasibility study*. It can also be a specific pre-testing of research instruments, including questionnaires or interview schedules (Compare, Polit, et al. & Baker, 2002; Van Teijlingen & Hundley, 2001.) The main aim of the pilot study was thus to determine whether the researcher had a clear vision of the research topic and questions, the techniques and methods, which was applied, and what the research schedule would look like. It could still be adapted and modified accordingly (Blaxter, Hughes & Tight, 1996). The pilot study in the current research can be defined as mainly a try-out of research techniques and methods and questionnaires and interviews.

The pilot study aimed to examine data-collection instruments that will be used in the primary data collection. Any data-collection tools must have a pilot study "to iron out any problems of

overlap of categories" (Cohen et al, 2005, p. 130). In other words, Drever (1995, p. 56) points out that the researcher in the pilot study is trying to do two things: "first, to give the interview a trial run under realistic conditions; second, to get as much information as possible from the other person about how they interpret and react to the researcher's questions."

6.2. Describing the samples

The target group consisted of both male and female participants (*n*=50) who completed the questionnaires. The target group was selected to be a part of the pilot study using purposeful sampling.

Five focus groups of ten members each were purposively selected to conduct the interviews. All participants gave consent to be in the focus groups. Focus-group discussions were recorded and transcribed verbatim.

6.3. Data-collection procedure

Participants were asked to gather at a central venue at a specified time suitable to all. Participants were given the study information and an explanation of the aim of the pilot study. Information forms were handed out. All participants had to give consent before the pilot study would commence. All risks and that all conversations would be recorded.

6.4. Observation methods

The researcher made use of direct and indirect observation methods during the completion of the questionnaires. The researcher recorded all observations in his notebook and referred to the notes during the focus-group discussions. Participants were briefed on their role in the pilot study to provide vital information to improve the questionnaire and the focus-group schedule for the study. Participants were instructed to use a think-aloud method while completing the process, and the researcher could observe body language and facial expressions during the process. All data gathered were entered into a raw data sheet for the questionnaires and the

focus-group discussions were recorded and downloaded onto the researcher's personal computer with password protection.

6.5. Results

The feedback from the participants with regards to the questionnaire was as follows:

In general, respondents found the questionnaire challenging to answer as they saw the questionnaire as stressful. They found the font size acceptable and were able to ask about words they did not understand. The respondents were satisfied with the way the research study was explained to them. The data-collection procedure was clear to them, and the researcher was able to provide ongoing instruction. The respondents felt that the comprehension of the survey was problematic and that the level of understanding also needed to be taken into consideration. The respondents indicated that at the beginning their needs to be a short introduction describing the rating scale. The respondents also indicated that the researcher considers a ticking-the-box approach or completing each scale by circling the number (3, 2, 1, or 0) in the column that best describes the participant's response to each statement. The respondents also indicated that questions need to be more straightforward and that the researcher needs to restructure some questions.

In terms of the technical presentation of the questionnaire, respondents were satisfied with the layout. The respondents felt that the time required for the completion of the questionnaire was too long. The items were too long and were not easy to complete. It took one hour for the respondents to complete the TRSLAT questionnaire. Regarding the formulation of questions, the respondents stated that there appeared to be a repetition of questions that confused them. Some respondents did not understand the questions, hence the additional comments by the respondents. The Likert scale would have been better, using numbers, for example, 0-3. The

respondents believed that a numbered scale would have given them more options when indicating their preference or perception of the items asked.

The respondents hoped that any information gathered from this research would help them cope better during stressful situations.

6.6. Focus-group discussions

After completing the questionnaire, the researcher held ten-minute discussions with the respondents, verbalising the following aspects. The respondents indicated that they preferred a scale of 0 to 3, which required them only to indicate their preferred choice. They found the concept of the rating scale difficult to interpret; they found it challenging to decide on which side of the scale they thought they were at and, when they eventually decided, they found it difficult to decide the rate of the scale.

The pilot study for this PhD thesis research lasted four weeks and was conducted through focus-group discussions. The focus-group discussions lasted for nearly an hour. The focus-group discussions were conducted immediately after the completion of the questionnaire on the same day. All focus-groups discussions were audio-recorded. Focus groups were held after an informed-consent form from the participants had been obtained, which covered issues such as confidentiality and the right to withdraw. The respondents were asked to reflect on the questionnaire and then offered their opinions on the questions asked. The focus groups were held in a conference room in the central administration buildings in the Dockyard. The focus-group discussions lasted approximately two hours and were held mid-morning. Ten members of five focus-group discussions attended the sessions.

6.7. Questionnaire cover

The instructions on the cover page were reduced to a minimum to include only the purpose of the data collection, ethical concerns, and basic instructions. The respondents felt that the cover

page contained too much information. This should be shortened and made more accessible, since members were unlikely to read through so much in instructions and background information. Respondents felt that some of the questions were too similar and found this perceived repetitiveness annoying, again warning of the chance that they might stop reading the items and answer randomly, thus making their responses invalid. Where items were too similar, one of the items was removed, the participants felt that the questionnaire was too vague and that questions needed to be more descriptive. They suggested questions to circle since this would be the fastest way to respond to the items. The format was changed as suggested. They also suggested that more explicit reference should be made to circling the items mentioned above when the key is explained at the beginning of the instrument.

6.8. Questionnaire composition

A draft questionnaire was designed based on the focus-group discussions and the literature. There were many factors and attitudes deemed necessary in the study on stress in the SA Navy. These were collated in a format that incorporated Likert scored statements and questions requiring responses to be circled. A pilot sample of 50 navy members was obtained from several sources, comprising varying ranks, musterings and gender. Both written and verbal comments were requested on the content, style and questioning format. Responses were studied regarding the inclusion of items into the final questionnaire, with attention being paid to any questions considered confusing or repetitive, in addition to aspects not covered or considered not to be relevant or appropriate. The participants suggested that they are reminded regularly throughout the instrument that they must think back over the last 12 months when responding to a question. This reminder was then repeated at the beginning of each scale.

The questionnaire (Figure 1) can be divided into two parts. Part: 1- Baseline Demographics and Military Characteristics. This section requested responses on age, rank, sex, length of time spent in the navy and marital and family status. This section consisted of 33 naval and everyday

statements, comprising personal stress, occupational stress, wellness, and operational deployment. These items are based upon a four-point Likert scale which includes Almost Always (3) = Sometimes (2) = Rarely (1) =Never (0). These items were included to ascertain attitudes towards stress and identify the influences affecting navy personnel. Eight questions then enquire about stress-coping abilities and behaviour, whether individuals know anyone who has experienced stress-related difficulties during their time in the navy. Part 2: Leisure Behaviour Assessment comprises social activities, passive activities, physical activities, and outdoor activities. This section refers to leisure behaviour, and what types of measurements navy personnel put into alleviating stress. Respondents were requested to circle each statement based upon the extent of their leisure output.

The pilot study led to the advice that an excessively long questionnaire would reduce the response rate and potentially the validity of the responses, compared with a shorter survey, seen to be relevant to the target population.

6.9. Reflections on the pilot study

Once the instrument was adapted based on the input from the participants as described above, the final assessment tool where the applied questionnaire was adjusted (changed/deleted/added/replaced). The final assessment tool is based on the findings of the pilot study. No significant issues arose during the pilot study. The rest of this chapter reports the results of the analyses done on the data yielded.

The researcher changed the respondent's gender, age, academic qualifications, professional qualifications and experience in the military environment. Instead of having open-ended questions, the researcher implemented the four-point Likert scale. Each participant had to circle the (3, 2, 1, or 0) in the column that best describes their response to each statement. The literature repeatedly states that the ideal number of response categories is between four and

seven (Lozano, Garcia-Cueto & Muñiz, 2008; Preston & Colman, 2000; Weng, 2004). The instrument for the study thus included four response categories, namely, "Almost Always", "Sometimes", "Rarely", and "Never".

6.11. Personal stress

Relying on friends and family to help members cope with stressful aspects of work-life was described as most important in feeling supported. Many of the respondents felt their friends and families were very helpful when coping with difficult situations that they had someone to talk to about work. The first question concerns which the respondents are most likely to be approached for support with any stress problems they may have (i.e. a friend in a unit, a friend outside the navy, non-commissioned officer (NCO), officer, padre, partner, family member, or no-one). Moreover, respondents were asked to circle any options that applied to them.

The following questions referred to perceived confidentiality and its effect upon their career if they sought help for stress-related problems within the navy. This section concerns stresses experienced and are based upon free response. Respondents are asked whether any significant events have significantly affected them over the last 12 months and, if so, to describe them. Respondents were then asked to describe the three most difficult things they had had to deal with during their naval career, stating when they occurred and what circumstances. Space was then provided for respondents to state why they found them difficult and their effects on them. This section is vital, as it allows individuals to state what they perceive to be stressors, rather than relying on pre-conceived ideas of researchers and past studies. Finally, a free-response section was provided for respondents to add anything concerning stress they have experienced or how they believe the navy should be dealing with stress. Military members experience personal stress due to their work circumstances on top of their work stress (Young, 2013).

Based on the focus-group discussions conducted, most participants indicated that financial stress, emotional stress, problems with interpersonal relationships, death in the family, and illness at home contributed to the stress of military members. Personal stressors could distract both soldiers and leaders from performing their work optimally (Dolan & Ender, 2008). Personal stressors that should thus be considered for inclusion in the appraisal tool for naval members are financial stress, emotional stress, interpersonal relationships, the death of family members and illness at home.

Relying on friends and family to help members cope with stressful aspects of work-life was described as most important in feeling supported. Many of the participants felt their friends and families were very helpful in coping with difficult situations.

"*Emotional support is at home*", said Dave, one of the participants, "*I rarely hang out with my work colleagues*."

"*My wife is my support structure. Whenever I need to vent from a hard day at the office, she is there for me, my greatest asset in this difficult times*".

"*My family keeps me grounded in these difficult times, without them I would be nothing, they are my biggest support system*".

Many of the participants spoke about accepting their situation, since there was nothing they could do. Some said that stress is the order of the day when you put on that uniform. As one participant said, *"I do what I am told; I do my job to the best of my ability; after my shift is finish I go to bed*".

6.12. Occupational stress

A unique aspect of military life is the briefness of job postings; the average length in any one job is three years. This posed a problem for many of the respondents, since there is a sizeable

unknown component to where they will be working in the future, shore posting vs being on board a ship. Support was described as very important in low-control situations. Support provided an avenue to release stress by talking about their situation with co-workers who understand it as a navy member. It was also expressed that the rank structure inhibited their support due to the perceived competition among individuals in the same rank and an unwritten rule that ranks should not mix. Many of the respondents felt there was so much work to be done that they were working longer hours or sacrificing their time to complete their work. Some individuals felt there was a shortage of colleagues in their workplace. In order to get the job done, the respondents felt they had little choice but to work longer hours.

Many occupational stressors in the military environment, such as work pace, job demands, control, supervision, conditions, long working hours, and shift work, are comparable to many other workplace environments (Bogg & Cooper, 1995). Participants highlighted that occupational stress was caused by a lack of achieving personal goals, poor communication with superiors, family responsibilities beyond their work, marital problems and personal concerns, a lack of job advancement, educational development, alcohol abuse and a lack of life interest. Family responsibilities, marital problems and personal concerns could be related to personal stressors that affect their work performance. Based on the findings, the stressors experienced by participants were also related to operational activities and working conditions. Most of the participants in this study felt that the margin of error in the military is “zero tolerance”, allowing for inhumane treatment by supervisors in some cases.

This confirmed that unfair treatment by supervisors and verbal assaults by seniors was the order of the day. The navy is no different from other military forces around the world. The findings corroborate previous findings indicating that, although the military members are subject to occupational stressors, they do not allow it to impact their ability to do their work (Philot, 2006).

Post-traumatic stress disorder (PTSD) and acute stress disorder are the two most common psychological or operational stress disorders soldiers face (McLauchlin, 2006). Being stigmatised, revealing any of these mental conditions or revealing having personal and occupational problems cannot only be a career stopper but at times can also be associated with cowardice or malingering (Philot, 2006). Findings thus reiterate that military staff members who are troubled very seldom call for help and are instead encouraged to fall back on the solid drinking culture of the army (Philot, 2006).

The findings linked to occupational stressors should be considered essential both for the individual and the manager (commanders). To minimise stress, it is necessary to identify stressors first. Stress is not the same for everybody, as each individual responds to stress differently (Tabasi, 2002). Occupational stressors are categorised into operational and non-operational stressors (Young, 2013). The study findings align with the literature (Young, 2013; Bartone, 2006; Philpot, 2006), indicating the following operational stressors seem worthy of inclusion in the appraisal tool: workplace, job demands, control, supervision, long working hours and shift work. Other operational stressors evident from the literature include danger in the military workplace and being responsible for the lives of others (Bartone, 2006; Philpot, 2006; Young, 2013). The inhumane treatment by supervisors (unfair treatment and verbal assaults) and stigmatisation associated with revealing mental status affect how members manage their stress levels (Paton, 2007; Bartone, 2006). Because of this, military leaders and members must incorporate stress management programmes into their day-to-day routines of staff. According to research conducted, stress must be imposed to make a stimulus. Otherwise, life may be dull and unmotivating (Bartone, 2006). Therefore, the navy needs to "train the way they fight" to ensure that the staff is combat-ready, enabling them to operate in the combat environment in order for the experience to be less stressful.

It is worthy to note that the findings from the interviews revealed that the following non-operational stressors impact members: such as poor planning, communication, management styles, personal stressors and interpersonal difficulties at work, deployment opportunities, and perceived or actual demands of the work environment. The critical point is to note that stress differs from individual to individual. Well-managed stress makes people productive and makes life challenging (Carlisle, 2001). In conclusion, the theme of stress in the military highlighted the need to ensure enough support structures to combat stress.

6.13. Wellness

In addition to the job characteristics, the respondents also described their behaviours and personal strategies in the workplace. When workplace situations were described as very stressful, and there was little that they could do, members developed and focused on personal behaviours to distract themselves. Many respondents described using unhealthy coping strategies (i.e. substance use, overeating, and engaging in video/gaming). Participants described a lack of sleep due to their work schedules. Naval members expect to be deployed, yet the working schedule at sea is such that sleep is often interrupted and/or they cannot get enough sleep at any one time. Working at sea has the added challenge of the place where participants both work and rest. With heavy work demands, sleep deprivation was a factor mentioned by all respondents. This affected lifestyle behaviour in negative ways, such as doing too little exercise and having a lower tolerance for stress.

Physical training, sport and recreation (PTSR) form an integral part of military members' physical and psychological preparation and conditioning. Adequate physical condition and skills are necessary for soldiers to perform their primary function, namely, to defend and protect the RSA, its territorial integrity and its people under the Constitution and the principles of international law regulations for the use of force (Department of Defence Instruction, 2004). Military members always need to be combat-ready while remaining normal and socially

adaptive in the military context. The opportunity to de-stress is given to military members in the form of sport and recreation. By engaging in sport and recreation, military members are focused on attaining socially desirable attitudes, habits, and values. The navy members participate in the Wednesday afternoon sports parade which consists of inter-unit and local league competitions. Currently, there are 27 sporting codes in which members participate. It was deduced that sport and recreation activities offered to staff members were naturally more competitive. According to Trenberth (2005), a growing body of knowledge points to the importance of leisure as a way of coping with stress. Iwasaki (as quoted by Caldwell, 2005, p. 11) stated that "leisure can be an important buffer against stress to maintain good health."

The role of leisure in coping with stress was found to be that leisure-related coping outcomes significantly predicted positive and long-term coping outcomes, leading to mental health and psychological well-being (Trenberth, 2005). Leisure is used both as a measure of coping with stress and as part of the therapy. The study conducted by Iwasaki (2003) found that people often intentionally create a leisure space to cope with stress, using it as a stress-coping technique to find balance in life. Prescribed leisure activities and other psychological programmes can play a vital role in dealing with traumatic, stressful events (Carruthers & Hood, 2004). Leisure is a comprehensive coping resource, building the capacity to experience pleasure in life and creating emotional health, thus ensuring optimal psychological functioning (Carruthers & Hood, 2004; Hutchinson, Bland & Kleiber, 2008). Enough evidence is found in the literature to support the inclusion of sport and leisure as a way of coping with stress, making it natural to include it as a goal in a therapeutic recreation programme addressing stress and providing coping skills. It was found that military members mainly took part in sport and recreational activities for their health and well-being. Interactions in this study with staff members confirmed that sport and recreation programmes formed a significant part of their lives, despite potential barriers preventing them from participating. It was also found that most

sports programmes were designed to help personnel stay fit, thereby contributing to combat readiness. According to Hayward (2009), sport and recreation are used as a vehicle to enhance the general sense of well-being among soldiers.

Based on the outcomes of the focus-group discussion, it was believed that members engaged in sport or recreation activities in order to relieve stress. By living healthy lifestyles, naval members felt that it might serve to protect them against stress. It was thus deduced that sport and recreation activities in the navy were offered to the larger military community, promoting a mass participation culture. For example, the fleet and inter-unit sports days allowed members the opportunity to rejuvenate mentally and physically. It confirmed that recreation programmes in the military must and should be aimed at providing varied programmes of wholesome, constructive off-duty recreation and leisure opportunities that promote the mental, physical and social well-being of military staff (Temple & Ogilvie, 2006). Staff members engaged in these activities daily, indicating that they had regular access to activities and programmes being offered (Mull et al., 1997). Most of the participants in this study believed sport and recreation activities required some level of instruction and that no level of instruction would lead to members jumping ship. Members in the navy participate in voluntarily sport and recreation programmes. The objective of these programmes is to develop a better understanding of sport and recreation, thus fostering a culture of lifelong participation. The military environment, either operational or non-operational, cannot be changed. Soldiers need to adapt and learn to cope with the stressors in the environment to which they are subjected (Bartone, 2006). Therefore, soldiers must be healthy and need to maintain this state of health throughout their military careers. Based on the researcher's personal experience and observation, being part of the navy, facilities and space onboard ships were very limited and sport and recreation facilities were therefore not a major concern or interest in the workplace environment. The researcher postulated that the navy does provide activities for staff members that contribute towards stress

reduction. All naval members (including the physically disabled) shall take responsibility for their physical fitness and health by maintaining a lifestyle that promotes optimal health and physical readiness (Department of Defence Instruction, 2000).

The potential for sport and recreation interventions would be recommended to reduce stress among military staff. Based on this study, sport and recreation programmes can thus play a unique role in maintaining and enhancing the quality of life of military members. Quality of life has thus become a focus for future research, receiving a significant amount of attention within the health and human-service fields internationally (Janssen, 2004). It was also postulated that engaging in structured activities enhanced the perceived quality of a sailor's life. The results confirmed that naval members used sport and recreation activities to cope with stress. It was found that sedentary recreation activities, such as watching television or films, listening to music and sleeping, were more frequently used on board a ship than active recreation activities.

The supporting literature confirmed that naval members with lower stress levels were intrinsically motivated to participate in sport and recreation activities and were satisfied with their physical-activity lifestyle (Daly & Kunstler, 2006; Stumbo & Peterson, 1998). Frequent participation in sport and recreation activities fosters lifelong leisure and may contribute towards stress reduction (Miller, Schleien & Lausier, 2009; Daly & Kunstler, 2006). In response to the above findings, it was found that the respondents enjoyed both individual and team sports activities. In conclusion, the results confirmed that sport and recreation programmes formed a major part of navy members' lives and they engaged in these activities daily. Leisure and sport and recreation activities could be used to cope with stress. Therefore, it was included as a part of the appraisal tool. The leisure behaviour assessment as part of the appraisal tool assessed participants' leisure behaviour and sport and recreation pursuits and included questions focused on social activities, passive activities, physical activities, and

outdoor activities. The following leisure determinants were assessed: leisure time, leisure satisfaction, leisure participation, barriers to participation, access to leisure opportunities, personal factors that affect leisure, health factors and questions related to financial factors that affect leisure behaviour, and leisure as a stress-coping measure.

6.14. Operational deployment

It should be noted here that external deployment forms an integral part of the military way of life. Sailors are faced with real physical and emotional dangers and adverse experiences during deployments, which contribute to emotional stress. Operational deployment has been identified as a theme in the present study. It was postulated in this study that deployment had an adverse effect on sailors. The deployment was recognised as a workload stressor in the military, irrespective of the number of deployments, leaving a soldier feeling powerless, afflicted by long working hours, and uncertain about the duration and location of the deployments. For example, long working hours, feelings of powerlessness, and ambiguity were some of the stressors military members experienced. The navy continuously deploys in missions involving anti-piracy activities, disaster relief preparations and foreign peace-keeping. Peacekeeping and peace-making roles may be more stressful than traditional combat roles because the range of traumatic stimuli is potentially more diverse. Sailors often are deployed to remote locations, far away from home, separated from their families, frequently without methods for communicating. Modern communications technology enables more accessible contact between deployed personnel and their families and facilitates greater sharing of experiences.

Operational deployment has been identified as a theme in the present study. The deployment was recognised as a workload stressor in the military, irrespective of the number of deployments, leaving a soldier feeling powerless, afflicted by long working hours and uncertain as to the duration and location of the deployments (Bartone, 2006). According to Maclean (1999), soldiers face real physical and emotional dangers and adverse experiences during

deployments, which contribute to emotional stress. It was postulated in this study that deployment had an adverse effect on sailors. For example, long working hours, feelings of powerlessness, and ambiguity were some of the stressors military members experienced. The navy continuously deploys in missions involving anti-piracy activities, disaster relief preparations and foreign peace-keeping (Maclean, 1999). Peacekeeping and peace-making roles may be more stressful than traditional combat roles because the range of traumatic stimuli is potentially more diverse (Murphy, 2010). Sailors often are deployed to remote locations, far away from home, separated from their families, frequently without methods for communicating. Modern communications technology enables more accessible contact between deployed personnel and their families and facilitates greater sharing of experiences.

In some cases, worrying about one's family usually complicates the overall perceived stress level and can distract sailors from their daily work routines. Thus, the present study found that the deployed member was always informed about the family's experiences at home. If the family was struggling with social issues, it could traumatise the deployed member who cannot assist in alleviating pressure at home, which makes them feel helpless.

Modern military missions frequently involve long periods of "staying in one place", often without significant work to do (Bartone, 2006). As the weeks and months tick by, soldiers start to get bored. This can be countered by providing more entertainment and sports activities for sailors. However, boredom seems to result from a lack of meaningful work or constructive activities in which to engage. Daily tasks often take on a repetitive dullness, with a sense that nothing important is being accomplished. On a psychological and social level, peacekeeping soldiers face long periods of separation from family and friends. Unexpected emotions such as fear, anger, and depression are common. Bartone (2006) describes stress within the military context as originating from forces in the environment. These forces resulted in a response that could impact negatively the individual. A conceptual model of the stressors inherent in

deployments was developed by Lamerson and Kelloway (1996), which suggested that both occupational stresses (for example, long working hours, ambiguity and powerlessness), as well as personal stressors (for example, increased levels of marital, family and financial stress), play an important role in the development of stress that affects the relationship between exposure to the stressor and the subsequent experience of stress. The rationale behind this is that there may be stressors unique to the South African experience. Furthermore, to develop effective stress prevention programmes and maintain morale and mental health among soldiers and their families, it is necessary to develop a good understanding of the nature and the type of stressors present in the various phases of deployment.

This study reported that a lack of job advancement opportunities and a loss of educational opportunities was also a major concern for deployed military members. As stated by, being deployed also has financial implications in many instances. One might find that financial gain was one of the primary motivators for many sailors (Bartone, 1998). Sailors have a preconceived idea of how much money they would get during deployment. Nonetheless, after deductions such as taxation, the value of their total money could decrease, leading to stress.

The pilot study found that co-worker support was vital during deployments, when contact with family and friends outside of work was difficult to maintain due to the secrecy of deployments and technical challenges on board ships. The working environment on board ships were described differently than most other occupations, making it hard for family and friends to understand. Deployment was thus seen as a military stressor. Findings revealed that sailors must have a complete and clear idea of the mission expected outcomes if they wish to have a solid motivation. Questions related to operational deployment and stress will be used to assess how members deal with being deployed, the impact of being away from their families, and how deployment delays promotion and education. Questions regarding the feelings of loneliness and boredom were included as themes that became evident as stress.

After the pilot study was completed, the researcher had the opportunity to transcribe verbatim, manage and code the data. The lessons in transcribing and managing the data enabled the researcher to know how to summarise the transcripts and identify codes. Without a doubt, the significance of the pilot study assisted the researcher to refine strategies before embarking on the primary study phase. The pilot study helped the researcher to improve the interview guide. Additionally, some questions were rephrased and sequentially aligned.

6.15. Chapter conclusion

This chapter aimed to establish the stress levels navy members were experiencing by exploring the kinds of coping strategies they could apply in solving their problems. Data related to factors affecting employee stress were analysed using Creswell's (2009) six-stage process for analysing qualitative data. The data were reviewed, generating primary themes and interconnected subthemes. The literature on TR in military settings is not extensive and is mainly based on information from programmes. Research is needed in the area of TR in military settings and specifically in the African context. Results revealed that navy members' stress perceptions mainly were related to occupational and personal stressors. Support played a significant role in elevating stress in the workplace. The deployment was experienced by military members as an occupational stressor and was a stressful experience for military staff. Stress concerning leisure behaviour revealed that navy members were intrinsically motivated to engage in wellness activities, thus contributing to lower stress levels.

CHAPTER 7

RESULTS OF THE EVALUATION PHASE

7.1 Introduction

In this chapter, the quantitative research design of the study is discussed. The Therapeutic Recreation Stress Leisure Appraisal Tool (TRSLAT) evaluation phase was conducted at a military establishment in Simon's Town. The phase aimed to evaluate the reliability and validity of the appraisal tool. The questionnaire was filled out on days, as not to interfere with the daily routine of the sailors. The evaluation protocol included a presentation letter containing information about the goals and implications of the present study, assuring respondents that their participation was voluntary and confidential. The evaluation procedures give the professional the confidence to investigate the procedures' results (Dunn, 1987). The military members were free to decide whether or not they wanted to be part of the study. Further, they were not offered any financial incentive or material prize for their participation.

This section reported on an exploratory factor analysis (EFA) of all the items, including the factorability, reliability and other characteristics of the items. This section ended with the reporting of the reliability coefficients of the revised scales.

7.2 Exploratory factor analysis for the TRSLAT

The following table summarises the decisions made regarding the number of factors extracted in the PCAs. The summary includes the items loaded for factor analysis. The potential factors identified, the items removed, the component matrix, KMO and Bartlett test, and the Cronbach's alpha. Table 7.1 (p. 135) illustrates the summary table for factor analysis in the current study.

Table: 7.1 Summary of factor analysis for TRLSAT

Items	Potential Factors	Factor Loading	KMO Value	Cronbach Alpha
A1	Personal responsibilities (item)	N/A (removed)	N/A	N/A
A2	**Personal stress (factor)**	0,630	0,776	0,781
A3		0,708		
A4		0,939		
A5		0,749		
A6		0,763		
B9	Workload/ Responsibilities(Item)	N/A (removed)	N/A	N/A
B10	Meeting Deadlines (Item)	N/A (removed)	N/A	N/A
B7	**Occupational stress (factor)**	0,677	0,858	0,843
B8		0,578		
B11		0,589		
B12		0,582		
B13		0,757		
B14		0,747		
B15		0,652		
B16		0,677		
B17		0,738		
B18	Delays in not getting promoted (Item)	N/A (removed)	N/A	N/A
C19	**Wellness (factor)**	0,669	0,849	0,833
C20		0,756		
C21		0,78		
C22		0,816		
C23		0,726		
C24		0,597		
C25		0,598		
D26	Loneliness when away from loved ones (Item)	N/A (removed)	N/A	N/A
D27	**Operational deployment (factor)**	0,622	0,828	0,816
D28		0,568		
D29		0,662		
D30		0,609		
D31		0,824		
D32		0,815		
D33		0,736		
PS1	**Personal support (factor)**	0,762	0,67	0,71
PS2		0,815		
PS3		0,809		

PS4	Victimised at work if you feel stressed (item)	N/A (removed)	N/A	N/A
SCB1	**Stress-coping behaviour (factor**)	0,718	0,649	0,7
SCB2		0,828		
SCB3		0,826		
SCB4	Use positive leisure options (for example, church, board games …) (item)	N/A	N/A	N/A
BP1	**Barriers to participation A (factor)**	0,687	0,901	0,878
BP2		0,599		
BP3		0,668		
BP4		0,51		
BP5		0,694		
BP6		0,767		
BP7		0,788		
BP8		0,772		
BP9		0,689		
BP10		0,588		
BP11		0,617		
BP12	**Barriers to participation B (factor)**	0,722	0,738	0,71
BP13		0,715		
BP14		0,808		
BP15		0,685		
LB1	**Leisure behaviour (factor)**	0,767	0,874	0,842
LB2		0,707		
LB3		0,836		
LB4		0,789		
LB5		0,319		
LB6		0,854		
LB7		0,78		

The Cronbach alpha was measured for the nine factors identified. The Cronbach alpha coefficient was used to determine the internal consistency. The contribution of individual items were explored by using Cronbach's alpha coefficient analyses. The results indicated that only three of the stress factors retained their number of factors. Some items were moved between scales based on their factor loadings and the appropriateness of their content. Cronbach's alpha coefficients demonstrated the extent to which items in the scale were positively related to each

other (Allen & Yen, 2002; DeVellis, 2003). The different scales of the instrument was confirmed that the items are measuring a similar construct through iterative analyses (Mouton & Babbie, 2001; Walsh & Betz, 2001). Cronbach alpha provides the lower limit of scale's reliability (Carmines & Zeller, 1979). The Cronbach alpha coefficient was used to identify the reliability coefficient.

The degree of uncertainty is associated with a statistical inference which is measured through the reliability statement (McClave, Benson & Sıncıch, 1999). The reliability of scales is based on the construct validation process of factor analysis. In this research, reliability was assessed by testing the internal consistency. The Cronbach alpha coefficient was used to determine the internal consistency. The results of the tests of reliability have been summarised with respect to the constructs. The closer Cronbach's alpha to one, the higher is the internal consistency reliability (Ozdamar, 1997). If the Cronbach alpha is between .0 and .40, the scale is not reliable. The coefficient of .50 to .60 is satisfactory, while coefficients of .70 and higher are highly satisfactory for most research purposes (Nunnally, 1978).

In this research, the Cronbach alpha was .8, which represents that factors are highly satisfactory. Most of the factors displayed reliability coefficients of at least .80, except for personal responsibilities at home, personal support, and barriers to participation A and B. The most robust items were selected for inclusion in the final instrument. The potential factors identified in the summary table above are discussed in Chapter 7.

7.3 Personal Stress Factor

7.3.1 Component matrix for Personal Stress factor

The component matrix for the Personal Stress factor indicated that two components were extracted and had two components account for 68% of the total variance. A1 factor loading regarding total variance indicated that personal responsibility at home was not a good fit for the model and was removed. Items A2-A6 were a good fit and were retained, implying that the

correct number of factors have been specified. The theoretical underpinnings of the measured constructs also contributed to the decision-making about the number of factors to retain (Laher, 2010; Preacher, Zhang, Kim & Mels, 2013). Table 7.2 (p. 136) contains component loadings, which are the correlations between variables and the component.

Table: 7.2 Component Matrix for Personal Stress Factor

Items for Personal Stress	Component Matrix for Personal Stress Factor	
	1	2
A1-Personal responsibilities at home	.492	.671
A2-Financial management problems	.670	.481
A3-Relationship problems	.710	.162
A4-Death of a loved one	.762	-.376
A5-Physical danger	.724	-.290
A6-Personal illness of family members	.735	-.368

7.3.2 KMO for Personal Stress factor

A Kaiser-Meyer Olkin measure of sampling adequacy (KMO) was calculated. The KMO measures the amount of variance in the data that can be explained by the factors (Brace, Kemp & Snelgar, 2003). A KMO of at least .50 is acceptable; up to .70 is mediocre; between .70 and .80 is good; .80 to .90 is outstanding and higher than .90 is superb (Hair, Black, Babin & Anderson, 2010; Van Heerden & Roodt, 2007). Bartlett's test of sphericity, which tests multicollinearity, was also conducted. This is a measure of the significance of the correlations between at least some of the variables. Table 7.3 (p. 137) shows the results for the KMO test below. Bartlett's test of sphericity was significant at a .001 level. This was significant (less than .05), indicating that the correlation matrix was significantly different from an identity matrix, in which correlations between variables are all zero. The distribution of scores on each of the items and the scale totals was examined to test for a normal distribution.

Table 7.3 KMO and Bartlett's test for Personal Stress factors

Personal Stress Factors (KMO and Bartlett's Test)		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.786
Bartlett's Test of Sphericity	**Approximately. Chi-Square**	1021.054
	Df	15
	Sig.	.000

These results indicate that the data for this version of the instrument were factorable at the scale level. The KMO is considered good (between .7 and .8), and Bartlett's test of sphericity was significant at a .001 level. This proves that the data were adequate for an EFA at this level. A KMO value of .78 or greater was used as the criterion for good factorability (Tabachnick & Fidell, 2001). The factor for Personal Stress was justified for inclusion. Bartlett's test of sphericity, which tests for multicollinearity, was also conducted. This measures the significance of the correlations between at least some of the variables (Hair, Black, Babin & Anderson, 2010; Van Heerden & Roodt, 2007). Given that these factorability indicators were significant, the data appeared suitable for an EFA.

7.4 Occupational Stress factor

Table 7.4:1 Component Matrix for Occupational Stress factor

Component Matrix for Occupational Stress Factor			
Items for Occupational stress factor	Component		
	1	2	3
B7-Inability to achieve personal goals at work	.667	-.060	.097
B8-Workload/responsibilities	.631	.382	.118
B9-Meeting deadlines	.506	.630	.155
B10-Staying in control of your temper at work	.471	.556	.050
B11-Long working hours	.607	.332	-.286
B12-Pulling duties after hours	.613	.347	-.238
B13-Unfair treatment by commander	.734	-.230	.015
B-14 Conflict with colleagues	.696	-.340	-.245
B15-Poor working conditions	.643	-.304	.279
B16-Bullying	.616	-.352	-.407
B17-Lack of support	.690	-.434	-.022
B18-Delays or not getting promoted	.437	-.182	.742

Table 7.4 (p. 138) contains component loadings, correlations between the variable and the component. Because these are correlations, possible values range from -1 to +1. The component matrix indicated that three components were not a good fit within the model and were extracted (Meeting Deadlines, Staying in Control of your Temper at Work and Delays or Not Getting Promoted). Some have argued that an item communality below .40 is potentially problematic; thus, it should not be retained (Costello & Osborne, 2005). All items had a significant loading on the one factor extracted in component one. However, the second component did not have a significant loading outcome due to the negative values observed (B 13-17). The more item loadings, the better the Cronbach alpha. The items indicated that the components have an excellent fit. The adequacy level was at .85, and it was significant at .000. The factor of Occupational Stress was therefore justified to be retained.

7.4.2 KMO for Occupational Stress factor

The KMO was considered good, and Bartlett's test of sphericity was significant at a 2672.394 level. This proves that the data were at an adequate level. A KMO value of .85 or greater was used as the criterion for good factorability. In addition, Bartlett's test is highly significant and based on this finding. We can be confident that factor analysis was appropriate for these data.

Table 7.5: KMO and Bartlett's test for Occupational Stress factor

Occupational Stress Factor (KMO and Bartlett's Test)		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.859
Bartlett's Test of Sphericity	**Approximately. Chi-Square**	2676.394
	Df	66
	Sig.	.000

7.5 Wellness Factor

Table 7.6: Component Matrix for Wellness Factor

Items for wellness factor	Component
	1
C-19 Poor self-esteem	.669
C-20 Insomnia	.756
C-21 Burned out	.780
C-22 Bouts of lows or sadness	.816
C-23 Bullying	.726
C-24 Intolerant supervisors using/abusive/vulgar language	.597
C-25 Alcohol abuse	.598

The component matrix was produced after factor extraction, and factor rotation had been performed. This matrix consists of a set of factor loadings explaining the importance of each variable (Field, 2005), thus making it possible to see which items fit best to the wellness factor.

Table 7.7: KMO and Bartlett's test for Wellness factor

Wellness factor for KMO and Bartlett's test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.849
Bartlett's Test of Sphericity	**Approximately. Chi-Square**	1544.088
	Df	21
	Sig.	.000

Table 7.7 (p. 139) shows the suitability of the data for structure detection. The wellness factor showed an excellent fit, as it was identified that a KMO of .84 and the Bartlett test of sphericity indicated a significance level of 1544.088. The KMO indicated the proportion of variance in the variables that the underlying factors might cause. The factor of Wellness was justified for inclusion. The Cronbach alpha value was substantial at .84. The evidence suggested that none of the items was poor, and, therefore, none should be eliminated. The scales retained all their items and remained as is.

7.6 Operational Deployment factor

Table: 7.8 Component Matrix for Operational Deployment factor

Items for Operation Deployment factor	Component	
	1	2
D-26 Loneliness when away from your loved ones	.584	.644
D-27 Boredom	.667	.410
D-28 Extended periods away from home	.627	.524
D-29 Lack of educational development	.643	-.147
D-30 Not being rewarded or promoted	.588	-.122
D-31 Do you experience any physical symptoms as a result of stress	.792	-.338
D-32 Do you experience any psychological symptoms as a result of stress	.783	-.369
D-33 Do you experience any behavioural symptoms as a result of stress	.700	-.364

The component matrix was used to group the items of the questionnaire into their latent factors. According to Field (2005), the researcher needs to assess the statistical significance of factor

loadings during the interpretation of the matrix. Researchers typically accept a loading with an absolute value of more than .3 as statistically significant (Costello & Osborne, 2005; Field, 2005). For this study, the researcher accepted loadings with an absolute value of .3 and more.

Table 7.9 KMO and Bartlett's test for Operational Deployment factor

Operational Deployment Factor (KMO and Bartlett's Test)		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.825
Bartlett's Test of Sphericity	**Approximately Chi-Square**	1902.301
	Df	28
	Sig.	.000

A value of .82 was obtained for the Kaiser-Meyer-Olkin Measure of Sampling Adequacy. Because this value was more significant than .60, the subscale was deemed factor-analysable. These results indicate that the data for this version of the instrument were factorable at the scale level. The KMO was considered a good fit, and Bartlett's test of sphericity was significant at 1902.301. This proved that the data were adequate for an EFA at this level. The factor of Operational Deployment was justified for inclusion.

7.7 Personal Support factor

Table 7.10 Component Matrix Personal Support factor

Component Matrix for Personal Support Factor	Component	
	1	2
PS-1Do you feel the family supports you in stressful times	.746	.327
PS2-Do you feel your superior support you in stressful times	.821	.105
PS3-Do feel you are able to speak to someone in stressful times	.812	.048
PS4-Do you feel you will be victimised in stressful times	.125	.962

In the component factor matrix, all subscale items had factor loadings greater than 0.5 (Theron, 2016). The component matrix, furthermore, indicated a single underlying factor for this

subscale. The factor matrix indicated that the factor loadings for all items were significant (Hinkin, 1998).

Table 7.11: KMO and Bartlett's test for Personal Support factor

Personal Support for KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.644
Bartlett's Test of Sphericity	**Approximately. Chi-Square**	399.489
	Df	6
	Sig.	.000

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .64 (>.60) (Pallant, 2010), which indicated that the subscale was factor-analysable. Bartlett's test of sphericity was significant at a 399.489 level. This proves that the data were adequate for EFA at this level.

7.8 Stress-Coping Behaviour factor

Table 7.12: Component Matrix in Stress-Coping Behaviour factor

Component Matrix for Stress-Coping Behaviour Factor	Component	
	1	
SCB1-Do you make use of aggressive behaviour to cope with stress	.699	
SCB2-Do you resort to the use of alcohol or drugs when feeling stressed	.821	
SCB3-Do feel you resort to any other anti-social behaviour (ie, gambling, prostitution, etc, to cope with stress	.820	
SCB4-Do you feel you make use of positive leisure options	.313	

In the component matrix, all subscale items had factor loadings greater than 0.5 (Theron, 2016). The component factor matrix, furthermore, indicated a single underlying factor for this subscale. The factor matrix indicated that the factor loadings for all items were significant (Hinkin, 1998).

Table 7.13: KMO and Bartlett's test for Stress-Coping Behaviour factor

Stress-Coping Behaviour Factor (KMO and Bartlett's Test)		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.664
Bartlett's Test of Sphericity	**Approximately. Chi-Square**	392.407
	Df	6
	Sig.	.000

The subscale was considered factor-analysable as the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .66, more significant than the minimum desired value of .60 (Pallant, 2010). Bartlett's test of sphericity was significant at a 392.407 level. This proved that the data were adequate for an EFA at this level.

7.9 External Barriers to Participation factor

Table 7.14: KMO and Bartlett's test for External Barriers factor

External Barriers for KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.891
Bartlett's Test of Sphericity	**Approximately. Chi-Square**	3817.804
	Df	105
	Sig.	.000

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .89 (>.60) (Pallant, 2010), which rendered the subscale factor-analysable. Bartlett's test of sphericity was significant at a 3817.804 level. This proved that the data was adequate for an EFA at this level.

Table 7.15: Component Matrix for External Barriers factor

Component Matric for External Barriers Factor	Component		
	1	2	3
BP1-Activity available near to my place of residence	.632	.381	.075
BP2-Activity unavailable in the workplace	.561	.323	.418
BP3-Activity unavailable during deployment	.614	.391	.149
BP4-Lack of childcare when I want to do physical activity	.516	.017	.270
BP5-Lack of transportation	.662	.223	.102
BP6-Inconvenient hours	.739	.224	.022
BP7-Poor program management	.738	.322	.031
BP8-Lack of program information	.748	.174	.008
BP9-No companion	.723	.147	.008
BP10-Personal safety concerns	.624	.216	.299
BP11-Lack of money	.653	.176	.345

The factor matrix indicated a single underlying factor and the percentage of variance explained by the single factor (64.4%) was greater than 50% (Theron, 2016) for all subscale items. The factor loadings of the un-rotated factor matrix were all significant at >.40 (Hinkin, 1998).

7.10 Barriers to Participation factor

Table 7.16: Internal Barriers factor for KMO and Bartlett's test

Internal Barriers for KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.738
Bartlett's Test of Sphericity	**Approximately. Chi-Square**	475.993
	Df	6
	Sig.	.000

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .73 (>.60) (Pallant, 2010), which rendered the subscale factor-analysable. Bartlett's test of sphericity was significant at a 475.993 level. This proved that the data were adequate for an EFA at this level. The factor of Barriers to Participation was justified for inclusion.

Table 7.17: Component Matrix for Internal Barriers to Participation factor

Component Matrix for Internal Barriers Factor	Component	
	1	
BP12-Personal health reasons	.722	
BP13-I am uncomfortable with other users	.715	
BP14-A personal physical condition that needs special consideration	.808	
BP15-No assistance for physical condition	.685	

The principal component analyses indicated a single underlying factor and the percentage of variance explained by the single factor (64.4%) was greater than 50% (Theron, 2016) for all subscale items. The factor loadings of the un-rotated factor matrix were all significant.

7.11 Leisure Behaviour factor

Table: 7.18: Component Matrix for Leisure Behaviour factor

Items for Leisure Behaviour Factor	Component
	1
LB1-Do you feel that leisure time is important	.767
LB2-Are you satisfied with your current leisure lifestyle	.707
LB3-Do you like to participate in activities in a regular basis	.836
LB4-Do you consider yourself to be a social person	.789
LB5-Do you consider yourself a loner	.319
LB6-Do you enjoy new challenges	.854
LB7-Do you consider yourself a confident person	.780

The component matrix indicated that all the components were a good fit. All items had a significant loading on the one factor extracted in the component. The more item loadings, the better the Cronbach alpha. The items indicated that the components have an excellent fit. The adequacy level was at .84, and it was significant at .000. The correlation matrix revealed evidence of coefficients equal to or greater than 0.30 (Hair et al., 2010). The seven significant

items explained 54.97% of the total variance, according to the guidelines established by Hair et al. (2010), namely that a solution that accounts for 50% of the total variance was satisfactory.

Table 7.19 KMO and Bartlett's test for Leisure Behaviour

Leisure Behaviour (KMO and Bartlett's Test)		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.874
Bartlett's Test of Sphericity	**Approximately. Chi-Square**	2000.592
	Df	21
	Sig.	.000

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .87 (>.60) (Pallant, 2010), which rendered the subscale factor-analysable. Bartlett's test of sphericity was significant at a 2000.592 level. This proved that the data were adequate for an EFA at this level. The results illustrate that there were good relationships between the constructs in question. Therefore, it was considered appropriate to continue with the factor analyses.

7.12 Demographics

A total sample size of 659 respondents took part in the study. The demographic items included age, educational level, and marital status. The results of these items are discussed in this section.

Table 7. 20: Age of respondents (*N*=659)

Age groups	Frequency	Percentage
20 - 30 years	330	50.1
30 - 40 years	244	37.0
40 - 50 years	72	10.9
50 - 60 years	13	2.0
Total	659	100.0

Table 7. 21: Marital status

Marital status	Frequency	Percentage
Single	407	61.8
Married	197	29.9
Widow	32	4.9
Total	659	100.0

Table 7. 22: Educational level

Educational level	Frequency	Percentage
Matric	478	72.5
Undergraduate	99	15.0
Graduate	50	7.6
Postgraduate	23	3.5
Other	9	1.4
Total	659	100.0

Table 7.20 (p. 149), age is the demographic variable most consistently related to stress (Cordes & Dougherty, 1993; Maslach et al., 2001). It was postulated that the majority of the respondents, 330 (50%), were between 20 and 30 years, 244 (37%) between 30 and 40 years, 72 (10,9%) between 40 and 50 years and 13 (2%) between 50 and 60 years. The distribution of the sample according to marital status is presented in Table 7.20 (p. 149). The majority of the respondents were unmarried, 407 (61,8%), married, 197 (29,9%), and widowed, 32 (4,9%). Table 7.21 (p. 150) indicates that the workforce is fairly young. The majority of the respondents, 478 (72,5%), had matric, 99 (15%) undergraduate, graduate 50 (7,6%) and postgraduate 23 (3,5%). A multitude of different qualifications was listed. Many different qualifications were listed, including a range of technical, scientific, managerial and administrative certificates, diplomas and degrees.

7.13 Military Demographics

A total sample size of 659 respondents took part in the study. The military demographic items included rank, number of years in the navy and level of employment.

Table 7. 23: Military Rank

Rank groups	Frequency	Percentage
Able Seaman	217	32.9
Leading Seaman	166	25.2
Chief Petty Officer	101	15.3
Ensign	3	49.2
Midshipmen	1	81.3
Lieutenant Commander	44	6.7
Commander	2	33.4
Total	659	100.0

Table 7. 24: Number of years in the navy

Number of years groups	Frequency	Percentage
Less than five years	174	26.4
Between 5 and 10 years	204	31.0
Between 10 and 15 years	162	24.6
Between 15 and 20 years	60	9.1
20 years or more	59	9.0
Total	659	100.0

Table 7. 25: Level of employment

Level of employment groups	Frequency	Percentage
Permanent	41	6.2
Reserve	18	2.7
Contract	596	90.4
Total	659	100.0

Table 7.23 (p. 150) shows that respondents were mainly from the lower and middle ranks, Able Seaman (*n*=217, 32,9%), Leading Seaman (*n*=166, 25,2%) and CPO (*n*=101, 15,3%). It can be postulated that the low response rate from senior officers could be due to work commitments. According to results Table 7.24, p. 151, the majority of the respondents who have been employed (*n*=204, 31%) were between 5 and 10 years in the navy, 174 (26,4%) respondents

were less than five years, 162 (24,6%) between 10 and 15 years, 60 (9,1%) between 15 and 20 years and 59 (9%) were 20 years and more. The level of employment is presented in Table 7.25 (p. 151). From the 659 responses, the majority were contract staff (*n*=596, 90%) while 41 (6%) were permanent staff, 18 (2%) were reserves, and 4 (6%) were staff members.

The frequency distribution was used to describe the quantitative data that confirmed the relevance of the items in the instrument. The instrument also allowed military members to indicate to what extent the items were considered important.

7.14 Correlations

The Pearson's correlation coefficient in this study was computed to assess the relationship between the factors. The purpose of correlation analysis was to find whether there is a significant relationship between the variables. It is also a chance to discover the direction of the relation (negative, positive, or zero) and the strength (magnitude) of the relation between these variables (Dancey & Reidy, 1999). A correlation coefficient (*r*) means that higher ranks on one variable are associated with higher ranks on the other. Higher absolute values of "*r*" indicated a strong relationship between the variables. A positive correlation between the variables was found. Interpretations of a correlation coefficient are necessary to decide whether or not it is statistically significant within a confidence level. A moderate positive correlation between the variables was found. It was therefore postulated that the correlations were significant at the two-tailed r=0,01. Item discrimination refers to how well an item distinguishes between high and low scorers. This was calculated by measuring the correlation between the item and scale scores. The higher this value, the better the item can distinguish between high and low scorers (Foxcroft & Roodt, 2009). Items were removed if they had correlations of ≤ 0.30 with the scale total.

7.14.1 Correlation between stress scores and Personal Stress

The Pearson's correlation coefficient was computed to assess the relationship between the stress scores and personal stress factors (Table 7.26, p. 147). A strong positive correlation between the variables (r=0.346; p=0.000) was found. Item A1 (personal responsibilities at home) did not have a good fit and was removed.

7.14.2 Correlation between stress scores and Occupational Stress

The Pearson's correlation coefficient was computed to assess the relationship between stress scores and Occupational Stress factors (Table 7.26, p. 147). A strong positive correlation between the variables (r=0.266; p=0.000) was found. Items B9 (meeting deadlines, r=.221), B10 (staying in control of your temper at work, r=.317), B18 (delays or not getting promoted, r=170), did not have a good fit and were removed.

7.14.3 Correlation between stress scores and Wellness

The Pearson's correlation coefficient was computed to assess the relationship between the stress scores and wellness factors (Table 7.26, p. 147). A strong positive correlation between the variables (r=0.191; p=0.000) was found. The Wellness factor was a good fit.

7.14.4 Correlation between stress scores and Operational Deployment

The Pearson's correlation coefficient was computed to assess the relationship between the stress scores and the Operational Deployment factor (Table 7.26, p. 147). A strong positive correlation between the variables (r= -0.289; p=0.000) was found. D26 (loneliness when away from your loved ones) did not fit well and was removed (r=.236).

7.14.5 Correlation between stress scores and Personal Support

The Pearson's correlation coefficient was computed to assess the relationship between the stress scores and Personal Support factors (Table 7.26, p. 147). A strong positive correlation

between the variables (r= -0.140; p=0.000) was found. PS4 (victimised at work if you feel stressed) did not have a good fit (r=.117).

7.14.6 Correlation between stress scores and Stress-Coping

The Pearson's correlation coefficient was computed to assess the relationship between the stress scores and Stress-Coping factors (Table 7.26, p. 147). A strong positive correlation between the variables (r=0.103; p=0.000) was found. SCB4 (do you make use of positive leisure options) was not a good factor to include in this study.

7.14.7 Correlation between stress scores and Barriers to Participation (A)

The Pearson's correlation coefficient was computed to assess the relationship between the stress scores and barriers to participation factor (Table 7.26, p. 147). A strong positive correlation between the variables (r= -0.168; p=0.000) was found.

7.14.8 Correlation between stress scores and Barriers to Participation (B)

The Pearson's correlation coefficient was computed to assess the relationship between the stress scores and Personal Stress factors (Table 7.26, p. 147). A strong positive correlation between the variables (r= -0.165; p=0.000) was found.

7.14.9 Correlation between stress score and Leisure Behaviour

The Pearson's correlation coefficient was computed to assess the relationship between the stress scores and Personal Stress factors (Table 7.26, p. 147). A strong positive correlation between the variables (r= -0.084; p=0.000) was found.

It can, therefore, be concluded that there were positive correlations between the stress factors. The relationships with the factors revealed that 71,09% of the questionnaire had a 99% confidence level. The total relationships tested at a 1% significance level was 182=75,83% and

5% significance level was 198=82,5%. Based on the evidence, it can thus be deduced that the appraisal tool was valid and reliable.

Table 7.26: Correlations between factors

		Factor Score	Personal Stress	Occupational Stress	Wellness	Operational Deployment	Personal Support	Stress-coping	Barriers to Participation (A)	Barriers to Participation (B)	Leisure Behaviour
Factor Score	Pearson Correlation Sig (2-tailed) N	1 0,000 659	.346 0,000 659	.266 0,000 659	.191 0,000 659	.289 **0**,000 659	-.140 0,000 659	.103 0,000 659	.168 0,000 659	.165 0,000 659	.084 0,000 659
Personal Stress	Pearson Correlation Sig (2-tailed) N	.346 0,000 659	1	.450 0,000 659	.436 0,000 659	.446 0,000 659	-.119 0,002 659	.271 0,000 659	.345 0,000 659	.206 0,000 659	0.036 0,357 659
Occupational Stress	Pearson Correlation Sig (2-tailed) N	.266 0,000 659	.450 0,000 659	1	.659 0,000 659	.628 0,000 659	-.158 0,000 659	.395 0,000 659	.400 0,000 659	.223 0,000 659	.161 0,000 659
Wellness	Pearson Correlation Sig (2-tailed) N	.191 0,000 659	.436 0,000 659	.659 0,000 659	1	.713 0,000 659	-.181 0,000 659	.514 0,000 659	.475 0,000 659	.332 0,000 659	.087 0,026 659
Operational Deployment	Pearson Correlation Sig (2-tailed) N	.289 0,000 659	.446 0,000 659	.232 0,000 659	.628 0,000 659	1	.-.205 0,000 659	.442 0,000 659	.500 0,000 659	.314 0,000 659	.113 0,004 659
Personal Support	Pearson Correlation Sig (2-tailed) N	-.140 0,000 659	-.119 0,002 659	.-158 0,000 659	-.181 0,000 659	-205 0,000 659	1	-.077 0,047 659	-.094 0,016 659	-0,009 0.818 659	.164 0,000 659
Stress-coping	Pearson Correlation Sig (2-tailed) N	.103 0,008 659	.271 0,000 659	.395 0,000 659	.514 0,000 659	.442 0,000 659	-.077 0,000 659	1	.321 0,000 659	.340 0,000 659	-0.010 0,000 659
Barriers to Participation (A)	Pearson Correlation Sig (2-tailed) N	.168 0,000 659	.345 0,000 659	.400 0,000 659	.475 0,000 659	.500 0,000 659	-0.094 0,818 659	.321 0,000 659	1	.507 0,000 659	.301 0,000 659
Barriers to Participation (B)	Pearson Correlation Sig (2-tailed) N	.165 0,000 659	.206 0,000 659	.223 0,000 659	.332 0,000 659	.314 0,000 659	.-0.009 0,818 659	.340 0,000 659	.507 0,000 659	1	.166
Leisure Behaviour	Pearson Correlation Sig (2-tailed) N	.084 0,030 659	.0.036 0,357 659	.161 0,000 659	.0.87 0,026 659	.113 0,004 659	.164 0,000 659	-0.010 0,000 659	.301 0,000 659	.166 0,000 659	1

7.15 Chapter conclusion

The best items were selected for the TRSLAT based on their item-total correlations, item distributions, factor loadings in the PCA, and contribution to scaling reliability. The reliability test confirmed that the measures are internally consistent, as all the factors possessed a Cronbach's alpha above .70. The construct validity was established utilising PCA. The results provided evidence of higher KMO values (.80), a significant probability of Bartlett's test of sphericity (<.001). All nine factors possessed eigenvalues above 1. Therefore, the results had a 99% confidence level, meaning that the variables' relationship was significant. Using the results of the factor loading, the construct validity and the reliability were confirmed in the study. The next chapter will analyse and present the data obtained from the findings. This is then followed by the validation and reliability of the TRSLAT.

CHAPTER 8

DISCUSSION

8.1 Introduction

This study focused on the validity and reliability of an instrument developed to measure stress, coping, and leisure behaviour in a military setting. This chapter will summarise and discuss the findings concerning the research objectives established for this study's arguments about the validity and reliability of the TRSLAT.

8.2 Discussion of findings

The study's findings were presented in Chapter 7 and aligned with the questionnaire's layout, with the discussions following successively. In order to ensure that the research objectives were achieved, the researcher had to ensure that the TRSLAT was internally reliable and constructively valid. An item and factor analysis (EFA) was conducted using SPSS, whereby the instrument was subjected to a confirmatory factor analysis (CFA) to corroborate the findings of the TRSLAT.

The methodological considerations was relevant factor analysis as a method to gather internal or structural validity evidence or item selection. The terms "internal and structural evidence" were used interchangeably throughout the thesis to refer to procedures that examine a factor's internal structure or the instrument as a whole. This section provided an overall view of the validation processes. A brief discussion was undertaken regarding validity, reliability measures, and objectives, which were in line with the aim of the study.

8.3 Factor loadings

The component matrix in Table 7.1 (pp. 133-134) showed the factor loading for all nine factors of the TRSLAT. The statistics presented in Table 7.35 suggested that the nine-factor components loaded significantly. All the items loaded above .80, the minimum recommended value in research (Straub et al., 2004). The factor analysis results satisfied the criteria of construct validity which confirmed the existence of the construct validity in the instrument. (Table 7.1, pp. 133-134), which means that the data collected and the findings obtained from the instruments are reliable.

The theoretical framework was applied for the first time. EFA was employed to determine whether the factors do load as hypothesised according to the selected framework. EFA was used to identify inter-relationships between items that form part of a unified construct. Before conducting the analysis, an attempt was made to confirm the appropriateness of the theory on which the constructs were based (DeVellis, 2003). By performing an EFA, informed decisions were made about the extraction method and the criteria used to decide on the number of factors to retain. In addition, the value of factor loadings on factors was relatively high. Hence it provided enough information on construct validity. The considerations in making these decisions in EFA are discussed next.

8.4 Item selection

The data for Objective 2 were examined to assess their factorability at the item level, sampling adequacy, multicollinearity, and item characteristics. Before the final data set was analysed, it was examined to establish that conditions and design requirements and assumptions had been met for an EFA at the item and factor level. For this study, an EFA using the PCA extraction method explored the number of factors represented by the items (Bonato et al., 2020). It was used to explore the contribution of items to the scales and reduce the number of items. The

items to represent each of the scales were selected according to the factor-loading patterns. Allen and Yen (1979) point out that factor analysis can be used in this way to establish whether a set of items are unidimensional. During this phase, EFA procedures were used iteratively to select items (Schmitt, 2011).

This section reported on the results of the principal components analysis (PCA). The item factor loadings were discussed, along with the decisions made about the items based on these item loadings and other criteria. The impact on the reliability of the scale, the discrimination value of the items, and the distribution of scores on these items were considered. Most of the KMO measures of sampling adequacy were either "good" (.7 to .8) or outstanding (.8 to .9), with one factor demonstrating superb KMO (above .9). The results of Bartlett's test of sphericity yielded highly significant results for all the variables ($p < .001$). This indicates that the correlation matrix differs significantly from an identity matrix for all these variables. Since there is sufficient inter-correlation and common variance among the variables, this analysis proved that the data for the TRSLAT were adequate for an EFA. The Cronbach's coefficient alpha (a) and Pearson's correlations among dimensions extracted by the factor analysis assessed the internal consistency reliability. These steps are described in the literature as the everyday use to validate instruments (Bonato et al., 2020; Nora et al., 2020; Oliveira et al., 2019; Viterbo et al., 2019; Viterbo et al., 2020). The Cronbach's alphas of the proposed scales were explored. The item level data for this version of the TRSLAT was factorable, meaning that the patterns of correlations were relatively compact and that the data yielded distinct factors (Field, 2009).

Most of the items in the instrument had positive loadings. Content validity procedures were utilised for the selection of a theory for inclusion in the study. As mentioned, construct validity procedures included identifying the internal patterns relating to the constructs to be measured by the instrument (Messick, 1989; Cook & Beckman, 2006). In instrument development, EFA is often used as a construct validity procedure technique in support of structural evidence.

8.5 Assessment of construct validity using structural evidence

The results of Objective 3 mainly assess the instrument's construct validity using procedures of construct validity. This section presented the results of the CFA using principal axis factoring (PAF) to determine which of the items loaded on the factors. Structural evidence was gathered by looking at the relationships between the items and the factors. According to Messick (1989), factor analysis is commonly employed to demonstrate that factors' items are interrelated when gathering structural evidence supporting construct validity.

The internal structure of the measure was examined to see whether it was consistent with the theory hypothesised (Costello & Osborne, 2005; Wegener, Maccallum & Straham, 1999). It was found that the components of the measure matched the construct. In this study, the theory guided the selection of the items and the development of factoring criteria. Structural evidence was gathered by looking at the relationships between the items and the relationships between the items and the scale totals (Worthington & Whittaker, 2007). In order for the instrument to be considered valid in the study, the internal structure of the instrument had to resemble the internal structure of the construct domain. Bartlett's test of sphericity was employed to assess the assumption of multicollinearity at the scale level. The KMO measure of sampling adequacy was employed to test the adequacy of the sample at this level. These results indicated that the data of the instrument were factorable at the scale level. Data collected using Likert-type items, as in the TRSLAT, are unlikely to be normally distributed (Floyd & Widaman, 1995). This is because the total for the items do not necessarily represent accurate metric data since they are composed of ordinal data collected on each of the factors that contribute to the totals (Tabachnick & Fidell, 2007). The data for high-quality items was established for construct validity by determining the number of factors underlying the items.

The validation of the developed instrument was an essential process in order to ensure high-quality measurement. An essential process in empirical research is instrument validation, which

reduces measurement error, thus, increasing an instrument's validity (Fruhling & Lee, 2005). In other words, the instrument has to appear to measure what it is supposed to measure (Wood & Ross-Kerr, 2011). This quantitative, descriptive study was thus the baseline in establishing the validity of the TRSLAT.

It is, therefore, suitable to imply that the quality of data collected is as good as the instrument used to collect these data (Wood & Ross-Kerr, 2011). The results indicated that the item-level data for this version of the instrument validation was factorable. Cronbach's alpha results of most of the scales ended up as satisfactory and provided provisional support for the items in the factors. Content validity involved evaluating a new survey instrument to ensure that it included all the essential items and eliminated undesirable items to a particular construct domain (Lewis et al., 1995; Boudreau et al., 2001). A CFA was conducted to confirm certain factors in the original form concerning construct validity. Some items in the original form were not included in the factors in line with the results. The data were re-evaluated after these items were removed from the instrument.

8.6 Assessment of construct validity using external evidence

The results of Objective 4, which is the construct validity of the instrument using external validity evidence, was assessed. These procedures of validity evidence refer to the external patterns of evidence accounted for by the construct (Kitto, 2006). External validity evidence was assessed by testing the association between gender, age, rank, educational level, job levels and years in the navy. A total sample size of *n*=659 respondents took part in the study. The demographic data indicated that respondents comprised both men and women, with *n*=518 (78,6%) male subjects and *n*=140 (21,2%) female subjects. The statistics in the study confirmed there were more males than females in the military. Although the numbers above suggested gender differences, it does not suggest the occurrence of any influence. Most of the subjects

were aged 20-40 years with a cumulative percentage of 87,1%. The statistics indicated that stress management increases with age. However, the stress rate fell after 54 years.

Military demographics show that respondents were mainly from the lower and middle ranks, Able Seamen *n*=217 (32,9%) and Leading Seamen *n*=166 (25,2%). The majority of the respondents were unmarried. The years in the navy were indicated as, *n*=204 (31, 0%) 5-10 years in the navy, *n*=162 (26,4%) less than five years, *n*=162 (26,4%) 10-15 years, *n*=60 (9,1%) 15-20 years and *n*=59 (9,0%) 20 or years. Five hundred and ninety-four members were contract staff members. Forty-one were permanent, and *n*=18 were reserve force members. The finding indicated that there was a significant difference between occupational categories. Regarding the educational level of members, *n*=478 (78,5%) had a matric, undergraduate *n*=99 (15%), graduate *n*=50 (7,6%), postgraduate *n*=23 (3,5%). Pearson's correlation validated that there was a significant difference between education levels of members in the SAN. The construct validity using external evidence contributed towards the factor significance in validating the instrument. External validity procedures included criterion-related procedures (current and predictive validity) and construct validity procedures (convergent and discriminant validity). Smith and McCarthy (1995) proposed that a valid instrument should present convergent and discriminant correlation patterns. The advantage of including external validity evidence in the validity argument was that it demonstrated that the constructs represented in the instrument accounted for the external pattern of correlations. The meaning of the items was substantiated externally, assessing the degree to which the relationships were consistent with that meaning. The statistics in the instrument demonstrated that the item-level data for this version of the TRSLAT was factorable, which means that the patterns of correlations were relatively compact and that the data should yield distinct factors (Field, 2009).

8.7 Instrument reliability

The reliability of the instrument was assessed by calculating the Cronbach alpha coefficient (DeVellis, 2017). DeVellis (2017) suggested that a Cronbach alpha of .70 should be an absolute minimum for an instrument. Testing for reliability is essential as it refers to the consistency across the parts of a measuring instrument (Huck, 2007). An instrument is considered high in internal consistency reliability if the scale items "hang together" and measure the same construct (Huck, 2007; Robinson, 2009). The most commonly used internal consistency measure is the Cronbach alpha coefficient. It is viewed as the most appropriate measure of reliability when using Likert scales (Whitley, 2002; Robinson, 2009). No absolute rules exist for internal consistencies. However, most agree on a minimum internal consistency coefficient of .70 (Whitley, 2002; Robinson, 2009).

Cronbach's alpha was calculated for each item to test for internal consistency in the original and revised version of the instrument to assess whether these changes were positive. Table 7.1 (pp. 133-134) reports on which items were retained in each of the factors. Reliability determines the consistency, stability and repeatability of an instrument (Wood & Ross-Kerr, 2011). The Cronbach alpha coefficient was most commonly used to express internal consistency. The Cronbach's alphas for most of the revised items were at an acceptable level.

Conditions of multicollinearity and sampling adequacy were tested using Barlett's test of sphericity and the KMO measure of sampling adequacy. The results were reported in Table 7.1, along with Cronbach's alphas for each of the factors. The Cronbach's alpha indicated the inter-correlations between items in each factor (see Table 7.1). For a confirmatory study, reliability should be equal to or above .70 (Table 7.1). The reliability values reported in the study vary between .70 and .9 for various constructs. Reliability or the Cronbach's value of the various constructs in this research vary between .70 and .90, which means that all the constructs possessed reliability values above the minimum recommended level. This implied that the

validated instrument provided an effective and appropriate measure of internal consistency (Cook & Beckman, 2006). The instrument can demonstrate variations in reliability if used on different samples. This confirmed that the measurement was seen as internally consistent and possesses an appropriate reliability level. In this study, the validity and reliability of the TRSLAT as an essential research instrument were reviewed. Reliability and validity concepts were used to evaluate the quality of the research and indicated how well a method, technique and measures were used in the study. All nine factors possessed excellent reliability and validity levels. Thus, the reliability and validity of the components were assessed that indicated acceptable results.

8.8 Personal stress factor

It was important in this study to determine whether SAN members were stressed or not and to determine how stress affected their psychological well-being and behaviour. According to Nash (2007), it became clear that military members were often recruited into the military when they already suffered from personal stressors. Significant findings in this section indicated that personal stress varied from financial management problems to physical safety and illness of loved ones. Personal stress like physical danger, long periods away from home and physical demands on sailors, being in the public eye, and being responsible for the lives of others were implicated as causes of stress in the military (Bogg & Cooper, 1995; DeCarvalho & Whealin, 2015).

According to the finding in the component matrix, personal stress was found that the six items in the grouping had a good factor loading. In other words, financial management problems, relationship problems, death of a loved one, personal safety, and personal illness of family members had a strong relationship with the variable. Anastasi (1988) reports that, to learn the nature of a particular factor, one needs to examine the item loadings as having common characteristics. The more tests with standard loadings on a given factor, the more the nature of

the factor can be defined. The factor loadings were adequate (.63) to excellent (.93) on the two-factor solution. However, results indicated that personal responsibilities at home did not have a good fit within the relevance of Personal Stress and was therefore removed from the list. Thus, it was determined that five of the items were relevant to Personal Stress. Item communalities ranged from .60 to .72, which is considered to fit within the low-to-moderate range and type of social science research (Costello & Osborne, 2005). The theoretical underpinnings of the constructs that are being measured also contribute to the decision-making about the number of factors to retain (Laher, 2010; Preacher, Zhang, Kim & Mels, 2013).

A strong correlation between the factors about personal stress was identified. According to the findings of the KMO Bartlett test, Cronbach alpha, and component matrix, Personal Stress determined that the personal stress variables related well to one another. The KMO measure of sampling adequacy (MSA) and Bartlett's test of sphericity were run to assess the suitability of the data for factor analysis. In this exploratory study, the KMO and Bartlett test indicated that Personal Stress testified to the legitimacy of a factor, meaning the KMO measurement should be >= .60 to determine the legitimacy of a factor. In the case of Personal Stress, the factor was .78, indicating that the factor value was legitimate.

The Cronbach alpha was calculated for personal stress to justify the legitimacy of the factor. Hunsley and Mash (2008) proposed that an alpha coefficient between .7 and .80 is good. Field (2005) states that .8 is a good value for Cronbach's alpha. The internal consistency of personal stress is thus acceptable with a Cronbach alpha of .77.

The following personal factors were taken for this analysis for this study (A 2-5). Thus, A1 (personal responsibilities at home) is seen as an item, and A2-A6 (financial management problems, relationship problems, death of a loved one, personal safety, and personal illness of family members) is seen as a factor. All three steps (component matrix, KMO/Bartlett test and

Cronbach alpha) showed favourable signs for factor analysis. The averages for the quantitative data were calculated and they were evident in A1-6. The results indicated that there were strong relationships between the items of personal stress. The personal stress factor had high commonalities, given the fact that all items had high factor loadings. Therefore, all items appeared worthy of retention. Thus, the findings obtained in this research suggested that the personal stress factor was thus legitimate.

8.9 Occupational stress factor

The significant findings in the current study related to occupational stressors were related to the inability to achieve personal goals or poor communication with superiors, family responsibilities, marital problems, personal concerns, lack of job advancement, educational development, alcohol abuse, and a lack of interest in life. This is similar to studies conducted by Bogg and Cooper (1995) and Bartone (2006) indicating that occupational stressors in the military context included extended duties or prolonged working hours, lack of sleep due to extended duties, intolerant supervisors, using undermining, abusive or vulgar language, deployments or transfers and not being rewarded or promoted.

Regarding occupational stress, according to the findings in the component matrix, it was found that the 18 items in the grouping had good factor loadings. In other words, for this study, the following items were included in the instrument: inability to achieve personal goals, workload responsibilities, long working hours, pulling duties after hours, unfair treatment, and conflict with colleagues, poor working conditions, harassment and a lack of support). However, items B9, 10 and 18 (meeting deadlines, staying in control of your temper at work delays or not getting promoted) were items that did not load well with the Occupational Stress factor. Criteria for item deletion were determined by the values of the item loadings and cross-loadings on the factors and communality estimates. Pett et al. (2003) specified that an item should be deleted

if its factor loading is less than .40. The factor loadings were adequate (.67) to excellent (.75) on the two-factor solution.

According to the KMO and Bartlett test of sphericity, occupational stress was run to assess the suitability of the data for factor analysis. The KMO and Bartlett test indicated that the factor value was legitimate at the .85 level. This means the KMO measurement should be >= .60 to determine the legitimacy of a factor. In the case of personal stress, the factor was .85, indicating that the factor value was legitimate.

The Cronbach alpha was calculated for Occupational Stress to justify the legitimacy of the factor. The Cronbach alpha .84 justified the legitimacy of the factor on the reliability of the scales. It is generally agreed that .8 is a good value for Cronbach's alpha (Field, 2005; Garson, 2011d). Therefore, the Occupational Stress factor scales were reliable when their Cronbach's alpha coefficients were .8 or above.

The findings of Occupational Stress factors indicated a strong correlation between the inabilities to achieve personal goals at work. Workload responsibilities, long working hours, pulling duties after hours, unfair treatment by manager/commander, conflict with colleagues, poor working conditions, harassment, and lack of support were highlighted. The items of meeting deadlines, staying in control of one's temper and delays or not getting promoted at work were removed because they did not fit well with the Occupational Stress factor. The three outer layers (B9-10-18) did not load well and were considered irrelevant to the Occupational Stress factor as part of this study.

Strong correlations were identified with the rest of the items within Occupational Stress. Thus, the Occupational Stress factor was a legitimate factor that showed good interconnectivity between the factor loadings, justified by content validity.

8.10 Wellness factor

According to the finding in the component matrix of the wellness factor, it was found that the seven items in the grouping had good factor loadings. The rotated component matrix showed that all seven items loaded above .4 (Pallant, 2016). Thus, the factor loading for the wellness factor ranged from .57 to .81. Each of the items had significant ($p < 0.001$) loadings. The Wellness factor was considered statistically significant. The component matrix for the Wellness factor indicated that factors C19- C25 had a good fit.

The KMO and Bartlett's test of sphericity were run to assess the suitability of the data for the wellness factor analysis. The KMO and Bartlett test indicated that wellness tested the legitimacy of a factor. In the case of wellness, the factor was .84, indicating that the factor value was legitimate. Since factor analysis is a process in which correlating variables are grouped to form a factor, Bartlett's test is thus seen as significant to the wellness factor (Field, 2005).

The Cronbach alpha was adequate at .83, justifying the legitimacy to factor loading. In exploratory research, a value of .60 to .70 is considered acceptable (Hair, Ringle & Sarstedt, 2011). The final confirmatory factor analysis demonstrated that the Wellness factor estimates were satisfactory for the constructs. All items were in an acceptable range (.66, .75, .78, .81, .72, .59, and .59). Good internal consistency was found within the items. The values were similar to the findings in a study conducted by Schmitt, 2011. Items C19-25 (poor self-esteem, insomnia/sleeplessness, burned out, bouts of lows or sadness, bullying, intolerant supervisors using abusive/vulgar language, alcohol abuse) indicated in the instrument how important wellness was within the workplace. No items were removed, indicating that the seven wellness items had good factor loading and high factor commonality. Thus, the Wellness factor was a

legitimate factor. Moreover, factors for wellness were statistically significant and were justified for inclusion in the instrument.

8.11 Operational Deployment factor

According to the finding in the component matrix, regarding occupational stress, it was found that the eight items in the grouping had a good factor loading. The following Operational Deployment factor loadings (loneliness when away from your loved ones, boredom, extended periods away from home, lack of educational development, and not being rewarded or promoted) loaded well with high commonalities, indicating that these five factors related well to one another.

The factorability of the correlation matrix was determined by applying the KMO and Bartlett test, which indicated a legitimacy of .82, which was well above the commonly recommended value. The EFA with oblique rotation was used to correlate and rotate the factor structure. Only items that loaded on a single appropriate factor were retained (Gorsuch, 1983; Pett, Lackey & Sullivan, 2003; Tabachnick & Fidell, 2007).

The Cronbach alpha was good at .81, indicating the legitimacy of the Operational Deployment factor, which was similar to the finding of Haynes et al., 2011. Loneliness when away from your loved ones was seen as an outer layer because it did not load well with the Operational Deployment factor. Findings obtained in this research suggested that Operational Deployment was thus a legitimate factor. The inter-factor correlation coefficient between the eight items was all positive. The eight items appeared to have good internal consistency based on the reliability estimates. Therefore, the items obtained were seen as acceptable for inclusion. This is thus stable information to assume that all items are valid predictors of the wellness factor. The wide range of descriptions indicates that these items have similar values, allowing them to load on the same factor (Calibre Associates, 1995).

8.12 Personal Support factor

The instrument allowed the members to indicate the extent to which the items were considered necessary in their context or not (Schmitt, 2011). The significant findings related to this section indicate that three of the four factor loadings were adequate, with loadings ranging from .76; .81 to .80. The component matrix did indicate that three factors related well to each other; however, 'do you feel victimised at work if you feel stressed' was considered not a good factor loading and was thus seen as an item. The item 'do you feel victimised at work if you feel stressed' is irrelevant to other items in the same factor. Therefore, the item was omitted from the questionnaire and the factor analyses to increase the soundness of the construct.

Bartlett's test of sphericity, which tests for multicollinearity, was also conducted. This is a measure of the significance of the correlations between at least some of the variables. The KMO of .64 justified the legitimacy of the Personal Support factor.

The lower the number of items in a factor, the lower the Cronbach alpha, which was not the case with the Personal Support factor, which had a Cronbach alpha of .71. Coefficients at or above .70 were often considered sufficiently reliable (Webb et al., 2006). The Cronbach's alpha was an indication of the inter-connectivity between the items. Therefore, the higher the factor loading, the better the variable representation of the factor (Worthington & Whittaker, 2007). The three items in the personal support factor were found to have good quality, internal consistency and were found to be acceptable. The functionality of the items tested indicated a high level of reliability. Findings obtained in this research suggested that the Personal Support factor was thus legitimate. Thus, it is stable to assume that all items are valid predictors of Personal Support.

8.13 Stress-Coping Behaviour factor

The component matrix for stress-coping behaviour showed that three of the four items had a good fit. SCB 4 was seen as an item, and SCB 1- SCB 3 were seen as a factor. The component matrix measured the interaction between the items in the scale. The component matrix was then examined to determine if any relationships existed and if they corresponded with the researcher's expectations (Tabachnick & Fidell, 2007). This process highlighted items that were not performing satisfactorily. It was used to identify inter-relationships among items and groups of items that form part of a unified construct.

The KMO of .64 justified the legitimacy of the factor loading. The Keiser Myer Olkin measure of sampling adequacy (KMO) provided information about the appropriateness of conducting a factor analysis on a data set (Worthington & Whittaker, 2007). The closer to 1 the KMO score is, the more appropriate factor analysis is, and the values above 8 are considered "good" (Field, 2013).

The Cronbach alpha value was considered adequate, with the alpha value at .7, which tested the Stress-Coping Behaviour factor (DeVellis, 2017). Cronbach's alpha was run to examine this group of items' reliability or internal consistency. The goal was to identify the components with a Cronbach's alpha close to or above .7. With all four items together, the Cronbach's alpha was .7, indicating that all four items together are reliable measures of this component. Thus, the Cronbach alpha for Stress-Coping Behaviour represented a satisfactory coefficient as a whole measure. Eliminating any items did not strengthen the alpha rating, so all four items remained in this component for the Stress-Coping factor (SCB 1-SBC 3; Piedmont, 2014). SCB4 (the use of positive leisure options, for example, church and board games) was seen as an item because it did not have a good factor loading within the Personal Stress component. SCB1-SCB3 were seen as negative stress-coping behaviours.

The stress-coping factor fell within the threshold (.8). However, SCB 4 fell under the suggested threshold. On the exploratory factor analysis (EFA), the items 'do you make use of aggressive behaviour to deal with stress', 'do you resort to the use of alcohol or drugs when feeling stressed' and 'do you resort in any other type of anti-social behaviour to cope with stress' had strong correlations with the items grouped in the same construct. The findings showed that three of the four items were suitable for inclusion. SCB 4 was seen as an item, and SCB 1-SCB 3 were seen as a factor. The properties for Stress-Coping items were deemed acceptable for inclusion. There were positive correlations between the factor loadings in the Stress-Coping Behaviour factor. Thus, Stress-Coping Behaviour was seen as a legitimate factor. Although stressors may differ according to the situation, combat and non-combat navy members regularly need to cope with varying stressors on-board a ship (Calibre Associates, 1995). It is essential to use questionnaires to measure these coping abilities, such as the coping inventory for stressful situations. This questionnaire is similar to the TRSLAT in that it shows excellent internal consistency and good-to-adequate reliability.

8.14 Leisure Behaviour factor

The component matrix indicated that the seven-item loadings had a good fit, indicating the interaction between the scale items. Therefore, it confirms that the extracted components are reliable and that construct validity exists (Stevens, 1996).

The KMO and Bartlett test result of .87 justified the legitimacy of the factors. The results illustrate that the calculated *p*-value is < 0.001, which means there were good relationships between the constructs in question.

The Cronbach alpha .84 confirmed that the overall significance of the correlations within the correlation matrix was suitable for factor analyses. According to the Cronbach alpha, it was established that the respondents were consistent with their answers. The Chronbach's alpha

rating of these seven items was .84, and elimination of any of the items did not increase this number, so all four were identified as reliable items to measure. Thus, the alpha values were established to examine the internal consistency of the measure.

The values suggested that LB5 had a low value, and six of the remaining items had high reliability. The high values of the Cronbach alpha values for the constructs implied that they were internally consistent. Findings obtained in this research suggested that leisure behaviour as a factor was thus legitimate. The findings indicated that there were good factor loadings among the seven items. No items were excluded. Therefore, Leisure Behaviour was deemed a legitimate factor and was thus justified for inclusion.

8.15 Barriers to Participation factor

The rotated component matrix presented factor loadings for the 11 items. The statistics presented indicated that the items have a good fit. The factor loading summary of the findings indicates the following: activity unavailable near my place of residence, activity unavailable in the workplace, activity unavailable during deployment, lack of childcare when I have time to participate in the activity, lack of transportation, inconvenient hours, poor programme management, lack of program information, no companion, personal safety concerns, and lack of money (Barriers to Participation A) had a good fit, ranging from .51 to .80. All the items loaded above .4, the minimum recommended value (Straub et al., 2004).

The KMO measure was computed to determine the suitability of the results. The KMO was estimated using correlations to test whether the variables in the sample were adequate to correlate. The KMO and Bartlett test justified the legitimacy of the factor loadings at .9, indicating a value close to 1 is better (Brace et al., 2003; Hinton et al., 2004). The results confirm that the KMO test supports sampling adequacy, and it was worth conducting a factor analysis. This means that higher KMO values indicated the possibility of factor existence. The

Cronbach alpha of .87 was excellent regarding internal constancy of the reliability for Barriers to Participation A.

Barriers to participation B also had an excellent fit to the factor loadings. The four-factor loadings of personal health reasons, I am uncomfortable with other users, a personal physical condition that needs special consideration, no assistance for physical condition (should you have a physical condition that needs special assistance, i.e. a disability). The KMO and Bartlett test justified the legitimacy at .73. The Cronbach alpha .71 assessed the internal consistency of the factors. Due to differences in the factor questions related to reputational sustainability and a low-reliability score between them, it was decided to keep these three items as separate variables. The remaining four items were reduced to one factor, namely, Barriers to Participation B (reliability measured using Cronbach's α of .71, which is above the threshold of 0.7; Grant & Davis, 1997). This is because the standard error of measurement of a score increases as the reliability decreases. Thus, it can be seen that the alpha values are highly satisfactory and rather impressive. Thus, the findings obtained in this research suggested that barriers to participation as a factor were thus legitimate. The variables in the sample showed adequate factor loadings. The internal consistency of BP1-11 was adequate for factor analyses.

8.16 Chapter conclusion

This study aimed to evaluate the validity and reliability of the TRSLAT measuring stress, stress-coping and leisure behaviour in the SAN. The results showed that this was successfully achieved. The study's aim was solidified through the objectives. Although the findings in the study were encouraging, it should be borne in mind that the validation of an instrument is an ongoing process. Based on the evidence, it can thus be deduced that the appraisal tool was valid and reliable at a 99% confidence level. In conclusion, this study proved valuable in that a reliable and valid assessment tool was developed within SAN in a South African context.

CHAPTER 9

CONCLUSION AND RECOMMENDATIONS

9.1 Introduction

The aim, objectives and rationale of this study were achieved in support of the findings. The findings contributed to the validity argument for the TRSLAT in terms of content and structural and external evidence. Content evidence for the instrument was gathered through a pilot study that assessed how well military members from the target population understood and could relate to the items and format of the instrument. Improvements were made to the instrument based on the findings in this pilot study. Regarding structural evidence, the approach used for selecting items has been widely used in research, demonstrating support for the techniques employed. External evidence for the instrument was demonstrated significantly on all factors yielded by the typical factor analysis.

The TRSLAT was developed as an appraisal tool for the Therapeutic Recreation Stress Management Intervention Model (TRSMIM). The TRSMIM provided the necessary skills and ability for SAN members to cope with stress. The tool measured stress, stress-coping and the leisure behaviour of military members in the SAN. The tool looks at how military members assess stress and their leisure involvement activities. It also looked at health and well-being and the benefits of leisure as a stress-coping mechanism, both in members' personal lives and in the military. The tool also focused on leisure-coping strategies to treat and prevent stress. Emphasis was also placed on the development, maintenance and expression of an appropriate leisure lifestyle for military members. The validity and reliability of the TRSLAT were significant as a research instrument. The reliability and validity concepts were used to evaluate the quality of the research and indicated how sound methods, techniques and measures were used in the study. All of the nine factors possessed excellent reliability and validity levels.

Thus, the reliability and validity of the components were assessed that indicated acceptable results.

The TRSLAT is based on the following components:

1. Personal stress.
2. Occupational stress.
3. Wellness.
4. Operational deployment.
5. Personal support.
6. Stress-coping behaviour.
7. Leisure behaviour.
8. Barriers to participation.

Each component of the proposed appraisal tool will now be discussed.

9.2. Personal stress

The results indicated that there were strong relationships between the items of personal stress. Personal stressors varied from financial management problems to physical and psychological problems. The personal stress factor had high commonalities, given the fact that all items had high factor loadings. Therefore, all items appeared worthy of retention. Thus, the findings obtained in this research suggested that the personal stress factor was thus legitimate. It was essential to determine whether SAN members were stressed or not and to determine how stress affected their psychological well-being and behaviour.

9.3. Occupational stress

The validity and reliability of the TRSLAT were significant as a research instrument. Most occupational stressors were related to the inability to achieve personal goals or poor

communication with superiors, family responsibilities, marital problems, personal concerns, lack of job advancement, educational development, alcohol abuse, and a lack of interest in life. The reliability and validity concepts were used to evaluate the quality of the research and indicated how sound methods, techniques and measures were used in the study. All of the factors possessed excellent reliability and validity levels. Thus, the reliability and validity of the components were assessed that indicated acceptable results. In this study, both occupational stressors were the primary cause of military members' stress.

9.4. Wellness

No items were removed, indicating that the seven wellness items had good factor loading and high factor commonality. Thus, the Wellness factor was a legitimate factor. Moreover, factors for wellness were statistically significant and it was justified for inclusion in the instrument.

9.5. Operational deployment

Findings obtained in this research suggested that Operational Deployment was thus a legitimate factor. The inter-factor correlation coefficients between the eight items were all positive. It was postulated in this study that deployment had an adverse effect on sailors. For example, long working hours, feelings of powerlessness, and ambiguity were some of the stressors military members experienced. The eight items appeared to have good internal consistency based on the reliability estimates. Therefore, the items obtained were seen as acceptable for inclusion.

9.6. Personal support

The functionality of the items tested indicated a high level of reliability. In the study, military members felt that support appeared to be a source of stress rather than a buffer against the adverse effects of stress. Members also felt a lack of trust towards their supervisors and fellow staff members. Findings obtained in this research suggested that the Personal Support factor was thus legitimate.

9.7. Stress-coping behaviour

The properties for stress-coping items were deemed acceptable for inclusion. There were positive correlations between the factor loadings in the Stress-Coping Behaviour factor. Thus, stress-Coping Behaviour was seen as a legitimate factor.

9.8. Leisure behaviour

Findings obtained in this research suggested that Leisure Behaviour as a factor was thus legitimate. The findings indicated that there were good factor loadings among the seven items. The need to de-stress is given to military members in the form of sport, recreation and leisure. By engaging in these activities, military members are focused on attaining socially desirable attitudes, habits and values. No items were excluded. Therefore, Leisure Behaviour was deemed a legitimate factor and was thus justified for inclusion.

9.9. Barriers to participation

Thus, the findings obtained in this research suggested that Barriers to Participation as a factor was thus legitimate. The variables in the sample showed adequate factor loadings. The internal consistency of the BP1-11 was adequate for factor analyses.

Although continued refinement of the instrument needs to be undertaken, it is believed that further research needs to be conducted to improve the generalisability of the instrument.

9. 10. Limitations to the current study

This study gathered valuable information on the stress levels within SAN by measuring stress, stress-coping and leisure behaviour. The limitations experienced by the researcher as it relates to the study are discussed in the following paragraphs. The data in this study were collected using qualitative and quantitative research methods. There were limitations identified in the current study that should be taken into consideration. The following limitations were identified:

- The limited research on the military and the scarcity of recent studies conducted was a challenge because most of the literature was outdated in South Africa. Most, if not all, of the data collected depend on the recall ability and honesty of the participants.
- The accessibility and availability of ships' personnel due to deployments was also a limitation. Not all the invited participants provided feedback on the developed items that could participate due to being unavailable at the time.
- The challenges experienced with the recruitment of participants delayed the data-collection procedure. The challenges experienced with the current study included the fact that gaining access and approval in the military context was challenging.
- The instrument was completed either individually, with some assistance, or by reading the questions to the participants. This was necessary due to the variability among participants in terms of reading literacy and the participants' preference. Although no differences were identified in how the instrument was administered, it would be better in future studies to use an approach that accommodates participants with poor reading literacy.
- Although the sample size was adequate to conduct statistical analyses, further research needs to be conducted among a broader spectrum of participants. Focus-group discussions were particularly a unique experience for participants. Due to the researcher's rank within the organisation, it was deemed necessary to procure a research supervisor to conduct the focus-group discussions, with the aim of removing any potential bias.
- Another limitation of this study was that it only included members of the SAN and not the broader SANDF.
- The questionnaire length may also have limited the number of responses, as some of the questionnaires were not completed in full by participants, and some were even

handed in blank. This may have been due to problems with the schedule of the respondents, giving them limited time to complete the questionnaire.

9.11 Recommendations for further research

- A deductive approach was followed to generate items. The researcher recommends that both deductive and inductive approaches be considered to increase the validity and reliability of the instrument.
- Continued instrument refinement is recommended in new settings or new groups that call for new evaluations. In a multi-cultural country such as South Africa, particularly the military, with its numerous language and ethnic groups, it is necessary to consider differences in order to conduct fair assessments.
- The reliability coefficients of the Cronbach alpha and construct validity as evidenced by PCA and CFA are further supported by the soundness of the TRSLAT that was administered. In essence, the study shed light on the salient issues regarding the measurement of stress in general, as evidenced by the literature in the field.
- Through this study, we would like to make the TRSLAT questionnaire available to other researchers who could further investigate whether our questionnaire represents an appropriate instrument for assessing stress in the military.
- We recommend additional evaluation of this reliable, valid measure of the TRSLAT for its utility as a tool for measuring stress within a military environment.

9.12 Recommendations for practice

- The study could be helpful because a valid and reliable instrument was developed. The instrument could thus be used as a tool for determining how military members respond to stress in the military environment.

- The modified TRSLAT has been demonstrated to be reliable and valid. However, researchers still need to develop better ways to access military members' stress responses. Future studies need to use more structured questions to improve the preciseness of measuring military members' stress.
- The design and implementation of wellness practices should promote military members' health and well-being and that of the SANDF as an institution.
- Although the finding was encouraging, it should be borne in mind that validating an instrument is an ongoing process. Continued refinement of the instrument is thus recommended.

9.13 Study conclusion

In this chapter, the results of the study were summarised and discussed. Recommendations, implications and limitations of this study and suggestions for future research were provided. The chapter concluded with a summary of the entire thesis. The current research project emerged from the researcher's personal experience working within the military environment and previous research conducted within a military context. The setting for the study was of interest to the researcher after spending years working in the military environment. This study aimed to evaluate the validity and reliability of the TRSLAT, measuring stress, stress-coping and leisure behaviour in the SAN. The results supported the validity and reliability of the TRSLAT. The study's aim was thus solidified through the objectives.

Therefore, the current study's stages, phases, chapters, results, and findings contributed to establishing the validity and reliability of the TRSLAT in the military in an African context. The TRSLAT was developed in an African military context to address the needs and contribute to SANDF information systems. Although the findings in the study were encouraging, it should be borne in mind that the validation of an instrument is an ongoing process. Based on the

evidence, it can thus be deduced that the TRSLAT was a valid and reliable instrument that can aid in identifying and quantifying stress in the military. The TRSLAT questionnaire was a good instrument for measuring stress in the military, with moderate to good reliability, validity and feasibility. The high construct validity and internal consistency reliability suggested that the tool was useful in a sample of military personnel. In conclusion, this study proved valuable in that a reliable and valid assessment tool was developed within SAN in a South African context.

REFERENCES

Adams, T. (2003). *The power of perceptions: Measuring wellness in a globally acceptable, philosophically consistent way*. Wellness Management. www.hedir.org.

Allen, M. J., & Yen, W. M. (1979). *Introduction to measurement theory*. USA: Waveland Press Inc.

Allen, R. 1983. Human stress: *Its nature and control. Minneapolis*, Minn: Burgess Publishing Company.

Anderson, D., Plotnikoff, R. C., Raine, K., Cook, K., Smith, C., & Barrett, L. (2004). Towards the development of scales to measure 'will' to promote heart health within health organizations in Canada. *Health Promotion International*, 19, 471-481.

Anspaugh, D., Hamrick, M. & Rosato, F. (2004). *Wellness*: Concepts and Applications 6th ed. Boston: McGraw Hill. "Wellness and Fitness for life".

Austin, D. (1998). The health protection/health promotion model. *Therapeutic Recreation Journal, 32*(2): 1-6.

Bagne-Walsh, J. (2008). *Stress management and wellness*: A toolbox for stress management and wellness for the social service professional. Master's thesis, University of Winona.

Bartone, P. (2005). The need for positive meaning in military operations: Reflections on Abu Ghraib. *Journal of Military Psychology, 17*(4): 315-324.

Bartone, P. (2006) Resilience under military operational stress: Can leaders influence hardiness? *Military Psychology*, 18 (Supplement), 131-148.

Bates, M., Bowles, S., Hammermeister, J., Stokes, C., Pinder, E., Moore, M., et al. (2010). Psychological fitness. *Military Medicine*, 175(8), 21-38.

Beglar, D. (2010). *A Rasch-based validation of the vocabulary size test*. Language testing, 27, 101-118.

Benton, T., & Bienenfeld, D. (2010, November). *Adjustment disorder*. Retrieved November 14, 2011, from Medscape reference: Drugs, disease and procedures: http://emedicine.medscape.com/article/292759-overview

Bogg, J. & Cooper, C. (1995). Job satisfaction, mental health, and occupational stress among senior civil servants. *Journal of Human Relations*, *48* (1): 327–341.

Bokti, N.L.M. & Talib, M.B. (2011). A preliminary study on occupational stress & job satisfaction among male navy personnel at a Naval Base in Lamut Malaysia.

Bonato, D., Costa, A.S., Viterbo, L.M.F., Vidal, D.G., & Dinis, M.A.P., (2020). *Medical Emergency Resource Classification Instrument* (MERCI) in the oil industry Brazil. In P.M.

Arezes, J.S. Baptista, M.P. Barroso, P. Carneiro, P. Cordeiro, N. Costa, R.B. Melo, A.S. Miguel, & G. Perestrelo (eds). *Springer International* Publishing.og/10/10.100/970-3-030-41486-27.

Brace, N. Kemp, R. & Snelgar, R. (2003). *SPSS for psychologist: a guide to data analysis using SPSS for windows*, New York: Polgrave Macmillian.

Bray, R., Fairbank, J., & Marsden, M. (1999). Stress and substance use among military women and men. The American Journal of Drug and Alcohol Abuse, 25(2), 239-256. Bronfenbrenner, U., & Ceci, S. J. (1994). Nature-nurture reconceptualized: A bioecological model. *Psychological Review*, 101, 568-586.

Bronfenbrenner, U. (1986). Ecology of the family as a context of human development: Research perspectives. *Developmental Psychology*, 22, 723-742.

Bronfenbrenner, U. (1995). Developmental ecology through space and time: A future perspective. In P. Moen, G. H. Elder, Jr & K. Luscher (Eds.), Examining lives in context:

Butt, M. L., Pinelli, J., Boyle, M. H., Thomas, H., Hunsberger, M., Saigal, S., Austin, P. (2009). Development and evaluation of an instrument to measure parental satisfaction with quality of care in neonatal follow-up. *Journal of Developmental and Behavioral Pediatrics*, 30, 57-65. Perspectives on the ecology of human development (pp. 619-647). Washington DC: American Psychological Association.

Caldwell, L. (2005, February). Leisure and health: Why is leisure therapeutic? *British Journal of Guidance and Counselling*, *33*(1), 7-26.

Carter, S. P., Loew, B., Allen, E.S., Osborne, L. S. Scott, M. & Markman, H. J. (2015). Distraction during deployment: Marital relationship associations with spill-over for deployed army soldiers. *Military Psychology*, *27*(2): 108-114. http://dx.doi.org/10.1037/mil0000067.

Castro, M. & Martins, N. (2010). The relationship between organizational climate and employee satisfaction in a South African information and technology organization. *South African Journal of Industrial Psychology*. 36(1): 1-9.

Cohen, J. (2013). Statistical power analysis for the behavioural sciences. Routledge Academic.

Coie, J. D., Watt, N. F., West, S. G., Hawkins, J. D., Asarnow, J. R., Markman, H. J., … Long, B. (1993). The science of prevention: A conceptual framework and some directions for a national research program. *American Psychologist*, 48, 1013.

Compare, A., Zarbo, C., Shonin, E., Van Gordon, W. & Marconi, C. (2014). Emotional Regulation and Depression: A Potential Mediator between Heart and Mind," *Cardiovascular Psychiatry and Neurology*, vol. (1): 1-10. doi:10.1155/2014/324374.

Comrey, A. L. (1988). Factor-analytic methods of scale development in personality and clinical psychology. *Journal of Consulting and Clinical Psychology*, 56, 754.

Conway, J. M., & Huffcutt, A. I. (2003). A review and evaluation of exploratory factor analysis practices in organizational research. *Organizational Research Methods*, 6, 147-168.

Cook, D. A., & Beckman, T. J. (2006). Current concepts in validity and reliability for psychometric instruments: Theory and application. *The American Journal of Medicine*, 119, 166.e7- 166.e16.

Cooper, C & Straw, A. (1998). Successful stress management. London: Hodder & Stoughton.

Corbin, C. B & Pangrazi. R. P. (2001). Toward a uniform definition of wellness. *Research Digest*. 3(15):1-10.

Cordes, C. L., & Dougherty, T. W. (1993). A review and an integration of research on job burnout. *Acadamy of Management Review*, 19(4), 621-656.

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of applied psychology*, 78(1), 98.

Costello, A.B., & Osborne, J.W. (2005) Best practices in exploratory factor analysis: Facto recommendations for getting the most from your analysis. Practical Assessment Research & Evaluation, 10 (7), 1-9.

Cozett, M.W. (2013). *Perceptions of Basic Military Training*. Mini-thesis. The University of the Western Cape.

Crawford, M., Sharpe, D., Rutter, D., & Weaver, T. (2009). Prevention of suicidal behaviour among army personnel: A qualitative study. *Journal of the Royal Army Medical Corps*, 155(3), 203-207.

Creswell 2003, J.W., Plano-Clark, V.L., Gutmann, M., Hanson, H., 2003. *Advanced mixed method research designs*. In handbook on mixed methods in the behavioural and social sciences, ed. Tashakkori, A. & Teddie, 209-40 Thousand Oaks.

Creswell, R. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. USA: SAGE Publications.

Creswell, J.W., Plano, V.L. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.

Creswell 2003, J.W., Plano-Clark, V.L., Gutmann, M., Hanson, H., 2003. *Advanced mixed method research designs*. In Handbook on mixed methods in the behavioural and social sciences, ed. Tashakkori, A. & Teddie, 209-40 Thousand Oaks.

Creswell, J.W. (2009). *Research design: qualitative, quantitative and mixed methods approach*, 3rd Ed. Thousand Oaks, California: SAGE Publication, Inc.

De Bruin, G. P., & Taylor, N. (2006). The job demand-control model of job strain across gender. *South African Journal of Industrial Psychology*, 32, 66-73.

De Bruin, G. P., & Lew, C. (2000). Construct validity of the career resilience questionnaire. *South African Journal of Industrial Psychology*, 28, 67-69.

De Bruin, K., & De Bruin, G. P. (2011). Development of the learner Self-Directedness in the Workplace Scale. *South African Journal of Industrial Psychology*, 37, 1-10.

De Bruin, K., De Bruin, G., Derksen, S., & Cilliers-Hartslief, M. (2005). Predictive validity of general intelligence and big five measures for adult basic education and training outcomes. *South African Journal of Psychology*, 35, 46-57.

Deahl, M., Srinivasan, M., Jones, N., Thomas, J., Neblett. & Jolly, A. (2000). *Preventing Psychological Trauma in Soldiers*: The role of Operational Stress.

Delport, C. S. L., De Vos, A. S., Fouché, C. B., & Strydom, H. (2005). *Research at grassroots for the social sciences and human service professions*. Pretoria. Van Schaik.

DeVellis, R. F. (2003). *Scale Development*: Theory and Applications. USA: SAGE.

De Vet, H. C., Adèr, H. J., Terwee, C. B., & Pouwer, F. (2005). Are factor analytical techniques used appropriately in the validation of health status questionnaires? A systematic review on the quality of factor analysis of the SF-36. *Quality of Life Research*, 14, 1203-1218.

DeYoung, C. G., Peterson, J. B., & Higgins, D. M. (2001). Higher-order factors of the big five predict conformity: Are there neuroses of health? *Personality and Individual Differences*, 33,533–552.

DeCarvalho, L.T & Whealin, J.M., (2015). A Review of "Healing Stress in Military Families: Eight Steps to Wellness". *Journal of Couple & Relationship Therapy*: Innovations in Clinical and Educational Interventions. 14(1). 9192 doi:10.1080/15332691.2015.987031. doi:10.1080/15332691.2015.987031.

DeLongis, A., Folkman, S. & Lazarus, R. S. (1988). The impact of daily stress on health and mood: Psychological and social resources as mediators. *Journal of Personality and Social Psychology*, 54(2), 486–495.

Devellis, R.F. (2007). Scale development: Theory and applications (4th ed) Thousand Oaks, CA: Sage

Dolan, C.A., Crouch, C.L., West, P., & Castro, C.A. (2001). Sources of stress and coping strategies among U.S. soldiers and their leaders. Paper presented at the meeting of the European Health Psychology Conference, St. Andrews, Scotland.

Dolbier, C., Smith, S., & Steinhardt, M. (2007). Relationships of protective factors to stress and symptoms of Illness. *American Journal of Health Behaviour*, *31*(4), 423-433.

Dolan, S. (2007). *Stress, self-esteem, health and work*. Hampshire: Palgrave Macmillan.

Drescher, K., Smith, M., & Foy, D. (2007). Spirituality and readjustment following war zone experiences. In Figley, C. & Nash W. (Eds.), Combat stress injury: Theory, research and management (pp. 295-310). New York: Routledge.

Downing, S.M. (2004). Reliability: On the Reproducibility of Assessment Data. *Medical Education*, 38, 1006-1012.

Dupius, S., Smale, B. & Wiersma, E. (2005). Creating open environments in long-term care settings: An examination of influencing factors. *Therapeutic Recreation Journal*, 39(4), 277-299.

Du Bois, B., Goodman, J., Conway, T., (1989) Dietary and behavioural prediction of obesity in the Navy. Naval Health Research Center Report 89-56. Department of Navy lement no.61152N.MR.0001/0002289WRWW542.A6-A223-919.

Duckers, M. L. A., Wagner, C., & Groenewegen, P. P. (2008). Developing and testing an instrument to measure the presence of conditions for successful implementation of quality improvement collaboratives. *Bio Medical Central Health Services Research*, 8, 172.

Eid, J. (2006). Dissociation, hardiness, and performance in military cadets participating in survival training. *Military Medicine*, 171(5), 436-442.

Ekblad, S. (2002). Ethnopolitical warfare, Traumatic family stress and the mental health of refugee children. In C. Stout (Ed.), The psychology of terrorism: Clinical aspects and responses (Vol. II, pp. 27-48). Westport: Preager Publishers.

Ender, M. G., Campbell, K., Davis, T., & Michaelis, P. (2004). Embedded reporters and military families. Paper presented at the Annual Meeting of the International Sociological Association, Research Committee 01: Armed Forces and Conflict Resolution, Ankara, Turkey.

Enshassi, A., Swaity, E.A. & Arian, F. 2016. Investigating common causes of burnout in the construction industry. International Journal of Construction Project Management, 8, 43.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4, 272-299.

Farnick M., & Pierzchala, W. (2012). Instrument development and evaluation for patient-related outcomes assessments. Dove Medical Press Ltd.

Field, A. (2003). Discovering Statistics using IBM SPSS statistics. Sage: Thousand Oaks, CA.

Figley, C., & Nash, W. (2007). Introduction: For those who bear the battle. In C. Figley, & W. Nash (Eds.), Combat stress injury: Theory, research and management (pp. 1-8). New York: Routledge.

Floyd, F. J., & Widaman, K. F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment*, 17, 286-299.

Fok, M. S., & Tsang, W. Y. (2005). Development of an instrument measuring Chinese adolescent beliefs and attitudes towards substance abuse. *Journal of Clinical Nursing*, 14, 986-994.

Foxcroft, C., & Roodt, G. (2005). *An introduction to psychological assessment in the South African context* (2nd Ed.). South Africa: Oxford University Press.

Furnham, A. (1997). *Lay theories of work stress*. Journal of Work & Stress, 11(1), 68–78.

Garmezy, N. (1987). Stress, competence, and development: Continuities in the study of schizophrenic adults, children vulnerable to psychopathology, and the search for stress-resistant children. *American Journal of Orthopsychiatry*, 57(2), 159-174.

Garson, G. D. (2011d). Internal consistency reliability, from Statnotes: Topics in Reliability Analysis. Retrieved August 11, 2011, from http://faculty.chass.ncsu.edu/garson/PA765/reliab.htm

Girden, F.R., & Kabacoff, R., (2002*). Evaluating research articles from start to finish* (3rd

Gorsuch, R.L. (1983). Factor analysis. Hillside, N.J.L. Erlbaum Associates.

Grant, J., & Davis, L. (1997). Selection and use of content experts for instrument development. *Research in Nursing & Health*, 20, 269-274.

Gratton, C., & Jones, I. (2004). *Research methods for sport studies*. London: Routledge Taylor and Francis Group.

Grenier, S., Darte, K., Heber, A., & Richardson, D. (2007). *The operational stress injury social support program: A peer support program in collaboration between the Canadian Forces and Veterans Affairs Canada*. In C. Figley, & W. Nash (Eds.), Combat stress injury: Theory, research and management (pp. 261-294). New York, Routledge.

Hair, J.F., Ringle, C.M. & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. Journal of *Marketing theory & Practice*, 19 (2), 139-152.

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010). *Multivariate Data analysis*, 7th ed, Pearson Prentice Hall, NJ.

Hall, K., & Giese, S. (2008-2009). *Addressing quality through school fees and school funding*. South African Child Gauge 2008/2009.

Harrison. J, Sharpley. J, Greenberg. N. (1998). *The Management of post-traumatic stress reaction in the military*.

Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research. *Educational and Psychological Measurement*, 66, 393-416

Hayes, S.N., Smith, G.T., & Hunsley, J.D. (2011). Scientific foundations of clinical assessment. New York, NY: Routledge.

Hettler, B. (1980). Wellness promotion on a university campus. Family and Community Health: *Journal of Health Promotion and Maintenance*, 3(1): 77-95.

Field, A. (2005). Discovering statistics using SPSS. (2nd ed.). London: Sage Publications.

Hills, P., & Argyle, M. (2001). The Oxford Happiness Questionnaire: A compact scale for the measurement of psychological well-being. Personality and Individual Differences, 33, 1073-1082

Hinkin, T.R. (1995). A review of instrument practices in the study of organisations. *Journal of Management*, 21 (5), 967-988.

Hodge, C., Terhakopian, A., Castro, C., Messer, S., & Engel, C. (2007). Association of post-traumatic stress disorder with somatic symptoms, health care visits and absenteeism among Iraq War Veterans. *American Journal of Psychiatry*, 164, 150-153.

Hu, L. T., Bentler, P. M., & Kano, Y. (1992). Can test statistics in covariance structure analysis be trusted? *Psychological bulletin*, 112, 351.

Hutchinson, S., Bland, A. & Kleiber, D. (2008). Leisure and stress-coping: implications for therapeutic recreation practice. *Therapeutic Recreation Journal Special Issue*, 42(1): 9-23.

Hourani, L., Williams, T., & Kress, A. (2006). Stress, mental health and job performance among active military personnel: Findings from the 2002 Department of Defence Health-Related Behaviours Survey. *Military Medicine*, 171(9): 849-856.

Iwasaki, Y., & Mannell, R. C. (2000). Hierarchical dimensions of leisure stress coping. *Leisure Sciences*, 22(1): 163-181.

Jones, N., Greenberg, N., Fear, N. E., Mcallister, P., Reid, G., & Wessely, S. (2008). The operational mental health consequences of deployment to Iraq for UK forces. *Journal of the Royal Army Medical Corps*, 154(2): 101-105.

Kaplan, R. M., & Saccuzzo, D. P. (2009). Psychological testing: Principles, applications, and issues (7th ed.). Belmont, CA: Wadsworth, Cengage Learning.

Killion, T., Bury, S., De Pontbriand, R., & Belanich, J. (2009). United States army science and technology: Sustaining soldier performance. *Military Psychology*, 21(Supplement), 9-22.

Kristjansson, E., Tugwell, P. S., Wilson, A. J., Brooks, P. M., Driedger, S. M., Gallois, C., Wells, G. A. (2007). Development of the Effective Musculoskeletal Consumer Scale. *Journal of Rheumatology*, 34, 1392-1400.

Laher, S. (2010). Using exploratory factor analysis in personality research: Best practice recommendations. South African. *Journal of Industrial Psychology*, 36, 1-7.

Lauder, T., Baker, S., Smit, G., & Lincoln, A. (2000). Sports and physical training injury hospitalizations in the army. *American Journal of Preventive Medicine*, 18(3), 118-128

Lazarus RS, Folkman S. Stress, Appraisal, and Coping. New York: Springer 1984. Grzywacz JG, Almeida DM, McDonald DA. Work-family spillover and daily reports of work and family stress in the adult labor force. *Family Relations*. 2002; 51(1): 28-36.

Leatz, C., & Stolar, M. (1993). Career success/personal stress: How to stay healthy in a high-stress environment. New York: McGraw-Hill.

Lee-Baggley, D., Preece, M., & DeLongis, A. (2005). Coping with interpersonal stress: Role of Big Five traits. *Journal of Personality 73*(5): 1141-1180.

Legesse, B. (2014). Research Methods in Agribusiness and Value Chains. School of Agricultural Economics and Agribusiness, Haramaya University.

Lew, H., Otis, J., Tun, C., Kerns, R., Clark, M., & Cifu, D. (2009). Prevelance of chronic pain, post-traumatic stress disorder, and persistent postconcussive symptoms in IOF/OEF veterans: Polytrauma clinical trial. *Journal of Rehabilitation Research and Development*, 46(6), 697-702.

Lindon, W. (2005). Stress management: From basic science to better practice. California: Sage Publications.

Long, T. (2008 a). The therapeutic recreation process. In T. Robertson, & T. Long (Eds.), Foundations of therapeutic recreation: Perceptions, philosophies, and practices for the 21st century (pp. 79-99). Champaign, Illinois: Human Kinetics.

Louw, G., & Viviers, A. (2010). An evaluation of psychosocial stress and coping model in the police work context. *South African Journal of Industrial Psychology*, 31(1), 1-11.

Luis Gaviria & Associates. (2008, April). Living with stress... and learning how to manage it! Bilingual parent outreach program. Ft. Lauderdale, Miami.

Malkin, M., Benshoff, J., Beck, M., & Toriello, P. (1996). Therapeutic recreation interventions in substance abuse treatment programs. Parks and Recreation, 31(10), 26-34

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397.

McGhee, S., Groff, D., & Russoniello, C. (2005). We care too: Providing community-based therapeutic recreation Services for youth with emotional and behavioural disorders. *Therapeutic Recreation Journal*, 39(1), 32-47.

McGonigle, T., Casper, W., Meiman, E. C., Cronin, B., & Harris, R. (2005). The relationship between personnel support programs and readiness: A model to guide future research. *Military psychology*, 17(1), 25-39

McIntire, S. A., & Miller, L. A. (2007). *Foundations of psychological testing*: A practical approach. USA: Sage.

McLauchlin, P. (2006). Afghanistan war poses unique challenges for military MD's. Canadian *Medical Association Journal*, 175(11), 1357-1358.

Mclellan-Wright, M. F., Anderson, D., Barber, S., Smith, N., Cantin, B., Felix, R., & Raine, K. (2007). The development of measures of a community capacity for community-based funding programs in Canada. *Health Promotion International*, 22, 299-306.

Meads, D. M., Doward, L. C., McKenna, S. P., Fisk, J., Twiss, J., & Eckert, B. (2009). The development and validation of the Unidimentional Fatigue Impact Scale (U-FIS). Journal of *Multiple Sclerosis*, 15, 1228-1238.

Miller, G., & Foster, L. (2010). *Critical synthesis of wellness literature*. Canada: University of Victoria.

Miller, K., & Rasmussen, A. (2010). *War exposure, daily stressors and mental health in conflict and post-conflict settings*: Bridging the divide between trauma-focussed and psychosocial frameworks. Social Science and Medicine, 70(1), 7-16.

Mischel, W., Shoda, Y., & Peake, P. K. (1988). The nature of adolescent competencies predicted by preschool delay of gratification. *Journal of Personality and Social Psychology*, 54(4), 687.

Messick, S. (1989). Validity. In R. L. Linn (Ed.), Educational Measurement (pp. 13-104). New York: Macmillan Publishing Company.

Messick, S. (1995). Validity of psychological assessment. American Psychologist, 50, 741-749.

Messick, S. (1995). Validity of psychological assessment: Validation of inferences from persons' responses and performances as scientific inquiry into score meaning. *The American Psychologist*, 50, 741-749

Messick, S. (1996). Validity and washback in language testing. New Jersey: Educational testing Service.

Morgan, C., Cho, T., Hazlett, G., Coric, V., & Morgan, J. (2002). The impact of burnout on human physiology and on operational performance: A prospective study of soldiers enrolled in the combat diver qualification course. *Yale Journal of Biology and Medicine*, 75, 199-205.

Nash, W., & Baker, D. (2007). Competing and complementing models of combat stress injury. In C. Figley, & W. Nash (Eds.), Combat stress injury: *Theory, research and management* (pp. 65-94). New York: Routledge.

Nissen, L., Marott, J., Gyntelberg, F., & Guldager, B. (2011). Danish soldiers in Iraq: Perceived exposures, psychological distress, and reporting of physical symptoms. *Military Medicine*, 176(10), 1138-1134

Nunnally, J. C. (1978). Psychometric theory (2nd ed.). New York: McGraw-Hill.

Pallant, J., 2010. SPSS survival manual, sixth edition. McGraw-Hill Education. Bershire England.

Panelli, R., & Tipa, G. (2007). Placing well-being: A Maori case study of cultural and environmental specificity. *Journal of Eco-Health* 4 (1): 445-460.

Patching, A. & Best, R. 2014. An Investigation into Psychological Stress Detection and Management in Organisations Operating in Project and construction Management. Procedia Social and Behavioural Sciences, 119, 682-691.

Patel, C. (1991). The complete guide to stress management. New York: Plenum Press.

Phillips, N. (2006). A phenomenological study of the impacts of Morale Welfare and Recreation (MWR) on soldiers during Operation Iraqi Freedom (OIF). Graduate College of Bowling Green State University. Australia:

Philot, T. (2006, December 10). War wounds. Community care (1644). Retrieved March 8, 2007, from Database: Academic Search Premier.

Ramchand, R, Rudavsky, R, Grant, S, L.H.P (2015). Relevance of, Risk Factors For, and Consequences of Posttraumatic Stress Disorder and Other Mental Health Problems in Military Populations Deployed to Iraq and Afghanistan. Current Psychiatry Reports.

Rego, A., & Cunha, M. (2008). Perceptions of authentizotic climates and employee happiness: Pathways to individual performance. *Journal of Business Research*, 61(7), 739-752.

Renwick, D. (2009). The origins of employee wellbeing in Brazil: and exploratory analysis. *Journal of Employee Relations*, 31(3), 312-321.

Rocco, C. (1998). Wellness at Air Command and Staff College: Impacting total force readiness through tomorrow's leaders. Maxwel Air Force Base, Alabama: Air Command and Staff College.

Ramchand, R, Rudavsky, R, Grant, S, L. HP (2015). Relevance of, Risk Factors For, and Consequences of Posttraumatic Stress Disorder and Other Mental Health Problems in Military Populations Deployed to Iraq and Afghanistan. *Current Psychiatry Reports*. 17, (5), 1-11.

Reise, S. P., Waller, N. G., & Comrey, A. L. (2000). Factor analysis and scale revision. *Psychological Assessment*, 12, 287 – 297.

Rice, H. (1998). Recreation down range: Army MWR delivers. Parks and Recreation, 33(12).

Pflanz, S., & Ogle, A. (2006). Job stress, depression, work performance and perceptions of supervisors in military personnel. *Military Medicine*, 171(9), 861-865.

Piedmondt, P.L. (2004. Inter-item correlations. In A.C. Michalos (Ed). Encyclopedia of quality of life and well-being research (pp 3303-3304) Dordrecht: Springer.

Preacher, K. J., Zhang, G., Kim, C., & Mels, G. (2013). Choosing the optimal number of factors in exploratory factor analysis: A model selection perspective. *Multivariate Behavioral Research*, 48, 28-56.

Preston, C. C., & Colman, A. M. (2000). Optimal number of response categories in rating scales: Reliability, validity, discriminating power, and respondent preferences. *Acta Psychologica*, 104, 1-15.

Ramchand, R, Rudavsky, R, Grant, S, L.H.P (2015). Relevance of, Risk Factors For, and Consequences of Posttraumatic Stress Disorder and Other Mental Health Problems in Military Populations Deployed to Iraq and Afghanistan. *Current Psychiatry Reports*. 17,

Rego, A., & Cunha, M. (2008). Perceptions of authentizotic climates and employee happiness: Pathways to individual performance. *Journal of Business Research*, 61(7), 739-752.

Sarason, I. G., & Sarason, B. R. (2005). Abnormal psychology: The problem of maladaptive behavior (11th ed.). Upper Saddle River, NJ: Prentice Hall.

Schmidt, T.A., 2011. Current Methodological Considerations in Exploratory & Confirmatory Factor Analysis. *Journal of Psychoeducational Assessment*, 29 (4), 304-321.

Schaubroeck, J., & Merritt, D.E. (1997). Divergent effects of job control on coping with work stressors: The key role of self-efficacy. Academy of Management Journal, 40(3), 738-754.

Schlebusch, L. (2000). Mind shift: Stress management and your health. Pietermaritzburg, South Africa: University of Natal Press.

Schwerin, M., Michael, P., Glaser, D., & Farrar, K. (2002). *A cluster evaluation of Navy quality of life programs*. Evaluation and Program Planning, 25(2), 303-312.

Shimazu, A., & Kosugi, S. (2003). Job stressor, coping and psychological distress among Japanese employees: Interplay between active and non-active coping. *Journal of Work & Stress, 17*(1): 38 – 51.

Smith, J. (2011). *Stress management. What you need to know: Definitions, best practices, benefits and practical solutions*. Newstead, Australia: Emereo Publishing.

Siyanqoba Seminars. (2007). Time and stress management. Pretoria, South Africa: Siyanqoba Seminars.

Straub, D., Boudreau, M.C. & Gelen, D. (2004). Validity guidelines for positivist research. Communications of the association for Information systems, 13, 380-427.

Stevens, J. (2002). Applied multivariate statistics of the social sciences (4th ed.). Mahwah, NJ: Erlbaum.

Sudam, K., & Hackey, K., (2011). *Temporal trends in Health and fitness of military personnel*. 1 (3):1-10.

Tabachnick, B.G., & Fidell, L.S. (2007). Using multivariate statistics (5th ed.) Boston: Allyn & Bacon.

Tasseron, J. (2001). Military manning and the revolution in social affairs. *Canadian Military Journal*. Autumn, pp. 53-62.

Trenberth, L., & Dewe, P. (2005). An exploration of the role of leisure in coping with work-related stress using sequential tree analysis. *British Journal of Guidance and Counselling*, 33(1), 101-116.

Van der Merwe, A. (2004). Stress strategie. Verstaan en bestuur jou stress vir n gebalanseerde, energieke lewe, Kaapstad, Suid-Afrika. Tafelberg Uitgewers.

Van Zyl, Y., Surujlal, J., & Singh, C. (2009). An empirical study of university student-athletes strategies for coping with stress: the social psychology of sport. *African Journal for Physical Health, Education*, Recreation and Dance, Supplement 1, 67-78.

Walsh, W. B., & Betz, N. E. (2001). Tests and assessment. (4th ed.). New Jersey: Prentice Hall.

Wattanasit, P. (2009). Determinants of physical activity in Thai adolescents: unpublished PhD thesis, Had Yai District, Sonkla Province, Thailand.

Widaman, K. F. (1993). Common factor-analysis versus principal component analysis: Differential bias in representing model parameters. *Multivariate Behavioural Research*, 28, 263-311.

Williams, R. (2008). *Places, models and modalities of practice*. In T. Robertson, & T. Long (Eds.), Foundations of therapeutic recreation (pp. 63-77). Champaign, Illinois, USA: Human Kinetics.

Worthington, R.L. & Whittaker T.A. (2007). Scale development research. A content analysis and recommendations for best practices. *The counselling Psychologist*, 34 (6), 860-938. DOI: 10.11777/0011000006288127.

Yanovich, D, R. Hadid, A, Erlich, T, Daniel S Moran, D.S, Heled, Y (2015). Physiological and cognitive military related performances after the 10-kilometer march. Disaster and Military Medicine, 1(6), 2-6, doi: 10.1186/2054-314X-1-6.

Young, M. (2013). *Stress Management through Therapeutic Recreation in the Botswana Defence Force*: University of Pretoria (DPhil Thesis).

Zillich, A. J., Doucette, W. R., Carter, B. L., & Kreiter, C. D. (2005). Development and initial validation of an instrument to measure physician-pharmacist collaboration from the physician perspective. Journal of *Value in Health*, 8, 59-66.

Zohrabi, M. (2013). Mixed Method Research: Instruments, Validity Reliability and Reporting Findings. *Theory and Practise in Language Studies*, 3 (2), 254-262.

APPENDIX A:

UNIVERSITY of the WESTERN CAPE

OFFICE OF THE DIRECTOR: RESEARCH
RESEARCH AND INNOVATION DIVISION

Private Bag X17, Bellville 7535
South Africa
T: +27 21 959 4111/2948
F: +27 21 959 3170
E: research-ethics@uwc.ac.za
www.uwc.ac.za

28 March 2018

Mr M Cozett
SRES
Faculty of Community and Health Science

Ethics Reference Number: BM18/1/10

Project Title: Stress in the SA Navy: Piloting and evaluating the validity and reliability of a developed Therapeutic Recreation Stress and Leisure Appraisal Tool.

Approval Period: 22 March 2018 – 22 March 2019

I hereby certify that the Biomedical Science Research Ethics Committee of the University of the Western Cape approved the scientific methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report in good time for annual renewal.

The Committee must be informed of any serious adverse event and/or termination of the study.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

PROVISIONAL REC NUMBER -130416-050

FROM HOPE TO ACTION THROUGH KNOWLEDGE.

APPENDIX B:

QUESTIONAIRE

THERAPEUTIC RECREATION STRESS AND LEISURE APPRAISAL TOOL

Your participation in completing this questionnaire or any specific question is voluntary. If you decide to participate, please answer the questionnaire honestly.

Please complete each scale by circling the number (3, 2, 1, or 0) in the column that best describes your response to each statement.

GENERAL INFORMATION (Baseline Demographic and Military Characteristics)

1. Designation/Rank: ……...

2. **Age (in years):**
(a) 20-30
(b) 30-40
(c) 40-50
(d) 50-60

3. **Gender:**
(a) Male? □
(b) Female? □

4. **Education level:**
(a) Matriculation
(b) Undergraduate
(c) Graduate
(d) Post Graduate
(e) (Others specify) ……

5. **Marital status:**
(a) Single
(b) Married
(c) Widowed

6. **Number of years in Navy:**
(a) Below 5
(b) 5-10
(c) 10-15
(d) 15-20
(e) Above 20

7. **Please indicate your level of employment (please tick)**
□ Permanent force
□ Reserve force
□ Contract

PART: 1

STRESS ASSESSMENT

For each statement, indicate how often or to what degree it describes your behaviour.
Almost Always (3) Sometimes (2) Rarely (1) Never (0)

A.	**Personal Stress**				
A1	Financial management problems	3	2	1	0
A2	Relationship problems	3	2	1	0
A3	Death of a loved one	3	2	1	0
A4	Personal safety	3	2	1	0
A5	Personal illness of family members'	3	2	1	0
B.	**Occupational Stress**				
B7	Inability to achieve personal goals at work	3	2	1	0
B8	Workload/ responsibilities	3	2	1	0
B9	Long working hours	3	2	1	0
B10	Pulling duties after hours	3	2	1	0
B11	Unfair treatment by manager/commander	3	2	1	0
B12	Conflict with colleagues	3	2	1	0
B13	Poor working conditions	3	2	1	0
B14	Harassment	3	2	1	0
B15	Lack of support	3	2	1	0
B16	Delays or not getting promoted	3	2	1	0
C.	**Wellness**				
C17	Poor self-esteem	3	2	1	0
C18	Insomnia/sleeplessness	3	2	1	0
C19	Burned out	3	2	1	0
C20	Bouts of lows or sadness	3	2	1	0
C21	Bullying	3	2	1	0
C22	Intolerant supervisors using /abusive/vulgar language	3	2	1	0
C23	Alcohol abuse	3	2	1	0
D.	**Operational Deployment**				
D24	Boredom	3	2	1	0
D25	Extended periods away from home	3	2	1	0
D26	Lack of educational development	3	2	1	0
D27	Not being rewarded or promoted	3	2	1	0
D28	Do you experience any physical symptoms as a result of stress?	3	2	1	0
D29	Do you experience any psychological symptoms as a result of stress?	3	2	1	0
D30	Do you experience any behavioural symptoms as a result of stress?	3	2	1	0

Part 2:

Please answer the following questions regarding personal support and stress coping behaviour. For each statement, indicate how often or to what degree it describes your behaviour.

Almost Always (3) Sometimes (2) Rarely (1) Never (0)

Section 1:

Personal support

Do you feel that your family supports you in stressful times?	3	2	1	0
Do you feel that your superiors support you in stressful times?	3	2	1	0
Do you feel that you are able to speak to someone when you feel stressed?	3	2	1	0
Do you make use of aggressive behaviour to deal with stress?	3	2	1	0
Do you resort to the use of alcohol or drugs when feeling stressed?	3	2	1	0
Do you resort in any other type of anti-social behaviour (i.e. gambling, prostitution, etc.) to cope with stress?	3	2	1	0

Stress coping behaviour

The following questions aim to determine your stress coping behaviour and leisure preferences: social, physical, passive and outdoor activities: Do you participate in social, passive and outdoor activities. What activities do you like to do to relief stress?

Section 2: Leisure preferences and participation trends

A. Social Activities:

The following are examples of social activities: **church group activities, clubs and team sports activities, etc.**

How often do you do social activities? ***Select only one option per activity (✓).***

Activity	Daily	2-3 times a week	Once a week	Once a month	Once every a few months
Select 1	**a**	**b**	**c**	**d**	**e**
Tick✓					

B. Passive Activities:

The following are examples of passive activities: **watching television, listening to music, reading and computer activities etc.**

How often do you do these passive activities? ***Select only one option per activity (✓).***

Activity	Daily	2-3 times a week	Once a week	Once a month	Once every a few months
Select 1	**a**	**b**	**c**	**d**	**e**
Tick✓					

C. Physical Activities:

The following are examples of physical activities**: running, walking, swimming, soccer, rugby etc.**
How often do you do physical activities? ***Select only one option per activity (✓).***

Activity	Daily	2-3 times a week	Once a week	Once a month	Once every a few months
Select 1	**a**	**b**	**c**	**d**	**e**
Tick✓					

D. Outdoor Activities:

The following are examples of outdoor activities: **sporting events, concerts, fishing and gardening etc.**

How often do you do outdoor activities? ***Select only one option per activity (✓).***

Activity	Daily	2-3 times a week	Once a week	Once a month	Once every a few months
Select 1	**a**	**b**	**c**	**d**	**e**
Tick✓					

Section 3: Barriers to Participation

Select the barriers listed below that are most likely to keep you from participating in an activity. For each statement, indicate how often or to what degree it describes your behaviour.

Almost Always (3) Sometimes (2) Rarely (1) Never (0)

Barriers to Participation A

1. Activity unavailable near my place of residence	3	2	1	0
2. Activity unavailable in the workplace	3	2	1	0
3. Activity unavailable during deployment	3	2	1	0
4. Lack of childcare when I have time to participate in the activity	3	2	1	0
5. Lack of transportation	3	2	1	0
6. Inconvenient hours	3	2	1	0

Barriers to participation B

1. Personal health reasons	3	2	1	0
2. I'm uncomfortable with other users	3	2	1	0
3. A personal physical condition that needs special consideration	3	2	1	0
4. No assistance for physical condition (should you have a physical condition that needs special assistance, i.e. a disability)	3	2	1	0

Section 4: Leisure behaviour

Select the leisure behaviour listed below that best describe your behaviour. For each statement, indicate how often or to what degree it describes your behaviour.

Almost Always (3) Sometimes (2) Rarely (1) Never (0)

1. Do you feel that leisure time is important?	3	2	1	0
2. Are you satisfied with your current leisure lifestyle?	3	2	1	0
3. Do you like to participate in activities on a regular basis?	3	2	1	0
4. Do you consider yourself a social person?	3	2	1	0
5. Do you consider yourself a person who prefers being alone?	3	2	1	0
6. Do you enjoy new challenges?	3	2	1	0
7. Do you consider yourself a confident person?	3	2	1	0

SUMMARY OF ASSESSMENT: ***(For the use of the therapist only)***

_____
_____
_____
_____
_____
_____
_____

SIGNATURE (Therapist): _____ Date: _____

APPENDIX C:

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2653, Fax: 27 21-959 3688
E-mail: ntsoli@uwc.ac.za

CONSENT FORM

Title of Research Project: Stress in the SA Navy: To pilot and evaluate validity and reliability of a developed Therapeutic Recreation Stress and Leisure Appraisal Tool

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

Participant's name……..

Participant's signature…….

Date……

APPENDIX D:

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2653, Fax: 27 21-959 3688
E-mail: ntsoli@uwc.ac.za

INFORMATION SHEET

Project Title: Stress in the SA Navy: To pilot and evaluate validity and reliability of a developed Therapeutic Recreation Stress and Leisure Appraisal Tool

What is this study about?

This is a research project being conducted by Marlin Cozett at the University of the Western Cape. We are inviting you to participate in this research project because you are assessing stress managed in the South African. The purpose of this research project is to evaluate the reliability and validity of the Recreation Therapy Stress and Leisure Appraisal Tool (RTSLAT) in the South African Navy.

What will I be asked to do if I agree to participate?

You will be asked to participate in focus group discussions, face-to face interviews and fill in a questionnaire. *The study will be conducted at Naval Base Simon's Town.*

Would my participation in this study be kept confidential?

The researchers undertake to protect your identity and the nature of your contribution. To ensure your anonymity, all personal information will be kept confidential. To further protect confidentiality, only the researcher will have access to information. I will collect the questionnaires personally and I will be responsible for ensuring their storage in a locked and secure place. Participation in this research is completely voluntary.

If we write a report or article about this research project, your identity will be protected.
In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning child abuse or neglect or potential harm to you or others. In this event, we will inform you that we have to break confidentiality to fulfil our legal responsibility to report to the designated authorities. This study will use focus groups therefore the extent to which your identity will remain confidential is dependent on participants' in the Focus Group maintaining confidentiality.

What are the risks of this research?

All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimise such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study.

Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

What are the benefits of this research?

This this study aimed to make a significant contribution to naval information systems. This research is not designed to help you personally, but the results may help the investigator learn more about stress, stress coping and leisure behaviour in a military environment.

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify

What if I have questions?

This research is being conducted by *Marlin Cozett Sport Recreation and Exercise Science* at the University of the Western Cape. If you have any questions about the research study itself, please contact Marlin Cozett at: 9 Fourteen Avenue Da Gama Park, Simon's Town, marlincozett@gmail.com. Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Dr Marié Young
Head of Department: SRES
University of the Western Cape
Private Bag X17
Bellville 7535
myoung@uwc.ac.za

Prof Anthea Rhoda
Dean of the Faculty of Community and Health Sciences University of the Western Cape
Private Bag X17
Bellville 7535
chs-deansoffice@uwc.ac.za

APPENDIX E:

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2653, Fax: 27 21-959 3688
E-mail: ntsoli@uwc.ac.za

FOCUS GROUP CONFIDENTIALITY BINDING FORM

Title of Research Project: Stress in the SA Navy: To pilot and evaluate validity and reliability of a developed Therapeutic Recreation Stress and Leisure Appraisal Tool

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits. I understand that confidentiality is dependent on participants' in the Focus Group maintaining confidentiality. I hereby agree to the following:

I agree to uphold the confidentiality of the discussions in the focus group by not disclosing the identity of other participants or any aspects of their contributions to members outside of the group.

Participant's name……..

Participant's signature……..

Date……

Bruce Conradie
66 Greenfield Rd
Greenside, Johannesburg
South Africa
Landline: +27 (0) 782-1401
bruce.conradie@theresearchfaculty.com

Attention: Marlin Cozett
HP

16 Dec 2021

To whom it may concern

Confirmation of document editing

This letter is to confirm that I have edited the document (thesis, dissertation, article, or report) titled:

> Stress in the SA Navy: Piloting and evaluating the validity and reliability of a developed therapeutic recreation stress and fulfilment appraisal tool

The document was the work of Marlin Cozett..

I may have involved the contributions of one or more subcontractor.

We have edited the document for errors of grammar, punctuation, and style. I have also provided the author with a list of aspects needing further attention or correction.

Excluded from the editing work were the annexures (if applicable), the spelling of authors' names and other proper nouns, and fact checking.

I am a registered member of the SA Institute of Translators.

Yours faithfully

Bruce Conradie
Research Support Specialist

Job reference number = JR00093

turnitin

Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

Submission author:	Marlin Cozett
Assignment title:	Thesis
Submission title:	stress in the sa navy
File name:	Marlin_Cozett_masterdoc_-_Copy.docx
File size:	459.61K
Page count:	179
Word count:	51,636
Character count:	290,773
Submission date:	15-Dec-2021 03:29PM (UTC+0200)
Submission ID:	1720485844