COMBAT EXPOSURE AS MODERATOR BETWEEN RISK, PROTECTIVE FACTORS AND SUICIDE IDEATION FOR SOUTH AFRICAN ARMY INFANTRY SOLDIERS

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Co-promoter: Prof K. G. F. Esterhuyse

Declaration

I declare that this dissertation entitled: “Combat Exposure as Moderator Between Risk, Protective Factors and Suicide Ideation for South African Army Infantry Soldiers” is my own, independent work and that it has not been submitted previously as a whole or in part for any qualification at another institution.

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Signature

Abstract

The South African National Defence Force is a recruiting, and operational organisation with the protection of the country as primary function. Ironically, this large conglomerate of men and women tasked with this ideal function has been plagued by a consistently increasing manifestation of suicide acts. This behavioural pattern has been noted on a global scale and by its very nature presents a concern to military organisations around the world.

The aim of this study was to investigate the current state of suicide ideation among South African Infantry soldiers of the SANDF, by examining the contribution of risk and resource factors as well as the role of combat exposure in affecting this relationship. A total of 1475 respondents were selected from nine South African Army Infantry units in various provinces in South Africa. The study followed a quantitative and non-experimental approach using a correlational and cross-sectional survey-type research design. Gathering data proceeded by using the following self-reporting measuring instruments: a biographical questionnaire compiled by the researcher, the Scale for Suicide Ideation (SSI), the Orientation to Life Questionnaire (OLQ), the PTSD Checklist-Civilian Version (PCL-C), the Alcohol Use Disorders Identification Test (AUDIT), the Perceived Stress Scale (PSS), and the Interpersonal Support Evaluation List (ISEL).

A hierarchical regression analysis was conducted to determine the influence of various risk and resource factors on suicide ideation, and a stepwise regression analysis investigated the unique contributions of risk and resource factors on suicide ideation. To determine whether combat exposure moderated or mediated the relationship between the mentioned variables, a series of subset regression analyses that investigated suicide ideation as dependent variable in relation to independent resource variables (appraisal, tangible support, belonging, comprehensibility, manageability, and meaning) and risk variables (alcohol consumption, dependence, related problems, PTSD, and perceived stress) was conducted.

The findings from this study indicate that the level of suicide ideation for the sample was considerably lower when compared with other international military samples. However, participants with combat exposure were categorised as among the high-risk

group for suicide ideation. In the stepwise regression analysis, it was found that risk and resource variables collectively explained 16% of the variance of suicide ideation significant on the 1% level of significance. More specifically, four risk variables, namely perceived stress, alcohol-related problems, alcohol dependence, and PTSD, contributed to the increased level of suicide ideation among active duty members of the South African Army Infantry. In addition, seven protective variables (i.e., self-esteem, appraisal, belonging, comprehensibility, manageability, meaning, and tangible support) explained a combined 0.5% of the variance of suicide ideation. Consequently, it was found that only tangible support (subscale of ISEL) had made a significant contribution; it was associated negatively with suicide ideation. Combat exposure significantly influenced the reported level of suicide ideation in risk variables (i.e., alcohol-related problems, alcohol dependence, and PTSD) and the protective variable (i.e., tangible support) for infantry soldiers.

From this study, it is recommended that future research focuses on exploring the current variables from the sample of deployed and non-deployed soldiers, the sample of soldiers exposed to and not exposed to combat, as well as gender differences as factors that moderate suicide ideation. The findings of this research contain essential baseline data that will be utilised by the military organisation toward developing mechanisms that assist soldiers in dealing with the debilitating effect of combat trauma by focusing on strengthening their coping resources such as tangible support.

***Keywords**:* suicide behaviour, suicide ideation, active duty service members, combat exposure, risk factors, resource factors, deployed infantry soldier, non-deployed

Opsomming

Die Suid-Afrikaanse Nasionale Weermag is ‘n werwing en operasionele organisasie met die beskerming van die land as primêre funksie. Ongelukkig word hierdie groot organiseering van mans en vroue wat met hierdie ideale funksie getaak is, deur ‘n konstante en toenemende selfmoord as risiko gekonfronteer. Hierdie gedragspatroon is op ‘n wêreldwye skaal waargeneem, en vanweë die aard daarvan hou dit kommer vir militêre organisasies regoor die wêreld in.

Die doel van hierdie studie was om die huidige stand van selfmoord-ideasie onder Suid-Afrikaanse infanteriesoldate van die SANW te ondersoek deur die bydrae van risiko- en hulpbronfaktore asook die rol van gevegsblootstelling in hierdie verwantskap te ondersoek. ‘n Totaal van 1475 respondente is uit nege Suid-Afrikaanse infanterie-eenhede in verskillende provinsies in Suid-Afrika gekies. Die studie het ‘n kwantitatiewe en nie-eksperimentele benadering gevolg met die gebruik van ‘n korrelasionele en dwarssnit opname-tipe navorsingsontwerp. Die insameling van data is met die gebruik van die volgende self-verslag meetinstrumente: ‘n biografiese vraelys saamgestel deur die navorser, die Scale for Suicide Ideation (SSI), die Orientation to Life Questionnaire (OLQ), die PTSD Checklist-Civilian Version (PCL-C), die Alcohol Use Disorders Identification Test (AUDIT), die Perceived Stress Scale (PSS), en die Interpersonal Support Evaluation List (ISEL).

‘n Hiërargiese regressieontleding is uitgevoer om die invloed van verskeie risiko- en hulpbronfaktore op selfmoord-ideasie te bepaal, en ‘n trapsgewyse regressieontleding het die unieke bydraes van risiko- en hulpbronfaktore op selfmoord-ideasie ondersoek. Om vas te stel of gevegsblootstelling die verwantskap tussen die genoemde veranderlikes gemodereer of bemiddel het, is ‘n reeks subgroep regressieontledings wat selfmoord-ideasie as ‘n afhanklike veranderlike in verhouding tot onafhanklike veranderlikes (waardering, tasbare ondersteuning, behoort, verstaanbaarheid, beheerbaarheid, en betekenis) en risiko-veranderlikes (alkoholinname, afhanklikheid, verwante probleme, PTSV, en waargenome stres) ondersoek, uitgevoer.

Die bevindings van hierdie studie toon dat die vlak van selfmoord-ideasie aansienlik laer was in vergelyking met ander internasionale militêre steekproewe. Deelnemers met

gevegsblootstelling is egter onder die hoërisikogroep vir selfmoord-ideasie gekategoriseer. In die trapsgewyse regressieontleding is bevind dat risiko-en hulpbronfaktore gesamentlik 16% van die afwyking van selfmoord-ideasie beduidend op die 1%-vlak van belangrikheid verklaar. Meer spesifiek het vier risiko-veranderlikes, naamlik waargenome stres, alkoholverwante probleme, alkoholafhanklikheid en PTSV, tot ‘n verhoogde vlak van selfmoord-ideasie onder aktiewe diens-lede van die Suid-Afrikaanse Leër-infanterie bygedra. Bykomend het sewe beskermende veranderlikes (nl. selfagting, waardering, behoort, verstaanbaarheid, beheerbaarheid, betekenis, en tasbare ondersteuning) ‘n gekombineerde 0.5% van die afwyking van selfmoordbeelding verklaar. Gevolglik is bevind dat slegs tasbare ondersteuning (subskaal van ISEL) ‘n beduidende bydrae gelewer het; daarom is dit negatief met selfmoordbeelding geassosieer. Gevegsblootstelling het die gerapporteerde vlak van selfmoordbeelding in risiko-veranderlikes (nl. alkoholverwante probleme, alkoholafhanklikheid, en PTSV) en die beskermingsveranderlike (nl. tasbare ondersteuning) beduidend vir infanteriesoldate beïnvloed.

Uit hierdie studie word aanbeveel dat toekomstige navorsing fokus op die verkenning van die huidige veranderlikes uit die steekproef van ontplooide en nie-ontplooide soldate, die steekproef van soldate wat aan geveg blootgestel is en nie daaraan blootgestel is nie, asook geslagsverskille as faktore wat selfmoord-ideasie modereer. Die bevindings van hierdie navorsing bevat belangrike basislyn data wat deur die militêre organisasie gebruik sal word vir die ontwikkeling van meganismes wat soldate in die hantering van die uitmergelende effek van gevegstrauma ondersteun deur op hulle hanteringshulpbronne soos tasbare ondersteuning te fokus.

Sleutelwoorde: selfmoordgedrag, selfmoordbeelding, aktiewe diens-lede, gevegsblootstelling, risiko-faktore, hulpbronfaktore, ontplooide infanteriesoldaat, nie-ontplooide

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TO WHOM IT MAY CONCERN

STATEMENT REGARDING LANGUAGE EDITING OF DOCTORAL THESIS

Hereby I, Jacob Daniël Theunis De Bruyn STEYL (I.D. 5702225041082), a language practitioner accredited to the South African Translators' Institute (SATI), confirm that I have edited the language of the following doctoral thesis:

Title of thesis: Combat Exposure as Moderator Between Risk, Protective Factors and Suicide Ideation for South African Army Infantry Soldiers

Author: Phindile Ellina Mbhele

Yours faithfully

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Chapter 1

Introduction

1.1 General Orientation of Study and Problem Statement

A suicide occurrence during military service is a major challenge for military forces around the world (Department of Defence Suicide Events Report [DODSER], 2011; Shelef et al., 2014b). Previously, a number of researchers on military suicide have focused on completed suicide, which is rather a singular occasion (Griffith, 2012; Kessler et al., 2004; Shelef et al., 2014b) while on the contrary, many cognitive processes take place before suicide is finally accomplished.

Even though it has been reported that not all individuals who express suicide ideation will eventually attempt or complete suicide (Kessler et al., 2004), clinical researchers on suicide ideation (Fergusson & Lynskey, 1995; Wenzel & Beck, 2008) affirm that suicide ideation can be seen as a predecessor to and risk factor for suicidal behaviour, since a high level of suicide ideation can be considered a strong indicator of suicide risk only in the presence of other risk factors. Conversely, Casey (2011) reported that military settings have been identified as sources of stress and key contributors to a high proportion of suicides in the military.

Armed forces around the world have important obligations to provide military forces that will *"deter war and protect citizens".* Equally, according to the Geneva Centre for the Democratic Control of Armed Forces (DCAF), armed forces must serve three functions: (1) national defence; (2) internal security and stability, and (3) involvement in international security (DCAF, 2015).

Similarly, the South African National Defence Force (SANDF) is mandated by the Constitution of the Republic of South Africa to fulfil these functions (Constitution, 1996; Department of Defence, 2016). It is further stated that the SANDF should provide a *military force* that is capable of executing its tasks *effectively and efficiently* through professional skills, equipment, training, and management capacity (Defence Force Policy, 1996). In fulfilling these tasks, the South African military ensures internal security and

stability through (but not limited to) civil defence, border control, assisting law enforcement, and gathering intelligence.

For its international obligation, South Africa is committed to bring about peace and political and economic stability on the African continent. This is to be achieved through the involvement of South Africa in the African Union (AU), South African Development Community (SADC), and the organization for international peace and security – the United Nations (UN). The SANDF is involved in peace support operation (PSO) and force intervention brigade (FIB) missions. Peace support operations could be defined broadly in two types: peacekeeping operations that refer to military operations conducted without resorting to force, and peace enforcement operations entailing the use of force to compel compliance in a conflict-ridden zone. FIB missions imply the involvement of the South African military forces in UN operations that are authorised to use force due to its combat nature.

In these operations, soldiers must be able to engage in armed conflict when the need arises. Therefore, the South African military needs its forces to meet a high standard of combat readiness, which is defined as an extent to which a soldier possesses the required level of skill and biopsychosocial fitness to engage in any military operation and/or for training purposes (Nkewu, 2014). However, exposure to these operations may put extra strain on soldiers who are already exposed to the stressful nature of a military setting. This further raise a concern about how mentally fit soldiers are in withstanding the stress of military demands.

Military service is characterised by challenging conditions that may deplete a soldier's capacity to manage environmental and psychological stressors effectively. In a number of militaries, for example Israeli (Apter et al., 1993; Bodner et al., 2006), the United States (US), the United Kingdom (UK) (Griffith, 2012; Shelef et al., 2014b) as well as South Africa (SA) (Kramm & Heinecken, 2015), military service begins at about 18 years of age, which coincides with members' transition from emerging adulthood to adulthood.

This period of enlistment encompasses three important factors that serve to intensify recruits' subjective experiences of stress that act as a predisposition for suicide risk: First, the stressful transition from civilian to military life requires adjustment to a highly

demanding and structured environment (Kramm & Heinecken, 2015). Second, ongoing geographical relocations of soldiers for combat readiness result in soldiers being isolated from valued support structures, which increase their vulnerability toward using poor coping strategies (i.e., substance use/abuse). Third, exposure to traumatic situations during deployments (i.e., combat, death, human suffering, etc.) increases a soldier's vulnerability to developing symptoms of PTSD, depression, anxiety, and suicidal behaviour (Griffith, 2012; Kalamdien & Van Dyk, 2009). Furthermore, exposure to stressful life events and subjective stress play a significant role in suicidal behaviour among soldiers (Nock et al., 2013). These psychosocial risk factors may leave soldiers vulnerable to suicide ideation, attempted suicide and eventually completed suicide (Koopman & Van Dyk, 2012b; Van't Wout & Van Dyk, 2015).

The demand of the military environment affects not only the active duty service members, but also their families negatively (Riggs & Riggs, 2011; Saltzman et al., 2011). Family is an important institution that provides social support to military members. Throughout, families of active serving members in military forces, including the SANDF, are confronted with unique stressors different from families without member in active military forces. Owing to the demanding nature of the military environment, soldiers are separated from their families repeatedly due to training and other operations such as deployment in hostile environments, which could be severely stressful for families (Van Breda, 2008).

Families that are already vulnerable often experience some breakdown during the absence of a father or mother due to either deployments, a member working far from home, or for training purposes. The extended period of isolation is felt by both a member and the loved ones, which becomes an added strain to a service member. A study of family resilience during deployment confirms that deployments increase the rate of marital discord and domestic violence, which are risk factors for suicidal ideation (Saltzman et al., 2011). Furthermore, parental maltreatment or neglect of children is also attributed to a sense of loneliness felt by an active parent. These stressors may increase members' vulnerability to suicidal behaviour as well as for family members such as an active parent, caregivers, and children. Research indicates that having a family member who died by suicide or attempted suicide increases a risk of suicide ideation for a soldier (Mash et al., 2016).

In a study that explored depressive symptoms on spouses of active duty service members, it was found that some spouses presented with depressive symptoms that might be detrimental to a service member receiving social support from the significant other (Saltzman et al., 2011). Service members who are deprived of social support are considerably vulnerable to experiences of depression, anxiety, substance abuse, and suicide ideation (Riggs & Riggs, 2011). However, a positive family environment provides a protective resource (i.e., social support) that protects against suicidal behaviour.

As a resource factor, military settings promote high levels of morale among its members which is defined as enthusiasm and persistence with which a member of a group engages in a prescribed activity of that group (Van't Wout & Van Dyk, 2015). High levels of morale contribute to the development of cohesive "group identity", which is defined as a binding of a group as an entity into a sense of "we-ness" (Becker, 2005, p. 36). If a soldier has developed a strong sense of group identity, he or she is able to access positive resources such as social support.

Social support minimises the effects of other stressors, thus ensuring a positive state of mind and persistent motivation to engage in the shared purpose of the group (Becker, 2005). Therefore, a soldier who perceives him-/herself to be part of the group is likely to become more resilient, confident, optimistic, and develop a high sense of coherence, which is a protective factor against suicidal behaviour (Luutonem et al., 2011). Persons with high scores in sense of coherence (SOC) perceive their world as ordered, consistent and are able to manage stressful situations and find life meaningful (Antonovsky, 1993).

In the military context, a high SOC was found to have a buffering effect against stressful circumstances, improve coping abilities, and lower levels of PTSD and depression symptoms occurrence among soldiers (Luutonem et al., 2011).). The current study appreciates that Sense of Coherence is essentially problem-solving orientation towards stressors in one's environment. Combat exposure has a potential to create a set of life-threatening, and traumatic experiences that may impact psychological functioning of infantry soldiers where suicide can be viewed as a solution, hence the use of Sence of Coherence. Moreover, the inclusion of SOC is deemed appropriate, as it provides for a salutogenic shift in explaining how the positive aspects of health (resource factors) can provide coping mechanism to negative effects of stress (risk factors) in the face of

pervasive stress. This study focused primarily on combat exposure, risk, and protective factors with the exclusion of other traumas such as civic trauma and developmental trauma. Therefore, this study aimed to explore how various risk and protective factors affect suicide ideation of South African Infantry soldiers and the role of that combat exposure plays in it.

1.1.1 Clarification of Terms and Concepts

To assist in the fluency of the reading material, the terminology used in this research document is defined as follows:

Suicide risk is viewed as a probability that a person will attempt suicide, repeat, continue, or increase suicidal behaviour, and therefore needs careful monitoring to ensure well-being (George, 2009; Pienaar & Rothmann, 2005; Schlebusch, 2005).

Suicidal behaviour is not an abrupt occurrence but is a complex process in which some biopsychosocial factors in an individual's life combine to increase that individual's risk for suicide (Rutter, 1995; Schlebusch, 2005).

Suicidal behaviour comprises a number of different suicide-related behaviours varying from the mere thought of suicide to actually engaging in and ultimately ending in the completion of successful self-destructive behaviours (Madu & Matla, 2003; Reynolds, 1988).

For the purpose of this study, *non-fatal suicide behaviours* are defined as follows:

(a) *Suicide ideation* refers to cognitive processes that take place when an individual seriously contemplates killing him- or herself. The degree of seriousness may vary from fleeting thoughts to preoccupation, to detailing a specific plan (Nock et al., 2013).

(b) *Attempted suicide* refers to the performance of self-injurious behaviour with some intent to die (Nock et al., 2013).

(c) *Para-suicide,* also known as *self-injury with no intent to die,* refers to when an individual engages in self-injurious acts without the overt intent to end his/her life (Nock et al., 2013), but rather to decrease distressing emotions, communicate his/her distress to others, or influence the behaviour or emotions of others towards themselves in some way.

(d) *Suicide plan* refers to an individual formulating an actual plan to consider when and how she or he intends to kill her - or himself (Nock et al., 2013).

Suicide can be defined as the extent to which a person succumbs to his or her death through intentional self-inflicted injuries with evidence that the person intended to die (Schlebusch, 2005).

Military deployment refers to the movement or rotation of a soldier, military unit, or the entire contingent or force from one geographical location to another, usually for operational purposes (Nkewu, 2014).

Internal deployment refers to the deployment of soldiers within the borders of the Republic of South Africa to maintain internal security and stability (Nkewu, 2014).

External deployment entails the deployment of soldiers outside the borders of the Republic of South Africa for peace support operations (PSOs) or force intervention brigade (FIB) missions under international authorisation (Koopman & Van Dyk, 2012a; Van Dyk, 2009).

Peacekeeping entails the deployment of soldiers to areas where there is conflict with the consent of all major parties, usually after a ceasefire has been achieved, for the purpose of restoring and maintaining peace under international command and control through negotiation strategies rather than combat (Montesh & Basdeo, 2012; Moskos, 1976; Van Dyk, 2009).

Peace enforcement refers to the application of armed forces or the threat of its use, in support of diplomatic efforts governed by international authorisation, to compel compliance between belligerents who may not be consenting to intervention for the

purpose of restoring or maintaining peace and order (Montesh & Basdeo, 2012; Moskos, 1976).

Force intervention brigade (FIB) is the involvement of the South African military forces in UN operations that is authorised to use force due to its combat nature.

Military service is defined as the period of service in the military served as an active duty member of the armed forces, served either voluntary or by conscription (Department of Defence, 2016).

Active duty service members in this study refers to both full-time active duty service members and Reserve Force components (part-time employees), as both of these categoriesparticipate in active military service including military operations (i.e., deployments), operational or force training, and day-to-day operational and functional duties (Fisher, 2014).

Stress could be defined broadly as an external force in a person's environment that produces negative physical and psychological responses within the individual when one perceives himself/herself as lacking in sufficient strength and resilience (Bartone, 1998). In other words, stress implies an individual's pattern of internal responses to externally imposed demands or environmental stimuli (Stokes & Kite, 1994).

Military stress refers to events or forces outside the person ranging from complex demands that integrate cognitive, physical, interpersonal, and emotional aspects to possible life-threatening and dangerous situations due to serving in the military (Bartone, 1998; De Beer & Van Heerden, 2014).

Risk factors are defined as factors or stressors that increase the probability of a negative outcome (George, 2009; Moss & Schaefer, 1993).

Protective factors also referred to as resilience to suicide risk – are circumstances that increase the possibility of a positive outcome and act as a buffer against adverse effects of stressors or risk factors (Moss & Schaefer, 1993).

1.2 Focus of Research

The South African National Defence Force has four divisions: the South African Air Force (SAAF), South African Army (SA Army), South African Navy (SA Navy), and the South African Military Health Services (SAMHS). Within these divisions there are active military service members comprising active duty members (AD) and Reserve Force members (RF). However, these two service military member categories differ in terms of their employment status/contracts.

Active duty members are in the employment of their respective divisions (Army, Navy, Air force, and Medical Services) all year long. However, Reserve Force members are required to participate actively in active duty periodically or on a part-time basis, which are typically referred to as "call-ups". Both of these components participate in internal deployments, external deployments, ongoing military training, and day-to-day military work at units.

During military operations such as peacekeeping operations, conventional warfare, force interventions, and force preparations, suicidal behaviour can be seen as a reaction to the stressful nature of these operations that compromises the soldier's ability to cope (Koopman & Van Dyk, 2012b). Studies have indicated that suicidal behaviour is not only limited to members who are in active-duty military service and those in combat and non-combat situations (Bryan et al., 2013b), but also combat and non-combat veterans (members who are no longer in active service) also present with high rates of suicide (Castro & Kintzle, 2012; Rudd et al., 2011).

The Department of Defence (DoD, 2010) reported that suicide among veterans appeared to be more problematic than among active duty military members. An approximation of the Department of Veterans Affairs (2010) of veteran suicide in the USA suggests that about 22 suicides are reported per day in comparison with about 1 suicide for an active duty service component per day. Furthermore, in a study by Pietrzak et al. (2010) of 167 veterans who were surveyed a year after returning from external combat deployment in Iraq or Afghanistan, 36 (21.6%) reported suicide ideation.

This is an indication that suicide risk is not limited to serving members only, but the risk extends further to after military service. However, the current study focused on suicide ideation of active-duty service components (i.e., active duty components and Reserve

Force components) of the South African Army Infantry in the South African National Defence Force (SANDF).

1.3 Significance of the Study

Soldiers in the SANDF are involved in a number of peace support operations, force intervention operations on the African continent, internal/national duties and many other forms of training and exercises. These soldiers are vulnerable to boredom, traumatic incidents with child soldiers (i.e., having to shoot at them in the line of duty or to be shot at), exposure to death, rape, suicide of their peers and direct involvement with rebel groups (Rudd et al., 2011). For example, on 23 March 2013, in the Battle of Bangui South African soldiers were deployed in Central African Republic (CAR) as part of peace support operations and were exposed to a violent confrontation with the enemy force (rebel group). The incident resulted in 27 members of SANDF wounded, while 13 died in battle (Van't Wout & Van Dyk, 2015). According to Rudd et al. (2011), the context in which the soldiers are involved in combat functions significantly increases their risk to develop PTSD and depression, which substantially increases their vulnerability to suicide, unlike those not exposed to combat situations.

When the catastrophic rates of military suicide around the world are considered, it is evident that a concerning number of soldiers may be at risk of suicidal behaviour. This study is the first to explicitly explore the risk and resource factors influencing the level of suicide ideation as well as the role of combat exposure among active duty members in the SANDF (EbscoHost, Google Scholar, Nexus, 26 April 2019), which underlines the need for more studies in this area. This could yield knowledge and understanding of suicidal behaviour and help to develop programmes that can be utilised by leaders to protect their subordinates from the scourge of this phenomenon; also, to further protect them from the adverse effects of risk factors imposed by military environment that contribute to suicidal thoughts and increase the risk of engaging in acts of suicidal behaviour (i.e., plan, attempt, and complete suicide) in the SANDF.

1.4 Research Objectives

To clarifying the aim discussed above, the following objectives were formulated:

- To determine the incidence of suicide ideation among active duty soldiers of the SA Army Infantry of the SANDF throughout the nine provinces of South Africa.

- To investigate the possible relationship between combat exposure and incidence of suicide ideation.

- To investigate the possible relationship between family exposure to suicide (either by attempted suicide or completed suicide) and the incidence of suicide ideation.

- To determine if there is a significant relationship between suicide ideation and potential risk and resource factors of the active duty soldiers of the SA Army Infantry of the SANDF with regard to combat exposure.

- Finally, to investigate if combat exposure moderates the relationship between suicide ideation and risk factors as well as between suicide ideation and resource factors.

1.5 Delineation of the Study

The research process is reported in seven chapters, in accordance with the requirements for the PhD completed in a dissertation format, namely, general introduction and orientation to the study; literature review; conceptual framework, methodology; reporting the results; discussion of the results; and finally, the conclusion, limitations, and recommendations of the study.

1.5.1 Chapter 1: General Introduction and Orientation to the Study

This chapter gives a general introduction to the study. The focus of the first chapter is on identifying the problem of suicide that is plaguing military organisations and the SANDF. It introduces the reader to the military context and highlights the problem and the significance of the study, as well as the need for the problem to be explored further in the South African context.

1.5.2 Chapters 2 and 3: Literature Review

These chapters contain the literature review of published articles about suicide behaviour. The literature review gives a broad description of a complex and challenging military environment by exploring reports on suicide and causes of, as well as risk/resource factors associated with suicide ideation. A description of the theory on sense of coherence (SOC) using the salutogenesis model creates a clear understanding of the phenomenon of suicide ideation in the SANDF.

1.5.3 Chapter 4: Methodology

This chapter describes the manner in which the research was conducted in order to conclude whether combat exposure moderates the relationship between risk and resource factors and suicide ideation among SA Army Infantry soldiers. The empirical area of the research is explored. To realise the objectives of the study, a non-experimental, quantitative, cross-sectional, and correlational design was used (Maree, 2007). Data were collected using standardised questionnaires as well as a researcher's compiled biographic questionnaire. All questionnaires were administered by the researcher and research assistants to all participants in the selected nine infantry operational units of the SA Army in nine provinces of South Africa. Participants were of the rank groups from privates to colonel.

1.5.4 Chapter 5: Reporting of the Results

This section reports on the results of the data analyses used to test the hypotheses of the study. Various statistical measures used in gathering data for this study are explained. The reliability of all measurements was investigated by calculating Cronbach alpha coefficients. To determine the correlation between variables, Pearson product correlation coefficients were calculated (Stangor, 2011). The Statistical Product and Service Solution (SPSS) version 22.0 was then used to analyse the data (SPSS Incorporated, 2015). Statistical data are reported by means of frequency tables, means, standard deviations, maximums, and minimums, and the degrees of risk by reporting on levels (i.e., low/medium/high). Furthermore, a product term regression analysis was used to determine whether combat exposure moderates the relationship between risk/resource factors and suicide ideation.

1.5.5 Chapter 6: Discussion of the Results

The focus of this section is to discuss the outcome of the results and the empirical research, and to discuss the integrated findings of the study.

1.5.6 Chapter 7: Conclusion, Limitations and Recommendations

The focus of this section is threefold: First, the conclusion of the research is discussed. Second, the limitations of the study and of the measuring instruments are discussed. Finally, recommendations for further studies are discussed, and the ways in which the results can be applied in the SANDF are discussed.

1.6 Concluding Summary

The general orientation of the study, problem statement, the introduction of definitions to enhance the fluency of reading, and the sequence of chapters were discussed. The reader was introduced to the military environment and challenges that soldiers face and seem to increase their predisposition toward suicidal behaviour, for instance, deployments, combat exposure, and isolation from valued social support, as well as ongoing relocations. Therefore, it is imperative that risk factors that increase their vulnerability to suicide risk and protective factors that buffer against their pervasive effects are identified to aid and improve soldiers' well-being.

The next chapter expands on literature on suicidology. This theoretical and empirical perspective on suicidal behaviour serves as a foundation to understand suicide in the South African military context. Chapter 2 provides an overview of the current international literature on suicide behaviour. In addition, it lays the foundation for understanding the results of this study, as they deal with how the participants of this study view suicide behaviour in general.

Chapter 2

Defining Suicide

2.1 Introduction

The phenomenon of suicide in the military has been established in numerous studies (i.e., Griffith, 2012; Nock et al., 2013; Pietrzak et al., 2009; Shelef et al., 2015a). Despite suicidal behaviour being a major health concern in most armies globally, there is still a lack of empirical knowledge in this area (Prinstein, 2008). One of the reasons for this, as stated by those who have invested in studying this phenomenon, is that it is empirically difficult to study suicidal behaviour because of its complexity and unpredictability (Prinstein, 2008; Van Orden et al., 2010).

Little information exists regarding suicidal behaviour of members of the SANDF, therefore, it is important to gain more understanding of factors that increase soldiers' vulnerability to suicide and those that provide a buffering effect. The purpose of this study was to investigate the psychosocial risk and protective factors that affect the suicide ideation of the South African Army Infantry soldiers of the SANDF. Combat exposure is believed to play a role in this regard; therefore, the aim was to determine if combat exposure moderates the relationship between risk/protective factors and suicide ideation thereof.

In this chapter, main themes are unpacked as follows:

To begin the chapter, an overview of the historical context of suicide is discussed, followed by a definition of suicide. Suicidal behaviour is discussed from different theoretical perspectives/models, while concluding with the prevalence of suicide in the military, globally.

2.2 Historical Context of Suicide

For centuries, the evolution in the conceptualisation of suicide has been witnessed with popular views emerging over time, which have shaped how suicide is defined currently. Religion, law, and culture often influenced historical understanding of suicide (De Leo et

al., 2006). This further influenced the attitude attached to it and the treatment of those who engaged in any form of suicidal act. The word *suicide* originates from a Latin word – *sui* (of oneself) and *caedere* (to kill) (Minois, 1999). Sir Thomas Bowne, a physician and an influential thinker of that time, first introduced it in the 17th century in his book *Religio Medici* (1642). He wanted to distinguish between *homicide* of oneself and the *killing* of another (De Leo et al., 2006; Minois, 1999).

In the early history, suicide was not often perceived negatively but rather as an acceptable and sometimes encouraged conduct under certain circumstances. For instance, in the Ancient Greece, they had a permissible attitude when suicide could be justified by either (1) poor health due to incurable illness, (2) unbearability of life, (3) or when legally ordered by the State. Similarly, in the early Roman culture, there was no prohibition of suicide for free citizens with the exception of slaves and soldiers (Minois, 1999). For slaves, suicide was forbidden on economic grounds, while for soldiers it was for patriotic reasons.

The first significant shift in the perception of suicide came about in the fourth century AD as Christianity came to the fore. Suicide was becoming popular increasingly among the early Christians as a form of *martyrdom* and began to threaten the very existence of the Christian Church. Even though there was no explicit biblical condemnation of suicide, the increase of martyrdom led to new laws against suicide being introduced; thus, taking one's life was prohibited and became a mortal sin in terms of Catholicism (Minois, 1999).

During the Middle Ages, all types of suicide were perceived negatively, forbidden, and criminalised. Callous penalties were attached to attempters/survivors and their families, which included confiscation of their estates, and forbidding commemorative offerings and Christian burial for individuals who have died of suicide (Minois, 1999).

Attitudes towards suicide began to change slowly during the Renaissance, regardless of the fact that suicide was still considered a mortal sin from the religious perspective. Scholars and philosophers of the time were beginning a debate questioning the traditional and religious views of suicide.

By the 19th century, the attitude towards suicide shifted gradually, leading to its decriminalisation. Courts began to differentiate between the verdicts attached to suicide, *non compos mentis* which implied insanity at the time of committing suicide, and *felo de se* for those judged to be in violation of the laws of god and man (MacDonald, 1989). As suicide became more and more decriminalised, in 1961, the Suicide Act was adopted across Europe, England and Wales, leading to the removal of all penalties attached to all types of suicidal activities. However, in the United Kingdom, euthanasia (also known as mercy killing) is still considered a felony to this day.

The conception of suicide continued to shift progressively away from criminality. The emergence of influential thinkers such as Emil Durkheim (1897) and Sigmund Freud (1916; 1920) led to the adoption of a greater sociological and psychological perspective of the concept of suicide that placed emphasis on the social factors and psychological influences on suicide (Baumeister, 1990; De Leo et al., 2006). To date, various theories from different perspectives continue to seek a more empirical understanding of suicidal behaviour (Joiner, 2005).

2.3 Defining Suicidal Behaviour

A powerful yet insufficient statement clearly communicates the gravity of suicidal behaviour, namely, "[t]he act of suicide is far too complex to sum up in three brief words – deep emotional pain" (Olson, 2014, p. 1).

Suicide is a well-recognised concept worldwide in any social, political, religious, economical, and cultural context. When the topic of suicide arises, it is instinctively known by everyone that it means taking one's life, even though defining suicide is actually more complicated than simply "killing oneself" (De Leo et al., 2006, p.5). A wealth of knowledge has been generated on suicide through research, books, and conferences in an attempt to find consensus on the inclusive definition of suicide (see Table 1). However, a definition of suicide that is unanimously agreed on is yet to be constructed (Van Orden et al., 2010).

Various theorists from different theoretical perspectives define the act of suicide. In defining suicide, fundamental theorists depart from the psychological and sociological

theoretical viewpoint (Bradatan, 2007). From the sociological perspective, Durkheim's (1897; 1951) characterisation of suicide was based on social factors. He defined suicide as the results of direct or indirect actions of a person with enough knowledge that they will lead to death (Durkheim, 1897; 1951). From the psychological perspective, Freud (1916; 1963) introduced the psychodynamic view that suicide is determined by personal or dispositional factors experienced that contribute to self-destructive tendencies (Lester, 1988). Thus, Freud views suicide as disguised murder; in fact, the goal is not really self-destruction but the destruction of the lost object with whom or which the person who have died of suicide identified.

Modern theorists seem to build on these pioneers (see Table 1). As noted by Selby et al. (2014, p. 297), "deep emotional pain" is the recurring theme in suicide theory, and its debilitating presence has been called the "most common theoretical reason for suicide". The most common features arising from these definitions of suicide are (1) the outcome of the behaviour – death; (2) the intent expressed – to end one's life; (3) level of consciousness – the person is fully aware of his/her actions*;* (4) the action is self-directed; (5) the theoretical grounding, and (6) the cultural influence in the conceptualisation of suicide definition (De Leo et al., 2006).

Notable diversity in these suicide definitions is based on distinct theoretical perspectives (see the further discussion in section 2.4). For instance, the sociological approach views suicide as a result of social factors (Durkheim, 1966); the psychological perspective focuses on intra-psychic conflict (Freud, 1916; 1963; Shneidman, 1985), while the existential approach views suicide as being caused by annihilation anxiety (Baechler, 1980). Hence, according to a recently revised nomenclature on definition of suicidal behaviour, De Leo et al. (2006) state that it is essential to adopt a standard definition of suicidal behaviour that reflects neutrality of theory, free from cultural biases, explicit, and generalisable (Stack, 1996).

Table 1

Frequently Used Definitions of Suicide (De Leo et al., 2006)

Theorist	Definitions of Suicide
Durkheim (1897, 1951)	Suicide is the result of direct or indirect actions of a person with enough knowledge that they will lead to death.
Freud (1916, 1963)	Suicide is a disguised murder; apparently, the goal is not really self-destruction but the destruction of the lost object with whom or which the suicided person identified.
Baechler (1980)	Suicide is the behaviour that an individual engages with in seeking to find a solution to an existential problem.
Shneidman (1985)	Suicide is a conscious act of self-induced annihilation whereby an individual perceives suicide as the only existing solution to his or her predicament.
Rosenberg et al. (1988)	Suicide is self-inflicted death.
Ivanoff (1989)	Suicide is intentional, self-inflicted death.
Mayo (1992)	Suicide is self-initiated death with an active or passive intention to end one's life.
Silverman and Maris (1995)	Suicide is not a disease, but self-inflicted action or behaviour that has a fatal outcome.
World Health Organisation (1998)	Suicide is a deliberate, self-inflicted behaviour or action whereby an individual is fully aware of the fatal outcome.
Schlebusch (2005)	Suicide is the extent to which a person succumbs to his/her death through intentional, self-inflicted injuries with evidence that the person intended to die.

The multidimensional nature of suicidal behaviour (i.e., ideation, attempt, and death) provides a rationale for making a clear definitional distinction between its various processes, as one should keep in mind that each process varies according to what part of a risk factor is predicted in terms of statistical ratio, aetiology and correlates (Nock et al., 2013; Van Orden et al., 2011). Suicidal behaviour is defined as the process that comprises a number of diverse suicide-related behaviours progressing from suicide ideation (serious thoughts about killing oneself) to suicide plan (formulating an actual plan to end one's life), to attempted suicide (self-injurious behaviour with fatal intent), and finally completed suicide (a person succeeds in intentional self-inflicted death) (Nock et al., 2013; Reynolds, 1988).

According to Schlebusch (2005), the degree of severity of suicidal behaviour varies according to the individual's seriousness about his or her wish to die. This wish is usually influenced by various factors, for instance the individual's psychopathology, level of distress, the motive behind the attempt, lethality of the method, as well as the awareness and expectations of the consequences. He further postulates that suicidal behaviour ranges from (a) those which are fatal whereby an individual has high intentions to end his or her life and eventually succeeds (fatal suicide behaviours/completed suicide); to (b) self-injurious suicidal behaviour with low or no intent to die (non-fatal suicide behaviour).

Non-fatal suicidal behaviour with low intent to die is also referred to as parasuicide and attempted suicide (Schlebusch, 2005), which sometimes serves as the way of decreasing distressing emotion (i.e., by ingesting substances, engaging in self-cutting, etc.). Furthermore, they are sometimes seen as suicide gestures, in which a person engages in a parasuicide/attempted suicide to try and 'manipulate' the behaviour of others (Nock et al., 2013). Even though some researchers differ from the notion that an individual intends to manipulate others (Silverman et al., 2007), they agree that the person intends to express thoughts of emotional distress (Nock et al., 2013).

Schlebusch (2005) indicates that suicide ideation forms part of the evolutionary process of suicide behaviour. This is in line with Beck et al. (1979) who view suicide contemplators as individuals who are at the most basic stage of suicide risk, as they currently have plans and wishes to end their lives but have not made any recent overt suicide attempt. These individuals have core cognitive errors and negative self-beliefs that combine with psychodynamics in their core conflicts, making them more vulnerable to suicide (Beck et al., 1979). Since suicide ideation is logically seen as a milder dimension of suicidal behaviour that progressively translates into a more serious form of suicidal behaviour (i.e., attempted suicide or completed suicide), it seems appropriate to focus on the factors that contribute to its intensity and pervasiveness (Reynolds, 1988).

Numerous researchers (Lewinsohn et al., 1996; Rainieri et al., 1987; Shea, 1998) reported similar findings that suicidal ideation was a strong predictor of suicidal acts that were more serious, and that the degree of self-harm was directly proportionate to the degree of suicidal ideation experienced. However, it has been reported that not all individuals who express suicide ideation will eventually attempt/complete suicide (Kessler

et al., 2014). Fergusson and Lynsky (1995) state that suicide ideation can be seen as a predecessor to and risk factor for suicidal behaviour, since high levels of suicide ideation can be considered a strong indicator of suicide risk in comorbidity with other risk factors.

Various psychological researchers (Joiner, 2005; Wenzel et al., 2009) established evidence that cognitive distortions and ineffective thought processes are central to suicidal behaviour that extend from suicidal ideas, thoughts, through preparations for a suicide attempt, to finally completed suicide. In a study by Shelef et al. (2015b) among Israel Defence Force members, suicide ideation, mental pain, and low emotional regulation were found to be significantly higher in a suicidal group compared to a non-suicidal group.

This affirms findings that multiple factors, such as depression and alcohol problems (Pietrzak et al., 2010), PTSD (Sher et al., 2012), life stressors and emotional distress in 24 hours preceding attempts (Bryan & Rudd, 2012), and guilt, shame, and suicidal ideation (Bryan et al., 2012) (see risk factors for suicide ideation), increase the risk of suicide ideation among military service members. For the purpose of this study, suicide ideation refers to cognitive processes that take place when an individual seriously contemplates killing him- or herself (Reynolds, 1988). The degree of seriousness may vary from fleeting thoughts to preoccupation, to detailing a specific plan (Nock et al., 2013).

2.4 Theoretical Perspective/Models of Suicide

Theoretical perspectives of suicide are instructive in the examination of suicide in the military (Griffith, 2012). From the earliest investigation, theorists have endeavoured to explain “the why” of suicidal behaviour; thus, “theory at its best is an important tool in transforming information into knowledge” (Makinen, 2009, p. 139). Prinstein (2008) writes in his review that a sound theoretical model of suicide has to have the embodiment of the following characteristics: It should account for empirically documented risk factors and provide an understanding of the interaction between interpersonal and intrapsychic influences, as well as on how individual contextual factors interact with proximal triggers to predict his/her suicide risk (Barzilay & Apter, 2014).

This review will focus mostly on suicide theory formulated from a psychological and sociological perspective. This account is far from exhaustive; however, it will provide an

in-depth interpretation of suicidal behaviour from some major contributors in the field of suicidology from the 19th century to date. The significance of theoretical knowledge and understanding gives rise to vast knowledge of aetiology of suicidal behaviour, identify population at risk, and foretell prevention and treatment measures (Joiner, 2005).

2.4.1 Durkheim's Theory of Suicide

Durkheim (1897) laid the foundation for understanding suicide and became the baseline for many theories of suicide. According to him, suicide is caused by two social forces around the individual, i.e., the extent to which an individual feels integrated and regulated by the society. The levels of these forces must be balanced; otherwise, a lack of equilibrium may push the individual to commit suicide. He argued that people crave to feel connected to others – social connection. This need for social connection is met by his perception of sense of belonging to others, for example, family, friends, colleagues, church, and organisation. He defined four types of suicide:

Anomic suicide: According to Durkheim, social norms are responsible for people's sense of connectedness, as they give meaning and purpose to people. He argues that lack of social bonds results in life becoming meaningless, and the individual becomes estranged and loses direction, which increases the risk for suicide.

Egoistic suicide is the extent to which an individual experiences sense of "futility" – uselessness. They lack drive and have nothing to look forward to; thus, life becomes meaningless and they feel free to do whatever they want to, even to take their own lives (Danigelis & Pope, 1976).

Altruistic suicide is viewed as an over-integration of the individual into society, to the extent that the individual is willing to sacrifice his or her own life for the benefit of the collective (Stack, 2004). Stack refers to it as an obligatory suicide which occurs in a social group where a low value is placed on the individual. For example, military culture or the military spirit is seen as cultivating a sense of social integration that is conducive to altruistic suicide (Durkheim, 1897; 1966, p. 228). A soldier may sacrifice his/her life under the torturous arm of an enemy so as not to disclose information that will lead to the demise of the others – even his country.

Fatalistic suicide is the extent to which individuals experience excessive regulation whereby the society excessively suffocates the individual under strict rules similar to slavery, where there is extreme lack of freedom that may eventually lead them to feel depressed and distressed. For example, the conditions of deployment may be similar to slavery where there is lack of freedom.

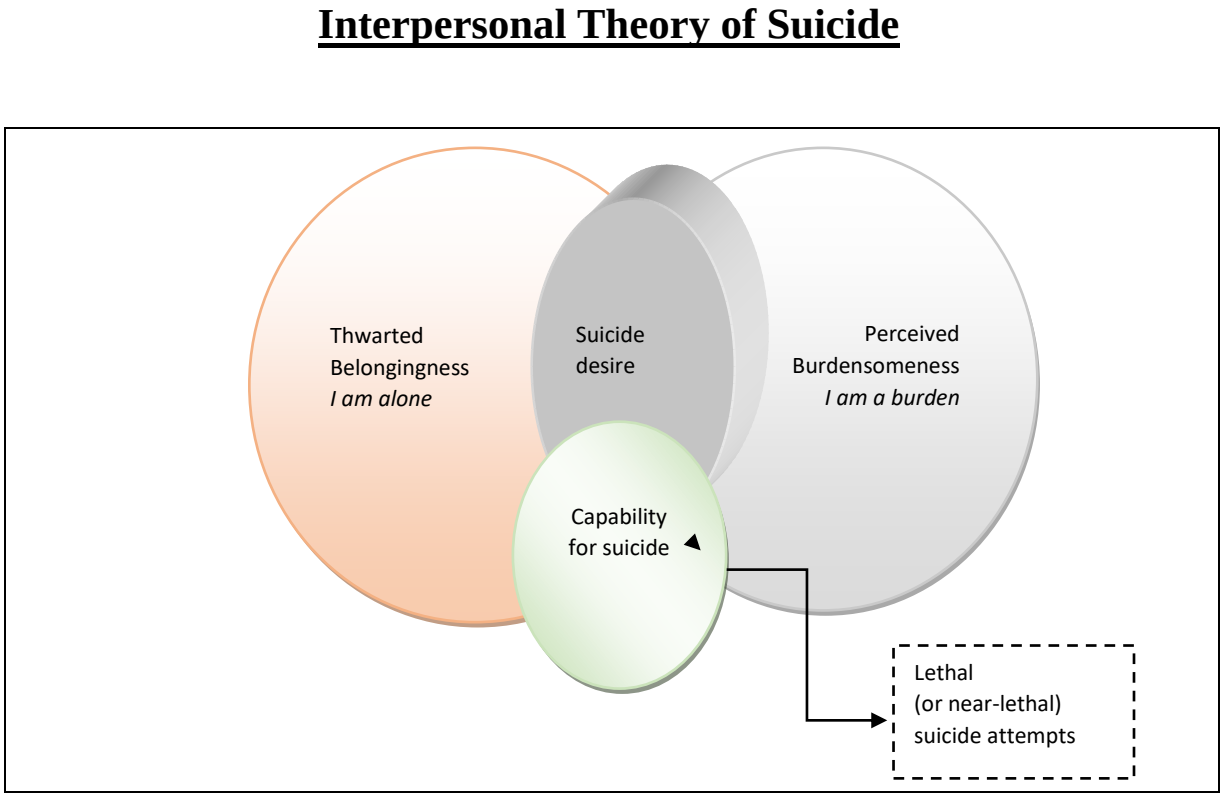
However, this theory is not without its limitations. Durkheim's theory ignores the issues of individual psychopathology (i.e., mental illness, genetic predisposition, personality) and focuses on societal factors that play a dominant role in causing individuals to kill themselves.

2.4.2 Joiner's Interpersonal Psychological Theory of Suicide

Joiner's interpersonal psychological theory of suicide [IPTS] is increasingly receiving empirical support for its evidence in understanding suicidal behaviour (Joiner, 2005). He proposes that human beings are not born to kill themselves, meaning they are not born with a developed capability to kill or seriously harm themselves but instead with an innate need for self-preservation (Joiner, 2005). Therefore, for an individual to be able to engage in suicidal behaviour, a combination of factors must be present to aid in developing this capacity. For example, repetitive exposure to traumatic and painful experiences in such a way that one becomes used to them in a process called habituation, results in acquiring an ability to engage in fatal self-injurious behaviour (Bryan et al., 2010; Shelef et al., 2014). Despite that, this theory holds that having a suicidal desire does not suffice dying by suicide, as this desire can be overpowered by our natural instinct to avoid self-destruction (Barzilay & Apter, 2014).

Figure 1

Interpersonal Theory of Suicide (Van Orden et al., 2008)



The interpersonal psychological theory of suicidal behaviour proposes that death by suicide occurs when three contributing variables are available: (1) thwarted belongingness, (2) perceived burdensomeness, and (3) acquired capability for suicide.

Thwarted belongingness refers to the extent to which an individual feels a strong sense of disconnection from others with whom he or she previously held meaningful relationships, while *perceived burdensomeness* is the extent to which an individual experiences him- or herself as a burden and/or a liability to others (i.e., family, friends, community, even to the world), as he or she believes that he or she no longer makes a valuable contribution and feels worthless (Castro & Kintzle, 2014; Griffith, 2012). However, the presence of these two conditions – perceived burdensome and thwarted belongingness – is not enough to cause death by suicide.

According to Joiner (2005), both of these conditions (i.e., perceived burdensomeness and thwarted belongingness) must co-exist *concurrently* with the acquired capability to

enact lethal self-harm. *Acquired capability* is a condition that develops over time through repeated exposure to painful experiences (i.e., trauma, violence, and abuse) in such a way that a person becomes accustomed to it. The process of gradually getting used to pain and tolerating it is called habituation (Mastroianni & Scott, 2011).

Through the habituation process, individuals can gradually decrease their response and resistance to pain by observing self-injury in others or self, and/or by rehearsing them mentally, they may then become highly tolerant to mental pain and physical pain; consequently, they may easily engage in self-injurious behaviours and eventually completed suicide (Joiner, 2005). In some occupations (i.e., physician, police, and soldiers) individuals may be exposed occupationally to experiences that facilitate response to injury and death. For example, military service exposes service members to experiences that may be traumatic (i.e., human suffering, child soldier, death of civilian and of fellow soldiers) and potential easy access to weapons (during training, deployments, or in the course of day-to-day duty).

In a clinical research by Mastroianni and Scott (2011), it is stated that soldiers may acquire capability for suicide through stress caused by military demands and military culture that foster uniformity in all aspects and place high expectations of compliance without questioning. Furthermore, separation from family puts added strain on service members' relationships. For example, the demands of military service force spouses and children to develop skills to cope with challenges in the absence of a service member (Mastroianni & Scott, 2011). The authors state that, as family members become more independent and self-reliant, soldiers may feel less or not needed anymore, thereby increasing their perceptions of thwarted belongingness and perceived burdensomeness. Evidence of the effect of these three psychological conditions in suicidal behaviour has been established in various studies (Conner et al., 2007; Griffith, 2012; Joiner et al., 2009; Shelef et al., 2014b; Van Orden et al., 2008).

2.4.3 Beck's Hopelessness Theory of Suicide

Beck's cognitive theory of suicide posits that ineffective cognitive processing and problem solving is key in distinguishing suicidal individuals from non-suicidal individuals (Wenzel & Beck, 2008). According to Beck's theory, hopelessness is central in driving an

individual's suicidal thought about intentionally ending one's life and/or engaging in behaviours relating to suicide. For example, the perception of being inadequate and unworthy (worthlessness), that one is lacking the resource to manage one's own health/life and to make effective changes to reach his own goals (low self-efficacy), and in the belief that emotional stress is too much and one is unable to tolerate it (perceived unbearability), that one is a burden to others (perceived burdensomeness), or the belief that the current situation will never improve and no one can help either (hopelessness) has been confirmed in recent studies as risk factors associated with suicide-related cognitions and behaviours in the general population as well as in the military population (Bryan et al., 2012; Joiner, 2005; Rudd, 2006; Wenzel et al., 2009).

Literature on suicide and Beck's theory are consistent with the findings by Bryan et al. (2013a) that these maladaptive beliefs individuals have about themselves, the world and the future (i.e., cognitive triad) function as an underlying vulnerability for psychiatric disturbances such as depression, PTSD, and suicide ideation. In Bryan et al.'s (2013a) research on the interaction of optimism with hopelessness in suicidal ideation (see *Optimism Reduces Suicidal Ideation and Weakens the Effect of Hopelessness among Military Personnel*), they found that severe hopelessness significantly contributes to suicide ideation that is more severe only among participants with low levels of optimism. However, Beck's theory has been criticised for its focus on hopelessness entirely above other factors given that suicide is a result of the marriage of multiple risk factors (Joiner, 2005).

2.4.4 Baumeister's Escape Theory of Suicide

Baumeister (1990) describes suicide as an escape from a painful state of self-awareness, in contrast to the view held by classical psychodynamic theory (Freud, 1920; Menninger, 1938) that suicide is a form of self-destruction, and Durkheim's sociological theory (1897) that focuses on breakdown in social norms as the cause of suicide. Baumeister's theory views suicide as being caused by the need to cease emotional pain and loss of self-awareness. According to escape theory, people engage in suicidal behaviour when they are experiencing unbearable life events and they tend to seek ways to stop the emotional suffering by escaping through suicide. He describes suicide as a process that follows six sequential steps:

1. *Inconsistency of standards and expectation*

A suicidal individual experiences the outcome of the current situation as a personal failure or setback as he or she falls short of standards and unrealistically high life expectations. He or she perceives a mismatch with regard to his or her abilities and the unachievable important standards, and/or unrealistic expectations. Consequently, self-awareness of one's perceived failures leads to one becoming extremely frustrated and disappointed in oneself.

2. *Attribution to self*

Awareness of one's perceived failures leads to unfavourable self-attribution, which is defined as the extent to which an individual perceives him- or herself as having stable undesirable characteristics that are predictive of future doom (Baumeister, 1990). Apparently, negative self-attribution results in self-blame as the self is perceived worthless due to being unable to live up to important standards and perceived expectations. There is evidence that links individuals' negative view of themselves with suicide ideation. In a study by Ross (2013) on military combat veterans, he reported that the majority of suicidal veterans experienced intense self-blame relating to combat (i.e., death of a soldier, survivor guilt, death of civilian, and for other atrocities). This is in line with the notion of escape theory that self-awareness of one's shortcomings leads to the need to escape from the awareness state of mind.

3. *Aversive state of distorted self-awareness*

An aversive state of high self-awareness occurs as an individual negatively continues to make comparisons of self with unrealistically high standards (Barzilay & Apter, 2014). The individual conceptualises the situation that led to him falling short of the significant standards as implying that the self is blameworthy, inadequate, worthless, guilty, incompetent, or shameful. A study conducted by Bryan and his colleagues in a military mental health outpatient sample (Bryan et al., 2013a) found that guilt (i.e., an interpersonal cognitive-affective state) and shame (i.e., an intrapersonal cognitive-affective state) were associated with severity of suicidal ideation, with guilt having a significant correlation with suicide ideation.

4. *Negative self-awareness leads to negative emotions*

The awareness of one's inadequacies and the distorted self-awareness evoke negative emotions. The individual falls into the dejected state (i.e., depression) as he or she feels guilty about not being able to perform according to expectations and standards (Baumeister, 1990). This further leads to one being anxious as one's perception of future unworthiness threatens one's future achievements. The need to escape is intensified and the only meaningful solution is the cessation of self-awareness, for instance, the suicidal person believes that negative emotions caused by guilt and self-blame will eventually stop and he or she will be freed from aversive emotional pain.

5. *Cognitive deconstruction*

According to Baumeister (1990), suicidal individuals attempt to escape from the self-awareness state and its consequences (i.e., depressed mood) through cognitive deconstruction. Accordingly, the deconstructed cognitive state is characterised by low level of thinking whereby meaningful thoughts are both consciously or unconsciously avoided and rejected.

In this state, the focus is relatively concrete; they experience the sense of numbness and are reduced to just a body, movement and sensations. The only goal is fulfilment of immediate needs. Without higher meaningful awareness, a troubled individual has decreased inhibition, leaving him or her free to engage in risky behaviour (i.e., substance abuse, self-harm, suicidal behaviour, etc.).

6. *A deconstructed state of self-awareness leads to suicide*

In a deconstructed state of mind, the individual has a passive attitude, lacks accountability, and the thought of suicide becomes less terrifying. As the need to escape one's self-awareness is amplified, and without behavioural inhibition to overcome the fear of death, for some, suicide ideations can progress to the actual suicide as the best way to end one's self-awareness (Barzilay & Apter, 2014).

Baumeister's theory drew from Baechler's model of suicide (Baechler, 1980), which views suicide as an escape from an existential problem. Also, it is in line with Shneidman's view that suicide is the response to the need to escape an overwhelming emotional pain (Shneidman, 1985). However, Baumeister's theory has been criticised for lack of clarity regarding the onset of suicidal thought in his six-stage model. In addition, it is very limiting, as it lacks generalisability, since it was mostly tested on a non-clinical sample (Barzilay & Apter, 1990). Even so, Baumeister has been commended well for his contribution in the conceptualisation of suicide and has influenced other theorist to develop the concept of escape (i.e., O'Connor, 2011; Williams, 1997).

2.4.5 Shneidman's Theory of Psychache

Shneidman's (1985) theory assumes that people resort to suicide because they are being tormented by unbearable emotional pain (i.e., psychache). "Psychache refers to the hurt, anguish, soreness, aching, psychological *pain* in the psyche, the mind. It is intrinsically psychological – the pain of excessively felt shame, or guilt, or humiliation. When it occurs, its reality is introspectively undeniable. Suicide occurs when the psychache is deemed by that person to be unbearable" (Leenaars, 2010, p. 7). Accordingly, suicide does not happen instantaneously, but an individual tries to cope and seek relief from this pain until he or she believes that all avenues have been exhausted. Suicide becomes a last resort and is considered as problem-solving behaviour (Barzilay & Apter, 2014).

Shneidman's theory elucidates the importance of fulfilment of an individual's basic needs which is in line with Maslow's theory of needs (Sadock & Sadock, 2003). He argues that when an individual's basic needs such as primary or biological needs (i.e., food) and secondary or psychological needs (i.e., interconnectedness) are not met, the person may experience a sense of isolation, loss, and rejection, which may develop into psychache. This is in line with Joiner's interpersonal psychological theory of suicide positing that thwarted belongingness (i.e., feeling alienated) and perceived burdensome (i.e., feelings of being a burden to others) increase the risk of suicide ideation. It is unlike Freud's psychodynamic view that suicidal people possess a death wish (i.e., wish to die, wish to be killed, and wish to kill).

Together with Baumeister (1990) and other contemporary psychological theorists, Shneidman disregards this notion of self-destruction (Shneidman, 1985). Furthermore, Shneidman argues that suicidal individuals use suicide as a last resort when their pain threshold has been reached. He notes that suicidal individuals suffer from unbearable mental pain, feelings of rejection, deep loneliness, and finally, feeling that death is the only way (the only solution) to end suffering. He proposed stress, pain, and mental uneasiness as the main contributors that guide the cognitive process of suicide. In his work, *Definition of Suicide,* Shneidman (1985) as quoted by Leenaars (2010), proposes the following 10 common factors (commonalities) present in a suicidal person:

Ten Commonalities of Suicide (Shneidman, 1985, as cited in Leenaars, 2010)

- Suicidal persons view suicide as the only solution to a perceived problem.
- The goal of suicide is to end consciousness.
- Suicide is caused by unbearable psychological pain.
- Suicidal persons experience psychological distress due to unmet psychological needs.
- Suicidal persons experience feelings of hopelessness and helplessness.
- Cognitively, suicidal persons are ambivalent towards life and death.
- Suicidal persons have a restricted perceptual state of suicide.
- Suicidal persons have a strong need to escape from the perceived unbearability of life.
- Suicidal persons communicate their intent through their interpersonal networks.
- Suicidal persons display lifelong dysfunctional coping patterns.

2.5 Global Prevalence of Suicidal Behaviour in the Military

The World Health Organisation (WHO) (2008) reported that suicide was the 16th most common cause of death worldwide, and in the United States' general population, it was the 10th leading cause of death and accounted for 14% of all deaths (Nock et al., 2013). Historically, the suicide rate in the military has always been relatively lower than the suicide rate of the general population (Griffith, 2012; Nock et al., 2013) until two decades ago (Vanderploeg et al., 2015).

Nock et al. (2013) attribute the historic low military suicide rates to (1) periodical screening of military service members for mental health problems; (2) documented criminal history of all serving members; (3) availability of strong social network; and (4) access to mental health care. However, in 2008, it was first noted that the rate of soldier suicide for the US Army service components has surpassed the rate of the general population (adjusted for age and gender) i.e., the suicide rate for Army service members accounted for 20 per 100 000, while for their civilian counterparts, it was 18 per 100 000 (Kuehn, 2009; Nock et al., 2013; Vanderploeg et al., 2015).

The steady increase of suicide in the US military has been ascribed to the initiation of military operations in Afghanistan and Iraq and the consequences of direct combat exposure (Department of Defense Task Force on the Prevention of Suicide by members of the Armed Forces [DOD TFPS], 2010). Vanderploeg et al. (2015) agree that the past decade has witnessed a steady increase in suicide in the military, irrespective of conflict. Between 2005 and 2009, about 1 100 suicide deaths were reported. Estimates suggest that at least one active duty service member dies by his own hand approximately every 36 hours. In a study by Griffith (2012) about suicide in the Army National Guard, he reported an increase in their suicide rates with 31 per 100 000, which exceeded the rates of Army Reserve members and of the general population when adjusted with age and gender.

In 2013, the rates for active duty personnel were reported to have increased at 22.7 per 100 000; for Reserve Force members 24.2 per 100 000; and 28.1 per 100 000 for National Guard members (Smolenski et al., 2013). The survey conducted by the Armed Forces Health Surveillance Centre from 1998 to 2011 found that about 2 990 active duty service

members died of suicide while in active service (Armed Forces Health Surveillance Center – [AFHSC], 2012).

In contrast with previous reports, recent studies by Reimann and Mazuchowski (2018) on suicide rates among US active duty service members, in comparison with their civilian counterparts (adjusted with age and gender) between 2005 and 2014, found that Army suicide rates were lower than those of civilian counterparts. Their findings were in line with findings of previous researchers (Griffith, 2012; Kuehn, 2009; Nock et al., 2013; Vanderploeg et al., 2015) with regard to the increase in the suicide of the United States active duty service members between 2005 and 2009 but extended that their suicide rates remained relatively stable between 2009 and 2014 in the same population but lower than those of their civilian counterparts (adjusted with age and gender).

Although these rates seem trivial enough in giving an indication of the problem of suicide, it is still an underestimation of military suicide risk, as it reflects death by suicide, not the animosity of suicide ideation. Nonetheless, it is of significance to note that these suicide rates give us an indication and understanding of the severity of suicide ideation, which is a risk factor laying a foundation for all suicidal behaviours (Joiner, 2005). Given the scope and the seriousness of the suicide problem in the military, there is a desperate need to increase our understanding of factors contributing to suicide ideation to prevent the unnecessary loss of life by one's own hand.

2.6 Prevalence of Suicidal Behaviour in the SANDF

Suicidal behaviour among active duty components of the South African military remained a concerning matter before and after the transition to the democratic dispensation of the Republic (cited in Koopman & Van Dyk, 2012b; Van Dyk, 1992). Findings by Van Dyk (1992) revealed that 453 members of the former South African Defence Force (SADF) between the ages of 18 and 24 years engaged in suicidal behaviour, and others died of suicide in 1986 at the height of counter-revolutionary war. After the establishment of the democratic dispensation in 1994, the SANDF continued to experience the reality of suicide. For example, during the period between 1994 and 2000, 300 soldiers were reported to have died by suicide. Koopman and Van Dyk (2012b) reported that there were

about 2040 incidents of suicidal behaviour, of which 433 were completed suicides during the 11-year period between 1990 and 2001.

For the purpose of this study, statistical data provided by the SANDF in its Health Care Activity and Medical Stays, Suicide Report (HCASUICI, 1 January 2004 until 31 December 2018) indicate that, during the 15-year period between 2004 and 2018, 503 suicides occurred among active duty service members in the SANDF. The distribution, according to different arms of service, indicates that the highest number of deaths by suicide was in the Army, namely 273 deaths, followed by SAMHS with 92 deaths, followed by the Air Force with 86 deaths, and lastly the Navy with the lowest number of 50 suicidal deaths.

According to race distribution, this report indicated that soldiers of African descent had the highest number of suicides (333) over the 15-year period, followed by Caucasians (98), Coloureds (65), and Asians with the lowest number (5). Military active duty service members aged between 26 and 45 years had the highest suicide rate, followed by the adolescent population (i.e., between the ages of 18 and 25 years), and the lowest rate was observed among ages between 46 and 65 years. Personal communication with the Head of Health Research and Development at the Military Psychological Institute (MPI) of the South African Military Health Services (SAMHS) revealed “member suicide continues to be a key concern in the SANDF for both local and deployed soldiers” (Lt Col M. C. Kgosana, personal communication, May 24, 2016).

2.7 Concluding Summary

This chapter outlined an overview of the prominent suicidologists in the conceptualisation of suicide. A historical context and theoretical perspective of suicide were discussed, giving the reader a foundational understanding of suicidal behaviour. The chapter concludes with the prevalence of suicidal behaviour in the military context, followed by the prevalence in the South African military. Existing research has revealed that there is a need to consider risk and protective factors in the suicidal behaviour of South African military active duty members to develop measures to alleviate its effect and prevalence. Thus, the current study aimed to explore how various risk and protective factors affect suicide ideation of South African Infantry soldiers and the role thereof after

combat exposure. Given the fact that international understandings of suicide cannot be transported to other developing countries, this study aimed to address the existing gap in the literature.

Chapter 3

Literature Review: Sense of Coherence and Risk/Protective factors

3.1 Introduction

The purpose of the current study was to investigate the effect of risk/protective factors and combat exposure on suicide ideation of SA Army infantry soldiers of the SANDF. The current chapter provides a theoretical discussion of literature in the following order: a conceptual framework of the study: salutogenesis model of health (SMH); a justification for using the concept: sense of coherence in the current study; risk factors associated with suicide ideation in the military; stressors associated with the military environment, protective factors associated with suicide ideation in the military; combat exposure and suicide ideation. This chapter is aimed at providing a theoretical and empirical appreciation of the phenomena and serves as a backdrop in understanding suicide behaviour as experienced by members of operational units in the SA Army. Finally, the relationship between risk/protective factors and combat exposure will be explored from literature.

3.2 Theoretical Framework

To understand factors affecting the suicide ideation of active duty South African Army Infantry members in the SANDF better, this study used a salutogenic lens: a salutogenic model of health (Antonovsky, 1979). The salutogenic model of health is also known to as salutogenesis model. This theory was born out of a need for a paradigm shift by Aaron Antonovsky, a medical sociologist, in 1979.

The term *salutogenesis* comes from the combination of the Greek and Latin words *saluto* (Latin meaning of *salus*, being health) and *genics* (the Greek meaning of *genes*, being the origin). Thus, salutogenic refers to the origin of health, which entails the causes of health and how health can be sustained (Antonovsky, 1996).

Antonovsky expostulated the *pathogenic* approach, which focuses on disease and illness, with the *salutogenic* approach, which focuses on promotion of health (Antonovsky, 1996). His main interest was to demonstrate the relationship between health, well-being and stress to find the rationale behind "how people manage stress and manage to stay well"

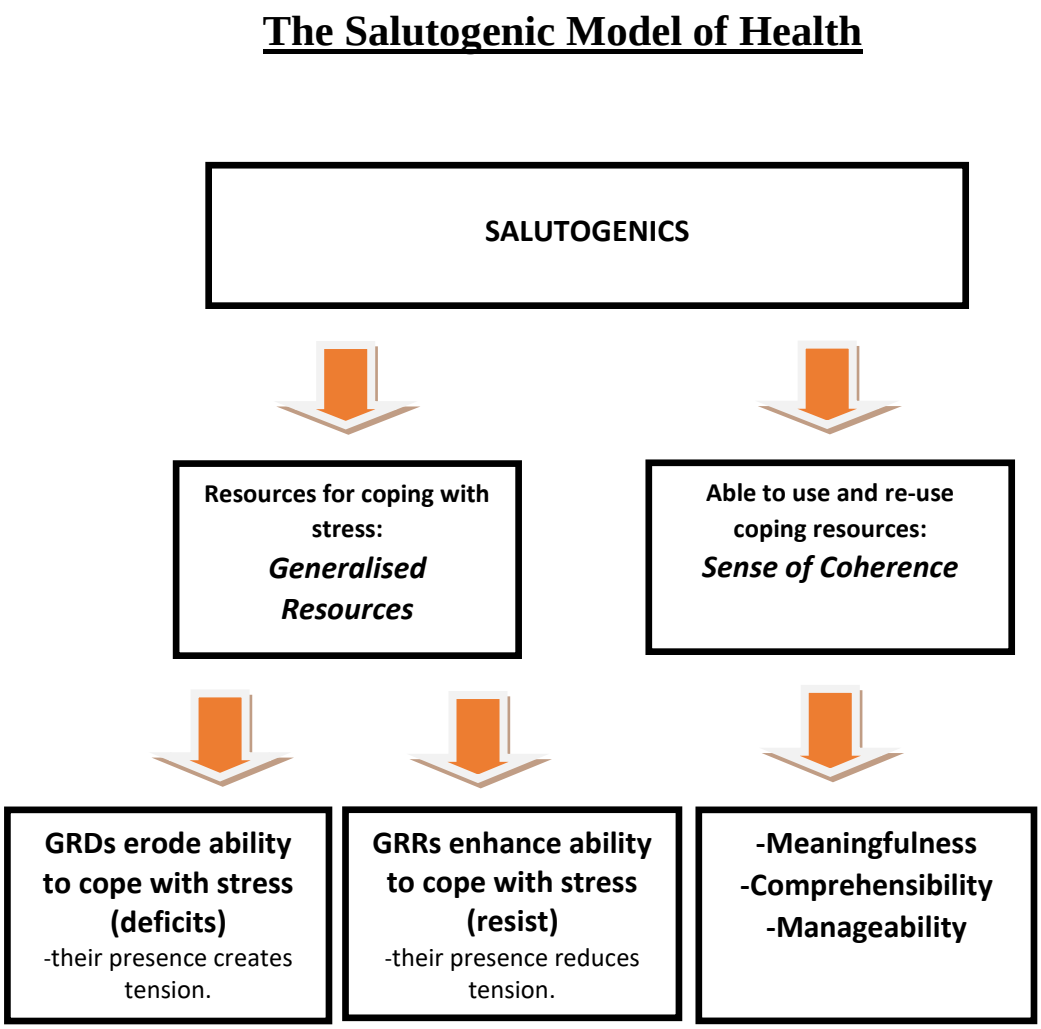
(Strümpfer, 1995, p. 81). Hence, this approach allows us to look beyond an individual as 'disease filled' (*pathogenic*) to individuals as being able to move towards health (*salutogenesis*) despite being encountered by stressful life situations (Antonovsky, 1996, in Lezwijn et al., 2011).

This is the theory that emphasises strengths in people and the ability to overcome adversities of life (Antonovsky, 1987a). In the study of concentration camp survivors, Antonovsky and his colleagues found that despite exposure to multiple traumas and adversities of life, some individuals adapted and functioned well (Antonovsky et at., 1971). Throughout his studies, he indicates that people's strength lies in the coping resources that are effective during the experience of psychological distress (Antonovsky, 1979). He further theorises that a person's strength in coping with daily challenges is determined by his or her position in the health ease/dis-ease continuum.

Salutogenesis orientation is conceptualised in terms of two core conceptions: (1) generalised resistance resources (GRRs), in relation to generalised resistance deficits (GRDs), and (2) sense of coherence (SOC) (see Figure 2) (Antonovsky, 1979; McGregor, 2017; Strümpfer, 1995).

Figure 2

Simplified Generalised Resources and Sense of Coherence (Antonovsky, 1979, in McGregor, 2017, p. 5)



3.2.1 Generalised Resistance Resources (GRRs) and Generalised Resistance Deficits (GRDs)

According to Antonovsky, humans are bound to experience stress; hence, they are neither completely healthy nor completely ill (Antonovsky, 1979; McGregor, 2017). They are somewhere along the continuum with *health-ease* on the one extremity and *dis-ease* located on the opposite extremity of the continuum. The goal of humans should be to overcome stress – a physical, mental, emotional factor that causes physical or psychological tension or strain (McGregor, 2017), and move towards the health ease pole.

GRDs are defined as forces that eradicate one's ability to cope with stress. These forces affect the entire system (i.e., mentally, physically, and emotionally); hence, they are generalised. Antonovsky (1979) defines stressors as some stimulus that poses demands to which one has no instantaneous response at one's disposal. McGregor (2017) writes that GRDs occur in the form of disposition forces called overloads (e.g., poor health, insomnia, low energy, low self-esteem, etc.) or in the form of socio-environmental forces called underloads (i.e., low social class, cultural instability, low material resources, etc.) on the individual's stress level (McGregor, 2017).

Antonovsky recognises that people's problems can be either medically related (diagnosable) or those of experiencing dis/ease or breakdown (stressors – GRDs). According to him, GRRs could counteract problems that are neither medically diagnosable nor classifiable (i.e., GRDs: stressors, demands). Accordingly, GRRs refer to resources possessed by a person, group, society, or subculture that facilitate effective tension management (McGregor, 2017). Furthermore, GRRs can be operationalised as the presence of a variety of creative and dynamic resources in the soldier or in his immediate unit (such as colleagues, religious leaders – the chaplain, and health care professionals) that enable a soldier to resist stress and increase adaptive coping that promote health (Van Breda, 2008).

Strümpfer (1995) attests that when GRRs are available, perceived, used, and re-used, they could make it possible for individuals to either avoid an assortment of stressors or fight them. He identifies these resources as artefactual material (i.e., money, shelter, and food), cognitive resources (i.e., intelligence and information), interpersonal relational resources (i.e., social connectedness and social support), and macro socio-cultural resources (i.e., rituals and religion) (Strümpfer, 1995, p. 82). Lezwijn and colleagues further categorise GRRs into psychological resources such as upbringing, life experiences, social networks, and marital status (Lezwijn et al., 2011).

According to Antonovsky's salutogenic theory, GRRs and GRDs provide a feedback loop towards reinforcement of either a strong or a weak sense of coherence – a personal resource to deal with life challenges (see section 3.2.2) (Strümpfer, 1995). For example, when an individual has had encounters with stressors (i.e., GRDs) that required them to use their coping resources (i.e., GRRs), sense of coherence permits them to reach out in any

given situation and utilise those resources accordingly, irrespective of what the stressor might be. If GRRs are regularly experienced and are used/reused, it leads to reduction of tension as one experiences better coping with stressors (i.e., GRDs). Thus, an individual moves towards the health ease side of the continuum (salutogenesis) as opposed to the dis/ease side of the continuum (pathogenic). For that reason, a strong sense of coherence develops, which implies a belief in the availability of sufficient resources to cope with life stressors (Vinje et al., 2016).

Strong SOC mobilises the GRRs for the person to fight and conquer difficult life situations (i.e., GRDs). Hence, this theory assumes that individuals can manage and cope with stress. In the 1970s, Antonovsky conducted a study that focused on determining the effect of menopause on women who have had exposure to traumatic life events. His finding revealed that while others were affected negatively by stress, some managed to function well (Lindström, 2010). However, individuals' overall perception of the world is important in their coping with stress, as it determines towards which pole one leans (*health-ease* pole or *dis/ease* pole) (Benson, 2013). This perception is called sense of coherence, which is at the heart of the salutogenic model of health (Antonovsky, 1979).

3.2.2 Sense of Coherence

Antonovsky defines sense of coherence as:

"a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that one's internal and external environments are predictable and there is a high probability that things will work out as well as can be as reasonably be expected" (Antonovsky, 1979. p. 123).

In the book, *Unraveling the Mystery of Health*, published in 1987 (Antonovsky, 1987b; Mittelmark & Bauer, 2017) Antonovsky provides a further clarification. He postulates that SOC is a global orientation that expresses the extent to which one has a feeling of confidence that:

(1) stimuli from one's internal and external environment in the course of living are structured, predictable, and explicable;

(2) GRRs are available to meet the demands posed by these stimuli;

(3) demands are challenges worthy for investment and engagement.

From the salutogenic orientation, the significant role of sense of coherence is realised only when one understands the difference between (a) having the resources at one's disposal and (b) the capacity and the inclination to perceive and apply them in their immediate environment (i.e., when confronted with life's challenges) (Antonovsky, 1987, cited in Lindström & Eriksson, 2005; Lezwijn et al., 2011).

Antonovsky comments that the extent to which individual can remain healthy and successful in managing stress depends on one's unique interpretation of his or her world – sense of coherence (Benson, 2013). In essence, sense of coherence is a manner in which one sees the world from the dispositional orientation, which facilitates successful coping with a number of stressors (Antonovsky, 1993). He further elucidates that sense of coherence is a generalised world view that can be understood in terms of its three dimensions – the perception that the world is comprehensible, manageable, and meaningful (Lezwijn et al., 2011; McGregor, 2017).

Comprehensibility

This is a cognitive element of sense of coherence (Compton et al., 2005). Comprehensibility refers to being able to have a grasp of what is going on and the understanding of the situation being assessed. In the salutogenic orientation, it implies that one has a belief that one has a clear understanding of the challenges is facing and knows how to activate resources for coping (Vinje et al., 2016). Antonovsky defines comprehensibility as the extent to which one perceives the stimuli that confronts one, deriving from the internal and external environments as making cognitive sense. The information is considered to be ordered, structured and consistent, as opposed to being chaotic, unstructured, random, senseless, and inexplicable (Antonovsky, 1987).

Individuals with a high sense of comprehensibility are able to cope with unexpected stressful situations because (1) they are able to make sense of situations or events and attach precise analysis; (2) they acknowledge that life brings about both negative and

positive experiences – hence, one has to deal with both; and (3) even before negative events occur (i.e., sudden death of a loved one) these individuals believe that such events will be understood and coped with eventually. McGregor (2017) attests that people with a high sense of comprehensibility believe in the consistency of information; thus, life events are seen as structured, orderly, and clear. They are confident in their ability to make sense of every situation. On the other hand, individuals with a low sense of comprehensibility have difficulty in making sense of the characteristics of the unexpected negative events, leading them to perceive life as unstructured, disordered, and impossible to cope with.

In the military situation, a soldier may experience a traumatic event (i.e., combat exposure) in which one might have killed other combatants. The soldier with a high sense of coherence would try to make sense of the situation as to have killed in the line of duty, as a form of survival, or to save lives. This individual would achieve successful coping due to his unique orientation. On the other hand, a soldier with a low sense of comprehensibility might perceive the experience negatively and might even develop self-blame or survivor guilt (Benson, 2013). According to the salutogenic theory, a high sense of comprehensibility is beneficial to soldiers as it allows them to process combat experiences effectively and prevent the development of mental health problems such as PTSD and even suicidal behaviour (Benson, 2013).

Manageability

This is the behavioural component of sense of coherence that entails the capacity to make use of resources for coping (Antonovsky, 1996; Lindström & Eriksson, 2005). It denotes one's belief that the resources to cope with life adversities are possessed by an individual him/herself or can be accessed via significant others (Antonovsky, 1987a; Lezwijn et al., 2011). Antonovsky (1984) defines manageability as "the extent to which an individual perceives that the resources at one's disposal are adequate to meet demands posed by various stimuli that bombard one" (p. 118).

In essence, an individual perceives that he or she has things under control such as adequate support, help, and resources. Having a sense of manageability speaks to the fact that when faced with stressful life circumstances, (1) one has the capacity to understand and interpret them in such a way that they make sense to one (*comprehensibility*) and (2)

one possesses the motivation and the desire to cope, as one attaches meaning to one's situations (*meaningfulness*).

Persons with a well-developed sense of manageability are less likely to adopt a victim mentality when faced with negative life events. Instead, they remain optimistic and believe in the availability of necessary help, material or non-material resources to manage situations (Compton et al., 2005). From the salutogenic orientation, these individuals have learnt to view problems as challenges, which welcome opportunities for growth, learning, and maturation (McGregor, 2017). For example, Elder and Clipp (1989) conducted a study on World War ll veterans who have had traumatic military experiences, including combat, they viewed their experiences as having provided them with opportunities for learning new coping skills that had lifetime benefits.

Individuals with a high sense of manageability believe that events in their lives are within their control. This control factor of sense of coherence provides a fortifying feeling that one is in control of one's life circumstances and has confidence in one's coping skills (McGregor, 2017). Kobasa et al. (1981) note in their theory of hardiness that having sense of control implies that one is in charge of one's life, thus setting a pace of events in one's life. In contrast, persons with a low sense of manageability tend to lose control when faced with negative life events and consider themselves victims and unfortunate.

According to Antonovsky, people cope better when they know that resources to cope in difficult times are at their disposal, and if not, that they can be accessed via trusted individuals (i.e., religious authorities [chaplains], police, friends, family, support from unit commanders and fellow soldiers). Benson (2013) writes that individuals with a high sense of manageability are able to attach reasonable judgement to reality when faced with challenges. This means that they believe that life challenges can be managed accordingly through internal or external coping resources. However, they are still aware of the limits of their resources. Thus, they are motivated to find solutions as opposed to individuals with a low sense of manageability who become distressed, dejected and perceive life experiences as impossible to cope with.

During military operations, such as deployments where combat exposure is expected, a soldier with a high sense of manageability may rely on the resources such as members of

the unit, unit commanders, mental health in place, as well as the unit chaplain for support. All may depend on the kind of help needed; however, one will know how to use available resources. As noted by Aldwin et al. (1994), Elder and Clipp (1989), and Strümpfer (1995), a soldier with a high sense of manageability may be able to find beneficiation of the military service, regardless of difficult military experiences that may include combat exposure.

Furthermore, military service may have the embodiment of the following beneficial elements: It may increase social autonomy build a stronger sense of self efficacy, build a positive self-image, foster assertiveness, build confidence, build survival resources, strengthen comradeship, and enhance self-esteem. Actually, these elements may provide a buffering effect against mental health problems, including suicidality.

Meaningfulness

Meaningfulness is considered the most important component of a sense of coherence (Compton et al., 2005). According to Antonovsky, meaningfulness is a motivational component that gives people the willingness to engage with life challenges. Antonovsky (1979) defines this component as the extent to which the world makes sense at the emotional level whereby one is motivated to seek order and to turn resources from potentials into actuality. One feels a sense of being actively involved in shaping one's presence and the future, as opposed to being an observer.

From the salutogenic orientation, persons with high scores in meaningfulness perceive life challenges as worth investing energy and time in finding effective resolutions rather than looking at them as being burdensome. This theory does not take away the fact that unexpected negative life circumstances are disappointing and source unhappiness; however, making sense of them allows one to accept the realities of life (Compton et al., 2005). Although one is not happy to be confronted by difficult life circumstances, one welcomes them as challenges worthy of commitment and engagement.

According to Antonovsky, stressful life events can be managed and coped with if people attach meaning to them. People with a well-developed sense of meaningfulness believe that both negative and positive experiences can be managed effectively by uncovering their meaning. Accordingly, if meaning is attached to stressful life events, it means they matter to the person. Therefore, one is motivated to address them. Having a sense of meaning implies that people are motivated and have a desire to survive and persist and rise above their current situations. Otherwise, they will not be motivated to understand challenges they face (*comprehensibility*) and to have the capacity to know and use resources (*manageability*). Antonovsky emphasises the significance of meaningfulness for a stable and enduring perception of life experiences (Lezwijn et al., 2011).

Military experiences, including combat exposure, by their very nature contribute toward a stressful environment for soldiers, and others may be prone to develop a negative outlook in their future (Nock et al., 2015; Ursano et al., 2016). Nock et al. (2013) write that stressful life events associated with military training and other military practices, for instance combat exposure, injury, bereavement, negative unit climate, family stressors (i.e., divorce, separation), and personal stressors may increase soldiers' vulnerability to suicide behaviour. A soldier with a low sense of meaningfulness may be prone to developing psychological distress (Benson et al., 2013).

Such an individual may feel a sense of hopelessness as he/she engages with less adaptive coping strategies (such as substance use/abuse, passive acceptance of stressful events, self-blame, misinterpreting and catastrophising, and viewing events as impossible to deal with) (Bryan et al., 2013b; George & Van den Berg, 2012; James & Gilliland, 2001, Ross, 2013). They may then be unsuccessful in finding meaning to life challenges and develop mental health problems such as anxiety, depression, and eventually suicidal behaviour (Bryan et al., 2013a Bryan et al., 2013c). Alternatively, soldiers experiencing a high sense of meaningfulness are more likely to find meaning in their current situations as they perceive a potential for a brighter future with meaningful events (Antonovsky, 1987a; McGregor, 2017).

3.3 Justification for Using Sense of Coherence

The aim of the current study was to investigate the risk and protective factors that affect suicide ideation of SA Army Infantry soldiers and to determine the role of combat exposure in it. Using the salutogenesis model of health provided the researcher with a comprehensive model from which to understand human behaviour. Various components of the model adopt an integrative approach, which enabled the researcher to comprehend the effect of negative or risk factors (i.e., various stressors also conceptualised as GRDs, in interaction with protective factors or resource factors otherwise called GRRs. In addition, this theory provides a unique and exceptional perspective of the components of sense of coherence in their combination (cognitive, behavioural, and motivational) in how people deal with their life experiences.

Antonovsky believes that if individuals have a strong will to live, they will be motivated strongly to understand their current life challenges, activate internal or external resources to cope with the challenges, and ultimately become motivated to persist, even when the outcomes are less desirable. Thus, focusing on the combined (internal and external) approach creates life experiences that are characterised by consistency, load balance, and participation in decision making. This will then lead to the development of a strong sense of coherence.

Military service where deployments and combats are possible is very taxing in the psychological well-being of a soldier. However, individuals are usually not prepared to face such challenges on conscription. In a study on suicide in the US Army (Logan et al., 2012, in Nock et al., 2013) it was found that prior to suicidal death, the most common stressor-related circumstances were intimate partner problems (44.6%) (i.e., divorce and infidelity); military-related stressors (41.1%) (i.e., job-related problems, combat experiences, and most recent deployment).

In support, Barton (1998) and Griffith (2012) attest that military life experiences present with unique stressors that may be associated with increased risk of soldier suicide. Antonovsky's salutogenesis model sets forth that the greater the sense of coherence, the greater the probability of being psychologically healthy (Nkewu, 2014). Therefore, when faced with military stressors, a soldier will more likely understand that current negative

experiences are not permanent; therefore, one may appraise the situation, attach reasonable judgement, and activate appropriate resources that will yield a favourable outcome (Benson, 2013).

A strong sense of coherence allows an individual to seek available coping resources as follows: First, understand that the current situation and the outcome may be either negative or positive. Second, one may seek to find meaning, for example, to make sense of the challenges of either combat deployment, peacekeeping operations, or day-to-day military environmental challenges such as a negative unit climate, being ostracised from one's unit, etc. Finally, an individual with a strong sense of coherence will recognise internal and external resources available at his or her disposal such as utilising interpersonal support and ego strength (Antonovsky, 1993; Strümpfer, 1995). Consequently, the person gains understanding that life brings about both wins and losses; for that reason, one must appreciate both.

From the salutogenic perspective, one could deduce that a sense of coherence provides a differentiation between soldiers with a potential for the development of risk factors (i.e., mental health problems, suicidal behaviour) and those with the capacity to utilise protective factors (i.e., components of sense of coherence) as a buffer against suicidality. As stated by Strümpfer (1995), sense of coherence is a theory of strength, and even though combat exposure may somehow be perceived as a negative experience, it may not dictate one's outlook in future; thus, it is viewed as the area where strength develops. In view of that, soldiers with adequate coping resources, including a sense of coherence, are able to access social support and utilise their ego strength to survive military stressors (Antonovsky, 1979; Van Dyk, 2009). In the next section, suicide risk and protective factors associated with active duty service members are discussed.

3.4 Risk and Protective Factors for Suicide Ideation in the Military

Risk factors can be defined as conditions (i.e., individual behaviour, psychological or societal conditions) that increase the likelihood that a negative outcome will occur, while protective factors reduce the likelihood of such occurrences (Dekovic, 1999). In addition, suicide risk factors can be conceptualised as precipitating factors that lead an individual to succumb to engaging in suicide ideation, plan, attempt and even death by suicide (Van

Orden et al., 2010). Risk factors associated with the increase in the suicide rates of the military population have been studied extensively (Bryan et al., 2014a; Bryan et al., 2014b; Caceda, 2014; Fisher, 2014; Langhinrichson-Rohling et al., 2011; Millner et al., 2018; Naifeh, 2019; Nock et al., 2013; Nock et al., 2018; Pfeiffer et al., 2014; Pietrzak et al., 2010; Ramsawh et al., 2014; Riggs & Riggs, 2011; Ross, 2013; Shelef et al., 2015a; Ursano et al., 2015b; Vanderploeg et al., 2015).

Other researchers compared the suicide rates of the civilian population and military population (DOD Annual Suicide Report – ASR, 2018; Martin et al., 2009). Correspondingly, trends of suicidal behaviour observed in the civilian population are also observed in the military population (Nock et al., 2008; Ursano et al., 2015a). Ursano and colleagues conducted an epidemiological study on the prevalence of suicidal behaviour among the US Army soldiers to assess risk and resilience in the service members (Study to Assess Risk and Resilience in Service members – STARRS) (Ursano et al., 2015a). Findings revealed a high prevalence of suicide ideation among the Army population (14.1%), which is higher than the earlier similar study (13.9%) on the civilian population (Nock et al., 2014). Nock et al. (2013) affirm that an individual's risk to attempt suicide, and even to die by suicide is influenced by a combination of vulnerabilities or proximal-distal factors that guide suicidal thoughts.

It is evident that risk factors that appear in the general population can also be observed in the military population, such as demographic correlates (Black et al., 2011; Caceda, 2014; Fisher, 2014; Nock et al., 2013; Nock et al., 2014); and depression, alcohol-related problems and PTSD (Bryan et al., 2015b; Jakupcak et al., 2009; Langhinrichsen-Rohling et al., 2011; McLean et al., 2017; Pietrzak et al., 2010; Pukay-Martin et al., 2012). However, service members have additional context-specific risk factors (Loop, 2013). For example, military service (Bryan et al., 2014b; Corey, et al., 2011), guilt (Bryan et al., 2013c, 2013d; Bryan et al., 2015a), self-blame (Ross, 2013), deployments (Lemaire, & Graham, 2011; Loop, 2013; Vanderploeg et al., 2015), physical and sexual assault (Lemaire & Graham, 2011), sleep problems (Ribeiro et al., 2012), combat exposure (Amone-P'Olak et al., 2014; Mitchell, et al., 2012), family stress and family separation (Black et al., 2011; Gradus et al., 2013), killing in combat (Maguen et al., 2012), stigma (Sudak et al., 2008), anxiety (Bentley et al., 2016), and military career characteristics (Black et al., 2011; Millner et al.,

2018) have been identified as associated with increased suicide ideation and/or attempted suicide of service members.

In this section, the review of key studies that have found correlations of suicide ideation/behaviour with a number of risk factors and protective factors that can be seen in service members is presented as follows: (1) risk factors related to military environment; (2) mental health/psychological risk factors (depression, PTSD, and substance abuse); (3) environmental risk factors and socio-cultural risk factors (deployments, access to firearm, family exposure/family stressors due to active duty service); (4) role of combat exposure; and (5) protective factors (resilience, social support).

3.4.1 Risk Factors Related to the Military Environment

3.4.1.1 Military Service

Worldwide, military jobs have been recognised continuously as among the top ten most demanding occupations (Career-Cast, 2013; 2019; De Beer & Van Heerden, 2014; Harms et al., 2013). Particularly, military enlistment comes with its own unique challenges that may be detrimental to soldiers' physical and psychological well-being (Skomorovsky & Stevens, 2013). As is required by national duty, soldiers have to endure harsh physical weather conditions, extended periods away from home, exposure to physical danger of imminent enemy attack, and intense physical training (Harms et al., 2013). Throughout these periods, soldiers are usually confined in designated areas (i.e., military units/bases or training camps), participate in uncomfortable military assignments (i.e., combat or non-combat deployments) and other training operations (Dalenberg & Op den Bruijs, 2013; Kramm & Heinecken, 2015).

Furthermore, soldiers have to endure a routine-type lifestyle that is characterised by "uniformity" (doing things in unison such as drilling, wearing similar clothing, sleep/eat at certain times as a group), sleep deprivation, complete obedience, and complete reliance on the command structures (Dalenberg & Op den Bruijs, 2013; Kramm & Heinecken, 2015). This complete reliance on the command structure de-individualises the individual, as one's ability to make decisions about one's basic activities is surrendered to the command

structure, and one's needs and wants are subservient to that of the group or a team (Kramm & Heinecken, 2015).

Dalenberg and Op den Bruijs (2013) affirm that even though soldiers are trained to perform their duties effectively and diligently according to the values, goals, and beliefs of the organisation, military service involves activities that are challenging, confusing and induce stress. Many researchers, amongst others Black et al. (2011), Casey (2011), Martin et al. (2009), and Ursano et al. (2016) agree that military service itself is a source of stress and may increase soldiers' risk of a negative psychological outcome, including suicidal behaviour.

Soldiers are usually isolated from significant others who may provide valuable social support (Griffith, 2012; Kalamdien & Van Dyk, 2009; Pietrzak et al., 2010). A number of studies have demonstrated that social isolation is a major predictor of suicide ideation, attempted and fatal suicidal behaviour, as it leads to loneliness, social withdrawal and lack of social support (Joiner & Van Orden, 2008). Thus, soldiers may be more susceptible to experience problems such as divorce, loss of spousal support, loss of a spouse through death, and family separation (Joiner & Van Orden, 2008; Riggs & Riggs, 2011; Van Orden et al., 2010).

In addition, a number of studies found that association of strain put on soldiers by military service has a propensity to lead to them developing mental health problems such as alcohol abuse, depression, and PTSD (Bryan et al., 2010; Thoresen & Mehlum, 2004). These variables have been found to be significant risk factors for suicide ideation and attempt among active duty service members (Bryan et al., 2013b; Harms et al., 2013; Nock et al., 2013; Nock et al., 2015; Ursano et al., 2016).

3.4.1.2 Age at Enlistment as a Risk Factor

Various factors contributing to the increased risk of suicide of active duty service members may have their onset as early as the age at enlistment (Bryan et al., 2014b; Casey, 2011). Age at enlistment is an important factor in the militaries, as it marks the transition from a civilian to a military environment (Kramm & Heinecken, 2015). In most countries such as the United States, the United Kingdom, China, and Israel, military service is either

mandatory or voluntary between the ages of 17 or 18 years (Bodner et al., 2006; Nock et al., 2008). A slight difference is noted in other militaries (i.e., Bangladesh) where young people can voluntarily join the military at a tender age of 16 years (The World Fact Book, List of Enlistment Age by Country, August-2011). In South Africa, military service is a voluntary process. Young men and woman are recruited primarily between the ages of 18 and 22 years; however, older persons can be recruited up to 26 years of age if they meet specific academic criteria (Directorate South African Army Human Resource, MSDS, 2020; Kramm & Heinecken, 2015).

This age group is a worthwhile area of focus, as it appears to be a significant transitional period for military recruits. It marks not only the transition from a civilian to a military environment, but the young recruits are also in the critical developmental phase of emerging adulthood (Gomes et al., 2019). Arnett (1994, 2000) conceptualises emerging adulthood (18 to 29 years) as a "distinct period" of development during which young people no longer consider themselves as adolescents while at the same time they have not yet achieved full normative responsibilities of adulthood.

From the sociological perspective, "they are neither psychological adolescents nor sociological adults" (Henslin, 2008, p. 91); hence, it is referred to as the age of feeling in-between (Arnett, 2000). This transitional period is marked by increased explorations in various avenues of life, such as work, love life, and social roles (Halik et al., 2019). Young people perceive this period as the age of possibilities as they appreciate developing skills and accumulate knowledge to use later in adult life (Arnett, 2004; Halik et al., 2019).

Research indicates that while this is a period of multiple life changes, it is also marked by heightened instability (Arnett, 2004; Gomes et al., 2019; Halik et al., 2019). Some psycho-social and other contextual factors encountered by emerging adults make this transition unsettling. For example, in South Africa, problems faced by young adults among others include high unemployment rate, poverty, lack of financial resources, violence, substance abuse, and a high crime rate (George & Van den Berg, 2012; Nduna & Jewkes, 2012; Reddy et al., 2014; Schlebusch, 2012). While others may achieve the required social and psychological adjustment, some may become vulnerable to developing emotional and mental health problems such as substance use/abuse problems, mood disorders (depression

and bipolar depression), anxiety disorders (PTSD and generalised anxiety disorders) and suicidal behaviour (Gomes, et al., 2019; Nock et al., 2010).

Nock et al. (2013) testify that certain age groups are at a greater elevated risk for suicidal behaviour than others are. Unfortunately, for individuals aged between 18 and 29 years, suicide continues to be a global leading cause of death (Centers for Disease for Control and Prevention [CDC], 2010 and 2008; Gomes et al., 2019; WHO, 2017; WHO, 2014). Coincidentally, this age group makes up the majority of the active duty military members in many militaries (Bryan et al., 2014b; Koopman & Van Dyk, 2012b; Millner et al., 2018; Nock et al., 2010; Ursano et al., 2015a; Shelef et al., 2015b).

It has been found that suicide rates among young adults exceed that of the adolescent population (CDC, 2010) even though the level of risky behaviour known in adolescence (i.e., delinquency and fighting) decreases at emerging adulthood. Hooven et al. (2012) state that the history of suicidal behaviour (i.e., ideation and attempt) in adolescence, comorbid with anger and depression, may be carried over into emerging adulthood, thereby increasing the vulnerability of suicide risk due to mounting social and psychological developmental pressures.

These aforementioned vulnerabilities, combined with military environmental stressors and current stressors, may translate to greater risk of suicide for new recruits, as some may carry their suicide risk into the military system (Vanderploeg et al., 2015). Even so, militaries pride themselves for being highly selective institutions with high standards (Cornum et al., 2011). As part of strict military procedure, young men and women must go through a sophisticated recruitment process that includes excellent physical, mental and medical health, a clean criminal record, and high school or equivalent academic qualifications (Bodner et al., 2006; Cornum et al., 2011; Kramm & Heinecken, 2015).

Bryan et al. (2014b) note the importance of pre-enlistment psychological screening where psychopathological challenges can be detected at the earlier stage of military enlistment to ensure that only individuals with exceptional psychological profiles are selected. Unfortunately, other researchers including Bryan et al. (2014a), Larson et al. (2001), and Martin et al. (2009) agree that due to self-report methods of such screening procedures, the complete psychiatric picture could be obscured. Because new recruits have

a strong need to enter military service, some potential recruits may deny their history of suicidal behaviour leading to allowing individuals who are at risk to enter the military service. Thus, the pre-enlistment history of suicidal behaviour may be undetected, leading to possible suicidal tendencies later on in the military service (Bryan et al., 2014b).

3.4.1.3 Pre-enlistment Risk of Suicide

A history of attempted suicide prior to joining the military has been associated significantly with an increased risk of attempted suicide and severity of suicide ideation after joining the military. In 2014, Bryan et al. (2014a) conducted a ground-breaking study to explore the prevalence of suicidal behaviour prior to military service. They were interested in exploring the association of pre-military suicidal thoughts and behaviour with suicidal ideation and attempt during and after military service (Bryan et al., 2014a). These authors explored this association in two separate samples: (1) a sample of 374 participants that included military personnel (34.0%) and student veterans (66.0%) with ages ranging from 19 to 78 years; and (2) a sample of 151 active duty service members aged from 20 to 55 years (males 64.4% and females 35.6%) who were receiving outpatient treatment for mental health-related problems.

Their findings indicated that approximately 50% of the participants reported to have experienced suicide ideation prior to joining the military, and 25% attempted suicide after joining the military. They further found that pre-enlistment suicide attempts were the prominent predictor of subsequent attempts after joining the military, even when controlling demographic factors and the most recent emotional distress. These results significantly confirmed three facts: (1) Individuals with a history of attempted suicide prior to joining the military were found to be at an increased risk of suicidal behaviour after joining the military. (2) Individuals with a history of attempted suicide prior to joining the military were found to be 6 times more likely to attempt suicide after enlistment. (3) Those with a history of pre-military suicide risk reported current suicidal ideation that was more severe.

Bryan et al. (2014b) reported similar findings in their study on lifetime prevalence of suicide behaviour among a sample of non-deployed soldiers (N = 5428). About 58.3% of the men and 57.6% of the women reported the onset of suicide ideation prior to age at

enlistment, and 54.9% of the men and 49.8% of the women had made plans thereof. These results suggest that a history of suicidal behaviour before military enlistment is a significant risk factor after joining the military when the individuals experience the stressors of the military environment.

The risk of developing severe suicide ideation and eventually attempted suicide for service members is exacerbated by the presence of situational stressors such as interpersonal conflict, deployment, and combat exposure, combined with other psychological risk factors such as depression, insomnia, and hopelessness (Bryan et al., 2014a). Joiner et al. (2005) found an association between past attempted suicide and a more severe suicide ideation among active duty service members, even after controlling other affective variables (i.e., depression, hopelessness), gender, and personality traits.

These findings are in line with the fluid vulnerability theory of suicide in explaining military suicide risk (Rudd et al., 2006). Accordingly, suicide risk of service members could be "understood as the combination of situational stressors and acute distress within the context of predisposing baseline vulnerabilities (baseline risks are those relatively stable vulnerabilities to suicide and persist over time and serve as an individual's 'set point' for experiencing suicidal crisis)" (Bryan et al., 2014, p. 535).

This theory suggests that a history of prior self-injurious thoughts and behaviour of current serving members elevates their baseline suicide risk, making them more vulnerable to developing suicide ideation and attempting suicide as they continue serving in the military. Noteworthy, according to the Medical Surveillance Monthly Report (MSMR), calendar year 2014 and 2015, the majority of people experience suicidal thoughts but do not continue to attempt suicide. However, suicide ideation is a significant risk factor for severe suicidal behaviour in the future for active duty serving members, especially those with a history of suicidal behaviour before enlistment (Bryan et al., 2014a).

3.4.1.4 Military Socialisation Process as a Risk Factor

Any form of transitioning (i.e., new developmental stage, new stage of life, moving from one place to another, new job, etc) usually induces some level of anxiety and/or elevated mood reaction for that particular individual (Martin et al., 2009). The military

socialisation process (also referred to as basic military training) is not like any typical formal job or skill training programme but is a transitional period during which newly enlisted young men and women are re-socialised into the new military culture (Dalenberg & Op den Bruijs, 2013; Kramm & Heinecken, 2015).

The intense socialisation process includes (1) challenging training programmes aimed at providing them with skills to perform their required related roles; (2) intense physical training; (3) obtaining and maintaining the required level of fitness; (4) maintaining a required standard of combat readiness; and (5) learning and adhering to a strict military code of conduct, which is an embodiment of the military culture by a soldier (Cornum et al., 2011). In elaboration, Kramm and Heinecken (2015) point out that the aim is not limited to ensuring complete compliance with military 'institutional' rules but to ensure that members identify with organisational goals and values. Thus, this process is not just about adjusting to a new working environment, but it fundamentally involves assimilation of the culture, values and beliefs, which is typically a 'rite of passage' for young recruits (Dalenberg & Op den Bruijs, 2013).

Therefore, new recruits have to display some unique psychological adaptations, as it includes incorporating norms of military life into one's habits, thinking, feeling, and acting. Peterson and Seligman (2004, as cited in Cornum et al., 2011) postulate that an Army code of conduct should be displayed in a soldier's character through seven core values of the Army, namely loyalty, duty, respect, selfless service, honour, integrity, and personal courage. Consequently, this process is usually a traumatic experience for some recruits (Dalenberg & Op den Bruijs, 2013; Kramm & Heinecken, 2015).

Even though serving in the military is undoubtedly an honour and pride in the individual as he or she selflessly serves the nation, paradoxically, it can also have dire negative consequences that may lead to individuals developing suicide ideation (Martin et al., 2009; Millner et al., 2018). Kramm and Heinecken (2015) investigated the effects of military service on youths who joined the SANDF on the two-year Military Skills Development System (MSDS) in terms of integration (with the military) and reintegration (with civilian life afterwards). Findings from the MSDS investigation revealed that transition from civilian life to military life could be traumatic for some young recruits. Studies on the process of military socialisation substantiate that this process could be a

traumatic experience for some, as its success is rooted in isolation of members due to ongoing geographical relocations for training purposes or ongoing internal or external deployments (Bryan et al., 2014b).

Many studies (Bryan et al., 2014b; Kramm & Heinecken, 2015; Martin et al., 2009; Millner et al., 2018; Shelef et al., 2015a) indicate that during military basic training, some new recruits struggle to cope with stressors of the military environment (such as sleep deprivation, a routine lifestyle, etc.) and present with tremendous mental and physiological reactions. While others find ways to cope under adverse conditions, others respond with developing mental health problems such as depression and anxiety (Martin et al., 2009).

Many individuals with diagnosis of adjustment disorders were more likely to present with more serious suicidality within the first 20 to 60 days of basic military training. Likewise, Black et al. (2011) reported similar findings in a study that examined factors associated with suicide-related deaths among Army soldiers from 2001 – 2009, and their findings indicated a significant association of adjustment disorders with Army suicides.

In another South African study conducted among male conscripts aged between 18 and 24, the diagnosis of adjustment disorder was found to be associated with an increased risk of suicidal behaviour for those who were receiving psychiatric treatment (Van Dyk, 1992, cited in Koopman & Van Dyk, 2012b). Subsequently, the probability of being diagnosed with adjustment disorder is higher among military serving members compared to their civilian counterparts because of the unique nature of the military environment; hence, it increases their vulnerability to suicidal behaviour (i.e., thoughts, plan, and attempt) (Black, et al., 2011).

3.4.2 Psychological Risk Factors and Suicide Ideation

The presence of mental illness has been implicated significantly as a strong predictor of suicidality (i.e., suicidal ideation, intent/plan, attempt, even completed suicide) for military personnel (Bryan et al., 2015a; Khuzwayo et al., 2018; McLean et al., 2017; Miller et al., 2001; Nock et al., 2010; Ramsawh et al., 2014; Van Orden et al., 2010; Willingham, 2014;) as well as in the general population (Schlebusch, 2005; Wells et al., 2011).

Findings confirm a psychiatric diagnosis to be evident in about 95% of all completed suicides (Nock et al., 2010; Nock et al., 2013). These authors concluded that a diagnosis of one or more mental disorder is a significant risk, as it increases the risk for suicidal behaviour of active duty service members. For example, owing to their scope of work, such as service in volatile situations, interpersonal relational problems, periods spent away from families, and job stress, service members remain at risk of developing psychiatric disorders such as major depression, anxiety disorders, PTSD, and substances abuse (Ambrose, 2018; Gradus et al., 2013; Nock et al., 2010).

Analyses reported in the Medical Surveillance Monthly Report (MSMR) of 2015 indicate a notable increase in the number of active duty service members receiving inpatient and outpatient treatment for psychiatric disorders such as major depression (MDD) and posttraumatic stress disorders (PTSD) (Brundage & Rubertone, 2015). MDD and PTSD, either in comorbidity or individually have been found to play a major role in mediating the risk of suicidality (i.e., suicide ideation, intent, and/a plan, attempt, and even completed suicide) of active duty service members (Bodner et al., 2006; McLean et al., 2017; Ramsawh et al., 2014). In a sample of US Army active duty service members (N = 5927), 6% of the sample reported suicidality in a 12-month period of survey. Furthermore, the risk distribution for the said sample showed a strong independent association with PTSD (24%), MDD (29%), and comorbidity (45%).

3.4.2.1 Major Depression Disorder and Suicide Risk

The diagnosis of major depression is a major indicator of suicide risk (Bryan et al., 2013a; Pfeiffer et al., 2014; Ribeiro et al., 2012). A variety of scholars who have studied other components of depression such as self-blame (Ross, 2013), hopelessness (Bryan et al., 2013a), burdensomeness and hopelessness (Pfeiffer et al., 2014), guilt (Bryan et al., 2015b) as well as insomnia symptoms (Ribeiro et al., 2012) confirms the significant correlation of each component with other risk factors to elevate the risk of suicidal thoughts/behaviour among active duty members and veterans.

In 2015, Bryan and colleagues conducted a pathway analysis to explore the mediating role of guilt in a relationship between depression and PTSD with suicide ideation. They were interested in how these variables interact directly or indirectly to increase suicide

ideation of the military sample. These authors hypothesised that depression and PTSD simultaneously will be related indirectly to suicide ideation through guilt. A sample of 622 military members was divided into two groups for surveying: (1) military personnel and veterans (N = 464), and (2) active duty Air Force personnel (N = 158) with ages ranging from 20 to 54 years.

Their results indicated a significant inter-correlation of depression and PTSD and were both associated with increased risk of suicide ideation through guilt for both samples. Guilt was significantly associated with suicide ideation in both samples. Specifically, it partially mediated the relationship of posttraumatic symptoms with suicide ideation (p = .033) for military personnel and veterans, while in active duty Air Force personnel, guilt fully mediated the relationship (p = .016). They concluded that guilt played a mediating role in the suicide ideation of active duty service members and veterans presenting with depressive and posttraumatic stress symptoms.

These results are in line with the findings of previous study (Nock et al., 2014) that found depression and PTSD individually or together carry an enormous risk in shaping the suicidal ideation of the population of active duty soldiers and veterans. Furthermore, like in previous studies (Bryan et al., 2013b, 2013c; McLean et al., 2017; Ross, 2013) guilt was associated significantly with suicide ideation in both samples. These results suggest that military personnel, active duty service members, and veterans who are experiencing psychological distress and/or posttraumatic stress symptoms turn to judge themselves negatively and experience guilt, which explains why some develop suicide ideations while others do not (Bryan et al., 2015b). Studies affirm that guilt is an interpersonal cognitive state of regret or remorse resulting from a specific action or behaviour that one perceives to be a violation or transgression of others' well-being (Kim et al., 2011).

In another study, Ribeiro et al. (2012) compared self-reported effects of insomnia symptoms and suicide risk factors such as severe depression, hopelessness, PTSD, anxiety, substance use/abuse, in a sample of = military personnel (N = 311). The sample consisted of 255 male and 56 female inpatient psychiatric patients. Results indicated that insomnia was associated significantly with an increased risk of suicide ideation even after accounting for the aforementioned psychiatric disorders.

The salient risk posed by depression in the process of suicide is evident in various studies (Nock et al., 2010; Tiihonen et al., 2006). However, it is important to note that depressive symptoms are experienced by the majority of individuals, but they do not develop suicidal ideation, plan or attempt suicide. Nonetheless, it remains a psychological disorder that increases the risk of suicide (Ambrose, 2018; Joiner, 2005; Nock et al., 2010). Nock et al. (2009) elucidate that during episodes of depression, the odds of individuals attempting suicide are lower, while at the same time the odds of experiencing suicidal ideation are high, which then puts them at a heightened risk for the progression of a suicidal process.

In addition, Bryan et al. (2015a) found that approximately one quarter of people with depression made a non-fatal attempted suicide during their lifetime, and about 25% reported experiencing suicide ideation. In their study, Bryan et al. (2013a) concluded that severe depression significantly increased the risk of suicide ideation, even after accounting for age, gender, and a number of deployments for the outpatient military sample. They reported that the majority of military personnel admitted for suicide ideation reported to have experienced a depressed mood at the time of admission.

Coincidentally, the risk of suicidal death is elevated following inpatient hospitalisation (i.e., one week after discharge) (Koopman & Van Dyk, 2012b). The context of depression is centred on loss of energy, and as soon as they are discharged, they are in at least better physical strength to carry out their plans on return to the unit. Hence, it has been reported that in approximately 30 – 90% of suicidal deaths, depression is implicated.

3.4.2.2 PTSD and Suicide Risk

It has already been established in the literature discussed above that PTSD is a major predictor of suicide risk (Ambrose, 2018; Bryan et al., 2010; Gradus, 2013; Nock et al., 2010; Thoresen & Mehlum, 2004). PTSD is more prevalent in the military personnel with estimates suggesting it is 15 times higher than in the general population (Willingham, 2014). Perhaps not surprisingly, soldiers are exposed to military operations that have a propensity to lead to the manifestation of trauma-related symptoms as evident in soldiers returning from combat-related deployments (i.e., Iraq, Afghanistan, etc.) (McLean et al., 2017). Many studies attest that a diagnosis of PTSD plays a prominent role in the severity

of suicide ideation among active duty service members (Bryan & Corso, 2011; Bryan et al., 2013a; Nock et al., 2014; Vanderploeg et al., 2015).

McLean et al. (2017) conducted a study on active duty service members (N = 366) who were returning from combat deployments in Iraq and Afghanistan and were receiving treatment for PTSD. More specifically, the authors examined the contribution of combat exposure, social support, depressive symptoms, guilt and trauma-related cognitions and their influence on suicide ideation. In their results, PTSD was found to correlate indirectly with suicide ideation through trauma-related thoughts whereby individuals have negative thoughts about themselves (B = .041; SE = .015). Furthermore, depression was found to have a direct positive effect on suicide ideation through negative cognitions about self (B = .512; SE = .041), lower interpersonal support (B = .147; SE = .061) and increase suicidal ideation (B = .212; SE = 0.63). Lastly, it was shown that interpersonal support together with depression had a positive effect on suicide ideation (B = .320; SE = .048).

These findings indicate that active duty soldiers with severe PTSD symptoms tend to have negative cognitions relating to trauma experienced through combat deployments which, in turn increased their risk toward suicide ideation (McLean et al., 2017). For example, soldiers who were diagnosed with PTSD reportedly judged themselves more negatively due to their combat-related experiences such as their unsuccessful actions or failures to act, perceived weaknesses, shame, guilt, self-blame, etc. Contrary to previous findings that confirmed the direct link between PTSD and suicide ideation (i.e., Atwoli et al., 2013; Connell et al., 2013; Jakupcak et al., 2009; Ramsawh et al., 2014). McLean et al. (2017) found in their study that PTSD was not linked directly to suicide ideation, but only when individuals had negative thoughts about themselves, it led to suicide ideation.

3.4.2.3 Substance Abuse and Suicide Risk

The co-occurring of substance abuse disorders, in particular alcohol dependence, with other psychiatric disorders (i.e., depression, PTSD, anxiety, and bipolar I and II depression) have been observed in about 90% of completed suicides (Caceda, 2014; Harris & Barraclough, 1997; Herberman-Mash et al., 2016; Van Orden et al., 2015). Evidence of drug use or alcohol dependence (15 – 20% and 25 – 38%, respectively) has been shown to have played an active role in persons who completed suicides (Everett, 2013). Indeed, an

association of alcohol dependence with suicide ideation and attempted suicide has been established in the military population (Mash et al., 2014; Milliken et al., 2007).

Three studies were reviewed and confirmed the findings of previous studies that problematic alcohol use increases the risk of suicide ideation, attempted and completed suicide in the military population:

(1) Cohen et al. (2017) conducted a longitudinal analysis using data collected from 2008 to 2009 and from 2009 to 2010 from the military sample. This study investigated the correlational effect of alcohol dependence and depression in elevating the risk of suicide ideation among the Army National Guard service members (N = 1582). These authors reported a strong significant contribution of both conditions – alcohol dependence and depression – to shape suicide ideation of soldiers independently. Moreover, the results revealed that the presence of alcohol dependence with or without the presence of depression was a major contributory factor in influencing the course of the suicide ideation of the active duty Army National Guard service members negatively.

(2) Their findings were in line with those of Herberman-Mash et al. (2016), who examined the association of alcohol use and reasons for drinking as a risk factor for suicidal behaviour in the military sample. These authors examined variables such as alcohol use, PTSD, depression and suicidal behaviour among the sample of US Army active duty service members (N = 3813) in a 12-month period. The results of their study confirmed that high alcohol use was associated with suicidality among the military sample, and suicide ideation had been reported by 6% of the sample in the past year.

(3) Similar findings were reported by Milliken et al. (2007), namely that 12% of active duty service components presented with crippling alcohol use after deployment from a combat situation (see Longitudinal assessment of mental health problems among active and reserve components returning from the Iraq war, Milliken et al., 2007).

Among soldiers, psychological and social stressors predominantly inform their alcohol use and abuse, in particular the stress level relating to deployments, combat exposure, threat of death or injury, relationship problems, separation from family, marital problems, lack of privacy (i.e., little time of individuality), multiple deployments, boredom, and living circumstances (i.e., in units, barracks – living as a group) (Bush et al., 2013; Herberman-Mash et al., 2016). Their drinking habits have been approximated at five or more drinks on a typical drinking occasion per week, at least once a week (per 30 days) which further exacerbates the risk of developing alcohol dependence, which contributes to suicide ideation.

3.4.3 Socio-cultural Risk Factors

3.4.3.1 Deployment and Suicide Risk

There are conflicting findings about the contributory effect of deployments to suicide risk of active duty service members. Black et al. (2011) indicate that less than half of military service members who died by suicide had deployed. On the other hand, Bush (2013) reported that 53% of service members who died by suicide had never deployed. LeardMann et al. (2013) conducted an analysis of suicidal deaths in the military for the period 2001 – 2008 and found that there was no significant correlation between deployment and death by suicide. Similarly, Bryan et al. (2012) postulate that a significant link has not been made between death by suicide among service members with a history of deployment and/or combat exposure. Nonetheless, a mountain of research shows that deployment-related experiences either directly or indirectly contribute to suicide risk of military serving members.

Street et al. (2015) reported on the survey (Army STARRS database) conducted among active duty enlisted US Army members (N = 975 057) for the period between 2004 and 2009. The study sought to investigate the psychological effects of deployment with regard to elevating suicide risk of the currently deployed female soldiers. They found a high suicide rate among currently deployed female soldiers. Specifically, the suicide rate of currently deployed female soldiers was more than three times (3.1 – 3.5) compared with the suicide rates of their counterparts who had never deployed or who had not deployed previously. Also, the suicide rate of currently deployed male soldiers was only slightly

higher than the rate of never deployed men and lower than the rate of previously deployed men. Similarly, Bryan and Corso (2011) investigated the prevalence of risk factors associated with Army suicide in a sample (N = 874) for the period between 2001 and 2009. Their results confirmed a risk posed by deployment, namely that higher suicide rates were reported in men with deployment experience, psychiatric diagnosis/receiving treatment, and alcohol problems.

Higher rates of suicide among female soldiers compared to males during deployment could be explained by possible gender-specific risk factors such as (among others) sexual assault, victimization, sexual harassment, and gender-specific adjustment problems (Nock et al., 2013a, 2013b; Street et al., 2007, 2013, 2015). Despite gender differences in these results (a suggested area for future research), the significant psychological effect of deployment in heightening the risk of suicide in both male and female active duty service members is confirmed (Street et al., 2015).

Deployment in combat-related situations has been linked with increased risk of PTSD and traumatic brain injury (TBI) after returning from deployment (Black et al., 2011). Consequently, both of these conditions are associated risk factors for suicide ideation and attempted suicide among active duty service members and veterans (Black et al., 2011). Vanderploeg et al. (2015) conducted an epidemiological study among the active duty service members to examine the possible differential effects of deployments on suicide ideation. They were interested in examining the relationship between risk/protective factors, and suicide ideation on deployed and non-deployed National Guard active duty members (those who had deployment experience and those who had never deployed). A sample (N = 3098) of Florida National Guard active duty service members were divided into participants who had never deployed (N = 1 655) and those recently deployed (N = 1 443). The participants completed an online survey that assessed variables associated with the risk for suicide ideation (i.e., demographic factors, current psychiatric diagnosis, pre- and post-deployment experiences). Findings concluded that the risk of suicide ideation was significantly higher in the deployed group (5.5%) than in those who had never deployed (3.0%, $p < .001$). Moreover, a multivariate analysis for those who had never deployed indicated a strong significant association of suicide ideation with major depressive disorder ($p < .001$), PTSD ($p < .001$), prior psychological trauma ($p < .01$) and heavy and hazardous alcohol consumption ($p < .05$). Interestingly, in the deployed group, these authors found

that only PTSD ($p < .01$) and deployment-related mild traumatic brain injury ($p < .05$) yielded a strong significant association with suicide ideation.

For those who had not deployed, the significant association of PTSD and suicide ideation could be explained by prior psychological life traumas that were comorbid with other demographic risks factors to increase the risk of suicide ideation. This is in line with the findings by Bryan et al. (2015a) that a history of or mental health problems prior to military service increase the risk of suicide ideation after joining the military.

In the deployed group, a significant and independent association of PTSD and suicide ideation implies that exposure to traumatic events during deployments and participating in combat increase the risk of developing posttraumatic symptoms after deployment, which then increases the risk of suicide ideation. Furthermore, the risk of physical injuries during combat was found to be higher for deployed soldiers, which was also linked to an increased risk of developing deployment-related traumatic brain injury (TBI). Previous studies have confirmed that a history of TBI increases the risk of suicide ideation (Caceda, 2014). In this study, it was found that a major depression episode of the deployed group was not associated independently with suicide ideation, as opposed to PTSD and TBI. In a non-deployed group, it was found that active duty service members who were depressed and had PTSD symptoms were at a greater risk of developing suicide ideation. In contrast, soldiers with a deployment history who had acute or severe PTSD comorbid with traumatic deployment-related events could increase the risk of suicide ideation while major depression was found to pose a greater risk for the non-deployed group as opposed to the deployed group.

These findings suggest that deployments contribute indirectly to the suicide risk of active duty members through PTSD and mild, traumatic, deployment-related brain injury. High rates of suicide ideation were associated directly with MDD and PTSD in those with no deployment history, even after controlling other risk factors. In contrast, a direct and independent effect of MDD was not found in the suicide ideation rates of the deployed group, while PTSD and deployment-related mild traumatic brain injury were found to be associated independently with suicide ideation in the deployed group.

3.4.3.2 Access to Firearm and Suicide Risk

One may wonder if access to a firearm is a risk factor that exacerbates suicide of military members. The probability of obtaining fatal results is higher when attempting suicide with a firearm than an attempt with any other means (Azrael & Miller, 2016). Nock et al. (2013) affirm that among other risk factors, military members have a higher risk of completing suicide than the general population because of access to firearms. Even so, Bush et al. (2013) indicate that the use of a firearm as a method of choice is as prevalent in the military population (60%) as it is in the civilian population (50 – 60%). Interestingly, it has been found that few soldiers who completed suicide had utilised their military firearms; usually, a personal firearm is used. Thus, having access to a firearm appears to be a significant risk factor in suicidal behaviour, even without the presence of psychopathology (Bush et al., 2013; Nock et al., 2013).

Bush (2013) analysed 500 completed suicides of military personnel. Of those suicide deaths, only 17% utilised military firearms, while 72% made use of personal firearms. This is in line with the analysis by Behavioural Risk Factor Surveillance System (BRFSS) that household firearm ownership increases the risk of suicide (Caceda, 2014). According to this analysis, the presence of the firearm is not only an elevated risk to the owner, but also to people living in that household. The perception of the presence and access to a firearm accelerates the progress of suicide ideation from the onset to mild ideation, to severe ideation, and eventually to suicide ideation with lethal intent, plan, and attempt (Caceda, 2014).

3.4.3.3 Family Stress and Suicide Ideation

"Beyond the rigors of day-to-day life in the military, the negative effect associated with high stress experience of combat deployments often spill into the family domain as well" (Harms et al., 2013, p. 123). The protective effect of family to buffer against suicide ideation across the general population and the military population has been verified significantly (Caceda, 2014; Gradus et al., 2015; Harms et al., 2013; Kleiman & Liu, 2013; Pietrzak et al., 2010). In contrast, other researchers have argued that family is among the highest contributors of stress for the soldiers, thus increasing the odds of developing PTSD symptoms, depression symptoms, and suicide ideation (Badr et al., 2011; Erbes et al., 2011; Harms et al., 2013; Riggs & Riggs, 2011; Skopp et al., 2011).

Research on stress and emotional well-being of military personnel by Harms et al. (2013) established that the direct effect of stressors inherent in military life (e.g., deployments, combat, and day-to-day military work) on service members is felt indirectly by the family members. Further, Riggs and Riggs (2011) demonstrate that military families face unique stressors through the course of military service and deployments, including constant relocations, disruption of the family system due to separation, ambiguous loss and fear for a loved one's safety, a high level of stress, and/or dysfunction of family members. Unfortunately, the burden of family stress on a service member may lead to the experience of depression, anxiety, substance abuse, interpersonal conflict, aggressiveness, and suicide ideation upon return from military operations (i.e., deployments) (Hoge et al., 2006).

Gradus et al. (2015) examined the association of family-related factors (e.g., family support and family stress) experienced during deployment, post-deployment suicide ideation, and the mediating role of PTSD and depression symptoms in this association among the sample of (N = 978) veterans who had had direct combat exposure. The authors hypothesised that family stress and support would be associated with suicide ideation. Indeed, they found family stress (B = .13; SE = .037; p < .01) and family support (B = -.04; SE = .014; = p = 01) had a significant direct association with suicide ideation. It was found that PTSD and depression symptoms as mediators of the relationship between deployment family stress and support and suicide ideation had significant indirect paths through symptoms: PTSD symptoms (ab = -.016; SE = .005, 95%; CI = -.027, – .0008) and depression symptoms (ab = -.014; SE = .009, 95%; CI = -.062, – .025). The authors concluded that "deployment family support and family stress are associated with suicide ideation; however, these associations occur primarily through mental health symptomatology" (Gradus et al., 2015, p. 706).

In support of these findings, a recent study by McLean et al. (2017) found that PTSD correlated indirectly with suicide ideation through negative cognitions relating to trauma experienced in combat deployments, which in turn increased the risk of suicide ideation upon return from military operations. This is consistent with previous studies that confirmed an association between PTSD or depression symptoms with suicide ideation (Gradus et al., 2015; Nock et al., 2015).

Given these findings (Gradus et al., 2015) and the evidence of previous studies (Harms et al., 2013; Maris et al., 2000), it is evident that the risk of experiencing suicide ideation among service members and veterans is elevated by family stress and family support occurring during and after deployment. For example, it has been shown that a service member's concerns for the family begin as early as prior to deployment and are usually centred on disruption of family relationships, loss of important relationships, and anticipation of missing significant family events (i.e., birthdays, anniversaries, etc.) (Erbes et al., 2011; Gradus et al., 2015). These stressors could continue all the way through deployment phases and contribute to increasing the risk of suicide ideation, which is a significant risk of suicidal behaviour (Gradus et al., 2015).

Furthermore, contrasting findings have been reported about the role of marriage in the suicide ideation of service members. Some studies support the notion that being married is considered a protective factor against suicide ideation (Erbes et al., 2011; Lorant et al., 2005; Nisbet, 1996). On the other hand, some argue that marriage (i.e., having a spouse or a significant other) increases the risk of developing or worsening combat-related PTSD (Skopp et al., 2011). They further explicate that for married soldiers "deployment-related separation may create additional stress (e.g., worrying about family member's health and safety and being concerned about spouse fidelity), that makes soldiers more vulnerable to the effects of stressors and more prone to the development of PTSD" (Harms et al., 2013, p. 114), as opposed to unmarried soldiers. Nonetheless, literature on familial support attests that family is a major source of support before, during, and after deployment (Gradus et al., 2015; Harms et al., 2013). Moreover, supportive family members strengthen service members' ability to cope and reduce the propensity for the worsening of negative outcomes, including PTSD symptoms and suicide ideation (Gradus et al., 2015; Harms et al., 2013).

3.5 The Role of Combat Exposure in the Relationship with Suicide Ideation

The steady increase of military suicide has been observed since the commencement and the continuing of combat operations globally and has opened up a large area of interest in understanding the direct and indirect effects of combat exposure in shaping the suicidal behaviour of active duty service members and veterans (Amone-P'Olak et al., 2014; Bryan

et al., 2010, 2013a; Kgosana & Van Dyk, 2010; Koopman & Van Dyk, 2012; Maguen et al., 2012; Ross, 2013). However, contrasting findings have been reported.

Combat exposure can be conceptualised as a debilitating and pathogenic stressor that often precipitates the onset or worsening of PTSD – a stress-related psychiatric disorder that occurs after exposure to or witnessing a traumatic event such as combat/war, serious accident, physical or sexual assault, etc. It has been reported that combat exposure increases the likelihood of PTSD. The more intense are combat experiences the more severe are the symptoms of PTSD which then increases suicide risk (Castro & McGurk, 2007). PTSD is characterised by re-experiencing symptoms, emotional and behavioural avoidance (avoiding reminders – people, places, activities, etc.), intrusive negative cognitions (related distressing dreams, flashbacks, involuntary memories, etc.), negative mood (associated with guilt, fear, shame, feelings of detachment, etc.) and hyper-arousal symptoms (i.e., anger outburst, irritability, poor concentration, reckless behaviour, startled reaction, etc.) (American Psychological Association, 2013). Thus, for this study, combat exposures encompass (1) exposure to firing weapons, going on patrols, being ambushed / attacked (2) exposure to the aftermath of combat such as wounded fellow combatants, wounded civilians, dead bodies, body parts, and other atrocities (Bryan et al., 2013). The relationship between trauma exposure and suicide in the context of a variety of traumatic events including combat exposure has been studied and confirmed in previous studies (Bullman & Kang, 1996; Bryan et al., 2013a; Bush, 2015; Maguen et al., 2012; McLean et al., 2017).

During combat, soldiers may be exposed to potentially traumatic experiences such as exposure to imminent death, serious physical injuries (which could be permanent), involvement in serious motor vehicle accidents, handling of human remains, and witnessing death (i.e., death of fellow combatants, enemy soldiers, or civilians) (Caceda, 2014). It was confirmed that for some, multiple trauma exposures due to the frequency and number of deployments have potentially negative psychological consequences that are linked to the increased risk of suicidal tendencies (Amone-P'Olak et al., 2014; Benson, 2013; Bryan et al., 2013a; Bush, 2015; Maguen et al., 2012; McLean et al., 2017; Mitchell et al., 2012; Ross, 2013).

Some studies (Selby et al., 2014) support the notion of the interpersonal psychological theory of suicide (IPTS), which confirms the direct effect of combat exposure on suicide risk. This theory states that repeated exposure to traumatic and painful experiences of combat desensitise an individual and one becomes fearless towards pain and death, which increases the risk of completed suicide (Selby et al., 2014). A study by Bryan et al. (2013a) investigated the effects of combat exposure by measuring the following variables: trauma symptoms (PTSD), depression symptoms, thwarted belongingness, perceived burdensomeness, acquired capability (fearlessness about death), combat exposure, and suicide risk. A sample of currently deployed military personnel in Iraq was divided into two groups: (1) a nonclinical sample (N = 348, 312 males, 36 females) (2) and a clinical sample – receiving outpatient treatment for mental health-related problems (N = 219, 201 males, 18 females).

Findings of this study failed to substantiate the aforementioned notion, as they found that combat exposure was unrelated to the suicide risk of the military sample. However, it was found that more combat exposure was related directly to high levels of acquired capability (fearlessness of death and pain tolerance) and indirectly related to PTSD. In a nutshell, this study found no correlation between combat exposure and suicide risk among the sample of the deployed active duty service members.

Overwhelming literature suggests that a history of deployment or deployment to a combat-related zone is not a sufficient predictor or indicator of suicide risk among active duty service members (Bryan et al., 2015). Moreover, research indicates that a large number of soldiers who die by suicide have no history of deployment or combat exposure (Department of the Army, 2010). Nonetheless, combat exposure may provide a potential pathway toward increased suicide risk by increasing one's vulnerability through other risk factors, such as PTSD, depression, aversive childhood trauma, and alcohol and substance abuse, which have been linked significantly to attempting and completed suicide among military personnel (Bryan et al., 2013a; Department of the Army, 2010).

Supportive studies indicate that certain experiences during combat elevate the risk of suicidal behaviour among active duty members. For example, Maguen et al. (2012) tested the hypothesis that killing in combat would be associated independently with suicide ideation among war veterans, even after controlling risk variables such as PTSD,

depression, and substance use disorder. They found that soldiers who had high killing experiences in combat were twice as likely to report high suicide ideation, as opposed to their counterparts with lower killing experiences.

Similarly, Bryan et al. (2015a) established that the risk of suicidal behaviour by military personnel is extended further to others who may not be involved directly in combat activities (i.e., killing) but might have indirect combat exposure, for instance when handling dead bodies or the wounded; for example, health care professionals, chaplains, mortuary workers, etc. This confirms that the risk of suicidal outcome is not limited to those with a history of deployment and combat exposure, but other military operations such as humanitarian operations, peacekeeping missions, and training assimilations, as well as the nature of the military environment itself, could also carry the risk of suicide ideation, attempted and even completed suicide for active duty service members (Bryan et al., 2015b).

3.6 Protective Factors

3.6.1 Protective Factors for Suicide Ideation

Though not an area of study researched often (Bryan et al., 2013a; Ejdesgaard et al., 2015; Nock et al., 2013), exploring protective factors that buffer against suicide ideation in active duty military members still has an important contribution to make. Protective factors are referred to as societal or psychosocial conditions or individual behaviour that increases the probability of a favourable outcome (e.g., decrease the likelihood that an individual will engage in suicidal behaviour) (Bryan et al., 2013a; McLean et al., 2008; Nock et al., 2013). Similarly, Johnson et al. (2011) conceptualise protective factors as the set of beliefs of individuals, or perceptions and abilities that provide a buffering effect against the development of suicide tendencies in the face of risk factors or stressors. Research has identified individuals who are able to achieve positive adaptation in spite of their negative environment as being resilient (Rutter, 1995; Werner, 1995).

From the positive psychological perspective, resilience is the construct that is used to understand the capacity in which individuals and systems (families, groups, and communities) are able to cope successfully with adversity or suicide risk (Masten & Reed,

2002; McLean et al., 2008). Further, the capacity of resilience to develop depends on how an individual reacts to environmental stressors and operates as a protective factor to maintain and enhance health (McLean et al., 2008). Similarly, Werner (1995) established that resilience requires (1) active involvement in creating or finding a supportive environment and people to reinforce their competencies when faced with adversity or risk, as well as (2) the ability to seek out health-enhancing opportunities rather than being pessimistic (Werner, 1995, cited in Compton et al., 2005).

According to Peters et al. (2005, p. 14), Emmy E. Werner wrote that "resilience is inferred when risk or adversity is high enough to pose a significant threat to healthy development or functioning and yet positive outcomes are nonetheless observed". For example, it is hypothesised that service members with high resilience have effective skills to cope with and endure military environmental stressors, while those with low psychological resilience more likely would have an elevated probability of negative outcomes, including suicide ideation. It has been shown that resilient individuals exhibit a number of positive characteristics, including optimism, high self-esteem, positive attitude, trustworthiness, and hopefulness, which provide a buffering effect against suicide ideation (Mashego et al., 2003). As stated by Rutter (1985), resilient individuals do exceptionally well despite exposure to stressful environments and seem to be able to bounce back from adversity. Also, they are able to identify resources within themselves and in the environment and utilise them to enhance health.

For example, optimism is defined as a cognitive-affective construct with important motivational overtones relating to future expectations (Carver & Scheier, 2014). As a construct, optimism requires an interconnection of cognitive, emotional and motivational processes. Researchers have found that optimistic individuals report having a positive future outlook, greater social support/connections, and greater confidence in their abilities (Carver & Scheier, 2014). In the military sample, optimism has been identified as an important resource that buffers against suicide ideation (Bryan et al., 2013a). In their study, Bryan et al. (2013a) investigated the effect of optimism in suicide ideation and its moderating effects on other risk factors such as depression, posttraumatic stress, and hopelessness. A treatment-seeking clinical sample of active duty service Air Force personnel (N = 97) with ages ranging from 21 to 54 years was surveyed.

The results indicated that optimism was associated significantly with decreased levels of suicide ideation among the sample of active duty military members. Further, the result of multiple regression indicated that optimism was associated significantly with less severe symptoms of depression, hopelessness and suicide ideation, with the exception of posttraumatic symptoms, after controlling for demographic and clinical differences. Therefore, it was realised that the cognitive effect of optimism was specific to the cognitive domain; they found "optimism to weaken the effects of hopelessness, but not depression and posttraumatic symptoms on suicide ideation" (Bryan et al., 2013a, p. 1001).

These findings are consistent with the suicide mode theory perspective (Rudd et al., 2006) that service members who endorse suicidal ideation have underlying vulnerabilities to suicidal tendencies (i.e., automatic thoughts, assumptions, and negative beliefs about the future). For instance, a soldier with a low level of optimism may display severe hopelessness when faced with negative life events (i.e., combat), which contributes to severe suicide ideation. In contrast, in the event of a negative experience, an optimistic soldier may activate an alternative and more adaptive response pattern of optimism that will buffer against the effects of hopelessness (Bryan et al., 2013a).

3.6.2 Resilience

Greater psychological resilience has been indicated as a protective factor for suicide ideation (Asante & Meyer-Weitz, 2015; Kamble, 2015; Nock et al., 2015; Roy et al., 2007, 2011). Moreover, it was found that increased resilience moderates the relationship between psychopathological difficulties such as development of posttraumatic stress, depressive symptoms, childhood trauma, substance abuse, psychosocial difficulties; thus, it was concluded that it has a negative association with suicidal behaviour (Ambrose, 2018; Roy et al., 2007, 2011).

Roy et al. (2011) conducted a study to explore the protective effect of resilience to buffer against suicide behaviour (childhood trauma was measured as a risk factor for suicide behaviour) among two samples. The first group consisted of abstinent substance abuse patients (N = 20) (suicide attempters) and substance abuse patients (N = 20) (non-attempters), and the second group consisted of prisoners (N = 166) (suicide attempters) and prisoners (N = 166) (non – attempters). The groups were matched for age and score on

the Childhood Trauma Questionnaire (CTQ) and compared based on their scores on resilience on the Connor-Davidson Resilience Scale (CD-RISC).

The results of both samples (i.e., substance abuse patients and prisoners) indicated that scores of resilience were significantly higher for non-attempters compared to those who had attempted suicide. They concluded that the presence of resilience factors mitigates the risk of suicidal behaviour associated with childhood trauma. These authors substantiated the findings of previous studies (Ambrose, 2018; Benson, 2013; Griffith & West, 2013; Kamble, 2015; Pietrzak et al., 2010; Roy et al., 2007) that there is a greater need to increase resilience in the general population and military service members, as it buffers against the risk of suicide behaviour.

The military environment seems to increase the probability of maladjusted patterns of behaviour, more especially in those who have deployed (both in peacekeeping and combat environments). Accordingly, soldiers often experience problems such as depression, anxiety, substance abuse (i.e., alcohol), suicide ideation, interpersonal conflict, and aggressiveness after deployments (Riggs & Riggs, 2011). An alternative outcome scenario forwarded by Benson (2013) postulates that being resilient provides for strength and positive adaptation to traumatic experiences.

In another study, Connell et al. (2013) surveyed a population of South African border war veterans who served between 1975 and 1989. The authors wanted to determine the prevalence of PTSD and the extent to which the conscripts exhibited resilience. They explored variables such as demographic factors, combat exposure, PTSD, trauma recovery, drug and alcohol use, and resilience via Internet-based instruments. The results of this study indicated that about 33% of the sample reported to experience PTSD due to combat exposure, while on the other hand, a high percentage of the sample (approximately 94%) was found to have normal to above normal levels of resilience. Further, other variables such as cannabis was associated significantly with PTSD ($p = .044$).

Several researchers confirm further evidence regarding the effect of combat exposure (Amone-P'Olak et al., 2014; Benson, 2013; Bryan et al., 2013a; Bush et al., 2011; Maguen et al., 2012; McLean et al., 2017; Mitchell et al., 2012; Nock et al., 2013; Ross, 2013), finding that combat exposure produced dire psychological consequences to service

members (i.e., PTSD = 33%). Interestingly, the majority of the sample (94%) demonstrated that despite exposure to a high level of psychological distress and trauma, positive adaptation (i.e., resilience) is possible. This is consistent with findings in the military arena by Bush et al. (2011), who testified that sometimes trauma and stressful events of combat can produce positive psychological consequences for some soldiers in the form of posttraumatic growth (PTG) where an optimal level of distress promote a high level of resilience, thus reducing levels of suicide ideation (*see:* posttraumatic growth as protection against suicide ideation after deployment and combat exposure (Bush et al., 2011).

Considering the fact that resilience can be taught, learnt, and developed, the military has taken initiatives to introduce programmes that enhance psychological resilience among service members. A military resilience training programme called Master Resilience Training (MRT) has been proven effective in preventing development of depression, PTSD, and in improving soldiers' resilience since 2009. The study by Griffith and West (2013) sought to examine the effectiveness of the MRT programme. Over 95% of the sample reported that the success of the programme extended way beyond work life (military and civilian), as they found it applicable in their personal lives as well. Specifically, participants reported improvement in areas such as self-awareness, connectedness with others, optimism, mental alertness, and generally better coping abilities under duress.

Programmes related to increasing psychological resilience, thus reducing incidents of suicidal behaviour, are becoming more common in the militaries, as they foster great beneficence for soldiers and their families. Comprehensive Soldier Fitness (CSF) is another example of a psychological resilience training programme (Cornum et al., 2011). This programme is based on positive psychological principles. It is rather a proactive than reactive approach in promoting well-being, increasing psychological resilience and positive performance while reducing maladaptive problem and promoting not only physically fit but also psychologically fit soldiers (Cornum et al., 2011; De Beer & Van Heerden, 2014).

A plethora of research on psychological resilience and suicide ideation has been conducted on combat veterans and active duty service members (Ambrose, 2018; Pietrzak et al., 2009; Pietrzak et al., 2010; Pietrzak et al., 2011). Varying characteristics such as

suicide ideation, combat exposure, psychopathology (i.e., posttraumatic stress, depression, alcohol problems), most recent deployment, receiving mental health treatment, demographic factors (i.e., gender) and protective variables such as psychological resilience and social support were assessed. Findings of these studies led to the conclusion that increased psychological resilience (structured programmes by mental health professionals) and social support from family, friends and at unit level are important mechanisms that buffer against suicidal behaviour for military service members.

3.6.3 Social Support

Numerous researchers (Caceda, 2014; Ejdesgaard et al., 2015; Ingala et al., 2013; Nock et al., 2013; Pietrzak et al., 2011; Taliaferro & Muehlenkamp, 2014; Van Breda, 2008) agree that social support is an integral component for military service members faced with challenges of military service. Social support contributes to the embodiment of the following factors: (1) the perception that one is being cared for by others and is receiving well-needed support; (2) the availability of and participation in relevant social networks that affect health; (3) and the belief in the existence of social support and how to access these resources (i.e., emotional, informational, companionship, tangible or intangible support) (Harandi et al., 2017).

Appreciation of social support can provide positive reinforcement in the face of psychological distress, thereby reducing the risk of suicide ideation (Armstrong & Manion, 2013). Evidence below (note the specific focus on protective variables) indicates that the benefit of social support in the military setting extends beyond the unit level, to include phases of deployment (before, during, and after), the family system, and the broader community.

Pietrzak et al. (2010) investigated risk and protective factors associated with suicide ideation among military veterans (N = 272) returning from combat deployment of Operation Enduring Freedom/Operation Iraq Freedom (OEF/OIF). The objective of the study was to explore psychopathological factors such as PTSD, depression, alcohol problems, and psychosocial difficulties, as well as the effects of resilience and social support. In their results, they found post-deployment social support, sense of purpose and control to buffer against suicidal ideation.

In a similar study, Ejdesgaard et al. (2015) extended to the above-mentioned findings. They sought to identify risk and protective factors in a sample of Danish soldiers (N = 1264) deployed during the period from 1990 to 2009. Their findings were in line with those of Pietrzak et al. (2010), namely that social support from friends and family throughout the process of deployment buffer against suicide ideation. They also found that public appreciation of soldiers' efforts during deployment had a significant effect in reducing suicide ideation after deployment. Furthermore, they indicated that it is important that the soldier does not consider his/her need for support as a burden because it may increase the risk of suicide ideation. Therefore, if the perceived social support from the significant networks (i.e., unit, family, friends, spouse/partner) received during deployment continue after deployment, it will not only reduce the risk of suicide ideation but also the risk of attempted suicide.

In a recent study, Ambrose (2018) conducted an epidemiological study to investigate if there was a correlation between suicide ideation and protective factors among the sample of = US Army male and female active duty service members *(*N = 3446). The author was specifically interested in determining the effect of gender differences in (1) suicide ideation of the sample; (2) levels of protective factors (social support and resilience); and (3) if gender moderated the relationship between protective factors and suicide ideation. The result of the study found no significant differences in the effectiveness of protective variables in terms of gender. Also, a statistically significant correlation between social support and suicide ideation (p = 0.002) was found, while resiliency was found not to be statistically significant. These findings suggest that the greater the suicide ideation, the greater the likelihood that one will seek social support. From the literature it is noted that there is often an increased trend in the number of individuals seeking emotional/social support due to experiencing suicide ideation only after a suicidal event has occurred. Therefore, proactive preventative interventions on psychological resilience and social support should take precedence at the unit level and should involve family members (Ejdesgaard et al., 2015).

3.7 Summary

This chapter presented a review of literature on the suicidal behaviour of active duty service members. A theoretical framework – the salutogenesis model – was reviewed as

the window to understand suicide ideation of active duty service members. Furthermore, the justification for using this model was presented. Finally, the risk and protective factors associated with suicide ideation, as well as the role of combat exposure thereafter, were reviewed.

Chapter 4

Research Methodology

4.1 Introduction

The previous two chapters (i.e., Chapters 2 and 3) provided thorough conceptualisation of the phenomena and theoretical framework to be used as basis for the hypotheses in this chapter. As stated in the introduction, the current study aimed to explore how variables (i.e., risk factors and resource factors) affect the suicide ideation of South African Army Infantry soldiers and to determine whether combat exposure has a moderating or mediating effect in that relationship.

For a study of this magnitude and complexity, it was imperative that a carefully selected empirical research design had to be followed to ensure that the participants (SA Infantry soldiers) were awarded an opportunity to have their say on the subject being studied while at the same time the objectivity of the research was observed. Therefore, this chapter sets out to explain the research process of this study. Various stages of the research will be presented in this manner: First, the research design employed is discussed and the research hypotheses are stated. Then, a detailed description of characteristics of the sample is followed by a description of the data-gathering procedure. Furthermore, the measuring instruments used and the statistical analysis procedure are discussed. Finally, ethical considerations relevant in this study are explained.

Research design and methodology are the core concepts in the research process. Thus, it is of great importance to bring the reader to an understanding of these concepts prior to discussing the process followed in this thesis. As stated by Babbie and Mouton (1998), it is so often noticed that these research concepts (i.e., research design and methodology) are sometimes confused in their usage; therefore, it is of greater significance to make a clear distinction before providing the explanation of the research design, sampling method, measuring instruments, and statistical analysis of this paper. However, let us first answer the question of what research is.

4.1.1 Research

According to Theron (2009), the survival of human beings depends on man doing research in order to improve mankind's chances of survival. Through research, people are able to make sense of the world they live in by applying their intelligence, measure their findings and use that to explain the complexity of nature. Albert Einstein, a German-born theoretical physicist, –enunciated, "If we knew what it was we were doing, it would not be called research, would it?" (in Visser, 2010, p. 82). Leedy and Ormrod (2001) argue that research is not just about gathering information, documenting evidence, and searching for more information, which is what it is usually mistaken for.

Research, as defined in the Oxford Advanced Learners' Dictionary of Current English (1986), is a systematic enquiry aimed at discovering new facts and collecting more information. Hussey and Hussey (1997) state that research must be an embodiment of the following fundamentals: explain a phenomenon, generate new knowledge, and provide practical solutions. In affirmation, Stangor (2011) and Bailey (1978) state that research is the best tool to understand human beings and their interpersonal relations by applying empirical methods and making scientifically informed inferences, unlike analyses by religious leaders, politicians and philosophers, which are based on personal opinions, intuition, and faith.

It is apparent that scientific research is a planned activity that follows a systematic procedure in selecting an approach, preparing a blueprint (research design), defining objectives, designing research hypotheses, choosing methods and techniques (i.e., for selecting and developing data-collection instruments, data analysis, and interpretation of data), and finally, drawing conclusions about the phenomenon (i.e., about suicide).

4.1.2 Research Design

Stangor (2015) defines research design as a specific plan for conducting the entire research project. Leedy and Ormrod (2001) define research design as a complete plan of tackling the central research problem. For instance, it involves selecting the participants (who), research site (where), and data-collection procedures (when, how, what). For Rajasekar et al. (2013), these are all procedures the researcher uses in the research study to

collect, manipulate, or interpret data and should be essentially planned, be scientific, and value-neutral.

4.1.3 Research Methodology

Rajasekar et al. (2013) define research methodology as a science of how research should be carried out, thus providing the various means for data collection and data analysis. According to Leedy and Ormrod (2001), research methodology reflects all the steps in the research process. It clarifies procedures researchers follow to describe, explain and predict phenomena. According to Creswell and Tashakkori (2007), Rajasekar et al. (2013), and Stangor (2011), methodologies are essential in defining and clarifying researchable problems, research questions and testable hypothesis. It further informs a researcher's choice of methodological approaches and methods to ensure that particular problems are investigated using particular designs and procedures and appropriate data-collecting means are selected and developed.

4.2 Research Objectives and Research Hypothesis

From the research aim and objectives (see par 1.4), the following research questions and hypotheses were formulated:

4.2.1 Research Questions

The following research questions were formulated:

1. What is the incidence of suicide ideation among soldiers of the SA Army Infantry?

2. Is there a significant relationship between combat exposure and incidence of suicide ideation among SA Army Infantry soldiers?

3. Is there a significant relationship between exposure to suicide (attempt by family member) and incidence of suicide ideation among SA Army Infantry soldiers?

4. Is there a significant relationship between exposure to suicide (family member died) and incidence of suicide ideation among SA Army Infantry soldiers?

5. Is there a significant relationship between suicide ideation and potential risk and resource factors in members of the SA Army Infantry, with regard to combat exposure?

6. Does combat exposure moderate the relationship between suicide ideation and risk factors as well as between suicide ideation and resource factors?

4.2.2 Research Hypotheses

H1: There is a relationship between combat exposure and the incidence of suicide ideation among soldiers of the SA Army Infantry soldiers.

H2: There is a relationship between suicide ideation and the potential risk and resource factors in members of the SA Army Infantry, with regard to combat exposure.

H3: Combat exposure moderates the relationship between suicide ideation and risk factors, as well as between suicide ideation and resource factors.

H4: There is a relationship between family exposure to suicide and the incidence of suicide ideation of SA Army Infantry soldiers.

4.2.3 Null Hypotheses

H0: There is no relationship between combat exposure and the incidence of suicide ideation among soldiers of the SA Army Infantry soldiers.

H0: There is no relationship between suicide ideation and the potential risk and resource factors in members of the SA Army Infantry, with regard to combat exposure.

H0: Combat exposure does not moderate the relationship between suicide ideation and risk factors, as well as between suicide ideation and resource factors.

H0: There is no relationship between family exposure to suicide and the incidence of suicide ideation of the SA Army Infantry soldiers.

4.2.4 Alternative Hypotheses

H1: There is a significant and positive relationship between combat exposure and the incidence of suicide ideation among SA Army Infantry soldiers.

H1: There is a significant and positive relationship between suicide ideation and the potential risk and resource factors in members of the SA Army Infantry, with regard to combat exposure.

H1: Combat exposure does moderate the relationship between suicide ideation and risk factors, as well as between suicide ideation and resource factors.

H1: There is a significant and positive relationship between family exposure to suicide and the incidence of suicide ideation of SA Army Infantry soldiers.

The next section explores the research design used in this study. As stated above, a research methodology or strategy is determined by the nature, the research question, and the subject being investigated. Thus, the format used in the research is seen as a tool to clarify the objectives of the study and give answers to the research questions.

4.3 Methodology

For the SANDF to succeed in combating the scourge of suicide/suicidal behaviour and ensure mental well-being of its members, it was imperative that the current research explicitly had to explore and identify risk and protective factors associated with suicide ideation in the SA Army infantry soldiers. Furthermore, this study would yield knowledge and understanding of the relationship among risk/protective factors and suicide ideation across deployment status in the SANDF.

In addition, the current study is a build-up towards a future study that aims at developing a suicide prevention programme for the SANDF to be utilised by leaders, to protect their subordinates from the adverse effects of risk factors. Owing to limited South

African research related to suicide in the SANDF, and the relevance of generating knowledge regarding suicidal behaviour in the military context, this study aimed to investigate if there was a relationship between risk/protective factors and suicide ideation in the active duty soldiers of the South African Army Infantry; moreover, to determine if combat exposure had a moderating or a mediating role in such relationship.

4.3.1 Research Design

To realise the objectives of this quantitative study, a non-experimental, correlational design and cross-sectional survey-type research design utilising self-report measures was selected to investigate the research questions (Maree, 2007). The use of a non-experimental research design implies that the researcher did not employ any intervention techniques to control the variables of interest, as opposed to experimental research where a researcher actively manipulates what will be expected of participants (Babbie & Mouton, 1998). There are benefits in using non-experimental research; for instance, due to its reliance on questionnaires and correlational designs, it tends to demonstrate high external validity. Therefore, its findings can be generalised to a larger population. The next paragraphs provide justification for utilising specific methods and approaches in this study.

4.3.2 Justification of Research Approach

According to Stangor (2015), quantitative research is a research approach that emerged from the positivist epistemological paradigm. It is based on the belief that data collected can be analysed scientifically. In this approach, statistical data-collection methods and mathematical models of data analysis are utilised to ensure objectivity, generalisability, and reliability (Creswell, 2002).

Quantitative research uses precise measures of behaviour, for example experiments and surveys to collect data on the predetermined instruments (i.e., questionnaires), which are devised to be carried out, through statistical analysis, from the study sample in an unbiased manner (Creswell, 2003; William, 2011). It is unlike qualitative research where a researcher is required to take an active stance in the research process since he/she is considered a great instrument in the process, which could increase the risk of subjectivity. Quantitative research prides itself as being independent of the researcher. The detachment

and impartiality of the quantitative researcher allows for portrayal of objectivity of data collection, and the results produced can be replicated by any researcher.

Another benefit of this design is that it yields quantitative data that enable the researcher to determine the statistical relationships between the different variables being studied (Leedy & Ormrod, 2001). For its explanatory nature, quantitative research was suited for testing the research hypotheses of this study. For example, this study wanted to know whether there was a relationship between risk/protective factors and suicide ideation in the sample of SA Army Infantry soldiers and whether that relationship was mediated or moderated by combat exposure.

The current study was of a relational nature; thus, the aim was to investigate if there was a relationship between risk/protective factors and suicide ideation of SA Army Infantry soldiers, as well as to determine the role of combat exposure in that relationship. Therefore, a correlation design was used. According to Creswell (2002), the aim of correlational research is to determine whether a relationship between variables exists. According to William (2011), a correlation research method examines the differences between two or more characteristics or variables of the study sample.

In correlation research, a researcher gathers data about two or more variables (i.e., in the current study, risk factors, protective factors, suicide ideation, and combat exposure) to determine the extent to which these variables increase or decrease correspondingly with the others (Leedy & Ormrod, 2001). Leedy and Ormrod (2001) further emphasise that the degree of discovering valid statistical correlations depends on proper methods of calculation. Apuke (2017) attests that the degree of the relationship is expressed by correlation coefficients (i.e., ranges from a positive relationship *+1.00* to a negative relationship *–1.00*). William (2011) remarks that validity and reliability should be prioritised in correlation research.

A cross-sectional design falls under the umbrella of survey research. Survey research, as defined by Kerlinger (1973), is social scientific research that seeks to discover relative incidence, distribution, and interrelations by studying a sample selected from a large or small population using either face-to-face interviews, telephone interviews, or questionnaires. In cross-sectional research design, data is collected from the sample

selected from the large population at one point in time, and group comparisons are made across different age groups; however, all groups are measured at the same time (Stangor, 2015). This design was suited for the current study, as data were derived from a cross-section of the population at one point in time. For example, questionnaires were administered among 1475 soldiers from nine South African Infantry units who were very diverse in terms of ages (18-65 years), ranks (private to colonel) as well as gender (males and females).

4.4 Procedure

The sample used in this study was drawn from the South African Army Infantry (SAI) in the SANDF. Infantry (infantry soldier) refers to military specialisation that engages in military combat on foot, commonly known as foot soldiers. The SANDF has four branches of infantry, which are divided according to their specialised functions, namely (1) a Motorised Infantry Battalion that utilises mine-protected vehicles (MPVs) and armoured personnel (APC) for tactical movement; (2) a Mechanised Infantry Battalion that utilises different variations of Ratel Infantry combat vehicles (ICVs) as fighting vehicles and transport for mounted weapons and/or operations on foot; (3) a Parachute Battalion (Para Bn) consisting of infantry that is transported by aircraft and dropped with parachutes; as well as (4) a Specialised Infantry Battalion also known as the South African Specialised Infantry Capability (SASIC), a specialised unit that operates with dogs, horses, motorcycles, etc. (SA Army, Infantry Battle Handling, Volume 8, 1998).

Personal communication with the Officer Commanding 44 Parachute Battalion (Colonel Adoni, personal communication, 18 October 2019) revealed that “all infantry soldiers in the SANDF undergo similar basic training to qualify as fighter soldiers. On completion of this kind of basic training, they go for diverse specialised training based on their chosen fields.” In confirmation, Engelbrecht (2010) states that the infantry is the largest fighting corps in the SA Army and is deemed the heart of any army; therefore, they are expected to perform their combat duties under any conditions and demonstrate a high level of courage, fitness, and initiative. This is in line with the purpose of the current study, in which infantry soldiers were utilised due to their unique scope of work and the intensity of their training as infantry soldiers.

For this study, participants were selected from nine South African Infantry units in the nine provinces of South Africa. It is important to note that the selection of infantry units to provide participants for this study was not based on their specialisation (i.e., Mechanised Infantry Battalion). However, the units were selected for their geographical location to ensure that the sample would be representative of all infantry members in the nine provinces of South Africa and meet the inclusion criteria (see section 4.5).

The selected Infantry units were as follows: 1 SAI Battalion – Mechanised (Bloemfontein, Free State), 4 SAI Battalion – Motorised (Witbank, Mpumalanga), 6 SAI Battalion – Motorised (Grahamstown, Eastern Cape), 3 SAI Battalion – Training unit (Kimberley, Northern Cape), 9 SAI Battalion – Motorised (Cape Town, Western Cape), 10 SAI Battalion – Motorised (Mafikeng, North-West Province), 15 SAI Battalion – Motorised (Thohoyandou, Limpopo), 21 SAI Battalion – Motorised (Doornkop, Gauteng), and 121 SAI Battalion – Motorised (Matubatuba, KZN). It is worth noting that initially, 8 SAI Battalion – Mechanised (Upington, Northern Cape) was selected as a participating unit. However, at the time of data collection, the majority of the members were on internal deployment. For that reason, it was replaced by 3 SAI Battalion, Training unit (Kimberley, Northern Cape) which also met all the requirements of the sample and of the geographical location.

Prior to data gathering, a letter to request permission to collect data and utilise the participants and premises was sent to the officers commanding the respective SANDF units (the overall commanders of the units). In accordance with the instruction from the General Officer Commanding (GOC) of the Infantry Formation (see section 4.10 on ethical clearance), the unit commanders facilitated and assisted in identifying participants in accordance with the sample specifications and ensured that they were available on the day of administering the questionnaires.

Because a military population was used in this study, it was of great significance to consider the military culture, which is built around command and control, implying complete submission to authority (higher rank group) by the junior ranking structure. Soldiers are taught to comply with orders as a form of displaying discipline. To ensure that participants did not feel coerced into participating in the study, a Participant's Informed Consent booklet was presented and explained prior to administering the questionnaires.

The informed consent booklet contained information such as an explanation of the rationale for the study, the voluntary nature of participation, anonymity, and confidential nature of participation, as well as the right to withdraw voluntarily at any time (Allan, 2011; Health Professions Council of South Africa – HPCSA, 2004). Also, the potential risks for participation and the benefits of participating in the study were explained. Participants had to complete and sign the Participation Consent Form (Appendix B). Relevant contact details of the research team were also provided for in case participants had a need to follow up on the results of the study or had any other enquiries.

Participants were given the informed consent booklet to take home as a form of reference. After the contents of the informed consent booklet had been explained, informed consent was sought and obtained from the participants. Furthermore, participants were made aware that no identifying details were going to be made public or disclosed in the research results.

4.4.1 Confidentiality and Anonymity

Participants were not asked to provide personal identifying information such as name and force number/ID number. This was done to ensure anonymity of their participation, and the answers could not be linked to a certain individual. On the answer sheet, based on the biographical questionnaire, participants were required to provide their age, race, first language, gender, qualification, unit, province, and deployment status as well as combat/non-combat exposure. This information was going to be used only to explain the sample for research purposes. All identifying information such as consent forms and answer sheets would be kept in a locked filing cabinet, and access to them would be restricted to authorised individuals. Furthermore, no identifying details would be made public or disclosed in the research results. Should any participant need debriefing or further psychological care, a registered psychologist who would oversee the administering of questionnaires, would be at hand to manage such cases.

4.5 Data Gathering

For this study, a population of 1600 soldiers was identified using a stratified sampling method (Maree, 2007). A stratified sampling frame is a probability sampling method that

involves grouping of information about the population into homogeneous groups called strata (i.e., sex, age, ethnicity, religion, etc.) prior to sampling (Stangor, 2015). Data were collected by means of self-report standardised psychometric measures. A total of 1600 questionnaires was administered to the soldiers in nine SA Infantry units. Out of all the questionnaires administered, only 1475 were found to be usable.

Questionnaires were administered only in English (the official language of instruction in the SANDF). Questionnaires were bound in a booklet form, distributed and completed by participants. Testing was conducted under the guidance of a registered military clinical psychologist (principal researcher) and the research assistants at the various test centres who would also manage any need for further emotional and psychological support, if necessary.

Accordingly, participants were expected to avail themselves at the specified venue that was used as a central testing venue for that particular operational unit, at the given time. Participants were provided with a pencil and an eraser. Their participation was approximately 1 hour and 30 minutes, with the completion of questionnaires taking about 45 minutes.

Inclusion criteria: The sample included both male and female South African Infantry soldiers from only infantry units around the country. All ethnic groups were accepted as participants. The age of participants was between 18 years and 65 years. Furthermore, the sample frame included soldiers with deployment experience (i.e., deployed internally and/or externally); no deployment experience; combat exposure; non-combat exposure; a deployment period of 6 months and/or more; and a period of service of more than two years.

Exclusion criteria: Soldiers who formed part of the Military Skills Development System and had a contract of two years and less, as well as soldiers without infantry training were excluded.

The sample for this study was considered representative of the sample population – infantry soldiers. Thus, external validity was adhered to. Demographic characteristics of the sample are discussed in the next section.

4.6 Sample Characteristics

Distribution of the sample group in terms of gender, race, age, language, combat exposure, and suicide exposure is indicated in Table 2.

Table 2a

Frequency Distribution of Sample Group According to Biographic Variables

Biographical variable	N	%
Gender:		
Male	1202	81.5
Female	268	18.2
No response	5	0.3
Ethnicity:		
African	1224	83.0
Coloured	156	10.6
Asian	31	2.1
White	7	0.5
Other	1	0.1
No response	56	3.7
Home Language:		
English	45	3.1
Afrikaans	172	11.7
Isi-Xhosa	232	15.7
Isi-Zulu	256	17.4
Sesotho	228	15.5
Setswana	253	17.2
Other	274	18.6
No response	15	0.9

Table 2b

Frequency Distribution of Sample Group According to Biographic Variables

Rank:		
Private	800	54.8
L/Corporal or Corporal	356	24.4
Sergeant	101	6.9
Staff Sergeant	64	4.4
Warrant Officer	34	2.3
Sub-lieutenant	2	0.1
Lieutenant	64	4.4
Captain	25	1.7
Major	13	0.9
Lieutenant Colonel	2	0.1
Combat exposure:		
Yes	884	59.9
No	505	34.3
No response	86	5.8
Did a family member ever attempt suicide?:		
Yes	128	8.7
No	1300	88.1
No response	47	3.2
Did a family member ever die of suicide?:		
Yes	102	6.9
No	1328	90.0
No response	45	3.1

Table 2a and Table 2b indicate that the final group consisted of 1475 participants, while 125 were excluded from further analysis due to incomplete data. The defining demographic characteristics of the participants were as follows: The participating group was between the ages of 20 and 61 years. The mean age of the participants was 40.67 years, with a standard deviation of 10.58 years. The majority of participants were male; 1202 male soldiers (81.5%) and 268 female soldiers (18.2%) participated. This confirms the gender distribution in the SANDF and further in the infantry division (HCASUICI, 1 January 2004 until 31 December 2018). Thus, male soldiers were over-represented in the

participating group. At the nine infantry units that were selected to be included in the sample, male soldiers were a majority. This demographic composition of the sample might have affected the analysis in this study; therefore, the differences between males and female soldiers were not analysed in the study. Also, in interpreting the results, it should be kept in mind that more than two thirds of the population (81.5%) consisted of males.

With regard to race distribution, participants were from African descent (83.0%), while 10.6% indicated that they were Coloured. The remaining participants indicated that they were Asian (2.1%), White (0.1%), and 3.7% did not indicate their ethnicity. Regarding the language of first choice, the majority of the soldiers indicated to be Zulu (IsiZulu) speaking (17.4%) and Setswana speaking (17.2%). The remainder of the group of participants spoke IsiXhosa (15.7%), Sesotho (15.5%), Afrikaans (11.7%), English (3.1%), and other languages of first choice (18.6%). With regard to combat exposure, 884 (59.9%) participants indicated that they had been exposed to combat, while 505 (34.3%) participants had never had combat exposure. In terms of suicide exposure variables (i.e., attempted suicide, exposure by family member's death), the majority of participants (88.1%), indicated that they had never attempted suicide, while (8.7%) answered affirmative. A small group of participants (6.9%) seems to have had a family member die by suicide, while the majority of participants (90.0%) indicated not to have been exposed to a suicide death of a family member.

The measuring instruments used in the study are discussed in the next section.

4.7 Measuring Instruments

4.7.1 A Biographical Questionnaire

A self-compiled biographical questionnaire (Appendix C) was developed to gather information about demographic characteristics of the participants. The demographic characteristics pertaining to a participant's age, gender, race, language, marital status, highest education qualification, home province, arm of service, employment contract, field of utilisation, years of service, and rank level were obtained. Other information that was gathered included operational/deployment experience, alcohol consumption per week, smoking behaviour, exercise behaviour, social support, history of previous suicidal

behaviour, and exposure to suicide death of a family member. The operational/deployment experience consisted of three categories, namely having deployed internally or externally or never deployed.

4.7.2 The Scale for Suicide Ideation

The *Scale for Suicide Ideation (SSI)* (Weissman, 1979) (Appendix D) was used to measure the degree and extent of participants' levels of suicide ideation (Beck et al., 1979). The items of SSI are derived partly clinically and partly rationally. This implies that items for this scale were derived through systematic observation and semi-structured interviews of 90 in-patients who were hospitalised for self-destructive ruminations (Beck et al., 1979). Thus, the items of the SSI are presented in the form of a semi-structured interview.

The SSI is a standardised measure consisting of 19 items that are rated on a 3-point Likert scale from 0 to 2. Each item consists of three alternative statements that measure specific dimensions of suicidal ideation (i.e., active suicidal desire, specific plan, and passive suicidal desire) which are graded in their intensity. The grading of items vary according to the specific item being measured (i.e., Item 2: wish to die: *none* (0), *weak* (1), *moderate to strong* (2). Items of SSI are arranged in such a way that the first five items are used to screen for the current attitude toward living or dying. Patients responded affirmatively to Item 4 (active desire for attempted suicide) and Item 5 (passive desire for attempted suicide) are rated further on items 6-19 for severity of suicidal ideation (Desseilles et al., 2012).

The total score is computed by adding all individual item scores. The possible range of scores is between zero and 38 (Beck et al., 1979). The higher the total scores, the greater the severity of suicide ideation. In the Adolescent Depression Study (ADS), the severity of suicidal ideation in the adolescent sample (N = 218 psychiatric outpatients; and N = 200 school-attending adolescents) was assessed using SSI. The optimal cut-off threshold for the SSI total score was 3/4, yielding sensitivity of 75% and of 88.9% in the specific sample (Holi et al., 2005). A score of 6 or more was used as a cut-off threshold for clinically significant suicidal thoughts in adult psychiatric patients with major depressive disorder (Sokero et al., 2005).

The SSI has no reverse scores and no subscales. The scale was found to have high internal consistency at 0.89 and a moderately high correlation with clinical ratings of suicide risk and self-administered measures of self-harm in a sample of 90 in-patients (Beck et al., 1979). In a study by Holi et al. (2005) on psychometric properties and clinical utility of the scale suicide ideation with 218 adolescents, a high internal consistency at 0.95 was reported. No South African studies could be found that reported using the SSI (EbscoHost and associate databases, Google Scholar, Nexus, NiPAD, 06 August 2018).

4.7.3 The Orientation to Life Questionnaire (OLQ)

The *Orientation to Life Questionnaire (OLQ)* (Antonovsky, 1987b) (Appendix E) measures the participant's sense of coherence. The instrument consists of 29 items that are measured along a 7-point Likert scale (from 1 to 7). The total score ranges from 13 to 91, and the higher the score, the stronger the sense of coherence. In scoring this instrument, the researcher took special notice of the reverse score items (items no. 1, 4, 5, 6, 7, 11, 13, 14, 16, 20, 23, 25, and 27). Therefore, responses to negatively formulated items were reverse scored before the total scores for the subscales were calculated. Subscales for comprehensibility (11 items), manageability (10 items), and meaningfulness (8 items) are calculated by the sum of each subscale score. The total OLQ score is achieved by calculating the sum of the three subscale scores. Alpha coefficients ranging between 0.83 and 0.93 (Antonovsky, 1993), and for subscales ranging from 0.78 to 0.81 (Van der Westhuizen et al., 2015) were reported. In a South African study to determine the reliability, Strümpfer and Wissing (1998) reported Cronbach alpha coefficients ranging from 0.74 to 0.94.

4.7.4 The PTSD Checklist – Civilian Version (PCL-C)

The *PTSD Checklist – Civilian Version (PCL-C)* (Weathers et al., 1991) (Appendix f) measures participants' symptoms in response to stressful experiences from the past and is not linked to a specific event. It consists of 17 items measured along a 5-point Likert scale, ranging from *not at all* (1) to *extremely* (5), and the scale has no reverse scores and no subscales. Scoring of the PCL-C can be done to determine whether an individual meets the symptom pattern and/or severity threshold. For example, treat response categories 3-5 (moderate or above) as symptomatic responses, and 1-2 (below moderate) as non-

symptomatic responses. For DSM criteria diagnosis, symptomatic responses to at least 1 "B" item 1-5, and 3 "C" items 5-12, and2 "D" items 13-17 are considered. The total severity score ranges from 17 to 85. The total score was obtained by adding up each of the 17 individual scores (using raw scores, not standardised scores). A high score indicates clinical significance for PTSD (symptom pattern and severity threshold).

The cut-off score of 30-35 (below 15%) indicates a need for clinical care; a score of 36-44 (moderate; 16-39%) implies a specialised medical clinic; and the score of 45-50 (above 40%) indicates a need for a specialised mental health clinic. The PCL-C has a good diagnostic utility, validity, and reliability. A Cronbach Alpha coefficient of 0.97 was reported for PCL-C for a sample (N = 425) in Rudd et al.'s (2011) study. In a South African study by Idemudia et al. (2013), an alpha coefficient of 0.80 was obtained for a group of Zimbabwean refugees.

4.7.5 The Alcohol Use Disorders Identification Test (AUDIT)

The *Alcohol Use Disorders Identification Test (AUDIT)* (Saunders et al., 1993) (Appendix G) is an alcohol measure for adults to identify risky or harmful alcohol consumption as well as alcohol dependence and abuse. The AUDIT contains 10 items, which are scored on a Likert Scale. For example, Items 1 to 8 are scored on a 5-point Likert scale with scores ranging from *never* (0) to *daily or almost daily* (4), and Items 9 and 10 are scored on a 3-point Likert scale with scores ranging from *no* (0) to *yes, during the past year* (4). The 10-item AUDIT includes questions to assess the amount and frequency of alcohol intake (Items 1-3), alcohol dependence (Questions 4-6) and problems related to alcohol consumption (Items 7-10).

Total scores range from zero to 40. The score of 8 is generally an accepted cut-off point of the scale to identify potentially hazardous alcohol intake, and a score of 13 or more in women, and 15 or more in men, is likely to indicate alcohol dependence (Saunders et al., 1993). The total score is obtained by adding up all raw scores (not standardised scores), including scores for subscales. For instance, the maximum possible score for the consumption score (Items 1 to 3) is 12, and a score of 6 or 7 indicates a risk for harmful alcohol use; the maximum score for dependence (items no. 4 to 6) is 12, and a score of 4 or more indicates possible alcohol dependence; and the maximum score for alcohol-related

problem (items no. 7 to 10) is 16, and a score of 7 to 10 indicates a need for further investigation.

Cronbach alpha coefficient values ranging between 0.80 and 0.89 were reported for this instrument. The AUDIT has proven to be internally consistent with diverse samples and in a broad range of settings (Meneses-Gaya et al., 2009). In a study performed in Nigeria, the AUDIT showed high internal consistency and validity among university students (Adewuya, 2005). Daeppen et al. (2000) observed a test-retest reliability of 0.81 among 126 primary care patients over 6 weeks. In a South African study by Myer et al. (2008) AUDIT provided an acceptable alpha coefficient for a sample of HIV-infected individuals.

4.7.6 The Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS) (Cohen et al., 1983) (Appendix H) is a stress measure that assesses the degree to which situations in a respondent's life are perceived as unpredictable, uncontrollable, and overloading within the past month. The PSS consists of 14 items that are measured on a 5-point Likert scale ranging from *never* (0) to *very often* (4). The total score ranges from zero to 56, with the higher scores indicating greater perceived stress. The PSS includes reverse score items (items no. 4, 5, 6, 7, 9, 10, and 13). These negatively formulated items were reverse scored before the total scores for the scale were calculated. A high internal reliability (Cronbach alpha coefficient) of the PSS was reported (a = 0.84 – 0.86) for college students (Cohen et al., 1983). In a study by Shelef et al. (2014b), an excellent Cronbach alpha coefficient of 0.92 was found for the sample (N = 167). In a South African study by Davidowitz and Schreiber (2008), the PSS yielded excellent alpha coefficients for first-year students (N = 119) at the University of Cape Town

4.7.7 The Interpersonal Support Evaluation List (ISEL)

The *Interpersonal Support Evaluation List (ISEL)* (Cohen & Hoberman, 1983) (Appendix I) measures the individual's perceptions of social support. The ISEL consists of 40 items and four subscales: tangible support (items no. 12, 9, 14, 6, 8, 23, 29, 33, 35, and 39), appraisal (items no. 1 6, 11, 17, 19, 22, 26, 30, 36, and 38), belonging (items no. 5, 7, 10, 12, 15, 21, 25, 27, 31, and 34), and self-esteem (items no. 3, 4, 8, 13, 20, 24, 28, 32, 37,

and 40) that measure functions of social support. Items are measured on a 4-point Likert scale, and the total score ranges from 0 to 40. Responses range from 1 *(definitely false)* to 4 *(definitely true)*, which are added up to provide an overall availability of social support score (Bryan & Hernandez, 2013). The ISEL consists of a number of reverse scored items (items no. 3, 6, 9, 10, 11, 13, 14, 15, 17, 24, 25, 28, 29, 30, 34, 35, 36, 39, and 40). These (with a total score ranging between 40 and 160) negatively formulated items were reverse scored before the total scores of the subscales were calculated. A higher score on the ISEL indicates a significant stress buffering effect.

It was found in various studies (Aftyka et al., 2019) that the ISEL has good test-retest reliability (interclass correlation coefficients). High internal reliability (Cronbach alpha) of the ISEL was reported (a = 0.86) for the mothers of healthy children and those with a medical history (Aftyka et al., 2019). In the same study, internal consistency for the subscales was found to vary from acceptable values, i.e., tangible support (a = 0.79) and belonging support (a = 0.73) to low and unacceptable values, i.e., self-esteem support (a = 0.51) and appraisal support (a = 0.62)]. In a study by Shelef et al. (2014b), an excellent Cronbach's alpha coefficient of 0.92 was found for the sample (N = *167*). No South African studies could be found that reported using the ISEL (EbscoHost and associate databases, Google Scholar, Nexus, NiPAD, 06 August 2018).

The reliability of the respective scales was investigated. To this end, the internal consistency with which it measures was investigated by calculating Cronbach's alpha coefficients by means of the SPSS computer programme (SPSS Incorporated, 2015). The reliability scores together with descriptive statistics of all the variables involved appear in Table 3.

Table 3

Descriptive Statistics and Reliability Coefficients for the Measuring Instruments

Measures	N	M	SD	α	Skewness	Kurtosis
Suicide Ideation (SSI)	1475	1.94	3.48	0.792	**2.799**	**10.63**
Alcohol Use Disorder Identification Test (AUDIT)						
Consumption	1475	2.58	2.90	0.871	0.905	-0.01
Dependence	1475	0.50	1.45	0.745	**3.946**	**18.53**
Alcohol-related problems	1475	0.66	1.93	0.726	**4.018**	**18.52**
Interpersonal Support Evaluation (ISEL)						
Appraisal	1475	24.19	4.99	0.775	-0.788	0.301
Tangible support	1475	23.83	5.32	0.792	-0.806	0.283
Self-esteem	1475	21.81	4.27	0.600	-0.201	0.064
Belonging	1475	23.96	4.66	0.733	-0.673	-0.011
Orientation to Life Questionnaire (OLQ)						
Comprehensibility	1475	57.52	13.35	0.843	-0.472	-0.434
Manageability	1475	55.13	10.15	0.747	-0.436	-0.436
Meaning	1475	46.40	8.18	0.748	-0.829	0.229
PTSD Checklist (PCL-C)	1475	26.24	11.21	0.916	1.889	4.144
Perceived Stress Scale (PSS)	1475	29.58	8.90	0.778	-0.031	-0.856

Table 3 shows that, with the exception of self-esteem, the coefficients vary between 0.726 and 0.916. With the exception of self-esteem, the remaining scales produced acceptable to excellent internally consistent measurements; therefore, they were used in the analyses that follow. With regard to PSS, Item 12 was omitted because it would have reduced the reliability index for this scale from 0.778 to 0.700 if it had been retained.

The skewness and kurtosis coefficients are also indicated in Table 3. Skewness indicates whether there is lop-sidedness in the distribution or if it lacks symmetry (Salkind, 2008). This is indicated by either one tail of the distribution being longer or shorter than the other. Kurtosis indicates how flat (platykurtosis – flat data) or peaked (leptokurtosis – bell-shaped data) the distribution appears (Salkind, 2008). In evaluating these coefficients, the

following guideline values were used, namely skewness |2| and kurtosis |4| (Kahane, 2008). However, it is clear that in some cases, the scores are distributed in a skewed manner, while the kurtosis value is also big. This means that in many cases, the data do not meet the assumption of normality. Consequently, it was decided to make use of the bootstrapping method in these cases (e.g., suicide ideation). The latter procedure is used as an alternative way of estimating standard errors. Bootstrapping is a nonparametric approach to statistical inference that can be applied to any data because it requires no assumptions about underlying population distributions.

4.8 Statistical Procedures

The Statistical Product and Service Solution (SPSS) program was used to analyse the data. The reliability of all measurements was investigated by calculating Cronbach alpha coefficients. To determine the correlation between variables, Pearson product correlation coefficients were calculated (Stangor, 2015). The Statistical Product and Service Solution (SPSS) version 22.0 program was used to analyse the data (SPSS Incorporated, 2015) Furthermore, a product term regression analysis was utilised to determine whether combat exposure moderated the relationship between risk/resource factors and suicide ideation.

During the statistical exploration of the research questions, the statistically significant results that had been obtained were investigated also in terms of practical significance. The latter meant that effect sizes would be calculated to determine to what extent the significant results were really of value to interpret. Statistically significant results showing a medium to large effect size will be discussed further. Thus, results with small effect sizes will not be discussed in more detail.

To investigate the first research question, descriptive statistics were calculated in terms of frequencies and percentages. To investigate research questions 2, 3, and 4, the chi-square test for homogeneity was utilised, seeing that all the variables had been measured on the nominal level. In interpreting the results of the χ^2-test, the effect size is indicated by *w*, and the guideline values that can be used are as follows: **0,1** = *small*, **0,3** = *medium*, and **0,5** = *large*.

To investigate the fifth formulated research question, a hierarchical regression analysis was performed. In this case, risk factors (alcohol consumption, dependence, related problems, PTSD, and perceived stress) as well as resource factors (social support: appraisal, tangible support, and belonging; orientation to life: comprehensibility, manageability and meaning) were the independent variables, and suicide ideation was the dependent (criterion) variable.

The method followed was to first determine the total variance explained by the predictor variables jointly (full model) in respect of the criterion (suicide ideation). Thereafter, one of the predictor variables was omitted to determine the contribution of that specific variable to the explanation of the variance. Hierarchical regression analyses were conducted to investigate the contribution of the different **sets** of variables (risk factors and resource factors) to the percentage of variance in suicide ideation, as well as the contribution of each of the individual independent variables. The percentage variance explained by a specific variable or set of is indicated by R^2 (quadrated multiple correlation coefficient).

When the significance of an increase in R^2 is investigated, it is also necessary to calculate the effect size of the contribution by a specific predictor(s). The effect size indicates the contribution to R^2 in terms of the proportion undeclared variance of the full model. The effect size of the individual contributions can be calculated in terms of f^2 with the help of the following formula:

$$f^2 = \frac{R^2 - R^2_1}{1 - R^2}$$

where:

R^2 = proportion variance declared by the full model

R^2_1 = proportion variance declared by the smaller number of independent variables

According to Cohen's description of effect sizes as described by Steyn (1999), the following guideline values can be used:

f^2 = 0,01 : small effect

f^2 = 0,15 : medium effect

f^2 = 0,35 : large effect

To investigate the latter research question, a moderated regression analysis was made. In this procedure, the regression analyses are done in three steps. In the first step, a single variable was analysed; for example, a single independent variable (PTSD) was added to the regression comparison to determine its unique contribution and, subsequently, the moderator (in this case combat exposure) was added to the comparison.

In the third step, the product between this independent variable and the moderating variable in the prediction of suicide ideation was investigated. Because combat exposure is a dichotomous variable, the code 1 was allocated to the group that had indeed been exposed to combat, and the code 0 to those who had not been exposed to such contact. If a significant interaction (product term) were found, the conclusion could be drawn that a *moderator* effect was relevant. A moderator variable affects the direction and/or strength of the relationship between the independent and dependent variables (Baron & Kenny, 1986).

The 1% level of significance was used in this study, and the SPSS version 22.0 program used to analyse the data was used to analyse the results (SPSS Incorporated, 2017).

4.9 Ethical Considerations

Prior to conducting the study, ethical clearance was obtained from the Research Ethics Committee of the Faculty of Humanities of the University of the Free State (UFS) (Authorisation number: UFS-HSD2017/0688 – see Appendix A). Also, permission was obtained from the SANDF Directorate Psychology SG (D Psych) (Registration number: /R/104/10/5), SANDF Defence Intelligence (DI) (Authorisation number: DI/DDS/R/202/3/7), Military Psychology Institute (MPI) Authorisation number: MPI/R/104/10/5), General Officer Commanding (GOC) of the Infantry Formation SA ARMY (Authorisation number: INF FMN/R/103/2-3/3-Instruction No: 352/18), as well as from the officers commanding (OCs] of the nine selected units to participate in the study.

Commanding Officers facilitated the co-operation of the identified members by ensuring that all members who met the criteria were available on the day of administering the questionnaires, with the exception of members performing duties, members on sick or vacation leave, as well as on other types of authorised leave of absence) (DI Security Instruction, 2011).

As stated above, authorisation to conduct research involving soldiers was sought and obtained from the relevant authorities in the SANDF. However, only authorised persons have access to the data. All identifying information such as consent forms and answer sheets are kept in a locked filing cabinet, and access to this is restricted. Only members of the research team have access to participant's informed consent and answer sheets. These details will be kept for the maximum period according to the guidance of the HPCSA. Electronic data were secured on a secure network with a password or encryption protocol adhered to. No identifying particulars were used to identify data, as only a coding system or pseudonyms was used to ensure adherence to the anonymity principle. The hardcopy data were secured in a locked filing system to which no unauthorised person would have access. The participants were not deceived in any way.

4.9.1 Risk Mitigation

A study of this nature might lead to the recall of disturbing memories. Therefore, prior to completion of the questionnaires, it was explained to the participants that some of the questions were personal, sensitive and might make them feel uncomfortable. Participants had the right to refuse to answer any questions that made them feel this way. They were provided with enough information regarding their rights on the information leaflet. If participants chose not to answer some questions, it was explained that they were not going to be penalised or prejudiced in any manner.

If a participant were to feel upset or have a need to speak to a psychologist during or after answering the questionnaires, a registered psychologist was available to provide a psychological service. If further referral or psychological intervention was needed, a proper referral procedure to the psychologist of the specific unit was to be followed (every SA Infantry unit of the SANDF has a psychologist attached to it).

4.10 Concluding Summary

The purpose of this chapter was to provide a detailed description of the research design, research methodology, data-gathering process and ethical consideration that underpin this study. A detailed discussion on the justification for using the research approach and its relevance was resented. Also, the statistical analysis procedure was discussed. The next chapter builds on the methodological proposition presented in this chapter to employ statistical approaches for quantitative data analysis.

Chapter 5

Results

5.1 Introduction

The current chapter is aimed at providing the results of the current study. The results will be unpacked in a way that clarifies all the research questions and the objectives of the study.

5.2 Presentation of the Results

The first research question investigated the incidence of suicide ideation among soldiers of the SA Army Infantry. Using the Scale for Suicide Ideation (SSI), frequencies and percentages of the number of SA Army Infantry soldiers are indicated in three categories (low, medium, and high). According to Pienaar and Rothmann (2005), George (2009), and George and Mbhele (2017), the level of suicide can be divided into these three categories and then according to the following guideline values: 0-16 = *low*; 17-31 = *medium,* and ≥ 32 = *high*. The information for the entire group is provided in Table 4.

Table 4

Frequency Distribution of the Entire Group According to the Levels of Suicide Ideation

Suicide ideation	Frequency	%
Low	1462	99.1
Medium	13	0.9
High	0	0.0

Information in the table above indicates that the level of suicide ideation of approximately 99% of the entire group was low, while none indicated that they experienced extraordinarily high levels of suicide ideation. Only 13 (1%) indicated that they experienced medium levels of suicide ideation. Because this study focussed on combat exposure, the average scores on suicide ideation of the two groups (those who had

been exposed versus those who had not yet been exposed) were compared by using a *t*-test for two independent groups. The results appear in Table 5.

Table 5

Comparison of Average Scores on Suicide Ideation of Soldiers who had been Exposed to Combat and Those who had not been Exposed to Combat

Variable	Combat Exposure								
	Yes			No			*t*	*p*	*D*
	N	$\overline{X}$	*sd*	*N*	$\overline{X}$	*sd*			
Suicide ideation score	884	2.18	3.64	505	1.47	2.97	3.941*	0.000	0.20

* $p \leq 0.01$

The results in Table 5 show that a significant positive difference at the 1% level of significance was found between the average scores for suicide ideation of the two groups. In comparison with those who had not been exposed to combat, those who had been exposed had a higher average score that is statistically significant. However, the calculated effect sizes (*D*) indicate that this result is of little practical importance.

Table 6

χ^2-Results Between Level of Suicide Ideation and Combat Exposure

Suicide Ideation	Yes		No	
	N	%	N	%
Low	874	98.9	503	99.6
Medium	10	1.1	2	0.4
Row total	884	63.6	505	36.4

$\chi^2 = 2.028$

$p = 0.154$

$v = 1$

The results in Table 6 show that a statistically insignificant χ^2-value was obtained, which means that a significant relationship between the level of suicide ideation and combat exposure could not be found. Next, it was endeavoured to determine if there was a relationship between the level of suicide ideation experienced and attempted suicide of

family members if there had been such attempts (research question 3). A chi square test was used, and the results are indicated in Table 7.

Table 7

χ^2 Results Between Level of Suicide Ideation and Suicide Attempt by Family Member

Suicide Ideation	**Yes**		**No**	
	N	**%**	**N**	**%**
Low	124	96.9	1291	99.3
Medium	4	3.1	2	0.7
Row total	128	9.0	1300	91.0

$\chi^2 = 7.645$

$p = 0.006$ ($w = 0.07$)

$v = 1$

The chi-square results show that on the 1% level of significance ($p = 0.006$; $\chi^2 = 7.645$), there was a difference in proportions for the two groups (exposed to attempted suicide of a family member /not exposed to attempted suicide of family member) regarding the level of suicide ideation. The corresponding effect size of 0.07 (small) indicates that this result is of little practical significance. Table 7 indicates that a larger proportion of participants who had been exposed to attempted suicide of family members (3.1%) than those who had not been exposed (0.7%) revealed a medium level of suicide ideation.

Table 8

χ^2 Results Between Level of Suicide Ideation and Family Member Committed Suicide

Suicide ideation	Yes		No	
	N	%	N	%
Low	98	96.1	1319	99.3
Medium	4	3.9	9	0.7
Row total	102	7.1	1328	92.9

$\chi^2 = 11.065$

$p = 0.001$ ($w = 0.09$)

$v = 1$

Like in Table 7, the chi-square value indicates that with regard to levels of suicide ideation, there was a significant difference in proportions for the two groups (exposed to family member suicide/not exposed to family member suicide) on the 1% level of significance ($p = 0.001$, $\chi^2 = 11.065$). The corresponding effect size of 0.09 shows that this result is also of little practical significance. Table 8 shows that a larger proportion of those who had been exposed to suicide of a family member (3.9%) than those who had not been exposed (0.7%) revealed a medium level of suicide ideation.

To investigate Research Question 5, hierarchical regression analyses were conducted prior to conducting the regression analyses. Pearson product moment correlation coefficients were calculated for the independent (predictor) and dependent (outcome) variables. The correlation coefficients are shown in Table 9.

Table 9

Intercorrelations Between Predictors and Suicide Ideation for the Entire Sample (N = 1475)

Variables	2	3	4	5	6	7	8	9	10	11	12
1 Suicide ideation	.11*	.27*	.29*	.28*	.25*	-.21*	-.21*	.-18*	-.18*	-.21*	-.20*
2 Consumption	-	.48*	.45*	.13*	-.02	.01	.04	.01	-.11*	-.06	-.06
3 Dependence		-	.65*	.25*	.17*	-.17*	-.16*	-.15*	-.20*	-.20*	-.18*
4 Related problems			-	.32*	.16*	-.17*	-.16*	-.16*	-.21*	-.19*	-.19*
5 PTSD				-	.31*	-.36*	-.36*	-.36*	-.49*	-.50*	-.46*
6 Perceived stress					-	-.53*	-.51*	-.50*	-.43*	-.47*	-.44*
7 Appraisal						-	.78*	.76*	.46*	.51*	.48*
8 Tangible support							-	.77*	.46*	.52*	.45*
9 Belonging								-	.48*	.49*	.46*
10 Comprehensibility									-	.73*	.67*
11 Manageability										-	.75*
12 Meaning											-

* p < = 0.01

Results of intercorrelations between predictor variables and suicide ideation in Table 9 for the entire sample were significant at the 1% level, with the significant portion of the matrix indicates correlation of medium to strong relationship. The results of the hierarchical regression analysis regarding suicide ideation as a dependent variable and the resource and risk factors as independent variables for the entire group are provided in Table 10.

Table 10

Contributions of Risk and Resource Factors to R^2 with Suicide Ideation as Criterion Variable

Variables in analysis		R^2	Contribution to R^2: full minus reduced model	*F*	f^2
1.	[audit]+[pcl]+[pss]+[isel]+[olq]	0.160	1–5 = 0.001	0.680	
2.	[audit]+[pcl]+[pss]+[isel]+compre-hensibility	0.159	2–5 = 0.000	-	
3.	[audit]+[pcl]+[pss]+[isel]+manage-ability	0.159	3-5 = 0.000	-	
4.	[audit]+[pcl]+[pss]+[isel]+meaning	0.159	4-5 = 0.000	-	
5.	[audit]+[pcl]+[pss]+[isel]	0.159			
6.	[audit]+[pcl]+[pss]+[olq]+[isel]	0.160	6–10 = 0.003	1.669	
7.	[audit]+[pcl]+[pss]+[olq]+appraisal	0.158	7–10 = 0.001	1.186	
8.	[audit]+[pcl]+[pss]+[olq]+tangible support	0.159	8-10 = 0.002	2.925	
9.	[audit]+[pcl]+[pss]+[olq]+belonging	0.157	9-10 = 0.000	-	
10.	[audit]+[pcl]+[pss]+[olq]	0.157			
11.	[audit]+[pcl]+[isel]+[olq]+[pss]	0.160	11-12 = 0.013	21.793 *	.01
12.	[audit]+[pcl]+[isel]+[olq]	0.147			
13.	[audit]+[pss]+[isel]+[olq]+[pcl]	0.160	13-14 = 0.016	27.809 *	.02
14.	[audit]+[pss]+[isel]+[olq]	0.144			
15.	[pcl]+[pss]+[isel]+[olq]+[audit]	0.160	15–19 = 0.047	27.558 *	.06
16.	[pcl]+[pss]+[isel]+[olq]+consumption	0.121	16–19 = 0.008	13.839 *	.01
17.	[pcl]+[pss]+[isel]+[olq]+dependence	0.149	17-19 = 0.036	63.585 *	.04
18.	[pcl]+[pss]+[isel]+[olq]+related problems	0.152	18-19 = 0.039	67.472 *	.05
19.	[pcl]+[pss]+[isel]+[olq]	0.113			

Key: [audit] = Alcohol use disorder identification test; [pcl] = PTSD checklist; [pss] = perceived stress scale; [isel] = interpersonal support evaluation; [olq] = orientation to life questionnaire]

* $p \leq 0.01$

From Table 10, it is concluded that the 11 predictors jointly explained 16% (R^2 = 0.160) of the variance in suicide ideation among SA Army Infantry soldiers. This calculated R^2 value is significant on the 1% level of significance [$F_{11;1463}$ = 25.332; p = 0.000]. Table 10 shows that the set of predictors for alcohol use disorder made a significant contribution to explaining the variance in suicide ideation of the soldiers.

When the contribution of individual predictors is investigated, it is clear that all three of the subscales of the AUDIT indeed made a significant contribution on the 1% level of significance. Alcohol consumption, dependence, and alcohol-related problems respectively contributed 0.8% ($F_{1;1465}$ = 13.84; $p \leq 0.01$), 3.6% ($F_{1;1465}$ = 63.58; $p \leq 0.01$), and 3.9% ($F_{1;1465}$ = 67.47; $p \leq 0.01$) to explaining the variance in suicide ideation among SA Army Infantry soldiers. The effect sizes of these three predictors varied between 0.01 and 0.05, thus indicating results that are of little practical significance; therefore, they will not be discussed further in more detail.

Because the hierarchical regression analyses did not deliver any practically significant results for any of the independent variables, it was decided to conduct a stepwise regression analyses to determine:

- which **one** of these 11 independent variables explained the most variance of suicide ideation amongst SA Army Infantry soldiers;

- whether this independent variable explained a significant percentage of variance of the criterion variable; and

- whether any of the remaining independent variables also explained a significant percentage of the variance of the criterion variable and whether this combined set of independent variables explained a significant percentage of the variance.

To interpret the statistical results in terms of effect sizes, Steyn (1999) recommends using the following guidelines to interpret the proportional variance explained by the different independent variables: ρ^2 = 0.01 (*small*), ρ^2 = 0.1 (*medium*), and ρ^2 = 0.25 (*large*) effect. The results of the stepwise regression analysis with suicide ideation as the criterion variable are reported in Table 11.

Table 11

Stepwise Regression Analysis with Internal Adjustment as Criterion Variable

				Change statistics	
Step	**Variable entered N = 1475**	**Partial R^2**	**Model R^2**	***F*-value**	***Pr* > *F***
1	Alcohol-related problems	0.082	0.082	132.389*	0.000
2	Perceived stress	0.042	0.125	71.401*	0.000
3	PTSD	0.022	0.147	37.464*	0.000
4	Alcohol dependence	0.008	0.155	14.367*	0.000

*p≤0.01

As noted from Table 10, all of the 11 predictor variables explained a combined 16.0% ($F_{11;1463}$ = 25.332; p = 0.000) of the variance in suicide ideation scores for the sample. In Step 1 of the stepwise regression analysis, the independent variable, alcohol-related problems, was entered first into the regression equation and was found to be significant on the 1% level of significance. Alcohol-related problems explained 8.2% of the variance of suicide ideation ($F_{1;1473}$ = 132.389, $p \leq 0.01$). The correlation between alcohol-related problems and suicide ideation was positive. The corresponding effect size ($\wp^2$ = 0.08) indicates that the result is of medium practical significance.

Secondly, the independent variable, perceived stress, was added to the regression equation. Perceived stress contributed an additional 4.2% to the variance of suicide ideation on the 1% level of significance ($F_{1;1472}$ = 71.401; $p \leq 0.01$). The corresponding effect size ($\wp^2$ = 0.04) for the partial R^2 indicates that the contribution of perceived stress is not of any practical importance. Together, these two independent variables, alcohol-related problems and perceived stress, explained 12.5% ($p \leq 0.01$) of the variance in participants' suicide ideation. In this instance, the corresponding effect size ($\wp^2$ = 0.13) indicates that the contribution of these two independent variables in combination is of medium practical importance.

In Step 3 of the stepwise regression analysis, the independent variable, PTSD, was added to the regression equation. PTSD contributed an additional 2.2% ($F_{1;1471}$ = 37.464; $p \leq 0.01$) to the variance of suicide ideation of the participants. The corresponding effect size

($\wp^2$ = 0.02) for the partial R^2 indicates that the contribution of PTSD is not of practical importance. In Step 3, these three independent variables, alcohol-related problems, perceived stress, and PTSD, explained 14.7% ($p \leq 0.01$) of the variance in the suicide ideation of soldiers. In this instance, the corresponding effect size ($\wp^2$ = 0.15) indicates that the contribution of these three independent variables in combination is of medium practical importance. The direction of the correlation between PTSD and suicide ideation is also positive, which suggests that when participants experienced high levels of PTSD, their suicide ideation levels also seemed to increase.

In the last step (Step 4), the independent variable, alcohol dependence, was added to the regression equation. Alcohol dependence contributed an additional 0.8% ($F_{1;1470}$ = 14.367, $p \leq 0.01$) to the variance of suicide ideation of the participants. The corresponding effect size ($\wp^2$ = 0.01) for the partial R^2 indicates that the contribution of alcohol dependence is not of any practical importance. In Step 4, the four independent variables, namely alcohol-related problems, perceived stress, PTSD and alcohol dependence, explained 15.5% ($p \leq 0.01$) of the variance in the suicide ideation of offenders. In this instance, the corresponding effect size ($\wp^2$ = 0.16) indicates that the contribution of these four independent variables in combination is of medium practical importance. The direction of the correlation between alcohol dependence and suicide ideation is positive, which suggests that when participants experienced high levels of alcohol dependence, their suicide ideation levels also seemed to increase.

From the discussion, it is evident that these four independent variables explained 15.5% of the total variance in suicide ideation, whilst the remaining seven variables (16.0% – 15.5%) in combination explained only an additional 0.5% of the variance in suicide ideation. Owing to the smaller collective contribution, the results of these variables are noted only in this section but will not be followed up in the discussion section.

Lastly, to investigate Research Question 6, a series of subset regression analyses were conducted with suicide ideation as the dependent variable and with the resource variables (appraisal, tangible support, belonging, comprehensibility, manageability, and meaning) as well as the risks variables (alcohol consumption, dependence, related problems, PTSD, and perceived stress) as the independent variables, and combat exposure (yes = 1 and no = 0)

as a moderator of each variable relationship. Therefore, three regression equations were calculated, for each resource as well as risks factors, with the first two equations including the first-order effects only and a third including the first-order as well as a product term of one of the resource or risk factors and combat exposure.

The results pertaining to combat exposure as a moderator in the relationship between the resource factors and suicide ideation are presented in Table 12.

Table 12a

Moderating Effect of Combat Exposure on the Relationship Between the Resource Factors and Suicide Ideation

Moderating Effect of Combat Exposure on the Relationship between the Resource Factors and Suicide Ideation								
				Change Statistics				
			Adjusted	R^2				Sig. *F*
Model	*R*	R^2	R^2	Change	*F* Change	*df*1	*df2*	Change
1	.220[a]	.048	.048	.048	70.434	1	1387	.000
2	.236[b]	.056	.054	.007	10.766	1	1386	.001
3	.238[c]	.057	.055	.001	1.566	1	1385	.211
a Predictors: Appraisal b Predictors: Appraisal; Combat exposure c Predictors: Appraisal; Combat exposure; Appraisal x Combat exposure								
				Change Statistics				
			Adjusted	R^2				Sig. *F*
Model	*R*	R^2	R^2	Change	*F* Change	*df*1	*df2*	Change
1	.215[a]	.046	.046	.046	67.312	1	1387	.000
2	.236[b]	.056	.054	.010	13.955	1	1386	.000
3	.245[c]	.060	.058	.004	**6.798***	1	1385	.009
a Predictors: Tangible Support b Predictors: Tangible Support; Combat Exposure c Predictors: Tangible Support; Combat exposure; Tangible Support x Combat exposure								

Table 12b

Moderating Effect of Combat Exposure on the Relationship Between the Resource Factors and Suicide Ideation

Moderating Effect of Combat Exposure on the Relationship between the Resource Factors and Suicide Ideation								
				Change Statistics				
			Adjusted	R^2				Sig. *F*
Model	*R*	R^2	R^2	Change	*F* Change	*df*1	*df2*	Change
1	.175[a]	.031	.030	.030	43.676	1	1387	.000
2	.200[b]	.040	.038	.009	13.508	1	1386	.000
3	.204[c]	.042	.040	.002	2.494	1	1385	.114
a Predictors: Belonging b Predictors: Belonging; Combat Exposure c Predictors: Belonging; Combat Exposure; Belonging x Combat Exposure								
				Change Statistics				
			Adjusted	R^2				Sig. *F*
Model	*R*	R^2	R^2	Change	*F* Change	*df*1	*df2*	Change
1	.186[a]	.035	.034	.035	49.853	1	1387	.000
2	.217[b]	.047	.046	.012	18.046	1	1386	.000
3	.218[c]	.048	.045	.000	0.582	1	1385	.446
a Predictors: Comprehensibility b Predictors: Comprehensibility; Combat Exposure c Predictors: Comprehensibility; Combat Exposure; Comprehensibility x Combat Exposure								
				Change Statistics				
			Adjusted	R^2				Sig. *F*
Model	*R*	R^2	R^2	Change	*F* Change	*df*1	*df2*	Change
1	.211	.044	.044	.044	64.418	1	1387	.000
2	.235[b]	.055	.054	.011	15.865	1	1386	.000
3	.239[c]	.057	.055	.002	2.748	1	1385	.098
a Predictors: Manageability b Predictors: Manageability; Combat Exposure c Predictors: Manageability; Combat Exposure; Manageability x Combat Exposure								

Table 12c

Moderating Effect of Combat Exposure on the Relationship Between the Resource Factors and Suicide Ideation

Moderating Effect of Combat Exposure on the Relationship between the Resource Factors and Suicide Ideation								
				Change Statistics				
			Adjusted	R^2				Sig. *F*
Model	*R*	R^2	R^2	Change	*F* Change	*df*1	*df2*	Change
1	.207[a]	.043	.042	.043	61.816	1	1387	.000
2	.232[b]	.054	.052	.011	16.151	1	1386	.000
3	.236[c]	.056	.053	.002	2.683	1	1385	.102
a Predictors: Meaning b Predictors: Meaning; Combat Exposure c Predictors: Meaning; Combat Exposure; Meaning x Combat Exposure								

* p≤ 0.01

Inspection of Table 12a, 12b, and 12c shows that combat exposure did not moderate the relationship between suicide ideation and appraisal as a subscale of interpersonal support ($\Delta R^2 = 0.057$; $F_{(1;\ 1385)} = 1.566$; $p = 0.211$). Combat exposure also did not moderate the relationships between:

- belonging and suicide ideation: $\Delta R^2 = 0.040$; $F_{(1;\ 1385)} = 2.494$; $p = 0.114$;
- comprehensibility and suicide ideation: $\Delta R^2 = 0.045$; $F_{(1;\ 1385)} = 0.582$; $p = 0.446$;
- manageability and suicide ideation: $\Delta R^2 = 0.055$; $F_{(1;\ 1385)} = 2.748$; $p = 0.098$; and
- meaning and suicide ideation: $\Delta R^2 = 0.053$; $F_{(1;\ 1385)} = 2.683$; $p = 0.102$.

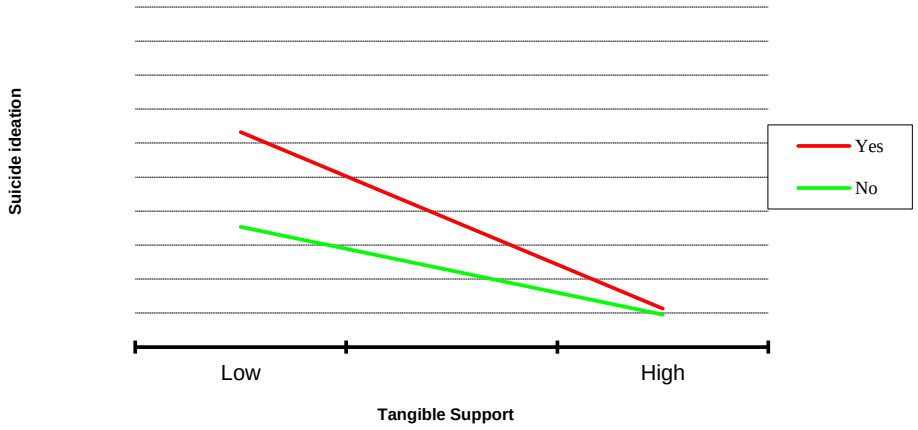
From Table 12a, 12b, and 12c it is evident that tangible support (as a subscale of interpersonal support) was the only predictor ($R^2 = 0.046$; $F_{(1;\ 1387)} = 67.312$; $p < 0.001$) explaining a significant percentage of variance in suicide ideation of SA Army Infantry soldiers. Combat exposure explained a further 1% of the variance in suicide ideation ($\Delta R^2 = 0.010$; $F_{(1;\ 1386)} = 13.955$; $p = 0.000$). The moderating effect of combat exposure explained a further 0.4% of the variance in suicide ideation above and beyond the variance explained

by tangible support (ΔR^2 = 0.004; $F_{(1;\ 1385)}$ = 2.683; p = 0.009). Jointly, tangible support, combat exposure and their interaction accounted for 6% of the variance in suicide ideation of SA Army Infantry soldiers.

Therefore, it can be concluded that combat exposure moderated the relationship between tangible support (as a subscale of interpersonal support) and suicide ideation. To investigate this effect further, separate regression comparisons were calculated between the tangible support and suicide ideation scores of respondents who had been exposed to combat and those who had not been exposed. These regression comparisons are presented graphically in Figure 3.

Figure 3

The Relationship Between Combat Exposure, Tangible Support (as a Subscale of Interpersonal Support) and Suicide Ideation



From Figure 3, it is clear that for the SA Army Infantry soldiers who were exposed to combat, there is a relatively quick drop in the regression line (slope = -0.173), with a significant negative relationship (-0.246) between tangible support and suicide ideation. For the soldiers who were not yet exposed to combat, there is also a drop in the regression line, although it is slight (slope = -0.086). The result indicates that for those who had been exposed to combat, there was a fairly quick drop in suicide ideation with an increase in tangible support (as interpersonal support), while there was a much smaller decline in suicide ideation for the group that had not been exposed to combat.

The results pertaining to combat exposure as a moderator in the relationship between risk factors and suicide ideation are presented in Table 13.

Table 13a

Moderating Effect of Combat Exposure in the Relationship Between Risk Factors and Suicide Ideation

Moderating Effect of Combat Exposure in the Relationship between Risk Factors and Suicide Ideation								
				Change Statistics				
			Adjusted	R^2				Sig. *F*
Model	*R*	R^2	R^2	Change	*F* Change	*df*1	*df2*	Change
1	$.108_a$	.012	.011	.012	16.291	1	1387	.000
2	$.147_b$	.022	.020	.010	14.297	1	1386	.000
3	$.149_c$	.022	.020	.001	0.801	1	1385	.371
a Predictors: Alcohol Consumption b Predictors: Alcohol Consumption; Combat Exposure c Predictors: Alcohol Consumption; Combat Exposure; Alcohol Consumption x Combat Exposure								
				Change Statistics				
			Adjusted	R^2				Sig. *F*
Model	*R*	R^2	R^2	Change	*F* Change	*df*1	*df2*	Change
1	$.292_a$	.085	.084	.085	129.077	1	1387	.000
2	$.302_b$	.091	.090	.006	9.655	1	1386	.002
3	$.305_c$	.093	.091	.002	2.427	1	1385	.120
a Predictors: Alcohol Dependence b Predictors: Alcohol Dependence; Combat Exposure c Predictors: Alcohol Dependence; Combat Exposure; Alcohol Dependence x Combat Exposure								

Table 13b

Moderating Effect of Combat Exposure in the Relationship Between Risk Factors and Suicide Ideation

Moderating Effect of Combat Exposure in the Relationship between Risk Factors and Suicide Ideation								
				Change Statistics				
			Adjusted	R^2				Sig. *F*
Model	*R*	R^2	R^2	Change	*F* Change	*df*1	*df2*	Change
1	.297[a]	.088	.087	.088	133.805	1	1387	.000
2	.311[b]	.097	.096	.009	13.613	1	1386	.000
3	.319[c]	.102	.100	.005	**7.430***	1	1385	.006
a Predictors: Alcohol-related Problems b Predictors: Alcohol-related Problems; Combat Exposure c Predictors: Alcohol-related Problems; Combat Exposure; Alcohol-related Problems x Combat Exposure								
				Change Statistics				
			Adjusted	R^2				Sig. *F*
Model	*R*	R^2	R^2	Change	*F* Change	*df*1	*df2*	Change
1	.284[a]	.080	.080	.080	121.346	1	1387	.000
2	.306[b]	.094	.093	.013	20.603	1	1386	.000
3	.316[c]	.100	.098	.006	**8.738***	1	1385	.003
a Predictors: PTSD b Predictors: PTSD; Combat Exposure c Predictors: PTSD; Combat Exposure; PTSD x Combat Exposure								
				Change Statistics				
			Adjusted	R^2				Sig. *F*
Model	*R*	R^2	R^2	Change	*F* Change	*df*1	*df2*	Change
1	.251	.063	.062	.063	93.340	1	1387	.000
2	.262[b]	.068	.067	.005	7.970	1	1386	.005
3	.263[c]	.069	.067	.001	1.239	1	1385	.266
a Predictors: Perceived stress b Predictors: Perceived stress; Combat Exposure c Predictors: Perceived stress; Combat Exposure; Perceived Stress x Combat Exposure								

* $p \leq 0.01$

Inspection of Table 13a and Table 13b shows that combat exposure did not moderate the relationship between alcohol consumption and suicide ideation ($\Delta R^2 = 0.020$; $F_{(1;\ 1385)} = 0.801$; $p = 0.371$). Exposure to combat also did not moderate the relationships between:

- alcohol dependence and suicide ideation: $\Delta R^2 = 0.091$; $F_{(1;\ 1385)} = 2.427$; $p = 0.120$; and

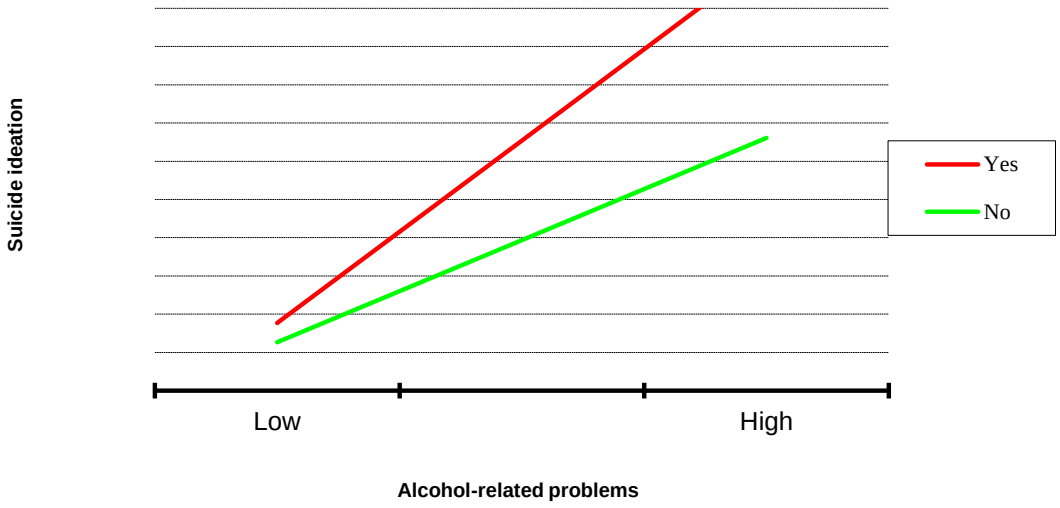
- perceived stress and suicide ideation: $\Delta R^2 = 0.067$; $F_{(1;\ 1385)} = 1.239$; $p = 0.266$.

From Table 13a and b, it is evident that alcohol-related problems was the only predictor ($R^2 = 0.088$; $F_{(1;\ 1387)} = 133.805$; $p < 0.001$) that explained a significant percentage (8.8%) of variance in the suicide ideation of the SA Army Infantry soldiers. Combat exposure explained a further 1% of the variance in suicide ideation ($\Delta R^2 = 0.009$; $F_{(1;1386)} = 13.613$; $p = 0.000$). The moderating effect of combat exposure explained a further 0.5% of the variance in suicide ideation above and beyond the variance explained by alcohol-related problems ($\Delta R^2 = 0.100$; $F_{(1;\ 1385)} = 7.430$; $p = 0.006$). Jointly, alcohol-related problems, combat exposure and their interaction accounted for 10.2% of the variance in suicide ideation of SA Army Infantry soldiers. Therefore, it can be deduced that combat exposure indeed moderates the relationship between alcohol-related problems and suicide ideation.

To investigate this effect further, separate regression comparisons for respondents were calculated between the alcohol-related problem and suicide ideation scores of respondents that had been exposed to combat and those who had not been exposed. These regression comparisons are presented graphically in Figure 4.

Figure 4

The Relationship Between Alcohol-related Problems and Suicide Ideation for Infantry Soldiers who Were Exposed to Combat and Those who Were not Exposed to Combat.



For SA Army Infantry soldiers who had been exposed to combat, Figure 4 shows a relatively sharper upward slope in the regression line (slope = 0.597), with a significant positive relationship (0.335) between alcohol-related problems and suicide ideation. For soldiers who had not yet been exposed to combat, there is also an upward slope in the regression line, although the gradient is less sharp (slope = 0.334). The result indicates that for those who had been exposed to combat, there was a fairly quick increase in suicide ideation with an increase in alcohol-related problems, while for the group that had not been exposed to combat, the increase in suicide ideation was smaller.

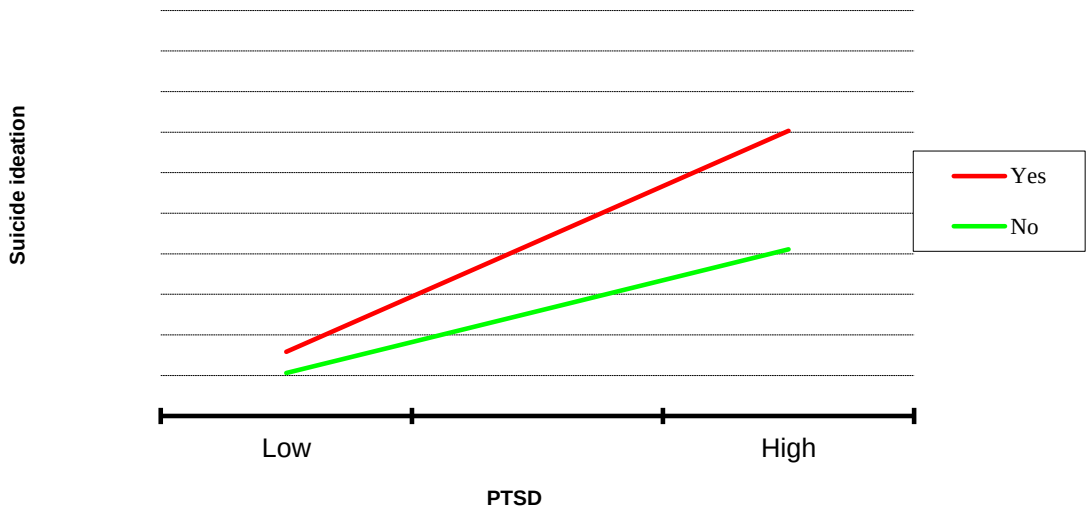
From Table 13a and 13b, it is further evident that PTSD as the only predictor (R^2 = 0.080; $F_{(1;\ 1387)}$ = 121.346; $p < 0.001$) explained a significant percentage of variance in the suicide ideation of the SA Army Infantry soldiers. Combat exposure explained a further 1.3% of the variance in suicide ideation (ΔR^2 = 0.013; $F_{(1;1386)}$ = 20.603; p = 0.000). The moderating effect of combat exposure explained a further 0.6% of the variance in suicide ideation above and beyond the variance explained by PTSD (ΔR^2 = 0.098; $F_{(1;\ 1385)}$ = 8.738; p = 0.003).

Collectively, PTSD, combat exposure, and their interaction accounted for 10.0% of the variance in suicide ideation of SA Army Infantry soldiers. Therefore, it can be deduced

that combat exposure indeed moderated the relationship between PTSD and suicide ideation. Nonetheless, the contribution of these variables was small due to the accompanying effect of size; thus, they have little practical significance. However, the contribution of a positive significant correlation between alcohol-related problems, perceived stress, PTSD, alcohol dependence, and suicide ideation is of medium practical importance; hence, it is worth mentioning, as it can be generalised to the rest of infantry population (see 5.1, Table 11). To investigate this effect further, separate regression comparisons for respondents were calculated between the PTSD and suicide ideation scores of respondents that had been exposed to combat and those who had not been exposed. These regression comparisons are presented graphically in Figure 5.

Figure 5

The Relationship Between PTSD and Suicide Ideation for Infantry Soldiers Exposed to Combat and Those not Exposed



From Figure 5, it is evident that for SA Army Infantry soldiers who had been exposed to combat, there is an upward slope in the regression line (slope = 0.109) with a significant positive relationship (0.323) between PTSD and suicide ideation. For soldiers who had not yet been exposed to combat, there is also an upward slope in the regression line, although it is less (slope = 0.061). The result indicates that for those who had been exposed to combat, there was a fairly sharp increase in suicide ideation with an increase in PTSD, while for the group who had not been exposed to combat, the increase in suicide ideation was smaller.

With an increase in PTSD, the two regression lines move further from each other, which indicates that with a higher level of PTSD, the group with combat exposure was more inclined to suicide ideation than the group without combat exposure was. In addition, it appears that when lower levels of PTSD were experienced, both groups (with and without combat exposure) were inclined to experience low levels of suicide ideation. If soldiers who had been exposed to combat revealed high levels of PTSD, they would be more inclined to suicide ideation than when they experienced low levels of PTSD.

5.3 Concluding Summary

The purpose of this chapter was to report on the results of the current research. Inferential and descriptive analyses were conducted using SPSS version 22 (IBM, 2017) to test the study's hypotheses. From the results above, it is evident that combat exposure moderates only the relationship between one of the resource factors (tangible support as a subscale of interpersonal support) and suicide ideation, while it moderates the relationship between two of the risk factors (alcohol-related problems and PTSD) and suicide ideation. As expected, those with combat exposure show a greater decrease in suicide ideation than those who were not exposed to combat when there is an increase in tangible support. On the other hand, if risk factors are present, like alcohol-related problems or PTSD, and there is an increase in these risk factors, there is greater increase in suicide ideation among those with combat exposure, while for the group who were not exposed to combat, the increase in suicide ideation is smaller.

Chapter 6

Discussion

6.1 Introduction

Global estimates suggest that approximately 1 million people die by suicide annually (WHO, 2002; 2017). Researchers who have studied suicide within the military environment demonstrated that suicidal behaviour is an increasing concern in the militaries among active-duty service members and military veterans (Bryan et al., 2013a; Castro & Adler, 2011). However, it is recognised that suicide is a complex outcome that forms part of the evolutionary process of suicidal behaviour (i.e., ideation, attempt, and death) and a combination of other risk factors (Schlebusch, 2005). Correspondingly, for individuals who engage in suicidal behaviour, "suicide ideation is a necessary step along the pathway from thoughts to attempt to death by suicide" (Vanderploeg et al., 2015, p. 464).

Identifying risk and protective factors that influence suicide ideation in the context of combat and non-combat exposure is a critical step in developing suicide prevention strategies and effective management of individuals who are at risk. Thus, the aim of the current correlation study was twofold; first, to investigate the risk and resource factors that influenced suicide ideation of South African Army Infantry soldiers; and second, to determine if combat exposure, conceptualised as a debilitating and pathogenic stressor that often precipitates the onset or worsening of posttraumatic stress disorder, was a risk factor that moderated the relationship between risk/protective factors and suicide ideation among the sample.

6.2 Recapitulation and Discussion

The results of this study indicate confidence in all measuring instruments used (with the exception of the self-esteem subscale of the Interpersonal Support Evaluation List (ISEL) by demonstrating an acceptable range of alpha coefficients varying between 0.726 and 0.916. On the other hand, the alpha coefficient for self-esteem on the interpersonal support evaluation subscale was below 0.600, which is below the suggested criteria of Nunnally

and Bernstein (1994), who propose a reliability of 0.700 or above as an acceptable value for non-cognitive constructs. Therefore, it was not considered for further analysis.

The incidence of suicide ideation among the soldiers of the South African Army Infantry suggests that the majority of participants (*N = 1462;* 99.1%) had low levels of suicide ideation, while only 13 participants (0.9%) reported to have engaged in at least a medium level of suicide ideation. None of the participants (*N* = 1475) reported experiencing extraordinarily high levels of suicide ideation. Although low prevalence of suicide ideation could be expected for the non-clinical sample (Benson, 2013), the current results were not consistent with the expected outcome depicted by the literature, namely that military active-duty service members are at higher risk for suicide ideation. Given the scarcity of specific data relating to suicide ideation in the South African National Defence Force, it is difficult to compare the low prevalence of suicidal ideation reported by South African Army Infantry soldiers in the current study; hence, the current rates of suicide ideation were compared with those reflected in international studies.

The clear statistically insignificant findings of the current study, in which the majority (99.1%) of SA Army Infantry soldiers were classified within the low suicide risk group, are not supported by findings of previous studies (Benson, 2013; Maguen et al., 2012; Mahon, 2005; Reimann & Mazuchowski; 2018). Authors such as Warnar et al. (2011) and Mitchell et al. (2012) reported a high incidence of suicide ideation (i.e., 4.7% and 4.1% respectively) among active-duty infantry soldiers. Given the account that SA Army Infantry soldiers are exposed to military conditions comparable to those of their international counterparts, these results should be viewed with caution; hence, it is identified as a gap and needs further investigation.

Correspondingly, cumulative data from the Army STARRS further disagree with the current findings, as it was reported that a high prevalence of suicide ideation (i.e., 14.1%, Ursano et al., 2015a) in US Army service members had surpassed the prevalence pertaining to their corresponding civilian counterparts (i.e., 11.7%) (Gadermann et al., 2012, as cited in Ambrose, 2018). According to Nock et al. (2014), the results of the Army STARRS on lifetime prevalence of suicidal behaviour indicate that 13.9% of Army service members had suicide thoughts, 5.3% had suicide plans, and 2.4% had attempted suicide. Furthermore, current findings are not in line with the recent research by Ursano et al.

(2020), who explored risk factors associated with suicide ideation in US Army active duty service members during combat deployment, which confirmed that service members were at higher risk of suicide ideation. They reported that the estimated prevalence of current suicide ideation (i.e., during the past 30 days) was 1.9%, suicide ideation during the past year was3.0%, and suicide ideation during lifetime was 11.7% for the sample.

It is evident from a number of studies that active duty service members are at a heightened risk of experiencing suicide ideation due to exposure to unique military environmental stressors (Black et al., 2011; Ejdesgaard et al., 2015; Griffith, 2012; Harms et al., 2013; Martin et al., 2009; Nock et al., 2013; Pietrzak et al., 2011; Ursano et al., 2016). Military demands such as deployments (combat or non-combat), number of deployments, constant geographical relocations due to functional or operational demands, and demanding physical training require soldiers to adjust and display a high level of combat readiness. This potentially leaves soldiers isolated from significant others who may provide valued social support (Griffith, 2012; Kalamdien & Van Dyk, 2009; Pietrzak et al., 2010). Consequently, poor psychological adjustment may compromise one's ability to cope and thus increases the likelihood of negative feedback from the environment, which may subsequently lead to a negative psychological outcome, including suicide ideation (George, 2005; Nock et al., 2013).

The results of the current study contradict findings reported in literature that suicide ideation is more prevalent among active-duty service members (Ejdesgaard et al., 2015; Nock et al., 2013; Ursano et al., 2016). From the perspective of the suicide continuum, none of the other forms of suicidal behaviour (i.e., attempted suicide and completed suicide) could take place without contemplating and indicating the risk posed by suicide ideation (Nock et al., 2008; Ursano et al., 2015a). However, a number of reasons could explain the high percentage of the SA Army Infantry soldiers who reported a low level of suicide ideation in this study.

First, the low prevalence of suicide ideation among the respondents could be explained by the period on the SSI that asked the soldiers to report on their current suicidal thoughts, current intensity of specific attitudes, behaviour, and plans to commit suicide (Beck et al., 1979; Zhang & Brown, 2007). Benson (2013) state that the use of a measuring tool that measures current suicidal thoughts (i.e., two weeks) is more appropriate in a clinical

sample, whereas in a non-clinical sample, a measuring tool with an extended period (i.e., one year) may be more precise in capturing the prevalence of suicidal thoughts that are more chronic. Thus, the short period specified by the SSI in assessing suicidal thoughts that are more current in a non-clinical sample of SA Army Infantry active-duty service members in the current study may explain potentially why most of the respondents reported experiencing low levels of suicide ideation.

Second, it is possible that recall bias could have affected the respondents in that their accuracy in recollecting past suicidal thoughts was limited. Lovalekar et al. (2017) state that a limitation of a self-report measure is that humans are inherently limited in their ability to recall all information, thus leading to low concurrent validity. Thus, respondents in the current study might have adjusted their behaviour to protect themselves better against suicide ideation to maintain their 'willingness to deploy' status better (Nkewu, 2014, p. 98). According to Bester and Stanz (2007), "willingness to deploy can be described as a state of submission by a soldier in the event of a need to make him-/herself voluntarily available for deployment for peacekeeping and war, even if death is eminent" (as cited in Nkewu, 2014, p. 98). For an SANDF soldier, willingness to deploy is the embodiment of various qualities such as one's loyalty, confidence, devotion, and pride in serving one's nation (Nkewu, 2014).

Third, the negative stigma associated with mental health concerns (including suicide) in the military may have influenced reporting of suicide ideation (Fisher, 2014; Mahon, 2005). In 2014, Fisher conducted a study that sought to explore the perception of risk/protective factors and stigma in the military with regard to suicide from two different samples: veterans and active duty service members. Both samples agreed that the military viewed mental health issues and suicide ideation negatively. Furthermore, the veterans perceived the military as discriminatory and wanting to "sweep mental health issues under the rug" (Fisher, 2014, p. 36).

Ritchie (1997) raised this notion in an earlier study, which concluded that in many militaries, any form of suicidal behaviour (i.e., attempted suicide, or deliberate self-harm) contravened military law; hence, it is a punishable offense. Martin et al. (2009) attest that stigma surrounding the reporting of mental health issues and suicide ideation creates a

barrier toward full disclosure and help seeking. Such barriers seek to exclude and thereby promote a sense of conformity (Fisher, 2014; Mahon et al., 2005).

Finally, given the unspoken military culture, which is based on command and control, underreporting of mental health issues and suicide ideation is informed by the fact that troops feel coerced to undertake any form of assessment (Martin et al., 2009). Since full disclosure may lead to mental health intervention, soldiers fear having a negative health status that could be a hindrance to future deployment opportunities, and they fear that they will be treated differently by leadership and that their peers might lose confidence in them (Hoge et al., 2004; Martin et al., 2009). This could also be a possible explanation for the current results, which has an important implication supporting that stigma in the military has far-reaching consequences. In the next section, I compared the incidence of suicide ideation between the group exposed to combat and the group not exposed to combat in accordance with the second research question.

In investigating the relationship between combat exposure and incidence of suicide ideation among SA Army Infantry soldiers, a statistically significant difference at the 1% level of significance was obtained with regard to suicide risk for participants who had been exposed to combat and those who had not been exposed. According to the results, the majority of active duty service members with combat exposure (63.6%) reported a high level of suicide ideation and were classified within the high-risk group, while active duty service members not exposed to combat reported lower levels of suicide ideation. Furthermore, the mean scores obtained for the group exposed to combat was noticeably higher (2.18) than for the group not exposed to combat (1.47). These results seem consistent with earlier findings (Bryan et al., 2012; 2013a; 2013b; 2014; Vanderploeg et al., 2015) in that deployment to combat-related situations places soldiers at an increased risk for suicidal behaviour compared to those in situations without the threat of direct combat.

This corresponds with previous findings that deployment where there is combat exposure is a strong predictor of suicide ideation among active duty service members (Bryan et al., 2013a; Vanderploeg et al., 2015) and military veterans (Maguen et al., 2012; Sareen et al., 2007). Caceda (2014), Griffith (2012), Maguen et al. (2012), and Vanderploeg et al. (2015) support current findings that traumatic experiences that are

direct consequences of combat, namely uncertainty of death or serious physical injury, exposure to death or injury (i.e., of fellow combatants, enemy soldiers, or civilians), exposure to explosions or explosives, handling of human remains, guilt and shame, as well as killing in combat are associated directly with suicide ideation.

Furthermore, Bryan et al. (2015b) add that other experiences that are related indirectly to combat exposure, such as handling of dead bodies or the wounded by health care professionals, chaplains, mortuary workers, etc., are also associated with suicide ideation. More often than not, the effect of combat exposure is observed among soldiers with posttraumatic stress disorder (PTSD) after combat-related deployment, which is more predictive of suicide ideation (Bryan et al., 2013a; Butterfield et al., 2005). In this study, soldiers without combat exposure reported lower levels of suicide ideation compared to those who had been exposed to combat. However, research indicates that these soldiers (without combat exposure) are not exempted from the risk of suicide ideation related to non-combat deployment factors (i.e., number of deployments, and extended time of isolation from family), military environmental stressors (i.e., repetitive routine work, and boredom), and current stressors (i.e., marital problems or intimate partner problems) (Bryan et al., 2015a).

One way of explaining the high suicide risk for soldiers exposed to combat is by understanding hidden vulnerabilities. Nock et al. (2014) are of the opinion that the interaction of pre-existing vulnerabilities (i.e., a pre-enlistment history of suicidal behaviour, PTSD, depression, or childhood trauma) with military factors (i.e., combat exposure) and current stressors significantly increases the risk of suicide ideation and subsequent suicidal behaviour. Hence, from the clinical perspective, regardless of deployment status, suicide risk assessment should be an ongoing practice in the military, beginning at enlistment and continuing through all stages of deployments (combat and non-combat), also with regard to non-deploying soldiers. Nevertheless, the findings show small practical significance, which implies the results should be viewed with some caution. In the next section, the findings pertaining to risk of suicide ideation posed by exposure to a family member's attempted suicide /death are explored.

Reflecting on the risk of suicide ideation posed by exposure to a family member(s) who attempted/completed suicide, Research Questions 3 and 4 respectively investigated the

relationship between exposure to suicidal behaviour following the death of a family member by suicide or attempted suicide and the levels of suicide ideation, as reported by the sample. The results show a significantly positive relationship between family exposure to suicide (via suicide death or attempted suicide) and levels of suicide ideation. Thus, a statistically significant difference was observed between the groups with medium and low suicide ideation scores on the 1% level of significance [$p < = 0.007$]. From the results, it appears that medium levels of suicide risk were associated with 3.9% of the participants exposed to a family member who had completed suicide, 3.1% of the participants exposed to a family member who had attempted suicide, and 0.7% of the participants who reported no exposure to family suicide

Consistent with expectations, the results of the current study show that participants who had been exposed to suicidal behaviour (i.e., completed suicide or attempted suicide) by one of their family members were at a higher risk of suicide ideation. These results (even though no participants were categorised within the high-risk group) link up with Weissman's (1979) postulation that participants with suicide thoughts must be viewed with serious concern, as any suicidal behaviour does not occur without contemplating.

According to Nock et al. (2013), a family history of suicidal behaviour increases the risk for suicide ideation in their offspring. The reasoning of the social learning perspective (Lester, 1988) allows us to understand suicidal behaviour as a learnt response to stressful situations, thereby reinforcing the notion of it becoming a viable option to those who have been exposed. Earlier, Sletten et al. (1973) found evidence that the suicidal behaviour of a friend or relative provides the basis for learning about the strategy, method, and the effect of the behaviour, which leads to the imitation effect. Bryan et al. (2017) found a strong association of exposure to suicidal behaviour of a family member with suicide ideation among military personnel. Similar to current findings, Bryan et al. (2017) support the idea of family exposure, as participants in their study who perceived themselves as having a close relationship with someone who had completed suicide appeared to be at greater risk for PTSD, depression, suicide ideation, and attempted suicide.

With regard to the contribution of risk and resource factors (predictor variables) that influenced suicide ideation of active duty service members of the SA Army Infantry soldiers, a statistically significant relationship was found with the 11 variables contributing

16% to the variance of suicide ideation. From the 11 predictor variables (see 5.1, Table 10), it was found that the seven resource variables (self-esteem, appraisal, belonging, comprehensibility, manageability, meaning, and tangible support) explained a combined 0.5% of the variance of suicide ideation. The remaining four risk variables (alcohol-related problems, perceived stress, PTSD, and alcohol dependence) significantly explained 15.5% of the variance of suicide ideation of the infantry soldiers under study. However, the practical significance of these findings was small; hence, it was decided to apply a stepwise regression analysis.

In the stepwise regression analysis, the combination of four predictor variables (i.e., alcohol-related problems, PTSD, alcohol dependence, and perceived stress) successfully explained about 15.5% of the total variance of suicide ideation, while the remaining seven variables explained only an additional 0.5%. (This significantly positive result for tangible support [subscale of ISEL] will be discussed later, as it was found significant to a later result as well). The combined variance contribution of the risk variables on suicide ideation was $\geq 14\%$, which is considered a significant amount of variance and implies that risk factors in combination played a significant role in predicting suicide ideation in soldiers. Thus, a positively significant correlation between alcohol-related problems, PTSD, alcohol dependence, perceived stress, and suicide ideation of the current sample (see 5.1 of Table 11) was identified. Considering the effect size ($p = 0.16$), these results were of medium practical significance; hence, they will be discussed in the next paragraph.As a risk variable, the influence of perceived stress seems to have significant implications for soldiers. From the results, it appears that participants were struggling to cope with stressful circumstances brought about by the military environment on the emotional and behavioural level. This implies that soldiers who had been traumatised by military factors, or who perceived their work environments as stressful or felt that they did not receive the necessary support from significant sources in their lives/workplaces showed greater predisposition towards suicidal thoughts. Authors such as Cohen and Syme (1985) and Ursano et al. (2015) seem to support the idea that soldiers are more likely to experience suicide ideation if they perceive their environment as stressful.

Consequently, negative appraisal of a stressful life event is said to be predictive of suicide ideation (Lane et al., 2012). From the findings by Lane et al. (2012), service members reported experiencing a significantly higher level of stress while carrying out

military duties, irrespective of deployment status. They further elaborated that the perception of stress associated with deployment (including upcoming deployment), combat or non-combat situations presents a unique threat to a soldier's well-being, given that it is associated with higher rates of depression symptoms, anxiety symptoms, PTSD, suicide ideation, and attempted suicide .

Moreover, in support of the current results, literature indicates that a combination of stressors in the infantry environment, namely constant geographical relocation that leads to long-term separation from family, little time off, a living environment that lacks privacy, multiple deployments, and social stressors (i.e., family or financial problems) contributes to an inability to cope effectively (Hoge & Castro, 2012; Mash et al., 2014, 2016; Nock et al., 2013). Although such participants are more likely to have a high perceived social support network, they adversely may be at higher risk for suicide behaviour. This may mean psychological intervention that facilitates environmental mastery, such as effective adjustment strategies that will be effective for soldiers to manage their psychological well-being and thus reduce suicidal thoughts.

A significant positive relationship between suicide ideation and risk factors such as alcohol-related problems and alcohol dependence was observed. Given the high perception of stress, this could explain why soldiers opt for ineffective coping strategies such as problematic alcohol consumption leading to alcohol dependence, which significantly increases their risk toward suicide ideation. As a risk factor for suicide ideation, soldiers indulge in high alcohol consumption for reasons such as to avoid social rejection, as they have a strong sense of belonging that predisposes them to an increased risk of developing suicide ideation. Current findings are supported by studies of Bush et al. (2013), Bryan et al. (2015b), Mash et al. (2016), and McLean et al. (2017), who concluded that having PTSD comorbid with other military environmental stressors, demographic risk factors, and psychological traumas predispose individuals to an increased risk of suicide ideation.

The final research question focused on the effect of combat exposure on the relationship between risk and protective variables and the levels of suicide ideation for soldiers who had been exposed to combat situations. A statistically significant result was obtained indicating that combat exposure moderated the relationship between tangible support

(protective variable) and suicide ideation, as well as between suicide ideation and alcohol dependence, alcohol-related problems, and PTSD (risk variables).

From this result, it appears that soldiers who had been in combat situations and still experienced tangible support viewed themselves as having access to physical and material resources provided by others and were less likely to experience suicide ideation; therefore, they were at lower risk for suicide. Therefore, tangible support appears protective in nature, decreasing suicide ideation levels even when soldiers experience stressful circumstances. This is in line with the study by Bryan and Hernandez (2013), who established that tangible support had a buffering effect against suicide ideation among active duty Air Force Security Forces personnel. According to these authors, elevated levels of suicide ideation could be explained by the rapid decline in scores of tangible support interacting with other risk factors (i.e., severe emotional distress).

This significantly negative association between tangible support and suicide ideation in the sample of the current study supports the findings of Ejdesgaard et al. (2015), which allude to the significant contribution of differential elements of social support (including tangible support) in decreasing the risk of suicide ideation. In their study, tangible support was linked more especially to the effectiveness of unit support (i.e., support from fellow soldiers, provision of material and financial resources, and psychological, physical, health, and religious support). This may imply that having a greater sense of tangible support, for instance knowing that I will receive the agreed-upon financial incentives, that my daily needs will be met, my family will have access to medical assistance, and that I have the best equipment available to engage in combat if necessary, leads to a sense of peace and confidence in the mission, which ultimately affects the entire well-being of the group while leaving limited opportunity for suicidal thoughts. Further support for the negative relationship between tangible support and suicide ideation comes from the existing literature (Ambrose, 2018; Ejdesgaard et al., 2015; Pietrzak et al., 2010), which concludes that differential elements of social support (including tangible support) provide a buffering effect against suicide ideation among service members across deployment statuses and in the context of combat exposure.

With regard to risk variables, alcohol-related problems in addition to combat exposure seem to have a significant influence on the risk for suicide ideation. Thus, soldiers in

combat situations whose behaviour is influenced by excessive alcohol consumption, disciplinary issues etc. show a higher predisposition towards suicide ideation. In agreement with the result of the current study, Bush (2013) and Mash et al. (2016) state that psychological and social stressors predominantly inform soldiers' use and abuse of alcohol. In particular, stress level relating to deployments, combat exposure, threat of death or injury, relationship problems, separation from family, marital problems, number of deployments, boredom, and living circumstances with lack of privacy (i.e., little time for individuality) all increase soldiers' vulnerability to suicide ideation.

A more concerning issue is the fact that upon their return from combat situations (post-combat deployment), active duty service members who continue engaging in problematic alcohol consumption are still at higher risk for suicide ideation. Milliken et al. (2007) lend credence to this notion by concluding that approximately 12% of active duty service members present with alcohol-related problems upon return from combat-related deployments, which increases the risk of suicide ideation. The implication of this finding highlights the consequential effects of combat exposure, which cannot be limited merely to deployment situations.

The risk of suicide ideation in the context of alcohol-related problems is exacerbated by social consumption of alcohol in the military (Nock et al., 2013). Specifically, alcohol rations during military functions (both formal and informal functions) could promote dependency, irrespective of deployment status, due to risk factors such as boredom, peer pressure to partake in alcohol, and alcohol use as self-medication to decrease stress (Mash et al., 2016). All these factors contribute to a military culture that appears to promote consistent alcohol consumption unintentionally among some soldiers while increasing the risk of suicide ideation.

This current finding is supported further by a number of researchers who reported on the major contribution of alcohol-related problems (alcohol use disorders and intoxication) towards suicide ideation and subsequent attempted and completed suicides in a military as well as a civilian population (Berglund & Ojehagen, 1998; Bryan et al., 2016; Caceda, 2014; Cohen et al., 2017; LeardMann et al., 2013; Mash et al., 2014, 2016; Milliken et al., 2007; Nock et al., 2013; Pompili et al., 2010). From this result, one could conclude that the ability to control one's alcohol consumption in the context of stressful military life can

allow active duty service members to protect themselves against the recurring need to self-medicate by using alcohol in the effort to reduce distress, which would leave them vulnerable to suicide ideation.

Concerning the psychiatric risk variable, a significantly positive relationship between PTSD and suicide ideation was found. It is evident that soldiers who have been exposed to combat are at a heightened risk of suicide ideation in the presence of posttraumatic stress symptomology. Thus, soldiers deployed in combat situations where they were exposed to traumatic events such as serious injury and death are more likely to develop suicide ideation. Concurring evidence from studies of a number of researchers seems to agree that the presence of PTSD in active duty service members with combat exposure is a significant risk that increases the likelihood of experiencing suicide ideation (Bryan et al., 2013b; 2013c; Vanderploeg et al., 2015).

Additionally, research findings seem to align with the study of Vanderploeg et al. (2015), which demonstrated a significant association between PTSD and suicide ideation for soldiers who were in combat deployment. Moreover, Black (2011) demonstrated that deployment in combat situations increases the risk of post-deployment PTSD and traumatic brain injury (TBI), which are both associated with increased risk of suicide behaviour, for active duty members and veterans. Studies (Black, 2011; Bryan et al., 2013b; 2013c) inadvertently highlight the need for a coordinated and focused approach toward effective health care management of soldiers in their post-combat period. This underlines the need for proactive and post-active interventions that will prepare and support soldiers who have been exposed to combat adequately toward managing post-combat challenges (Lane et al., 2012). From this result, conclusions can be drawn in support of findings by Milliken et al. (2007) that attest to the significance of conducting post-deployment health assessment and post-deployment health re-assessment for active duty service members as well as reserve components. Such assessments could aid to identify individuals who are at risk and present with mental health symptoms, including suicide ideation, for early interventions.

6.3 Summary of Discussion

In summary, results of the current study indicate that the risk factors of perceived stress, alcohol-related problems, alcohol dependence, and PTSD contribute to an increased level of suicide ideation among active duty service members of the South African Army Infantry Corps. Similarly, the significant moderating effect of combat exposure in affecting the levels of suicide ideation in risk variables (i.e., alcohol-related problems, alcohol dependence, and PTSD) and the protective variable (i.e., tangible support) was confirmed. This implies that combat exposure seems to have post-combat consequences that need to be managed carefully. Additionally, the perception that one is supported by others and has access to material resources provided by others (i.e., tangible support) plays a significant role in reducing suicide ideation for an active duty service member with or without combat exposure in the face of risk factors, as indicated in the literature.

Chapter 7

Conclusion: Summary of Research Findings, Limitations and Recommendations

7.1 Introduction

The current chapter is aimed at providing the most significant findings of the current study. Thereafter, the limitations of the study are discussed, recommendations for future studies are made, and the contribution of the study is discussed.

7.2 Generalised Summary of Literature

The previous chapters (Chapters 1 to 6) elaborated on the essential components of this study by outlining the problem of suicidal behaviour in relation to the military population, and the significance of this study in the South African National Defence Force, more specifically in the South African Army Infantry. From the literature, the researcher was able to sketch a broad understanding of suicide risk that is plaguing military organisations around the world. However, it is worth noting that a vast amount of research focuses on completed suicide, which is rather a singular occasion (Griffith, 2012; Kessler et al., 2004; Shelef et al., 2014a). On the contrary, there is still limited data on suicide ideation, and it is even scarcer in the South African context (EbscoHost, Google Scholar, Nexus, 26 April 2019).

Identifying and mitigating psychopathological risk factors is the main focus in many studies. For example, researchers such as Nock et al. (2010, 2013) recognise that psychiatric diagnosis is evident in about 95% of all completed suicides. They conclude that a diagnosis of one or more mental disorder is a significant risk, as it increases the risk for suicidal behaviour of active duty service members. Owing to the scope of work of service members, literature also identifies the contribution of socio-cultural/contextual risk factors such as deployment, combat exposure, access to a firearm, and family stress by virtue of having a member serving in the force, all of which play a significant role in increasing the risk for suicidal behaviour of active duty service members. Interesting findings pertaining to combat exposure indicate that combat exposure may provide a potential pathway toward increased suicide risk by increasing one’s vulnerability through other risk factors, such as

PTSD, depression, aversive childhood trauma, and alcohol and substance abuse, which have been linked significantly to attempted and completed suicide among military personnel (Bryan et al., 2013a; Department of the Army, 2010).

Another important discovery reported by previous studies is the exploration of protective factors that buffer against suicide ideation in active duty military members. The review of literature shows that protective factors are not the most frequented area of study (Bryan et al., 2013a; Ejdesgaard et al., 2015; Nock et al., 2013). Hence, they have an important contribution to make in providing a buffering effect against the adverse effects of suicide risk factors. Suicidal behaviour in the military environment should be prioritised, especially with regard to the effect of harnessing protective factors. According to McLean et al. (2008) and Nock et al. (2013), this will prevent soldiers from being preoccupied with suicidal thoughts when confronted with negative effects of the military environment that have the capacity to erode their ability to cope effectively.

7.2.1 Summary of Empirical Findings

The objective of this study was focused on investigating the relationship between risk/protective factors and suicide ideation in the sample of SA Army Infantry active duty soldiers of the SANDF selected from nine provinces of South Africa. More specifically, the research attempted to answer the following question: *Does combat exposure moderate or mediate the relationship between risk factors/suicide ideation and protective factors/suicide ideation?*

7.2.2 Suicide Ideation

The participants of this study obtained a mean SSI total score of 3.65 and a standard deviation of 6.61 for suicide ideation, which was significantly lower than the scores obtained by the Chinese participants in a study conducted by Zhang and Brown (2007), who reported a mean score of 4.84 and a standard deviation of 5.02 (slightly lower than in the current study). From these scores, it is evident that the current South African military sample reported a low prevalence of suicide ideation. This suggests that the majority of participants (N = 1462; 99.1%) had low levels of suicide ideation, while only 13

participants (0.9%) reported scores indicating a medium level of suicide ideation. None of the participants (N = 1475) reported experiencing high levels of suicide ideation.

Group comparisons of the levels of suicide ideation for those with combat exposure versus those with no combat exposure indicated that the majority of active duty service members with combat exposure (63.6%) reported a high level of suicide ideation and were classified within the high-risk group. while active duty service members not exposed to combat reported lower levels of suicide ideation. Furthermore, the mean scores obtained for the combat exposed group was noticeably higher (M = 2.18; SD = 3.64) than for the participants not exposed to combat (M = 1.47; SD = 2.97). This result seems consistent with earlier findings (Bryan et al., 2012; 2013b; 2013c; 2014a; Vanderploeg et al., 2015) in that deployment in combat-related situations placed soldiers at an increased risk for suicidal behaviour compared to those not deployed in direct combat situations.

7.2.3 Risk Factors and Protective Factors

The main findings of the current study revealed an association of combat exposure with risk factors such as alcohol-related problems, alcohol dependency, PTSD, and suicide ideation, as well as protective properties, more specifically the role of tangible support with regard to suicide ideation. This study indicated that combat exposure had a moderating effect in the relationship between alcohol-related problems, alcohol dependency, PTSD and suicide ideation for soldiers identified as individuals who are at risk (with combat exposure). The buffering effect of tangible support (as a protective factor) in decreasing the risk of suicide ideation for active duty service members with combat exposure was revealed.

Exploration of these relationships made a significant contribution by adding to the body of knowledge on suicide ideation in the SANDF soldiers in terms of (1) risk factors that increase their vulnerability to suicide ideation, (2) protective factors that provide a buffering effect against suicide ideation while improving their psychological well-being, and (3) specifically, aiding policy makers and stakeholders in how to protect soldiers against the scourge of suicide, regardless of deployment status, and/or combat and non-combat exposure.

This study revealed that active duty service members with combat exposure are at a higher risk of suicide ideation, as they are vulnerable to alcohol-related problems and dependency during and after combat-related deployments. Specifically, when these soldiers perceive their environment as stressful and feel not supported in terms of not having access to tangible support such as believing that there is always someone to provide material and physical support or having access to physical and material support whenever necessary, their risk of suicide ideation increases. They have a high propensity for resorting to ineffective coping strategies such as alcohol abuse leading to alcohol dependency. Furthermore, trauma of combat exposure could be exacerbated by lack of tangible support, leading to increased risk of substance abuse, especially in those with PTSD symptomology, depression, and anxiety, which may contribute to them resorting to suicide ideation.

7.2.4 Relating the Findings to the Conceptual Framework

The salutogenic model of health (SMH), also called the salutogenesis model, of Aaron Antonovsky (McGregor, 2017) (see Figure 2) served as the theoretical and guiding model upon which the current study, which investigated the role played by combat exposure in the relationship between risk/protective factors and suicide ideation of active duty service members in the South African Army Infantry of the SANDF, was based. Antonovsky's (1979) salutogenesis model reasons from the premise that people's strength lies in their coping resources that are effective during periods of psychological distress. Thus, the model implies that two core components, namely (1) general resistance resources (GRRs) and general resistance deficits (GRDs) interact to manifest a projected health status along the health ease/dis-ease continuum, as well as (2) a sense of coherence (SOC); a generalised world view that can be understood by its three dimensions – the perception that the world is comprehensible, manageable, and meaningful (see section 3.2.2) (Strümpfer, 1995).

Depending on their resistance resources, individuals will either move toward a more pathogenic or salutogenic state of health. Generalised resistance resources are viewed as protective resources that are aimed at increasing resistance towards pathogenic health states such as high risk for suicide ideation. In this study, appraisal, tangible support, self-esteem, and belonging (as components of Interpersonal Support); comprehensibility,

manageability and meaning (as components of Sense of Coherence) were labelled as GRRs. On the other hand, GRDs (as risk factors) are defined as forces that diminish one's ability to cope with stressors, namely perceived stress, alcohol dependency, alcohol use, alcohol-related problems, and PTSD.

7.2.5 Overview of Results

The study made use of a quantitative design, whereby a scientific research method was employed to ensure validity and reliability in data collection, processing, and interpretation for this study. The current correlation study sought to investigate the extent to which the risk and resource variable explained the variance in suicide ideation. The sample consisted of $N = 1475$ active duty service members of the SA Army, recruited from nine operational Army Infantry units in the nine provinces of South Africa.

From the results, it was discovered that the 11 predictor variables measured, namely perceived stress, PTSD, alcohol dependence, alcohol-related problems, self-esteem, tangible support, belonging, manageability, comprehensibility, meaning, and appraisal, collectively explained 16% in the variance of suicide ideation significant at the 1% level of significance. Specifically, results showed that perceived stress, PTSD, alcohol-related problems, and alcohol dependence were related positively to suicide ideation, as they significantly explained 15.5% of the variance of suicide ideation. Thus, it was established that there is a positively significant correlation between suicide ideation and alcohol-related problems, PTSD, alcohol dependence, perceived stress. On the other hand, the seven resource variables (self-esteem, appraisal, belonging, comprehensibility, manageability, meaning, and tangible support) explained a combined 0.5% of the variance of suicide ideation. Of these resource variables, tangible support was found to have a significant contribution; it was associated negatively with suicide ideation. This implies that having a greater sense of tangible support (material and physical resources) leads to a sense of peace and confidence in the mission, which ultimately affects the entire well-being of the group while leaving limited opportunity for suicidal thoughts.

7.2.6 Reflecting on Application of the Model

In applying this model, the researcher needed to understand if sense of coherence (SOC) measured in terms of its components had a buffering effect on the suicide ideation of SA Army Infantry soldiers by examining the interaction of risk factors (GRDs)/protective factors (GRRs) and suicide ideation in soldiers with combat exposure. The findings of this study did not support the association between SOC and suicide ideation. There was no strong significant association between components of SOC with suicide ideation. Stepwise regression analysis was conducted, and findings indicated that combat exposure did not moderate the relationship between suicide ideation and manageability, comprehensibility, and meaningful (subscales of SOC).

Theoretical connections between SOC and suicide ideation could be supported by the literature; hence, this model was useful in addressing variables of the study. Conversely, although none of the subscales of SOC indicated a significant positive association with suicide ideation, the current study found a significant interactional correlation with tangible support (subscale of interpersonal support as a GRD), which can indicate the buffering effect of SOC. In essence, when individuals have had an encounter with stressors (i.e., GRDs) that required them to use their coping resources (i.e., GRRs), sense of coherence enables them to reach out in any given situation and utilise those resources accordingly, irrespective of what the stressor might be. For instance, in the military situation, a soldier may experience a traumatic event (i.e., combat exposure) such as having killed other combatants, being ambushed, or facing the harshness and cruelty of warfare. In such instances, a soldier with a high sense of coherence would try to make sense of the situation and apply SOC components (meaning, comprehensibility, and manageability) to the situation. This can lead to achieving successful coping due to the person's unique orientation. Given this context, a strong sense of coherence develops, which aids the belief in the availability of sufficient resources to cope with life stressors; hence, the importance of tangible support (Vinje et al., 2016). On the other hand, a soldier with a low sense of coherence might perceive the experience negatively and might even develop self-blame or survivor guilt (Benson, 2013). Consequently, to test the effects of this conceptual model properly, future research should consider investigating the same variables and their correlational influence with different samples, or in terms of gender, or on a larger scale (see the section on recommendations).

7.3 Limitations

The limitations of this study should be read with utmost consideration, as they indicate the need for further exploration of the topic. Consequently, it allows acknowledgement that the results are neither incontrovertible nor vulnerable to explanation.

The study was limited to SA Army Infantry soldiers; although it is representative of the Infantry Corps, it did not include other components of the SANDF. The participants in the study were obtained from their respective operational units, where they completed self-report questionnaires during working hours. Although voluntary participation was emphasised frequently, some might have felt compelled or coerced to participate, as it was during working hours and under the command and control of their senior commanders. Future studies may consider online participation to avoid this limitation and increase reliability and validity of data collected.

Another challenge can be linked to soldiers' health status (i.e., G-1/K-1, which implies good health and deployable) which, if changed, would affect their deployability. Hence, participants might not have disclosed fully. While the assurance of confidentiality in the group context was re-emphasised frequently, this may not have been sufficient to allay concerns of the participants regarding how the data might be subsequently used.

An alternative research approach can be considered with follow-up research. A longitudinal design would allow for follow-up data collection to allow for observation of developmental trends over time, more especially when participants realise that they remain protected in the group context.

The negative stigma associated with psychological assessments was recognised as a limitation, as other participants indicated that having to partake in such an assessment will result in their being labelled as "mad" or 'unfit for deployment'. Therefore, more psycho-education programmes should be prioritised to eradicate stigma associated with mental illness and increase awareness, thus encouraging help-seeking behaviour.

The appropriateness of the measuring instruments in providing rich quantitative data is highly recognised, however, several limitations are noted. First, the study design relied

exclusively on self-report measures which deprived a qualitative understanding. It is possible that some soldiers would have provided more reliable and valid information if they afforded unstructured interview approach. Second, the PCL-C was used as research demonstrated good psychometric support and is a brief measure assessing trauma related symptoms. Yet, the limitation of this measure is that it is not standardised for the South African context. The use of instrument contextualised for South African participants may offer a richer and more relevant data. Thirdly, combat related trauma (combat exposure) is not specified by this measure. Hence, a more precise measure of combat exposure [i.e.,Combat Experiences Scale (CES)] is recommended for future studies to be used with PTSD *Checklist-Civilian Version (PCL-C*) or the *Checklist-Military Version (PCL-M)* (Weathers et al., 1993). A fourth limitation is, the PCL-C relied on the soldiers' perceived severity of distress related to combat experiences making it difficult to differentiate what could be factual and perceived severity of their combat experiences.

Exclusion of soldiers who form part of the Military Skills Development System was recognised as a limitation, as they possess deployment experiences, while some also had combat exposure.

7.4 Recommendations

Although participants in the current study did not report experiencing extremely high levels of suicide ideation, this study indicated that unique military environmental factors and individuals' factors increase the risk of suicide ideation, which is often the first step towards suicidal behaviour that is more fatal, such as attempted suicide and subsequently completed suicide (Nock et al., 2013; Schlebusch, 2005). Therefore, it is recommended that unit commanding officers ensure that members exposed to combat are identified and encouraged to attend debriefing sessions upon their return from combat deployments. A proper referral procedure to refer individuals who have been identified as are at risk to health care professionals should be adhered to.

Furthermore, it is recommended that in order to promote healthy readjustment, family involvement and support from fellow soldiers should be encouraged in psycho-education programmes in order to (1) decrease feelings of isolation, (2) increase awareness and understanding of a soldier's needs such as mental health, (3) increase help-seeking

behaviour, and (4) reduce stigma; thus, reducing the risk of suicide ideation. These psychoeducational programmes should focus on teaching families and friends the importance of social support (more especially *tangible support*) before, during and after deployment in decreasing incidence of suicide ideation among active duty service members. In addition, good readjustment programmes following the period of deployment should also include repatriated members. Members who are encountering readjustment difficulties and those with mental health problems, including alcohol-related problems, could be encouraged to seek psychological assistance to reduce the adverse effect of risk factors (i.e., alcohol-related problems and PTSD) that increase the risk of suicide ideation.

Further research to explore the effects of combat exposure on the suicide risk of active duty service members is essential, more specifically to explore the studied variables in different samples of deployed and non-deployed members, as well as members exposed and not exposed to combat, in other branches of the SANDF (i.e., Navy, Air Force, South African Medical Health Services). Gender differences with regard to all these variables and situations can also be explored. Moreover, there is a need for qualitative studies to augment the findings of the current study to understand the lived experiences of combat exposed soldiers; their use of resources; their exposure to risk factors; their coping strategies; and the nature of their suicide ideation.

7.5 Contributions of This Study

This study makes an original contribution to the psychological understanding of suicide risk in the military contexts in two folds namely: (i) the Salutogenic approach of the study as it provides more than just reactive / corrective guidelines for mental health in the military context. (ii) the elegant way in which appropriate variables (risk and resource factors) were combined in a statistical model to determine the nature of suicide risk in the military context. The current study is the first of its kind to be conducted in the SANDF among SA Army infantry soldiers of nine operational units in the nine provinces of South Africa. This study has been invaluable by providing initial data on the suicide ideation of active duty service members of the SA Army Infantry Corps. Future studies can build upon it by expanding on the topic and by exploring psycho-social experiences of soldiers with regard to suicide ideation immediately before deployment and immediately after deployment at mobilisation and demobilisation centres.

The most important contribution of this study is the adoption of the health promotion approach (salutogenesis approach) in understanding the problem of suicide in the SANDF. This emphasises the importance of preventative interventions across deployment statuses (before, during and after deployment), by understanding the psychosocial risk factors that promote negative outcomes associated with suicide ideation while promoting protective factors that enhance strength within an individual. Furthermore, this study underlines the importance of protective factors such as tangible support, which promotes healthy readjustment to unit and civilian life after deployment (combat and non-combat deployment). Additionally, this research revealed that irrespective of deployment status and combat or non-combat exposure, service members are at risk of suicide ideation due to unique military-specific environments; hence, protective factors such as tangible support can be used to enhance effective coping while decreasing dysfunctional coping through problematic alcohol use leading to alcohol-related problems, dependency and eventually suicide ideation.

Reference List

Adewuya, A. O. (2005). Validation of the Alcohol Use Disorders Identification Test (AUDIT) as a screening tool for alcohol-related problems among Nigerian university students. *Alcohol and Alcoholism, 40,* 575-577.

Armed Forces Health Surveillance Center (AFHSC). (2012). Deaths while on active duty, active and reserve force components-U.S. Armed Forces 1998-2011. *Medical Surveillance Monthly Report*, *19*(6), 7-10. http://www.health.mil/Military-Health-Topics/Health-Readiness/Armed-Forces-Health-Surveillance-Branch/Reports-and-Publications/Medical-Surveillance-Monthly-Report.

Aftyka, A., Rozalska, I., Pawlak, A., Mazur, A., Bednarek, A., & Zarzycka, D. (2019). Internal consistency and accuracy of Interpersonal Support Evaluation List (ISEL-40) in mothers of healthy children and those with a medical history. *Annals of Agricultural and Environmental Medicine*, *26*(1), 85-91.

Aldwin, C. M., Levenson, M. R., & Spiro, A. (1994). Vulnerability and resilience to combat exposure: Can stress have lifelong effects? *Psychology and Aging*, *9*(1), 34-44.

Allan, A. (2011). *Law and ethics in psychology: An international perspective* (2nd ed.). Inter-Ed.

Alvarez, A. (1972). *The savage god: A study of suicide.* New York: Random House.

Ambrose, J. F. (2018). *Gender, social support, and resiliency in suicidal ideation among U.S. Army soldiers* [Doctoral dissertation]. Walden University. https://scholarworks.waldenu.edu/dissertations/ 5444/

American Psychological Association (APA) (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). DSM-5. American Psychological Association.

Amone-P'Olak, K., Ovuga, E., Croudace, T. J., Jones, P. B., & Abbott, R. (2014). The influence of different types of war experiences on depression and anxiety in a Ugandan cohort of war-affected youth: The WAYS study. *Social Psychiatry and Psychiatric Epidemiology*, *49*(11), 1783-1792.

Antonovsky, A. (1979). *Health, stress and coping: New perspectives on mental and physical wellbeing.* Jossey-Bass.

Antonovsky A. (Ed.) (1984). The sense of coherence as a determinant health. In J. Matarazzo (ed.), *Behavioral health: A handbook of health enhancement and disease prevention* (pp. 114-29). John Wiley.

Antonovsky, A. (1987a). The salutogenic perspective: Toward a new view of health and illness. *Advances, 4*(1), 47-55.

Antonovsky, A. (1987b). *Unraveling the mystery of health: How people manage stress and stay well.* Jossey-Bass.

Antonovsky, A. (1993). The structure and properties of the Sense of Coherence Scale. *Social Science and Medicine, 36*(6), 725-733.

Antonovsky, A. (1996). The salutogenic model as theory to guide health promotion. *Health Promotion International, 11*(1), 11-18.

Antonovsky, A. (2005). *Hälsans Mysterium. Natur och kulturs psykologiklassiker, Bokförlaget Natur och kultur*. Author.

Antonovsky, A., Maoz, B., Dowty, N., & Wijsenbeek, H. (1971). Twenty-five years later: A limited study of the sequelae of the concentration camp experience. *Social Psychiatry, 6*(4), 186-193.

Apter, A., Bleich, A., King, R. A., Kron, S., Fluch, A., & Cohen, D. J. (1993). Death without warning? A clinical post-mortem study of suicide of 43 Israeli adolescent males. *Archives of General Psychiatry 50*, 138-142.

Apuke, O. D. (2017). Quantitative research methods: A synopsis approach. *Kuwait Chapter of Arabian Journal of Business and Management Review, 33*(5471), 1-8.

Armstrong, L. L., & Manion, I. G. (2013). Meaningful youth engagement as a protective factor for youth suicidal ideation. *Journal of Research on Adolescence, 25*(1), 20-27.

Arnett, J. J. (1994). Are college students adults? Their conceptions of the transition to adulthood. *Journal of Adult Development, 1*(4), 213-224.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469-480.

Arnett, J. J. (2004). *Emerging adulthood: The winding road from late teens through the twenties*. Oxford University Press.

Asante, K. O., & Meyer-Weitz, A. (2015). International note: Association between perceived resilience and health risk behaviours in homeless youth. *Journal of Adolescence, 39*, 36-39.

Associate databases. (2018, August 06) EbscoHost, Google Scholar, Nexus, NiPAD. https://libguides.unisa.ac.za/howtosearch/ebsco

Associate databases. (2019, April 26). EbscoHost and associate databases, Google Scholar, Nexus. https://libguides.unisa.ac.za/howtosearch/ebsco

Atwoli, L., Stein, D. J., Williams, D. R., Mclaughlin, K. A., Petukhova, M., Kessler, R. C., & Koenen, K. C. (2013). Trauma and posttraumatic stress disorder in South Africa: Analysis from the South African stress and health study. *BioMed Central Psychiatry, 13*(182), 1-12.

Azrael, D., & Miller, M. J. (2016). Reducing suicide without affecting underlying mental health. *The International Handbook of Suicide Prevention* (2nd ed., pp. 637-662). Wiley.

Babbie, E. R. (2010). *The practice of social research*, (12th ed.). Belmont: Wadsworth Cangage Learning.

Babbie, E., & Mouton, J. (1998). *The practice of social research*. Oxford University Press.

Badr, H., Barker, T. M., & Milbury, K. (2011). Couples' psychosocial adaptation to combat wounds and injuries. In S. MacDermid-Wadsworth & D. Riggs (Eds.), *Risk and resilience in U.S. military families* (pp. 213-234). Springer.

Baechler, J. (1980). A strategic theory. *Suicide and Life-Threatening Behavior, 10*(2), 70-99.

Bailey, K. D. (1978). *Methods of social research* (3rd ed.). The Free Press.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173-1182.

Bartone, P. T. (1998). Stress in the military setting: In C. Cronin (Ed.), *Military Psychology: an Introduction* (pp. 113-146). Simon & Schuster.

Barzilay, S., & Apter, A. (2014). Psychological models of suicide. *Archives of Suicide Research*, *18*(4), 295-312.

Baumeister, R. F. (1990). Suicide as escape from self. *Psychological Review*, *97*(1), 90-113.

Beck, A. T., Kovacs, M., & Weissman, A. (1979). Assessment of suicidal intention: The scale for suicide ideation. *Journal of Consulting and Clinical Psychology*, *47*, 343-352.

Becker, L. (2005). *Working with groups*. Oxford University.

Benson, M. K. (2013). *Suicide Resilience among Operation Enduring Freedom and operation Iraqi Freedom Veterans: Sense of Coherence as a Moderator of the Relationship Between Traumatic Experiences and Suicidality* [Doctoral dissertation, University of Akron]. The Graduate Faculty of the University of Akron.

Bentley, K. H., Franklin, J. C., Ribeiro, J. D., Kleiman, E. M., Fox, K. R., & Nock, M. K. (2016). Anxiety and its disorders as risk factors for suicidal thoughts and behaviours: A meta-analytic review. *Clinical Psychology Review*, *43*, 30-46.

Berglund, M., & Ojehagen, A. (1998). The influence of alcohol drinking and alcohol use disorders on psychiatric disorders and suicidal behavior. *Alcoholism: Clinical and Experimental Research*, *22*, 333s-345s.

Bester, P. C., & Stanz, K. J. (2007). The conceptualisation and measurement of combat readiness for peace-support operations: An exploratory study. *South African Journal of Industrial Psychology*, *33(*3), 68-78.

Black, S. A., Gallaway, M. S., Bell, M. R., & Ritchie, E. C. (2011). Prevalence and risk factors associated with suicide of Army soldiers in 2001-2009. *Military Psychology*, *23*, 433-451.

Bradatan, C. (2007). About some 19th-century theories of suicide: Interpreting suicide in an East European country. *International Journal of Comparative Sociology*, *48*(5), 417-432.

Bodner, E., Ben-Artzi, E., & Kaplan, Z. (2006). Suicide who kill themselves: The contribution of dispositional and situation factors. *Archives of Suicide Research, 10*(1), 29-43.

Brundage, J. F., & Rubertone, M. V. (2015). Medical Surveillance Monthly Report (MSMR). The first 20 years. *MCMR*, *22*(4) 1-35.

Bryan, C. J., Bryan, A. O., May, A. M., & Klonsky, E. D. (2014a). Trajectory of suicide ideation, non-suicidal self-injury, and suicide attempts in a nonclinical sample of military personnel and veterans. *The Journal of the American Association of Suicidology*, 01 – 11.

Bryan, C. J., Bryan, A. O., Ray-Sannerud, B. N., Etienne, N., & Morrow, C. E. (2014b). Suicide attempts before joining the military increase risk for suicide attempts and severity of suicidal ideation among military personnel and veterans. *Comprehensive Psychiatry*, *55*, 534-541.

Bryan, C. J., Butner, J. E., Sinclair, S., Bryan, A. B. O., Hesse, C. M., & Rose, A. E. (2017). Predictors of emerging suicide death among military personnel on social media networks. *Suicide and Life-Threatening Behavior*, *48*, 413-430.

Bryan, C. J., Clemans, T. A., & Hernandez, A. M. (2012). Perceived burdensomeness, fearlessness of death, and suicidality among deployed military personnel. *Personality and Individual Differences*, *52*(3), 374-379.

Bryan, C. J., & Corso, K. A. (2011). Depression, PTSD, and suicidal ideation among active duty veterans in an integrated primary care clinic. *Psychological Services*, *8*(2), 94-103.

Bryan, C. J., Cukrowicz, K. C., West, C. L., & Morrow, C. E. (2010). Combat experience and the acquired capability for suicide. *Journal of Clinical Psychology, 66*(10), 1044-1056.

Bryan, C. J., Garland, E. L., & Rudd, M. D. (2016). From impulse to action among military personnel hospitalized for suicide risk: Alcohol consumption and the reported transition from suicidal thought to behavior. *General Hospital Psychiatry, 41*, 13-19.

Bryan, C. J., Hernandez, A. M., Allison, S., & Clemans, T. (2013). Combat exposure and suicide risk in two samples of military personnel. *Journal of Clinical Psychology, 66*(1), 64-77.

Bryan, C. J., & Hernandez, A. M. (2013). The functions of social support as protective factors for suicidal ideation in a sample of Air Force personnel. *The American Association of Suicidology, 43*(5), 562-573.

Bryan, C. J., Morrow, C. E., Etienne, N., & Ray-Sannerud, B. N. (2013a). Guilt, shame, and suicidal ideation in a military outpatient clinical sample. *Depression and Anxiety, 30*, 55-60.

Bryan, C. J., Ray-Sannerud, B., & Heron, E. A. (2015a). Psychological flexibility as a dimension of resilience for posttraumatic stress, depression, and risk for suicide ideation among Air Force personnel. *Journal of Contextual Behavioural Science, 4*, 263-268.

Bryan, C. J., Ray-Sannerud, B., Morrow, C. E., & Etienne, N. (2013b). Guilt is more strongly associated with suicidal ideation among military personnel with direct combat exposure. *Journal of Affective Disorders, 148*, 37-41.

Bryan, C. J., Ray-Sannerud, B., Morrow, C. E., & Etienne, N. (2013c). Optimism reduces suicidal ideation and weakens the effect of hopelessness among military personnel. *Cognitive Therapy Research, 37*, 996-1003.

Bryan, C. J., Roberge, E., Bryan, A. O., Ray-Sannerud, B. N., Morrow, C. E., & Etienne, N. (2015b). Guilt as a mediator of the relationship between depression and posttraumatic stress with suicide ideation in two samples of military personnel and veterans. *International Journal of Cognitive Therapy, 8*(2), 143-155.

Bryan, C. J., & Rudd, M. D. (2012). Life stressors, emotional distress, and trauma-related thoughts occurring in the 24 hours preceding active duty US Soldiers' suicide attempts. *Journal of Psychiatric Research, 46*(7), 843-848.

Bush, N. E., Reger, M. A., Luxton, D. D., Skopp, N. A., Kinn, J., Smolenski, D., & Caine, E. D. (2013). Forging an agenda for suicide prevention in the United States. *American Journal of Public Health, 103*(5), 822-829.

Bush, N. E., Skopp, N. A., McCann, R., & Luxton, D. D. (2011). Posttraumatic growth as protection against suicidal ideation after deployment and combat exposure. *Military Medicine, 176*(11), 1215-1222.

Bush, T. (2015). *The unwounding of U.S. service men and women: To end suicidal tendencies*. Bound to Heaven Publishing/Ministries

Butterfield, M. I., Stechuchak, K. M., Connor, K. M., Davidson, J. R., Wang, C., MacKuen, C. L., & Marx, C. E. (2005). Neuroactive steroids and suicidality in posttraumatic stress disorder. *American Journal of Psychiatry*, *162*(2), 380-382.

Caceda, R. (2014). Suicidal behaviour: Risk and protective factors. *Review of Neuropsychiatry, 77*(1), 3-13.

Career-Cast. (2013). *The 10 most stressful jobs of 2013*. https://www.careercast.com/jobs-rated/10-most-stressful-jobs-2013.

Career-Cast. (2019). *2019 Most stressful jobs*. https://www.careercast.com/jobs-rated/most-stressful-jobs-2019.

Carver, C. S., & Scheier, M. F. (2014). Dispositional optimism. *Trends in Cognitive Sciences*, *18*(6), 293-299.

Casey, G. W. (2011). Comprehensive soldier fitness: A vision for psychological resilience in the US army. *American Psychologist*, *66*(1), 1-3.

Castro, C. A., & Adler, A. B. (2011). *Re-conceptualizing combat-related posttraumatic stress disorder as an occupational hazard*. In A. B. Adler, P. D. Bliese, & C. A. Castro (Eds.), *Deployment psychology: Evidence-based strategies to promote mental health in the military* (pp. 217–242). Washington, DC: American Psychological Association. http://dx.doi.org/10.1037/ 12300-009.

Castro, C. A., & McGurk, D. (2007). The intensity of combat and behavioural health status. *Traumatology*, 13, 6-23.

Castro, C. A., & Kintzle, S. (2014). Suicide in the military: The post-modern combat veteran and the Hemingway effect. *Current Psychiatry Reports*, *16*(460), 01-09.

Centers for Disease Control and Prevention. (2010). *National Center for Injury Prevention and Control. Web based Injury Statistics Query and Reporting System* (WISQARS). http://www.cdc.gov/injury/wisqars/index.htm.

Centers for Disease Control and Prevention. (2008). *Youth risk behavior surveillance United States, 2007: Surveillance Summaries. Morbidity and Mortality Weekly Report, 57*(4). http://www.cdc.gov/mmwr/PDF/ss/ss5704.pdf.

Cohen, A., Osorio R., Page L. M. (2017): Substance misuse in pregnancy. Obstetrics, *Gynaecology & Reproductive Medicine*, 27, 316-321.

Cohen, S. E., & Syme, S. L. (1985). *Social support and health*. Academic Press.

Cohen, S., & Hoberman, H. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology*, *13*, 99-125.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*, 385-396.

Compton, M. T., Thompson, N. J., & Kaslow, N. J. (2005). Social environment factors associated with suicide attempt among low-income African Americans: The protective role of family relationships and social support. *Social Psychiatry and Psychiatric Epidemiology*, *40*, 175-185.

Connell, M. A., Omole, O. Subramaney, U., & Olurunju, S. (2013). Posttraumatic stress disorder and resilience in veterans who served in the South African border war. *African Journal of* Psychiatry, 16(6). doi: 10.4314/ajpsy.v16i6.55.

Conner, K. R., Britton, P. C., Sworts, L. M., & Joiner, T. E., Jr. (2007). Suicide attempts among individuals with opiate dependence: The critical role of belonging. *Addictive Behaviours*, *32*, 1395–1404.

Corey, G., Corey, M., & Callanan, P. (2011). *Issues and ethics in the helping professions* (8th ed.). Brooks/Cole, Cengage Learning.

Cornum, R., Matthews, M. D., & Seligman, M. E. P. (2011). Comprehensive soldier fitness: building resilience in a challenging institutional context. *American Psychologist, 66*(1), 4-9.

Creswell, J. (2002). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research.* Prentice Hall.

Creswell, J. (2003). *Research design: Qualitative, quantitative and mixed methods approaches* (2nd ed.). SAGE Publications.

Creswell, J. W., & Tashakkori, A. (2007). Developing publishable mixed methods manuscripts. *Journal of Mixed Methods Research, 1*(2), 107-111.

Daeppen, J., Yersin, B., Landry, U., Pecoud, A., & Decrey, H. (2000). Reliability and validity of the Alcohol Use Disorders Identification Test (AUDIT) imbedded within a general health risk screening questionnaire: results of a survey in 332 primary care patients *Alcoholism Clinical and Experimental Research, 24*, 659–665.

Dalenberg, S., & Op den Bruijs, T. (2013). *Military socialization effects and effective leadership behavior in operations* [Doctoral project]. https://www.researchgate.net/publication/262735105.

Danigelis, N., & Pope. W. (1979). Durkheim's theory of suicide as applied to the family: An empirical test. *Social Forces, 57*, 1081-1106.

Davidowitz, B., & Schreiber, B. (2008). Facilitating adjustment to higher education: towards enhancing academic functioning in an academic development programme. *South African Journal of Higher Education, 22*(1), 191 - 206. doi:10.4314/sajhe.v22i1.25781.

De Beer, M., & Van Heerden, A. (2014). Exploring the role of motivational coping resources in a Special Forces selection process. *South African Journal of Industrial Psychology, 40*(1), 1-13.

De Leo, D., Burgis, S., Bertolote, J., Kerkhof, A., & Bille-Brahe, U. (2006). Definitions of suicidal behaviour: Lessons learned from the World Health Organisation/EURO Multicentre Study. *Crisis, 27*, 4-15.

Democratic Control of Armed Forces (DCAF). 2015. *Policy Paper - No 36 Parliaments and National Strategy Documents*: A comparative case-study from the Nordic region. https://www.dcaf.ch/sites/default/files/publications/documents/PP36_Bailes_FINAL_web_v2.pdf.

Defence Force Policy. (1996). Constitution of the Republic of South Africa, No 108 of 1996. *Government Gazette*, *378*(2083), 01-148. file:///C:/Users/cash/Desktop/CURRENT%20DESK/Referee/Constitution-of-the-Republic-of-South-Africa-Act-108-of-1996.pdf.

Defence Intelligence (DI) Security Instruction. (2011). *Guidelines for research making submissions to directorate psychology*. The South African Military Health Service.

Deković, M. (1999). Risk and protective factors in the development of problem behavior during adolescence. *Journal of Youth and Adolescence*, *28*(6), 667-685.

Department of Defence (DoD) Annual Suicide Report (ASR). (2018). *Annual suicide report: Calendar Year 2018*. https://www.dspo.mil/Portals/113/2018%20DoD%20Annual%20Suicide%20Report_FINAL_25%20SEP%2019_508c.pdf.

Department of Defence. (2016). *White Paper – Defence industry policy statement.* https://www.defence.gov.au/whitepaper/Docs/2016-Defence-Industry-Policy-Statement.pdf.

Department of Defense. (2016). *"DOD Dictionary of Military and Associated Terms*." https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/dictionary.pdf

Department of Defence. (2012). *Department of Defence Instruction Policy and Plans 00008/1999 (Edition 4): Policy on the Development, Promulgation and Maintenance of Defence (Level 1) Instructions.* Defence Policy, Strategy and Planning Division. https://core.ac.uk/download/pdf/37420479.pdf.

Department of Defense Task Force on the Prevention of Suicide by Members of the Armed Forces. (2010). *The challenge and the promise: Strengthening the force, preventing suicide, and saving lives.* USA Department of Defense.

Department of the Army. (2010). *Army Health Promotion, Risk Reduction, Suicide Prevention Report 2010*. http://csf2.army.mil/downloads/hp-rr-spreport2010.pdf.

Department of Veterans Affairs. (2010). Suicide prevention. Retrieved from http://www.mentalhealth.va.gov/suicide_prevention/

Department of Defense Suicide Event Report (DODSER). (2013). – *Calendar Year 2013 Annual Suicide Report.* https://www.dspo.mil/ Portals/113/Documents/2013-DODSER-Annual-Report.pdf.

Desseilles, M., Perroud, N., Guillaume, S., Jaussent, I., Genty, C., Malafosse, A., & Courtet, P. (2012). Is it valid to measure suicidal ideation by depression rating scales? *Journal of Affective Disorders, 136*(3), 398-404.

Directorate South African Army Human Resource. (2020). *Military Skills Development System (MSDS).* https://www.westerncape.gov.za/general-publication/military-skills-development-system-msds.

Durkheim, E. (1897/1951). *Suicide: A study in sociology* (J.A. Spaulding & G. Simpson, Trans.). The New Free Press (Original work published in 1897).

Durkheim, E. (1966). *Suicide.* (J. A. Spaulding & G. Simpson, Trans.). The Free Press.

EbscoHost and associate databases, Google Scholar, Nexus, NiPAD, 06 August, 2018.

EbscoHost and associate databases, Google Scholar, Nexus, 26 April 2019.

Ejdesgaard, B. A., Zöllner L., Jensen, B. F., Jorgensen, H., & Kahler, H. (2015). Risk and protective factors for suicidal ideation and suicide attempts among deployed Danish soldiers from 1990 to 2009. *Military Medicine, 180*(1), 61-67.

Elder, G. H., & Clipp, E. C. (1989). Combat experience and emotional health: Impairment and resilience in later life. *Journal of Personality*, 57(2), 311-341.

Engelbrecht, L. (2010). *Fact file: The SA Infantry Corps.* https://www.defenceweb.co.za/ resources/fact-files/fact-file-the-sa-infantry-corps/

Erbes, C. R., Arbisi, P. A., Kehle, S. M., Ferrier-Auerbach, A. G., Barry, R. A., & Polusny, M. A. (2011). The distinctiveness of hardiness, positive emotionality, and negative

emotionality in National Guard soldiers. *Journal of Research in Personality*, *45*, 508-512.

Everett, J. A. C. (2013). The 12 Item Social and Economic Conservatism Scale (SECS). *PLoS ONE, 8*(12), 82-131. https://doi.org/10.1371/journal.pone.0082131.

Fergusson, D. M., & Lynsky, M. T. (1995). Suicide attempts and suicidal ideation in a birth cohort of 19-year old New Zealanders. *Journal of American Academic Child Adolescent Psychiatry*, *34*, 1308-1317.

Fisher, N. G. P. (2014). *Risk and protective factors: Suicide in the military* [Master's thesis]. St. Catherine University.

Freud, S. (1916). Über Triebumsetzungen insbesondere der Analerotik. *Internationale Zeitschrift für Psychoanalyse*, *4*(3), 125-130.

Freud, S. (1920). *A general introduction to psychoanalysis*. Createspace Independent Publishing Platform.

Freud, S. (1963). 'Mourning and melancholia'. In J. Strachey (Ed.), *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, Vol. 14. Hogarth.

Geneva Centre for the Democratic Control of Armed Forces (DCAF). 2015. *Policy Paper - No 36 Parliaments and National Strategy Documents*: *A comparative case-study from the Nordic region*. https://www.dcaf.ch/sites/default/files/publications/documents/PP36_Bailes_FINAL_web_v2.pdf.

George, A. A., & Mbhele, P. E. (2017). Parental employment status in the relationship between traumatic exposure and adolescent suicide risk. *Southern African Journal of Social Work and Social Development*, *29*(2), 1-19.

George, A. A., & Van den Berg, H. S. (2012). The influence of psychosocial variables on adolescent suicidal ideation. *Journal of Child and Adolescent Mental Health, 24*(1),45-57.

George, A. A. (2005). *The influence of psychosocial factors and resources on suicidal ideation of adolescents* [Master's thesis]. University of Free State.

George, A. A. (2009). *Risk and resilience in adolescent suicidal ideation* [Doctoral dissertation]. University of the Free State.

Gomes, A. P., Soares, A. L. G., Kieling, C., Luis Augusto Rohde, L. A., Gonçalves, H. (2019). Mental disorders and suicide risk in emerging adulthood: The 1993 Pelotas birth cohort. *Rev Saude Publica*, *53*(96), 01-11.

Gradus, J. L., Street, A. E., Suvak, M. K., & Resick, P. A. (2013). Predictors of suicidal ideation in a gender stratified sample of OEF/OIF veterans. *Suicide & Life-threatening Behaviour*, *45*, 574-588.

Griffith, J., & West, C. (2013). Master resilience training and its relationship to individual well-being and stress buffering among Army National Guard soldiers. *The Journal of Behavioral Health Services & Research*, *40*(2), 140-155.

Griffith, J. (2012). Suicide in the Army National Guard: An empirical inquiry. *Suicide and Life-Threatening Behavior*, *42*(1), 104-119.

Halik, M., Wider, W., Mustapha, M., Japil, A. R. (2019). Exploring the emerging adulthood experiences among young adults in Sabah, Malaysia: a preliminary study. *GESJ: Education Science and Psychology*, *2*(52), 13-25.

Harandi, T. F., Taghinasab, M. M., & Nayeri, T. D. (2017). The correlation of social support with mental health: A meta-analysis. *Electronic Physician*, *9*(9), 5212-5222.

Harms, P. D., Krasikova, D. V., Vanhove, A. J., Herian, M. N., & Lester, P. B. (2013). Stress and emotional well-being in military organisations. *Research in Occupational Stress and Well Being*, *11*, 103-132.

Harris, E. C., & Barraclough, B. (1997). Suicide as an outcome for mental disorders. A meta-analysis. *British Journal of Psychiatry*, *170*(3), 205-228.

Health Care Activity and Medical Stays, Suicide Report (HCASUICI), 1 January 2004 until 31 December 2018. Injury Prevention and Control. (2013). http://www.cdc.gov/violenceprevention/suicide/riskprotectivefactors.htm.

Health Professions Council of South Africa (HPCSA). (2004). *Professional board for psychology: Rules of conduct pertaining specifically to psychology*: *Form 223.* www.hpcsa.co.za.

Henslin, M. J. (2008). *Social Problems: A down-to-earth approach* (8th ed.). Pearson.

Herberman-Mash, H. B., Fullerton, C. S., Ng, T. H. H., Nock, M. K., Wynn, L. G. H., & Ursano, R. J. (2016). Alcohol use and reasons for drinking as risk factors for suicidal behavior in the U.S. Army. *Military Medicine*, *181*(8), 811-820.

Hoge, C. W., & Castro, C. A. (2012). Preventing suicides in US service members and veterans: Concerns after a decade of war. *JAMA*, *308*(7), 671-672.

Hoge, C. W., Auchterlonie, J. L., & Milliken, C. S. (2006). Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan. *JAMA*, *295*(9), 1023-1032.

Hoge, C. W., Castro, C. A, Messer, S. C., McGurk, D., Cotting, D. I., & Koffman, R. L. (2004). Combat duty in Iraq and Afghanistan, mental health problems and barriers to care. *New English Journal of Medicine*, *352*(13), 134-145.

Holi, M. M., Pelkonen, M., Karlsson, L., Kiviruusu, O., Ruuttu, T., Heilä, H., & Marttunen, M. (2005). Psychometric properties and clinical utility of the Scale for Suicidal Ideation (SSI) in adolescents. *BMC Psychiatry*, *5*(1), 1-8.

Hooven, C., Snedker, K. A., & Thompson, E. (2012). Suicide risk at young adulthood: continuities and discontinuities from adolescence. *Youth & Society*, *44*(4), 524- 547.

Hussey, J., & Hussey, R. (1997). *Business Research: A practical guide for undergraduate and postgraduate students.* Macmillan.

Idemudia, E. S., Williams, J. K., Madu, S. N., & Wyatt, G. E. (2013). Trauma exposure and posttraumatic stress among Zimbabwean refugees in South Africa. *Life Science Journal*, *10*(3), 2397-2407.

Ingala, A., Nall, L., & Peters, A. (2013). The role of social support in veterans' college adjustment. *International Journal of Humanities and Social Sciences*, *3*(11), 14-21.

Ivanoff, A. (1989). Identifying psychological correlates of suicidal behavior in jail and detention facilities. *Psychiatric Quarterly*, *60*(1), 73–84.

Jakupcak, M., Cook, J., Imel, Z, Fontana, A., Rosenheck, R., & Mcfall, M. (2009). Posttraumatic stress disorder as a risk factor for suicidal ideation in Iraq and Afghanistan war veterans. *Journal of Traumatic Stress*, 22(4), 303-306.

James, R. K., & Gilliland, B. E. (2001). *Crisis intervention strategies*. Cengage Learning.

Johnson, J., Wood, A. M., Gooding, P., Taylor, P. J., & Tarrier, N. (2011). Resilience to suicidality: The buffering hypothesis. *Clinical Psychology Review*, *31*(4), 563-591.

Joiner, T. E., Van Orden, K. A., Witte, T. K., & Rudd, M. D. (2009). *The interpersonal theory of suicide: Guidance for working with suicidal clients*. American Psychological Association.

Joiner, T. E., & Van Orden, K. A. (2008). The interpersonal–psychological theory of suicidal behavior indicates specific and crucial psychotherapeutic targets. *International Journal of Cognitive Therapy*, *1*(1), 80-89.

Joiner, T. E., Wingate, L. R., & Otamendi, A. (2005). An interpersonal addendum to the hopelessness theory of depression: Hopelessness as a stress and depression generator. *Journal of Social and Clinical Psychology*, *24*(5), 649-664.

Joiner, T. (2005). *Why people die by suicide*. Harvard University Press.

Kahane, L. H. (2008). *Regression Basics*. Sage Publications.

Kalamdien, D. J., & Van Dyk, G. A. J. (2009). A psychological support for peacekeeping soldiers and their families: a preliminary model. *Journal of Psychology in Africa*, *19*(2), 281-286.

Kamble, R. (2015). Resilience, suicidal ideation, depression and adolescents. International *Journal of Education and Psychological Research*, *4*(3), 27-30.

Kerlinger, F. N. (1973). *The structure of scientific revolution.* Chicago: University of Chicago Press.

Kessler, R., Heeringa, S., Stein, M., Colpe, L., Fullerton, C., Hwang, I., & Ursano, R. (2014). Thirty-day prevalence of DSM-IV mental disorders among non-deployed soldiers in the U.S. Army: Results from the Army study to assess risk and resilience in service members (Army STARRS). *Journal of the American Medical Association Psychiatry*, *71*(5), 504-513.

Kgosana, M. C., & Van Dyk, G. A. J. (2010). *Family stability under conditions of deployment: A theoretical discussion.* http://hdl.handle.net/10019.1/418.

Khuzwayo, N., Taylor, M., & Connolly, C. (2018). High risk of suicide among high-school learners in uMgungundlovu District, KwaZulu-Natal Province, South Africa. *South African Medical Journal*, *108*(6), 517-523.

Kim, S., Thibodeau, R., & Jorgensen, R. S. (2011). Shame, guilt, and depressive symptoms: A meta-analytic review. *Psychological Bulletin*, *137*(1), 68-96.

Kleiman, E. M., & Liu, R. T. (2013). Social support as a protective factor in suicide: Findings from two nationally representative samples. *Journal of Affective Disorders*, *150*(2), 540-545.

Kobasa, S. C., Maddi, S. R., & Courington, S. (1981). Personality and constitution as mediators in the stress-illness relationship. *Journal of Health and Social Behavior*, *22*(4), 368-378.

Koopman, R., & Van Dyk, G. A. J. (2012a). Peacekeeping operations and adjustment of soldiers in Sudan: Peace in the minds and hearts of soldiers. *AJCR*, *12*(3), 1-24.

Koopman, R., & Van Dyk, G. (2012b). Suicide prevention and management in the South African National Defence Force: A psychological discussion. *Scientia Militaria, South African Journal of Military Studies*, *40*(1), 117-138.

Kramm, N., & Heinecken, L. (2015). We are different now? The effect of military service on youth reintegration and employment in South Africa. *African Security Review*, *24*(2), 122-137.

Kuehn, B. M. (2009). Soldier suicide rates continue to rise: Military, scientists work to stem the tide. *JAMA*, *301*(11), 1111-1113.

Lane, M. E., Hourani, L. L., Bray, R. M., & Williams, J. (2012). Prevalence of perceived stress and mental health indicators among reserve-component and active-duty military personnel. *American Journal of Public Health, 102*(6), 1213-1220.

Langhinrichsen-Rohling, J., Snarr, J. D., Smith Slep, A.M., Heyman, R. E., & Foran, H, M. (2011). Risk for suicidal ideation in the U.S. Air Force: An ecological perspective. *American Psychological Association, 79*(5), 600-612.

Larson, E. H., Hart, L. G., & Ballweg, R. (2001). National estimates of physician assistant productivity. *Journal of Allied Health, 30*(3), 146-152.

Mann, C. A., Powell, T. M., Smith, T. C., Bell, M. R., Smith, B., Boyko, E. J., & Hoge, C. W. (2013). Risk factors associated with suicide in current and former US military personnel. *JAMA, 310*(5), 496-506.

Leedy, P., & Ormrod, J. (2001). *Practical research: Planning and design* (7th ed.). SAGE Publications.

Leedy, P. D. (1993). *Practical research: planning and design.* New Jersey: Prentice-Hall.

Leenaars, A. A. (2010). Edwin S. Shneidman on Suicide: Review. *Suicidology Online, 1*, 5-18.

Lemaire, C. M., & Graham, D. P. (2011). Factors associated with suicidal ideation in OEF/OIF veterans. *Journal of Affective Disorders, 130*(1-2), 231-238.

Lester, D. (1988). *Suicide from a psychological perspective.* Charles C. Thomas.

Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1996). Adolescent suicidal ideation and attempts: prevalence, risk factors, and clinical implications. *Clinical Psychology: Science and Practice, 3*(1), 25-46.

Lezwijn, J., Vaandrager, L., Naaldenberg, J., Wagemakers, A., Koelen, M., & Van Woerkum, C. (2011). Healthy ageing in salutogenic way: building the HP 2.0 framework. *Health and Social Care in the Community, 19*(1), 43-51.

Lindström, B. (2010). Salutogenesis – an introduction. In B. Lindström, & M. Eriksson (Eds.), *The hitchhiker's guide to salutogenesis, Folkhälsan*, Health Promotion Research

Report 2010. http://www.centrelearoback.org/assets/PDF/04_activites/clr-GCPB121122- Lindstom_pub_introsalutogenesis.pdf.

Lindström, B., & Eriksson, M. (2005). Salutogenesis. *Journal of Epidemiology & Community Health, 59*(6), 440-442.

Loop, B. (2013, October 14). *PowerPoint presentation.* VA Medical Center.

Lorant, V., Kunst, A. E., Huisman, M., Costa, G., & Mackenbach, J. (2005). Socio-economic inequalities in suicide: A European comparative study. *The British Journal of Psychiatry, 187*(1), 49-54.

Lovalekar, M., Abt, J. P., Sell, T. C., Lephart, S. M., Pletcher, E., & Beals, K. (2017). Accuracy of recall of musculoskeletal injuries in elite military personnel: a cross-sectional study. *BMJ Open, 7*(12), e017434.

Luutonem, S., Sohlman, B., Salokangas, R. K. R., Lehtinen, V., & Dowrick, C. (2011). Weak sense of coherence predicts depression: 1 year and 9 year follow-ups of the Finnish Outcomes of Depression International Networks (ODIN) sample. *Journal of Mental Health, 20*(1), 43-51. http://dx.doi.org/10.10.3109/09638237.2010.537401.

MacDonald, M. (1989). The medicalization of suicide in England: Laymen, physicians, and cultural change, 1500–1870. *The Milbank Quarterly, 67*, 69-91

Madu, S. N., & Matla, M. P. (2003). The prevalence of suicidal behaviours among secondary school adolescents in the Limpopo Province, South Africa. *South African Journal of Psychology, 33*(2), 126-132.

Maguen, S., Metzler, T. J., Bosch, J., Marmar, C. R., Knight, S. J., & Neylan, T. C. (2012). Killing in combat may be independently associated with suicidal ideation. *Depression and Anxiety, 29*, 918-923.

Mahon, M. J. (2005). Suicide among regular-duty military personnel: A retrospective case-control study of occupation-specific risk factors for workplace suicide. *American Journal of Psychiatry, 162*(9), 1688-1695.

Makinen, I. (2009). Social theories of suicide. In D. Wasserman and C. Wasserman (Eds.), *Oxford Textbook of Suicidology and Suicide Prevention* (pp. 139-147). Oxford University Press.

Maree, K. (2007). *First steps in research.* Van Schaik Publishers.

Maris, R. W., Berman, A. L., & Silverman, M. M. (2000). *Comprehensive Textbook of Suicidology*. Guilford Press.

Martin, J., Ghahramanlou-Holloway, M., Lou, K., & Tucciarone, P. (2009). A comparative review of U.S. military and civilian suicide behavior: Implications for OEF=OIF suicide prevention efforts. *Journal of Mental Health Counselling, 31*(2), 101-118.

Mash, H. B. H., Fullerton, C. S., Ng, T. H., Nock, M. K., Wynn, G. H., & Ursano, R. J. (2016). Alcohol use and reasons for drinking as risk factors for suicidal behavior in the U.S. Army. *Military Medicine, 181*(8), 811-820.

Mash, H. B. H., Fullerton, C. S., Ramsawh, H. J., Ng T. H., Wang, L., Kessler, R. C., Stein, M. B., & Ursano, R. J. (2014). Risk for suicidal behaviors associated with alcohol and energy drink use in the U.S. Army. *Soc Psychiatry Psychiatr Epidemiology, 49*, 1379–1387. doi: 10.1007/s00127-014-0886-0.

Mashego, T-A. B., Peltzer, K., & Madu, S. N. (2003). *Preventing suicide: A manual for teachers and other school staff in South Africa* [Unpublished Manuscript]. University of the North.

Masten, A. S., & Reed, M. J. (2002). Resilience in development. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 74-88). Oxford University Press.

Mastroianni, G. R., & Scott, W. J. (2011). *Reframing suicide in the military*. Air Force Academy Colorado Springs Co Dept of Behavioral Sciences and Leadership. https://apps.dtic.mil/sti/pdfs/ADA594886.pdf.

Mayo, D. (1992). What is being predicted? The definition of "suicide". In R. Maris, A. Berman, J. Maltsberger, & R. Yufit (Eds.), *Assessment and prediction of suicide* (pp. 88-101). Guilford Press.

McGregor, S. L. T. (2017). Salutogenic consumer well-being [McGregor Monograph Series, No. 201702]. McGregor Consulting Group. http://www.consultmcgregor.com

McLean, C. P., Zang, Y., Zandberg, L., Bryan, C. J., Gay, N., Yarvis, J. S., & Foa, E. B. (2017). Predictors of suicide ideation among active duty military personnel with posttraumatic stress disorder. *Journal of Affective Disorders*, *208*, 392-398.

McLean, J., Maxwell, M., Platt, S., Harris, F. M., & Jepson, R. (2008). *Risk and protective factors for suicide and suicidal behaviour: A literature review*. Scottish Government.

Medical Surveillance Monthly Report (MSMR) (2014). https://www.health.mil/Military-Health-Topics/Combat-Support/Armed-Forces-Health-Surveillance-Branch/Reports-and-Publications/~/link.aspx?_id=534E26BD8E5D4ECC8CAA8ABA47679691&_z=z.

Medical Surveillance Monthly Report (MSMR) (2015). https://www.health.mil/Military-Health-Topics/Combat-Support/Armed-Forces-Health-Surveillance-Branch/Reports-and-Publications/~/link.aspx?_id=534E26BD8E5D4ECC8CAA8ABA47679691&_z=z.

Mehlum, L. (1998). Suicidal ideation and sense of coherence in male conscripts. *Acta Psychiatrica Scandinavica, 98*(6), 487-492.

Meneses-Gaya, C. D., Zuardi, A. W., Loureiro, S. R., & Crippa, J. A. S. (2009). Alcohol Use Disorders Identification Test (AUDIT): An updated systematic review of psychometric properties. *Psychology & Neuroscience*, *2*(1), 83-97.

Menninger, W. C. (1938). The treatment of chronic alcohol addiction. *Bulletin of the Menninger Clinic*, *2*(4), 101.

Miller, F. G., Renn, W. R., & Lazowski, L. E. (2001). The Adolescent Substance Abuse Subtle Screening Inventory (SASSI-A2). DUI offenders for alcohol problems: Psychometric assessment of the Substance Abuse Screening Inventory. *Journal of Drug Education, 31*(3), 289-303.

Milliken, C. S., Auchterlonie, J. L., & Hoge, C. W. (2007). Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq war. *JAMA*, *298*(18), 2141-2148.

Millner, A. J., Ursano, R. J., Hwang, I., King, A. J., Naifeh, J. A., Sampson, N. A., & Nock, M. K. (2018). Lifetime suicide behaviours and career characteristics among U.S. Army soldiers: Results from the Army Study to Assess Risk and Resilience in Service members (Army STARRS). *Suicide and Life Threatening Behaviour, 48*(2), 230-250.

Minois, G. (1999). *History of suicide: Voluntary death in Western culture.* Johns Hopkins University Press.

Mitchell, M. M., Gallaway, M., Millikan, A. M., & Bell, M. (2012). Interaction of combat exposure and unit cohesion in predicting suicide-related ideation among post-deployment soldiers. *Suicide and Life-Threatening Behavior*, *42*(5), 486-494.

Mittelmark, M. B., & Bauer, G. F. (2017). The meanings of salutogenesis. In M. B. Mittelmark, S. Sagy, M. Eriksson, G. F. Bauer, J. M. Pelikan, B. Lindström, & G. Arild Espnes (Eds.), *The handbook of salutogenesis* (pp. 7-13). Springer Nature.

Montesh, M., & Basdeo, V. (2012). The role of the South African National Defence Force in policing. *Scientia Militaria: South African Journal of Military Studies*, *40*(1), 71-94.

Moskos, C. C. (1976). The military. *Annual Review of Sociology*, *2*(1), 55-77.

Moss, R. H., & Schaefer, J. A. (1993). Coping resources & processes: Current concepts 8 measures. In L. Goldberger & S. Breznitz (Eds.), *Handbook of Stress: Theoretical & Clinical Aspects* (2nd ed., pp. 234-257). The Free Press.

Myer, L., Smit, J., Roux, L. L., Parker, S., Stein, D. J., & Seedat, S. (2008). Common mental disorders among HIV-infected individuals in South Africa: prevalence, predictors, and validation of brief psychiatric rating scales. *AIDS Patient Care and STDs*, *22*(2), 147-158.

Murphy, P. J. (2008). *Readiness, resilience and readjustments: A psychological investigation of human factors across the deployment cycle of contemporary peace support operations* [Unpublished doctoral dissertation]. University of Adelaide.

Naifeh, J. A., Ursano, R. J., Kessler, R. C., Zaslavsky, A. M., Nock, M. K., Dempsey, C. L., & Stein, M. B. (2019). Transition to suicide attempt from recent suicide ideation in US

Army soldiers: Results from the Army Study to Assess Risk and Resilience in Service members (Army STARRS). *Depression and Anxiety*, *36*(5), 412-422.

Nduna, M., & Jewkes, R. K. (2012). Disempowerment and psychological distress in the lives of young people in Eastern Cape, South Africa. *Journal of Child and Family Studies, 21*, 1018-1027.

Nisbet, P. A. (1996). Protective factors for suicidal black females. *Suicide and Life-Threatening Behavior*, *26*(4), 325-341.

Nkewu, Z. (2014). *Impact of psychological wellbeing and perceived combat readiness on willingness to deploy in the SANDF: An exploratory study* [Master's thesis]. Stellenbosch University.

Nock, M. K., Ham, G., Millner, A. J., Gutierrez, P. M., Joiner, T. E., Hwang, I., & Kessler, R. C. (2018). Patterns and predictors of persistence of suicide ideation: Results from the Army Study to Assess Risk and Resilience in Service members (Army STARRS). *Journal of Abnormal Psychology, 127*(7), 650-658.

Nock, M. K., Ursano, R. J., Heeringa, S. G., Stein, M. B., Jain., S., Raman, R. M., & Kessler, R. C. (2015). Mental disorders, comorbidity, and pre-enlistment suicidal behaviour among new soldiers in the U.S. Army: Results from the Army Study to Assess Risk and Resilience in Service members (Army STARRS). *Suicide and Life-threatening Behaviour, 45*(5), 588-599.

Nock, M. K., Stein, M. B., Heeringa, S. G., Ursano, R. J., Colpe, L. J., Fullerton, C. S., & Kelsser, R. C. (2014). Prevalence and correlates of suicide behaviour among soldiers: results from the Army Study to Assess Risk and Resilience in Service members (Army STARRS). *JAMA Psychiatry, 71*(5), 514-522.

Nock, M. K., Deming, C. A., Fullerton, C. S., Gilman, S. E., Goldenberg, M., Kessler, R. C., McCarrol, J. E., McLaughlin, K. A., Peterson, C., Schoenbaum, M., Stanley, B., & Ursano, R. J. (2013). Suicide among soldiers: A review of psychosocial risk and protective factors. *Psychiatry, 76*(2), 97-125

Nock, M. K., Borges, G., Bromet, E. J., Cha, C. B., Kessler, R. C., & Lee, S. (2008). Suicide and suicide behaviour. *Epidemiologic Reviews, 30*, 133-154.

Nock M. K., Park, J. M., Finn, C. T., Deliberto, T. L., Dour, H. J., & Banaji, M. R. (2010). Measuring the suicidal mind: Implicit cognition predicts suicidal behavior. *Psychological Science, 21*, 511-517.

Nock, M. K., Hwang, I., Sampson, N., Kessler, R. C., Angermeyer, M., Beautrais, A., & Williams, D. R. (2009). Cross-national analysis of the associations among mental disorders and suicidal behavior: Findings from the World Health Organisation World Mental Health Surveys. *PLoS Med, 6*(8), e1000123.

Nunnally, J., & Bernstein, I. M. (1994). *Psychometric theory.* McGraw-Hill.

O'Connor, R. C. (2011). The integrated motivational-volitional model of suicidal behavior. *Crisis, 32*, 295–298.

Olson, R. (2014). *Why people kill themselves? The major historical theories of suicidal behaviour*. Centre for Suicide Prevention.

Oxford Advanced Learners' Dictionary of Current English. (1986). Oxford University Press.

Peters, R. D., Leadbeater, B., & McMahon, R. J. (Eds.). (2005). *Resilience in children, families, and communities: Linking context to practice and policy*. Springer Science & Business Media.

Pfeiffer, P. N., Brandfon, S., Garcia, E., Duffy, S., Ganoczy, D., Kim, H. M., & Valenstein, M. (2014). Predictors of suicidal ideation among depressed veterans and interpersonal theory of suicide. *Journal of Affective Disorders, 152*(154), 277-281.

Pienaar, J., & Rothmann, S. (2005). Suicide ideation in the South African police service. *South African Journal of Psychology, 35*(1), 58-72.

Pietrzak, R. H., Goldstein, M. B., Malley, J. C., Rivers, A. J., Johnson, D. C., Southwick, S. M. (2010). Risk and protective factors associated with suicidal ideation in veterans of operations enduring freedom and Iraqi freedom. *Journal of Affective Disorders, 123*, 102-107.

Pietrzak, R. H., Johnson, D. C., Goldstein, M. B., Malley, J. C., & Southwick, S. M. (2009). Psychological resilience and postdeployment social support protect against traumatic

stress and depressive symptoms in soldiers returning from Operations Enduring Freedom and Iraqi Freedom. *Depression and Anxiety*, *26*(8), 745-751.

Pietrzak, R. H., Russo, A. R., Ling, Q., & Southwick, S. M. (2011). Suicide ideation in treatment-seeking veterans of operation enduring freedom and Iraqi Freedom: The role of coping strategies, resilience and social support. *Journal of Psychiatric Research*, *45*, 720-726.

Pompili, M., Serafini, G., Innamorati, M., Dominici, G., Ferracuti, S., Kotzalidis, G. D., & Lester, D. (2010). Suicidal behavior and alcohol abuse. *International Journal of Environmental Research and Public Health*, *7*(4), 1392-1431.

Prinstein, M. J. (2008). Introduction to the special section on suicide and nonsuicidal self-injury: A review of unique challenges and important directions for self-injury science. *Journal of Consulting and Clinical Psychology*, *76*(1), 1-8.

Pukay-Martin, N. D., Pontoski, K. E., Maxwell, M. A., Calhoun, P. S., Dutton, C. E., Clancy, C. P., & Beckham, J. C. (2012). The influence of depressive symptoms on suicidal ideation among U.S. Vietnam-Era and Afghanistan/Iraq-Era veterans with posttraumatic stress disorder. *Journal of Traumatic Stress*, *5*, 578-582.

Rajasekar, S., Philominathan, P., & Chinnathambi, V. (2013). *Research methodology*. eprintarXiv:physics/0601009.

Reddy, H. J., Fullerton, C. S., Herberman Mash, H. B., Ng, T. H. H., Kessler, R. C., Stein, M. B., & Ursano, R. J. (2014). Risk for suicidal behaviours associated with PTSD, depression, and their comorbidity in the U.S. Army. *Journal of Affective Disorders*, *161*, 116-122.

Ranieri, W. F., Steer, R. A., Lavrence, T. I., Rissmiller, D. J., Piper, G. E., & Beck, A. T. (1987). Relationship of depression, hopelessness, and dysfunctional attitudes to suicide ideation in psychiatric patients. *Psychological Reports*, *61*, 967-975.

Reimann, C. A., & Mazuchowski, E. L. (2018). Suicide rates among active duty service members compared with civilian counterparts, 2005–2014. *Military Medicine*, *183*(suppl_1), 396-402.

Republic of South Africa. (1996). *Constitution of the Republic of South Africa*. Government Printers.

Reynolds, W. M. (1988). *Suicide Ideation Questionnaire: Professional manual.* Psychological Assessment Resources.

Riberio, J. D., Pease, J. L., Gutierrez, P. M., Silva, C., Bernert, R. A., Rudd, M. D., & Joiner, T. E. (2012). Sleep problems outperform depression and hopelessness as cross-sectional and longitudinal predictors of suicidal ideation and behaviour in young adults in the military. *Journal of Affective Disorders, 136,* 743-750.

Riggs, S. A., & Riggs, D. S. (2011). Risk and resilience in military families experiencing deployment: the role of family attachment network. *Journal of Family Psychology, 25*(5), 675-687.

Ritchie, E. C. (1997). Malingering and the United States military. In R. G. Lande, & D. A. Armitage (Eds.), *Principles and practice of military forensic psychiatry*. Charles C Thomas, Ltd.

Rosenberg, M. L., Davidson, L. E., Smith, J. C., Berman, A. L., Buzbee, H., Gantner, G., & Jobes, D. (1988). Operational criteria for the determination of suicide. *Journal of Forensic Science, 33*(6), 1445-1456.

Ross, C. A. (2013). Self-blame and suicidal ideation among combat veterans. *American Journal of Psychotherapy, 67*(4), 309-322.

Roy, A., Carli, V., & Sarchiapone, M. (2011). Resilience mitigates the suicide risk associated with childhood trauma. *Journal of Affective Disorders, 133*(3), 591-594.

Roy, A., Sarchiapone, M., & Carli, V. (2007). Low resilience in suicide attempters: relationship to depressive symptoms. *Depression and Anxiety, 24*(4), 273-274.

Rudd, M. D. (2006). Fluid vulnerability theory: A cognitive approach to understanding the process of acute and chronic risk. In T. E. Ellis (Ed.), *Cognition and suicide: Theory, research, and therapy* (pp. 355-368). American Psychological Association.

Rudd, M. D., Goulding, J., & Bryan C. J. (2011). A national survey exploring psychological symptoms and suicide risk. *Journal of Family Psychology, 22*(5), 675-687.

Rutter, M. (1995). *Psycho-social disturbances in young people: Challenge for prevention.* Cambridge University press.

SA Army. (1998). *Infantry Battle Handling, Volume 8, Pamphlet 2: Organisations, Characteristics and Tasks of Infantry Battalions.* Brig Gen L. Wessels, Chief of the SA Army Headquarters, August 1998.

Sadock, B. J., & Sadock, V. A. (2003). *Kaplan & Sadock's concise textbook of clinical psychiatry*. Lippincott Williams & Wilkins.

Salkind, N. J. (2008). *Encyclopedia of educational psychology*. SAGE Publications.

Saltzman, W. R., Lester, P., Beardslee, W. R., Layne, C. M., Woodward, K., & Nash, W. P. (2011). Mechanisms of risk and resilience in military families: Theoretical and empirical basis of a family-focused resilience enhancement program. *Clinical Child and Family Psychology Review, 3*, 213-230.

Sareen, J., Cox, B. J., Stein, M. B., Afifi, T. O., Fleet, C., & Asmundson, G. J. (2007). Physical and mental comorbidity, disability, and suicidal behavior associated with posttraumatic stress disorder in a large community sample. *Psychosomatic Medicine, 69*(3), 242-248.

Saunders, J. B., Aasland, O. G., Babor, T. F., de la Fuente, J. R., & Grant, M. (1993) Development of the Alcohol Use Disorders Identification Test (AUDIT): World Health Organisation collaborative project on early detection of persons with harmful alcohol consumption-II. *Addict, 88*, 791-804.

Schlebusch, L. (2005). *Suicide Behaviour in South Africa.* University of KwaZulu Natal Press.

Schlebusch, L. (2012). Suicide prevention: A proposed national strategy for South Africa. *African Journal of Psychiatry*, *15*(6), 436-440.

Selby, E., Joiner, T., & Ribeiro, J. (2014). Comprehensive theories of suicidal behaviors. In M. K. Nock (Ed.), *The Oxford handbook of suicide and self-injury* (pp. 286-305). Oxford University Press.

Shea, S. C. (1998). The chronological assessment of suicide events: A practical interviewing strategy for the elicitation of suicidal ideation. *Journal of Clinical Psychiatry*, *59*(20), 58-72.

Shelef, L., Fruchter, E., Hassidim. A., & Zalsman, G. (2015a). Emotional regulation of mental pain as moderator of suicidal ideation in military settings. *European Psychiatry*, *30*, 765 -769.

Shelef, L., Kaminsky, D., Carmon, M., Kedem, R., Bonne, O., Mann., J. J., Fruchter, E. (2015b). Risk factors for suicide attempt among Israeli Defence Force soldiers: A retrospective case-control study. *Journal of Affective Disorders*, *186*, 232 – 240.

Shelef, L., Fruchter, E., Spiegel, D. O., Shoval, G., Mann, J. J., Zalsman, G., (2014a). Characteristics of soldiers with self-harm in the Israel Defence Force. *Archives Suicide. Research, 18*(4), 410–418.

Shelef, L., Levi-Belz, Y., & Fruchter, E. (2014b). Dissociation and acquired capability as facilitators of suicide ideation among soldiers. *Crisis, 35*(6), 388-397.

Sher, L., Grunebaum, M. F., Sullivan, G. M., Burke, A. K., Cooper, T. B., Mann, J. J., & Oquendo, M. A. (2012). Testosterone levels in suicide attempters with Bipolar disorder. *Journal of Psychiatry Research*, *46*(10), 1267-1271.

Shneidman, E. (1985). *Definition of suicide*. John Wiley & Sons.

Silverman, M. M., Berman, A. L., Sanddal, N. D., O'Carroll, P. W., & Joiner, T. E. (2007). Rebuilding the tower of Babel: a revised nomenclature for the study of suicide and suicidal behaviors. Part 1: Background, rationale, and methodology. *Suicide and Life-Threatening Behavior*, *37*(3), 248-263.

Silverman, M. M., & Maris, R. W. (1995). The prevention of suicidal behaviours: An overview. *Suicide and Life-threatening Behavior, 25*, 10-21.

Skomorovsky, A., & Stevens, S. (2013). Testing a resilience model among Canadian forces recruits. *Military Medicine*, *178*(8), 829-837.

Skopp, N. A., Reger, M. A., Reger, G. M., Mishkind, M. C., Raskind, M., & Gahm, G. A. (2011). The role of intimate relationships, appraisals of military service, and gender on

the development of posttraumatic stress symptoms following Iraq deployment. *Journal of Traumatic Stress*, *24*(3), 277-286.

Sletten, I. W., Evenson, R. C., & Brown, M. L. (1973). Some results from an automated statewide comparison among attempted, committed, and nonsuicidal patients. *Suicide and Life-Threatening Behavior*, *3*(3), 191-197.

Smolenski, D. J., Reger, M. A., Alexander, C. L., Skopp, N. A., Bush, N. E., Luxton, D. D., & Gahm, G. A. (2013). *Department of Defense Suicide Event Report (DODSER) calendar year 2012 annual report.* http://www.t2.health.mil/sites/default/files/dodser_ar2012_20140306-2.pdf.

Sokero, T. P., Melartin, T. K., Rytsälä, H. J., Leskelä, U. S., Lestelä-Mielonen, P. S., & Isometsä, E. T. (2005). Prospective study of risk factors for attempted suicide among patients with DSM–IV major depressive disorder. *The British Journal of Psychiatry*, *186*(4), 314-318.

South African Department of Defence (DOD), Annual report 2011–2012, 2012. www.dod.mil.za/documents/annualreports/AnnualReport1112n.pdf

South African Department of Defence (DOD), Annual report 2011–2012, 2012, www.dod.mil.za/documents/annualreports/AnnualReport1112n.pdf.

SPSS Incorporated. (2015). *IBM SPSS Statistics user's guide: Version 22.0*. IBM Corp, Macintosh.

SPSS Incorporated. (2017). *A step-by step guide to analysis and interpretation*. IBM Corp, Macintosh. (Author: Brian C. Cronk.

Stack, S. (1996). The effect of marital integration on African American suicide. *Suicide and Life-threatening Behavior*, *26*(4), 405-414.

Stack, S. (2004). Emile Durkheim and altruistic suicide. *Archives of Suicide Research*, *8*(1), 9-22.

Stangor, C. (2011). *Research methods for behavioural sciences* (4th ed.). Cengage Learning.

Stangor, C. (2015). *Research methods for the behavioural sciences*. Cengage Learning.

Stokes, A.F., & Kite, K. (5th Ed.). (1994). *Flight stress: Stress, fatigue, and performance in aviation.* Ashgate.

Street, A. E., Gilman, S. E., Rosellini, A. J., Stein, M. B., Bromet, E. J., Cox, K. L., Colpe, L. J., Fullerton, C. S., Gruber, M. J., Heeringa, S. G., Lewandowski-Romps, L., Little, R. J. A., Naifeh, J. A., Nock, M. K., Sampson, N. A., Schoenbaum, M., Ursano., R. J., Zaslavsky, A. M., & Kessler, R. C. (2015). Understanding the elevated suicide risk of female soldiers during deployments. *Psychological Medicine, 45*, 717 - 726.

Street, A. E., Gradus, J. L., Giasson, H. L., Vogt, D., & Resick, P. A. (2013). Gender differences among veterans deployed in support of wars in Afghanistan and Iraq. *Journal of General Internal Medicine, 28*(2), S556 – S562.

Street, A. E., Gradus, J. L., Stafford. J., & Kelly, K. (2007). Gender differences in experiences of sexual harassment: Data from a male-dominated environment. *Journal of Consulting and Clinical Psychology*, *75*, 464 – 474.

Strümpfer, D. J. W., & Wissing, M. P. (1998, September). *Review of South African data on the Sense of Coherence Scale as a measure of fortigenesis and salutogenesis.* Paper presented at the Fourth Annual Congress of the Psychological Society of South Africa, Cape Town, South Africa.

Strümpfer, D. J. W. (1995). The origin of health and strength: From "salutogenesis" to "fortigenesis". *South African Journal of Psychology*, *25*, 81-89.

Steyn, H. S. (1999). *Praktiese beduidendheid: Die gebruik van effekgroottes*. Potchefstroom: Publikasiebeheerkomitee, PU vir CHO.

Sudak, H., Maxim, K., & Carpenter, M. (2008). Suicide and stigma: A review of the literature and personal reflections. *Academic Psychiatry*, *32*(2), 136-142.

Taliaferro, L. A., & Muehlenkamp, J. J. (2014). Risk and protective factors that distinguish adolescents who attempt suicide from those who only consider suicide in the past year. *Suicide and Life-threatening Behavior*, *44*(1), 6-22.

The World Factbook, (2011). List of enlistment age by country. https://en.wikipedia.org/wiki/The_World_Factbook.

Theron, (2009). *Research methodology* [Unpublished Industrial Psychology Class Notes]. Stellenbosch University.

Thoresen, S., & Mehlum, L. (2004). Risk factors for fatal accidents and suicides in peacekeepers: Is there an overlap? *Military Medicine, 169*(12), 988-993.

Tiihonen, J., Lönnqvist, J., Wahlbeck, K., Klaukka, T., Tanskanen, A., & Haukka, J. (2006). Antidepressants and the risk of suicide, attempted suicide, and overall mortality in a nationwide cohort. *Archives of General Psychiatry*, *63*(12), 1358-1367.

United States Department of Defense (US DOD). (2011). *Department of Defense Suicide Event Report (DODSER) - Calendar Year 2011 Annual Report.* https://www.dspo.mil/Portals/113/Documents/2011-DODSER-Annual-Report.pdf

Ursano, R. J., Mash, H. B. H., Kessler, R. C., Naifeh, J. A., Fullerton, C. S., Aliaga, P. A., & Stein, M. B. (2020). Factors associated with suicide ideation in US Army soldiers during deployment in Afghanistan. *JAMA Network Open*, *3*(1), e1919935-e1919935.

Ursano, R. J., Kessler, R. C., Stein, M. B., Naifeh, J. A., Aliaga, P. A., Fullerton, C. S., & Heeringa, S. G. (2016). Risk factors, methods, and timing of suicide attempts among US Army soldiers. *JAMA Psychiatry*, *73*(7), 741-749.

Ursano, R. J., Heeringa, S. G., Stein, M. B., Jain, S., Raman, R., Sun, X., & Kessler, R. C. (2015a). Prevalence and correlates of suicidal behaviour among new soldiers in the U.S. Army: results from the Army study to assess risk and resilience in service members (Army STARRS). *Depress Anxiety*, *32*(1), 3-12.

Ursano, R. J., Kessler, R. C., Stein, M. B., Naifeh, J. A., Aliaga, P. A., Fullerton, C. S., & Heeringa, S. G. (2015b). Suicide attempts in the U.S. Army during the wars in Afghanistan and Iraq, 2004-2009. *JAMA Psychiatry, 72*(9), 917-926.

Van Breda, A. D. (2008). The military social health index: A partial multicultural validation. *Military Medicine, 173*(5), 480-487.

Van der Westhuizen, S., Horn, C., & Viljoen, A. (2015). Sense of coherence and burnout in the energy and chemicals industry: The moderating role of age. *South African Journal of Human Resource Management, 13*(1), 1-9.

Van Dyk, G. A. J. (1992). *Aanpassings versteurings: 'n Vergelykende psigologiese ondersoek* [Unpublished Doctoral dissertation]. PU for CHE.

Van Dyk, G. A. J. (2009). The role of military psychology in peacekeeping operations: The South African National Defence Force as an example. *Scientia Militaria: South African Journal of Military Studies, 37*(1), 113-135.

Van Orden, K. A., Wiktorsson, S., Duberstein, P., Berg, A. I., Fässberg, M. M., & Waern, M. (2015). Reasons for attempted suicide in later life. *The American Journal of Geriatric Psychiatry*, *23*(5), 536-544.

Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwasite, S., Selby, E. A., & Joiner, T. E. (2010). The international theory of suicide. *Psychological Review, 117*(2), 575-600.

Van Orden, K. A., Witte, T. K., Gordon, K. H., Bender, T. W., & Joiner, T. E. (2008). Suicidal desire and the capability for suicide: tests of the interpersonal-psychological theory of suicidal behavior among adults. *Journal of Consulting Clinical Psychology, 76*, 72-83.

Van't Wout, M. C., & Van Dyk, G. A. J. (2015). Managing morale on the battlefield: a psychological perspective. *Journal of Military Studies, 43*(1), 127-148.

Vanderploeg, R. D., Nazem, S., Brenner, L. A., Balanger, H. G., Donnell, A. J., & Scott, S. G. (2015). Suicidal ideation among Florida National Guard members: Combat deployment and non-deployment risk and protective factors. *Archives of Suicide Research, 19*, 453-471.

Vinje, H. F., Ausland, L. H., & Langeland, E. (2016). *The application of salutogenesis in the training of health professionals*. In M. B. Mittelmark, S. Sagy, M. Eriksson, G. F. Bauer, J. M. Pelikan, B. Lindström, & G. A. Espnes (Eds.), *The Handbook of Salutogenesis*. Springer.

Visser, M. (Ed.) (2010). *Contextualising community psychology in South Africa*. Van Schaik Publishers.

Warner, C. H., Appenzeller, G. N., Parker, J. R., Warner, C. M., & Hoge, C. W. (2011) Effectiveness of mental health screening and coordination of in-theater care prior to

deployment to Iraq: a cohort study. *American Journal of Psychiatry, 168*(4), 378-385. doi: 10.1176/appi.ajp.2010.10091303.

Weathers, F. W., Huska, J. A., & Keane, T. M. (1991). *PCL-M for DSM-IV*. National Center for PTSD - Behavioral Science Division.

Weissman, A. N. (1979). *The dysfunctional attitude scale: A validation study*. https://repository.upenn.edu/cgi/viewcontent.cgi?article=2994&context=edissertations

Wells, T. S., Miller, S. C., Adler, A. B., Engel C. C., Smith, T. C., & Fairbank, J. A. (2011). Mental health impact of the Iraq and Afghanistan conflicts: A review of U.S. research, service provision, and programmatic responses. *International Review of Psychiatry, 23,* 144-152.

Wenzel, A., & Beck, A. T. (2008). A cognitive model of suicidal behavior: Theory and treatment. *Applied and Preventive Psychology, 12*(4), 189-201.

Wenzel, A., Brown, G. K., & Beck, A. T. (2009). *Cognitive therapy for suicidal patients: Scientific and clinical applications*. American Psychological Association.

Werner, E. E. (1995). Resilience in development. *Current Directions in Psychological Science*, 4(3), 81-84.

Williams, C. (2011). Research Methods. *Journal of Business & Economics Research* (JBER), 5(3), pages

Williams, J. M. G. (1997). *Cry of pain: Understanding suicide and self-harm*. Penguin Group.

Willingham, V. (2014). *Study: Rates of many mental disorders much higher in soldiers than in civilians.* https://edition.cnn.com/2014/03/03/health/jama-military-mental-health/index.

World Health Organisation. (2017). *Suicide* [Fact sheet]. http://www.who.int/mediacentre/factsheets/fs398/en/

World Health Organization (WHO). (1998). Primary prevention of mental, neurological and psychosocial disorders. Suicide. Geneva: World Health Organisation.

World Health Organisation (WHO). (2002) *World report on violence and health.* World Health Organization. Author.

World Health Organisation (WHO). (2008). *Suicide prevention (SUPRE).* http://www.who.int/ mental_health/prevention/suicide/suicideprevention/en/index.htm.

World Health Organisation (WHO). (2014). *Preventing suicide: A global imperative.* World Health Organisation.

Zhang, J., & Brown, G. K. (2007). Psychometric properties of the Scale for Suicide Ideation in China. *Archives of Suicide Research, 11*(2), 203–210.

Appendix A: Ethical Clearance

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS·UV
HUMANITIES
GEESTESWETENSKAPPE

Faculty of the Humanites

11-Aug-2017

Dear **Mrs Mbhele**

Ethics Clearance: **Combat exposure as moderator between risk, protective factors and suicide ideation for South African Army Infantry soldiers.** Principal Investigator: **Mrs Phindile Mbhele**

Department: **Psychology (Bloemfontein Campus)**

APPLICATION APPROVED

With reference to your application for ethical clearance with the Faculty of the Humanities. I am pleased to inform you on behalf of the Research Ethics Committee of the faculty that you have been granted ethical clearance for your research.

Your ethical clearance number, to be used in all correspondence is: **UFS-HSD2017/0688**

This ethical clearance number is valid for research conducted for one year from issuance. Should you require more time to complete this research, please apply for an extension.

We request that any changes that may take place during the course of your research project be submitted to the ethics office to ensure we are kept up to date with your progress and any ethical implications that may arise.

Thank you for submitting this proposal for ethical clearance and we wish you every success with your research.

Yours Sincerely

Prof. Robert Peacock
Chair: Research Ethics Committee Faculty of
the Humanities

Office of the Dean/Kantoor van die Dekaan/Ofisa ya Dine
T: +27 (0)51 401 2240 | F: +27 (0)51 401 7363 | E: beukeshs@ufs.ac.za
P.O. Box/Posbus 339 | Bloemfontein 9300 | South Africa/Suid-Afrika | www.ufs.ac.za

Appendix B: Participation Consent Form

RESEARCH STUDY INFORMATION LEAFLET AND CONSENT FORM

DATE

01 October 2017

Combat exposure as moderator between risk, protective factors and suicide ideation for South African Army Infantry soldiers.

PRINCIPLE INVESTIGATOR / RESEARCHER(S) NAME(S) AND CONTACT NUMBER(S):

Phindile Ellina Mbhele 2008123354 073 900 5997

FACULTY AND DEPARTMENT

Faculty: Humanities
Department: Psychology

STUDY LEADER(S) NAME AND CONTCT NUMBER:

Dr A.A. George
051 401 9520

WHAT IS RESEARCH?

Research is something we do to find new knowledge about the way things and people work. We use research projects or studies to help us find out more about children and teenagers and the things that affect their lives, their schools, their families, and their lives. Research also helps us to find better ways of helping, or treating children who are sick. We do this to try and make the world a better place!

WHAT IS THE AIM / PURPOSE OF THE STUDY?

There has been notable increase in the incidents of suicide related problems in the SANDF. The aim of this study is to explore the risk and resource factors impacting on the level of suicide ideation of SA Army Infantry soldiers. This will help us to understand what is it in the soldier's environment that makes them vulnerable to suicide ideation and what can be done to reduce such risk. Therefore this study will yield valuable information on suicide risk across deployment status in the SANDF for intervention strategies.

WHO IS DOING THE RESEARCH?

I am Phindile E. Mbhele, a Doctoral student at the University of the Free State. I am currently working as a clinical psychologist at Area Military Health Unit Free State (AMHU FS). I am conducting a study based on suicide in the SANDF. My motivation for this study was based on my growing personal interest in suicide as I worked on a study based on adolescent suicide risk during my Masters. I com pleted my internship at 3 military hospital in Bloemfontein and I dealt with many cases relating to suicide behavior which increased my interest in learning more about the soldier's suicide. Unfortunately there is lack of studies done specifically in suicide ideation in the SANDF. As a result this study is highly surported by Military Psychological Institute (MPI) which is a division in the SANDF reponsible for Health Research and Development which then adopted the study as one of their projects. Currently for this study I am the principal researcher and Lt Col S. T. Sinkoyi [Head of Health Research and Development at the Military Psychological Institute (MPI)]is a project leader.

HAS THE STUDY RECEIVED ETHICAL APPROVAL?

This study has received ethical approval from the Research Ethics Committee of UFS. A copy of the approval letter can be obtained from the researcher.

Approval number: Noted.

WHY ARE YOU INVITED TO TAKE PART IN THIS RESEARCH PROJECT?

Your participation in this study will be extremely helpful in assisting the SANDF in applying knowledge gained from this research and inform policy makers on reducing incidents of suicide ideation therefore suicide. Authority for the study was granted by the SANDF-Defence Intelligence (DI) and the Directorate Psychology. For the purpose of this study, only soldiers from infantry units were selected as participants due to their unique scope of work and intensity of their training. Every infantry unit in the SANDF has a specific function. The following units were selected based on their functional specialization relevant to the purpose of the study namely: 1 SAI Batalion (Bloemfontein, Free State), 4 SAI Batalion (Witbank, Mpumalanga), 6 SAI Batalion (Grahamstown, Eastern Cape), 8 SAI Batalion (Nothern Cape), 9 SAI Batalion (Cape Town), 10 SAI Batalion (Mafikeng, North West Province), 15 SAI (Thohoyandou, Limpopo), 21 SAI Batalion (Doornkop, Gauteng), and 121 SAI `Batalion (Mathubathuba, KZN). You are one of the 1200 soldiers who were selected as participants from nine infantry units in nine Provinces of South Africa. From your unit, 200 participants will complete the questionnares including you. Your selection to participate in the study was facilitated by your Commanding Officer. Your Commanding Officer was instructed by the SANDF Defence Intelligence [DI] to support the study. He then tasked the Combat Readiness Officer to ensure that relevant people who meet the following criteria are selected as participants: Gender (male or female), Ethnic group (any), Age (between 18 years and 65 years), Deployment experience (deployed internally/ externally; never deployed), Combat exposure (no combat experience/ combat experience), Deployment period (more than 6 months), Period of service (more than two years), no MSDS members were requested.

WHAT IS THE NATURE OF PARTICIPATION IN THIS STUDY?

Your participation will be about 45 minutes. I will ask you to complete questionnaires about risk factors (i.e. substance abuse, stress, suicide ideation, and trauma) and protective factors (i.e. social support and well-being) which have no time limit. If you agree, your participation should take approximately 45 minutes to complete. We ask you to answer as many questions as you feel comfortable with and to be as honest as possible. If you have any questions or do not understand a question, please feel free to ask. Please understand that your participation is entirely voluntary. You alone decide whether or not you want to take part. If you agree to take part, you may refuse to answer any question or stop at any time. If you do this there will also be no penalties and you will not be prejudiced in any way.

CAN THE PARTICIPANT WITHDRAW FROM THE STUDY?

Please understand that your participation in this study is entirely voluntary and there is no penalty for refusing to participate. You alone decide whether or not you want to take part. If you agree to take part, you will be given this information sheet to keep and be asked to sign a written consent form. You may refuse to answer any question or stop at any time. If you do this there will also be no penalties and you will not be prejudiced in any way. However, if you decide to participate and answer the questionnaire and submit it, you may not be able to withdraw from the research project once you have submitted a completed questionnaire.

WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?

There are no immediate benefits to you for taking part in this study. However, this study will be extremely helpful in assisting the SANDF in applying knowledge gained from this research and inform policy makers on reducing incidents of suicide ideation therefore suicide. It should also be stated that this study forms part of a larger Suicide Prevention Project for the SANDF.

WHAT IS THE ANTICIPATED INCONVENIENCE OF TAKING PART IN THIS STUDY?

This study may lead to the recall of disturbing memories. Some of the questions are personal and sensitive and may make one feel uncomfortable. You have the right to refuse to answer any questions that make you feel this way. If one chooses not to answer some questions, you will not be penalised or prejudiced in any manner. If during or after answering the questionnaires you feel emotionally affected, an immediate psychological help will be provided by the research team. Should you need further intervention the psychologist at the testing venue will contact the unit psychologist and make an initial verbal referral for you then a standardised referral form used in the SAMHS called a DD0063 (H1) will be used. A DD0063 (H1) referral form includes the following information: your rank, name, surname, gender, force number/ ID number, date of birth, your contact details, name of your unit, type of service required and to whom the referral is for and lastly short notes clarifying the referral reason. You will then be required to take a letter to your Sickbay and hand it over to the psychologist of your unit. The psychologist will assess your situation and intervene accordingly. The principal researcher (Clinical psychologist) will later make follow-up to the unit psychologist regarding your progress. Please find the contact details of the psychologist in your area: 1 SAI

Battalion [Maj S. M De Lange, (051) 405 1689]; 4 SAI Battalion, [Capt H. B. P. Moshou, (013) 249 3572]; 6 SAI battalion [Lt Col M. J. Perry, (041) 505 1055]; 8 SAI Battalion [Lt Col Etzebeth, (053) 830 3261]; 9 SAI Battalion [Lt Col M. E. Dixon, (021) 787 1507]; 10 SAI Battalion [Lt Col M. M. Strydom, (081) 289 3427]; 15 SAI Battalion [Lt M. C. Mabidilala, (015) 965 9394]; 21 SAI Battalion [Lt M. E. Dipholo, (011) 212 5844/ 5835]; and 121 SAI Battalion [Lt N. L. Shongwe, (035) 550 6751].

WILL WHAT I SAY BE KEPT CONFIDENTIAL?

You will not be required to write your name and force no / ID number on the questionnaire and no one will be able to link you to the answers you give. On the answer sheet, it requires you to complete your age, race, first language, gender, qualification, unit and province. This information will only be used to explain the sample for research purposes. Your answers will be given a made-up code number or a false name and you will be referred to in this way in the data, in any publications, or other research reporting methods such as conference proceedings. All identifying information such as consent forms and answer sheets will be kept in a locked filing cabinet and access will be restricted to only authorised people. Your answers may be reviewed by people responsible for making sure that research is done properly, including the transcriber, external coder, and members of the Research Ethics Committee. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the record s. To ensure confidentiality principle is adhered to, all authorised persons working on this study will sign a confidentiality agreement. Please note that the information you provide may still be used for other purposes such as reporting the result of this study, publication, conference presentation, etc, however, your personal identification will not be disclosed at any point.

HOW WILL THE INFORMATION BE STORED AND ULTIMATELY DESTROYED?

Hard copies of your answers will be stored by the researcher for a period of five years in a locked cupboard/filing cabinet at the University of Free State for future research or academic purposes; electronic information will be stored on a password protected computer. Future use of the stored data will be subject to further Research Ethics Review and approval. Unauthoriesd access, use and disclosure of your confidential information may lead to emotional distress and even legal implications, therefore, the researcher will ensure that no unauthorised persons have access to your data. Once the project has been completed and the storage period have lapsed, all hard copies and electronic data will be destroyed.

WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?

There is no money promised or special favours offered by participating in the study. It is out of free will and without payment. Also, you will not forfeit any of your leisure time, tea or lunch break since testing is done during working hours. There are no immediate benefits to you for taking part in this study. However, this study will be extremely helpful in assisting the SANDF in applying knowledge gained from this research and inform policy makers on reducing incidents of suicide ideation therefore suicide. It should also be stated that this study forms part of a larger Suicide Prevention Project for the SANDF.

HOW WILL THE PARTICIPANT BE INFORMED OF THE FINDINGS / RESULTS OF THE STUDY?

If you would like to be informed of the final research findings, please contact the principal researcher, Capt P.E. Mbhele (051) 402 2521 or fax (051) 402 2515 or email phindi77@gmail.com; project leader, Lt Col S.T. Sinkoyi (012) 319 3130 or fax (012) 319 3264 or email simphiwe.info@gmail.com. Should you require any further information or want to contact the researcher about any aspect of this study, please contact Capt P.E. Mbhele (051) 402 2521 or fax (051) 402 2515 or email phindi77@gmail.com. Should you have concerns about the way in which the research has been conducted, you may contact Dr A. A. George, 051 401 9520 or fax email georgeaa@ufs.ac.za. This study may lead to the recall of disturbing memories. Some of the questions are personal and sensitive and may make one feel uncomfortable. You have the right to refuse to answer any questions that make them feel this way. If you feel that your rights were ignored and not explained properly you are welcome to contact the secretary of the Research Ethics Committee, Mrs C. Vercueil, (051) 401 7083 or email vercueilcc@ufs.ac.za.

Thank you for taking time to read this information sheet and for participating in the study

CONSENT TO PARTICIPATE IN THIS STUDY

I, _____ (participant name), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated convenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet. I have had sufficient opportunity to ask questions and am prepared to participate in the study. I understand that my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable). I am aware that the findings of this study will be anonymously processed into a research project, journal publications and/or conference proceedings.

I agree to the recording of the *insert specific data collection method.*

I have received a signed copy of the informed consent agreement.

Full Name of Participant: _____ _____

Signature of Participant: _____ Date: _____

Appendix C: Biographic Questionnaire

QUESTIONNAIRE

PLEASE ANSWER ALL THE QUESTIONS
PLEASE ENCIRCLE THE RELEVANT NUMBER – NO CROSSES!!

SECTION A: BIOGRAPHICAL INFORMATION

1. Gender

Male	1
Female	2

2. Ethnicity:

African	1
Coloured	2
Asian	3
White	4
Other	5

3. Year of birth: 19 ____

4. Rank:

Private	1
L/Corporal or Corporal	2
Sergeant	3
Staff Sergeant	4
Warrant Officer	5
Sub-Lieutenant	6
Lieutenant	7
Captain	8
Major	9
Lieutenant Colonel	10

5. Home Unit

1 SAI	1
4 SAI	2
6 SAI	3
8 SAI	4
9 SAI	5
10 SAI	6
15 SAI	7
21 SAI	8
121 SAI	9

6. Home Language

English	1
Afrikaance	2
Isi-Xhosa	3
Isi-Zulu	4
Sesotho	5
Setswana	6
Other	7

7. Marital Status	Married	1
	Divorced	2
	Single	3
	Seperated	4
	Common Law	5
8. Living Conditions	Own house	1
	Renting	2
	Family quarters	3
	Living-in quarters	4
	Living in your parant's house	5
9. Years of Service		
10. Highest education qualification	Matric	1
	Diploma	2
	Technical qualification (i.e. N4)	3
	University Degree	4
	Other	5
11. Have you deployed before	Yes	1
	No	2
12. If Yes, where did you deploy?	Internally (i.e. Ladybrand)	1
	Externally (i.e. DRC)	2
	Both (Internally & Externally)	3
13. Period of deployment	Less than 6 months	1
	More than 6 months	2
	6 months	3
	12 months	4
	More than 12 months	5
14. Combat-exposure experience	Yes	1
	No	2

15 Do you know anyone who committed suicide?	Yes	1
	No	2
16. If Yes, what was your relationship with that person?	Relative	1
	Colleague	2
	Friend	3
	Other	4
17. During deployment, did someone attempt suicide?	Yes	1
	No	2
18. During deployment did someone die of suicide?	Yes	1
	No	2
19. In your family, did someone ever attempt suicide?	Yes	1
	No	2
20. In your family, did someone ever die of suicide?	Yes	1
	No	2
21. Have you ever attempted suicide?	Yes	1
	No	2
22. What method did you use?	Poisoning	1
	Hanging	2
	Shooting	3
	Cutting	4
	Other	5
23. Do you drink alcohol?	Yes	1
	No	2
24. Do you smoke cigarettes?	Yes	1
	No	2

AUDIT: Please encircle the corresponding number that is applicable to you

1. How often do you have a drink containing alcohol?	Never	0
	Monthly or less	1
	2-4 times a month	2
	2-3 times a week	3
	4 or more times a week	4
2. How many standard drinks containing alcohol do you have on a typical day when drinking?	1 or 2	0
	3 or 4	1
	5 or 6	2
	7 to 9	3
	10 or more	4
3. How often do you have six or more drinks on one occasion?	Never	0
	Less than monthly	1
	Monthly	2
	Weekly	3
	Daily or almost daily	4
4. During the past year, how often have you found that you were not able to stop drinking once you had started?	Never	0
	Less than monthly	1
	Monthly	2
	Weekly	3
	Daily or almost daily	4
5. During the past year, how often have you failed to do what was normally expected of you because of drinking?	Never	0
	Less than monthly	1
	Monthly	2
	Weekly	3
	Daily or almost daily	4
6. During the past year, how often have you needed a drink in the morning to get yourself going after a heavy drinking session?	Never	0
	Less than monthly	1
	Monthly	2
	Weekly	3
	Daily or almost daily	4

7. During the past year, how often have you had a feeling of guilt or remorse after drinking?

Never	0
Less than monthly	1
Monthly	2
Weekly	3
Daily or almost daily	4

8. During the past year, how often have you failed to do what was normally expected of you because of drinking?

Never	0
Less than monthly	1
Monthly	2
Weekly	3
Daily or almost daily	4

9. Have you or someone else been injured as a result of your drinking?

No	0
Yes, but not in the past year	2
Yes, during the past year	4

10. Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested you cut down?

No	0
Yes, but not in the past year	2
Yes, during the past year	4

Appendix D: Scale for Suicide Ideation (SSI)

University of the Free State

UFS•UV

Scale for Suicide Ideation (SSI)

Record Type: Master Test Record

Altemate Title: Beck Scale for Suicide Ideation

Acronym: SSI

Test Year: 1979

Test Child Records: Scale for Suicide Ideation (SSI) [Test Development]
Assessment of suicidal intention: The Scale for Suicide Ideation. (AN: 1979-27627-001 from PsycINFO) Apr, 1979.
Authors: Beck, Aaron T.; Kovacs, Maria; Weissman, Arlene;
Source: Journal of Consulting and Clinical Psychology 47(2), American Psychological Association, US. Age Group. Adulthood (18 yrs & older); Thirties (30-39 yrs)
Population: Human; Male, Female; Sample: 90 patients who were hospitalized for self-destructive ruminations Keywords: suicidal intention; psychometric properties, interview, Scale for Suicide Ideation; test development internal consistency; test retest reliability, construct validity, discriminant validity; psychological assessment; Subjects Psychodiagnostic Interview: Suicidal Ideation; Test Construction; Test Reliability; Test Validity,

Authors:
Beck. Aaron T., University of Pennsylvania, School of Medicine, Philadelphia, Pennsylvania, United States
Kovacs, Maria, University of Pittsburgh, School of Medicine, Pittsburgh, Pennsylvania, United States Wejssman, Arlene, University of Pennsylvania, Philadelphia, Pennsylvania, United States

Address:
Beck, Aaron T.

Source:
PsycTESTS, 1979.

Language:
English

Construct:
Suicidal Ideation

Purpose:
The purpose of the Scale for Suicide Ideation is to quantify and assess suicidal intention.

Description:
The Scale for Suicide Ideation (SSI; Weissman. 1979) is a 19-item clinical research instrument designed to quantify and assess suicidal intention. The items on the SSI were partly clinically derived and partly rationally derived. Systematic observations and interviews of suicidal patients yielded a list of salient preoccupations, concerns and wishes, and thinking and behavior patterns. The initial scale was 3D-items, which was administered to 35 suicidal patients. Items that overlapped other items, that were unwieldy. or that were difficult to score were eliminated. The SSI is completed by a clinician based on the patient's answers in a semistructured interview. The internal consistency of the SSI was determined on a sample of 90 patients who were hospitalized for self-destructive ruminations. For the 90 cases, a reliability coefficient of .89 was obtained. The scale was found to have high internal consistency and moderately high correlations with clinical ratings of suicidal risk and self-administered measures of self-harm.
Furthermore, it was sensitive to changes in levels of depression and hopelessness over time. Its construct validity was supported by two studies by different investigators testing the relationship between hopelessness, depression, and suicidal ideation and by a Study

Format'	demonstrating a significant relationship between high levels of suicidal ideation and 'dichotomous' attitudes about life and related concepts on a semantic differential test. Factor analysis yielded three meaningful factors: active suicidal desire, specific plans for suicide. and passive suicidal desire, (PsycTESTS
Instrument Type:	Each item consists of three alternative statements graded in intensity from O to 2. The total score is computed by adding the individual item scores. The possible range of scores is 0-38.
Administration Method:	Rating Scale
PsycTESTS Classification:	Paper, Interview
Commercial Availability:	Mental Health/lllness Related Assessment (6700)
Permissions:	No
Fee:	May use for Research/Teaching
Other Version:	No.
Release Date:	9999-50762-000, Beck Scale for Suicide Ideation--Turkish Version. Translation
Correction Date:	20110912
Digital Object Identifier	20160711 http.//dx.doi.org/10.1037/t01299-OOO
Test File:	Full
Accession Number:	9999-01299-000

Scale for Suicide Ideation

Version Attached: Full Test

PsycTESTS Citation:

Beck, A. T., Kovacs, M., & Weissman, A. (1979). Scale for Suicide Ideation [Database record]. Retrieved from PsycTESTS. doi: http://dx.doi.org/10.1037/01299-000

Instrument Type:
Rating Scale

Test Format:
Each item consists of three alternative statements graded in intensity from O to 2. The total score is computed by adding the individual item scores. The possible range of scores is 0-38.

Source:
Beck, Aaron T., Kovacs, Maria, & Weissman, Arlene (1979). Assessment of suicidal intention: The Scale for Suicide Ideation. Journal of Consulting and Clinical Psychology, vol 47(2), 343-352. doi: 10.1037/0022-006X.47.2.343

Permissions:

PsycTESTS

doi: 10.1037/t01299-000

The Scale for Suicide ideation

Items

1. Wish to live
    - O. Moderate to strong
    - 1. Weak
    - 2. None
2. Wish to die
    - O. None
    - 1. Weak
    - 2. Moderate to strong
3. Reasons for living/dying
    - O. For living outweigh for dying
    - 1. About equal
    - 2. For dying outweigh for living
4. Desire to make active suicide attempt
    - O. None
    - 1. Weak
    - 2. Moderate to strong
5. Passive suicidal desire
    - O. Would take precautions to save life
    - 1. Would leave life/death to chance
    - 2. Would avoid steps necessary to save or maintain life
6. Time dimension: Duration of suicide ideation/wish
    - O. Brief, fleeting periods
    - 1. Longer periods
    - 2. Continuous (chronic) or almost continuous
7. Time dimension: Frequency of suicide
    - O. Rare, occasional
    - 1. Intermittent
    - 2. Persistent or continuous
8. Attitude toward ideation/wish
    - O. Rejecting
    - 1. Ambivalent; indifferent
    - 2. Accepting
9. Control over suicidal action/acting-out wish
    - O. Has sense of control
    - 1. Unsure of control
    - 2. Has no sense of control

19. Deterrents to active attempt (e.g., family, religion, irreversibility)
    - O. Would not attempt because of a deterrent
    - 1. Some concern about deterrents
    - 2. Minimal or no concern about deterrents
11. Reason for contemplated attempt
    - O. To manipulate the environment; get attention, revenge

1. Combination of O and 2
2. Escape, surcease, solve problems

12. Method: Specificity/planning of contemplated attempt
    O. Not considered
    1. Considered, but details not worked out
    2. Details worked out/well formulated

13. Method: Availability/opportunity for contemplated attempt
    O. Method not available; no opportunity
    1. Method would take time/effort; opportunity not readily available
    2a. Method and opportunity available
    2b. Future opportunity or availability of method anticipated

14. Sense of "capability" to carry out attempt
    O. No courage, too weak, afraid, incompetent
    1. Unsure of courage, competence
    2. Sure of competence, courage

15. Expectancy/anticipation of actual attempt
    O. No
    1. Uncertain, not sure
    2. Yes

16. Actual preparation for contemplated attempt
    O. None
    1. Partial (e.g., starting to collect pills)
    2. Complete (e.g., had pills, loaded gun)

17. Suicide note
    O. None
    1. Started but not completed; only thought about
    2. Completed

18. Final acts in anticipation of death (e.g., insurance, will)
    O. None
    1. Thought about or made some arrangements
    2. Made definite plans or completed arrangements

19. Deception/concealment of contemplated suicide
    O. Revealed ideas openly
    1. Held back on revealing
    2. Attempted to deceive, conceal, lie

Appendix E: Sense of Coherence – Orientation to Life Questionnaire

Sense of Coherence – Orientation to Life Questionnaire

INSTRUCTIONS:

The questions in this scale ask you about your feelings and thoughts

1 When you talk to people, do you have the feeling that they don't understand you?

1	2	3	4	5	6	7
Never						Always have this feeling

2 In the past, when you had to do something which depended upon cooperation with others, did you have the feeling that it:

1	2	3	4	5	6	7
Surely wouldn't get done						Surely would get done

3 Think of the people with whom you come into contact daily, aside from the ones to whom you feel closest. How well do you know most of them?

1	2	3	4	5	6	7
You feel that they're strangers						You know them very well

4 Do you have the feeling that you don't really care about what goes on around you?

1	2	3	4	5	6	7
Very seldom or never						Very often

5 Has it happened in the past that you were surprised by the behaviour of people whom you thought you knew well?

1	2	3	4	5	6	7
Never happened						Always happened

6 Has it happened that people whom you counted on disappointed you?

1	2	3	4	5	6	7
Never happened						Always happened

7 Life is:

1	2	3	4	5	6	7
Full of interest						Completely routine

8 Until now your life has had:

1	2	3	4	5	6	7
No clear goals or purpose at all						Very clear goals and purpose

9 Do you have the feeling that you're being treated unfairly?						
1	2	3	4	5	6	7
Very often						Very seldom or never

10 In the past ten years your life has been:						
1	2	3	4	5	6	7
Full of changes without you knowing what will happen next						Completely consistent and clearr

11 Most of the things you do in the future will probably be:						
1	2	3	4	5	6	7
Completely fascinating						Deadly boring

12 Do you have the feeling that you are in an unfamiliar situation and don't know what to do?						
1	2	3	4	5	6	7
Very often						Very seldom or never

13 What best describes how you see life:						
1	2	3	4	5	6	7
One can always find a solution to painful things in life						There is no solution to painful things in life

14 When you think about your life, you very often:						
1	2	3	4	5	6	7
Feel how good it is to be alive						Ask yourself why you exist at all

15 When you face a difficult problem, the choice of a solution is:						
1	2	3	4	5	6	7
Always confusing and hard to find						Always completely clear

16 Doing the things you do every day is:						
1	2	3	4	5	6	7
A source of deep pleasure and satisfaction						A source of pain and boredom

17 Your life in the future will probably be:						
1	2	3	4	5	6	7
Full of changes without knowing what will happen next						Completely consistent and clear

18 When something unpleasant happened in the past your tendency was:						
1	2	3	4	5	6	7
"To eat yourself up" about it						To say "ok that's that, I have to live with it" and go on
19 Do you have very mixed-up feelings and ideas?						
1	2	3	4	5	6	7
Very often						Very seldom or never
20 When you do something that gives you a good feeling:						
1	2	3	4	5	6	7
It's certain that you'll go on feeling good						It's certain that something will happen to spoil the feeling
21 Does it happen that you have feelings inside, you would rather not feel?						
1	2	3	4	5	6	7
Very often						Very seldom or neve
22 You anticipate that your personal life in future will be:						
1	2	3	4	5	6	7
Totally without meaning and purpose						Full of meaning or purpose
23 Do you think that there will always be people whom you'll be able to count on in the future?						
1	2	3	4	5	6	7
You're certain there will be						You doubt there will be
24 Does it happen that you have the feeling that you don't know exactly what's about to happen?						
1	2	3	4	5	6	7
Very often						Very seldom or neve
25 Many people – even those with a strong character – sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?						
1	2	3	4	5	6	7
Never						Very ofte
26 When something happened, have you generally found that:						
1	2	3	4	5	6	7
You overestimated or underestimated its importance						You saw things in the right proportion

27 When you think of the difficulties you are likely to face in important aspects of your life, do you have the feeling that:						
1	2	3	4	5	6	7
You will always succeed In overcoming the difficulties						You won't succeed in overcoming the difficultie
28 How often do you have the feeling that there's little meaning in the things you do in your daily life?						
1	2	3	4	5	6	7
Very often						Very seldom or neve
29 How often do you have feelings that you're not sure you can keep under control?						
1	2	3	4	5	6	7
Very often						Very seldom or neve

Appendix F: The Posttraumatic Stress Disorder Checklist (PCL)

The Posttraumatic Stress Disorder Checklist (PCL)

The PCL (Weathers et al, 1993) is an easily administered self-report rating scale for assessing the 17 DSM-IV symptoms of PTSD. It has excellent test-retest reliability over a 2-3 day period. Internal consistency is very high for each of the three groups of items corresponding to the DSM-IV symptom clusters as well as for the full 17-item scale. The PCL correlates strongly with other measures of PTSD, such as the Mississippi Scale, the PK scale of the MMPI-2, and the Impact of Events Scale, and also correlates moderately with level of combat exposure.

Three versions of the PCL are available, although the differences are very small. The PCL-M is a military version and questions refer to "*a stressful military experience*". The PCL-S is a non-military version that can be referenced to any specific traumatic event; the questions refer to "the stressful experience". The PCL-C is a general civilian version that is not linked to a specific event; the questions refer to "a stressful experience from the past". The scoring is the same for all three versions.

A total score is computed by adding the 17 items, so that possible scores range from 17 to 85. Used as a continuous measure, the PCL has good diagnostic utility. In Vietnam combat veterans a cut-off of 50 on the PCL is a good predictor of a PTSD diagnosis based on the SCID PTSD module. Principal components analysis revealed one large factor, consisting primarily of re-experiencing and hyperarousal items, and one much small factor, consisting primarily of emotional numbing items.

References:

Blanchard, E.B., Jones-Alexander, J., Buckley, T.C., & Forneris, C.A. (1996). Psychometric properties of the PTSD Checklist (PCL). *Behaviour Research and Therapy, 34,* 669-673.
Cardove, M.J., Andrykowski, M.A., Redd, W.H., Kenady, D.E., McGrath, P.C., & Sloan, D.A. (1995). Frequency and correlates of posttraumatic stress disorder like symptoms after treatment for breast cancer. *Journal of Consulting and Clinical Psychology, 63,* 981-986.
Forbes, D., Creamer, M., and Biddle, D. (2001). The validity of the PTSD checklist as a measure of symptomatic change in combat-related PTSD. Behavior Therapy and Research, 39, 977-986.
Weathers, F.W., Litz, B.T., Herman, D.S., Huska, J.A. & Keane, T.M. (1993) The PTSD Checklist (PCL): Reliablity, validity, and diagnostic utility. Paper presented at the 9th Annual Conference of the ISTSS, San Antonio.

Common assessment measures: PTSD Checklist

PTSD CheckList – Civilian Version (PCL-C)

Patient's Name: _____

Instructions: Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, put an "X" in the box to indicate how much you have been bothered by that problem *in the past month.*

No.	Response:	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
1.	Repeated, disturbing *memories, thoughts,* or *images* of a stressful experience from the past?					
2.	Repeated, disturbing *dreams* of a stressful experience from the past?					
3.	Suddenly *acting* or *feeling* as if a stressful experience *were happening again* (as if you were reliving it)?					
4.	Feeling *very upset* when *something reminded* you of a stressful experience from the past?					
5.	Having *physical reactions* (e.g., heart pounding, trouble breathing, or sweating) when *something reminded* you of a stressful experience from the past?					
6.	Avoid *thinking about* or *talking about* a stressful experience from the past or avoid *having feelings* related to it?					
7.	Avoid *activities* or *situations* because *they remind you* of a stressful experience from the past?					
8.	Trouble *remembering important parts* of a stressful experience from the past?					
9.	Loss of interest in things that you used to enjoy?					
10.	Feeling *distant* or *cut off* from other people?					
11.	Feeling *emotionally numb* or being unable to have loving feelings for those close to you?					
12.	Feeling as if your *future* will somehow be *cut short*?					
13.	Trouble falling or staying asleep?					
14.	Feeling irritable or having angry outbursts?					
15.	Having difficulty concentrating?					
16.	Being *"super alert"* or watchful on guard?					
17.	Feeling *jumpy* or easily startled?					

Weathers, F.W., Huska, J.A., Keane, T.M. *PCL-C for DSM-IV.* Boston: National Center for PTSD – Behavioral Science Division, 1991.

PTSD CheckList – Civilian Version (PCL-S)

Patient's Name: _____

Instructions: Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, put an "X" in the box to indicate how much you have been bothered by that problem *in the past month.*

The event you experienced was _____ on _____(date)

No.	Response:	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
1.	Repeated, disturbing *memories*, *thoughts*, or *images* of a stressful experience from the past?					
2.	Repeated, disturbing *dreams* of a stressful experience from the past?					
3.	Suddenly *acting* or *feeling* as if a stressful experience *were happening again* (as if you were reliving it)?					
4.	Feeling *very upset* when *something reminded* you of a stressful experience from the past?					
5.	Having *physical reactions* (e.g., heart pounding, trouble breathing, or sweating) when *something reminded* you of a stressful experience from the past?					
6.	Avoid *thinking about* or *talking about* a stressful experience from the past or avoid *having feelings* related to it?					
7.	Avoid *activities* or *situations* because *they remind you* of a stressful experience from the past?					
8.	Trouble *remembering important parts* of a stressful experience from the past?					
9.	Loss of interest in things that you used to enjoy?					
10.	Feeling *distant* or *cut off* from other people?					
11.	Feeling *emotionally numb* or being unable to have loving feelings for those close to you?					
12.	Feeling as if your *future* will somehow be *cut short*?					
13.	Trouble falling or staying asleep?					
14.	Feeling irritable or having angry outbursts?					
15.	Having difficulty concentrating?					
16.	Being *"super alert"* or watchful on guard?					
17.	Feeling *jumpy* or easily startled?					

Weathers, F.W., Huska, J.A., Keane, T.M. *PCL-S for DSM-IV.* Boston: National Center for PTSD – Behavioral Science Division, 1991.

PTSD CheckList – Military Version (PCL-M)

Patient's Name: _____

Instructions: Below is a list of problems and complaints that people sometimes have in response to stressful military experiences. Please read each one carefully, put an "X" in the box to indicate how much you have been bothered by that problem *in the past month.*

No.	Response:	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
1.	Repeated, disturbing *memories*, *thoughts*, or *images* of a stressful experience from the past?					
2.	Repeated, disturbing *dreams* of a stressful experience from the past?					
3.	Suddenly *acting* or *feeling* as if a stressful experience *were happening again* (as if you were reliving it)?					
4.	Feeling *very upset* when *something reminded* you of a stressful experience from the past?					
5.	Having *physical reactions* (e.g., heart pounding, trouble breathing, or sweating) when *something reminded* you of a stressful experience from the past?					
6.	Avoid *thinking about* or *talking about* a stressful experience from the past or avoid *having feelings* related to it?					
7.	Avoid *activities* or *situations* because *they remind you* of a stressful experience from the past?					
8.	Trouble *remembering important parts* of a stressful experience from the past?					
9.	Loss of interest in things that you used to enjoy?					
10.	Feeling *distant* or *cut off* from other people?					
11.	Feeling *emotionally numb* or being unable to have loving feelings for those close to you?					
12.	Feeling as if your *future* will somehow be *cut short*?					
13.	Trouble falling or staying asleep?					
14.	Feeling irritable or having angry outbursts?					
15.	Having difficulty concentrating?					
16.	Being *"super alert"* or watchful on guard?					
17.	Feeling *jumpy* or easily startled?					

Weathers, F.W., Huska, J.A., Keane, T.M. *PCL-C for DSM-IV*. Boston: National Center for PTSD – Behavioral Science Division, 1991.

Appendix G: AUDIT Questionnaire: Screen for Alcohol Misuse

AUDIT Questionnaire: Screen for Alcohol Misuse

Please circle the answer that is correct for you

1. How often do you have a drink containing alcohol?

- Never
- Monthly or less
- 2−4 times a month
- 2−3 times a week
- 4 or more times a week

2. How many standard drinks containing alcohol do you have on a typical day when drinking?

- 1 or 2
- 3 or 4
- 5 or 6
- 7 to 9
- 10 or more

3. How often do you have six or more drinks on one occasion?

- Never
- Less than monthly
- Monthly
- Weekly
- Daily or almost daily

4. During the past year, how often have you found that you were not able to stop drinking once you had started?

- Never
- Less than monthly
- Monthly
- Weekly
- Daily or almost daily

5. During the past year, how often have you failed to do what was normally expected of you because of drinking?

- Never
- Less than monthly
- Monthly
- Weekly
- Daily or almost daily

6. During the past year, how often have you needed a drink in the morning to get yourself going after a heavy drinking session?

- Never
- Less than monthly
- Monthly
- Weekly
- Daily or almost daily

7. During the past year, how often have you had a feeling of guilt or remorse after drinking?

- Never
- Less than monthly
- Monthly
- Weekly
- Daily or almost daily

8. During the past year, have you been unable to remember what happened the night before because you had been drinking?

- Never
- Less than monthly
- Monthly
- Weekly
- Daily or almost daily

9. Have you or someone else been injured as a result of your drinking?

- No
- Yes, but not in the past year
- Yes, during the past year

10. Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested you cut down?

- No
- Yes, but not in the past year
- Yes, during the past year

Scoring the audit

Scores for each question range from 0 to 4, with the first response for each question (eg never) scoring 0, the second (eg less than monthly) scoring 1, the third (eg monthly) scoring 2, the fourth (eg weekly) scoring 3, and the last response (eg. daily or almost daily) scoring 4. For questions 9 and 10, which only have three responses, the scoring is 0, 2 and 4 (from left to right).

A score of 8 or more is associated with harmful or hazardous drinking, a score of 13 or more in women, and 15 or more in men, is likely to indicate alcohol dependence.

[1]Saunders JB, Aasland OG, Babor TF *et al*. Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption — II. *Addiction* 1993, **88**: 791–803.

Appendix H: the Perceived Stress Scale (PSS)

The Perceived Stress Scale (14 items) - Cohen et al., 1983

Recommended by The NIH Centers for Population Health and Health Disparities (CPHHD)-Measures and Methods Work Group (MMWG)
CPHHD Taxonomy- Health and Mental Health [Well-being]-stress & hypervigilance-Perceived Stress

Also recommended by MacArthur Foundation (see http://www.macses.ucsf.edu/research/psychosocial/stress.php#perceived)

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control important things in your life?
3. In the last month, how often have you felt nervous and "stressed"?
4. In the last month, how often have you dealt successfully with irritating life hassles?
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
6. In the last month, how often have you felt confident about your ability to handle your personal problems?
7. In the last month, how often have you felt that things were going your way?
8. In the last month, how often have you found that you could not cope with all the things that you had to do?
9. In the last month, how often have you been able to control irritations in your life?
10. In the last month, how often have you felt that you were on top of things?
11. In the last month, how often have you been angered because of things that happened that were outside of your control?
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?
13. In the last month, how often have you been able to control the way you spend your time?
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

[0=never; 1=almost never; 2=sometimes; 3=fairly often; 4=very often]

Note: Items 4, 5, 6, 7, 9, 10, and 13 are scored in reverse direction.

Appendix I – Interpersonal Support Evaluation List (ISEL)

Interpersonal Support Evaluation List (ISEL) -- General Population

Instructions: This scale is made up of a list of statements each of which may or may not be true about you. For each statement check "definitely true" if you are sure it is true about you and "probably true" if you think it is true but are not absolutely certain. Similarly, you should check "definitely false" if you are sure the statement is false and "probably false" is you think it is false but are not absolutely certain.

1. There are several people that I trust to help solve my problems.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

2. If I needed help fixing an appliance or repairing my car, there is someone who would help me.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

3. Most of my friends are more interesting than I am.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

4. There is someone who takes pride in my accomplishments.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

5. When I feel lonely, there are several people I can talk to.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

6. There is no one that I feel comfortable to talking about intimate personal problems.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

7. I often meet or talk with family or friends.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

8. Most people I know think highly of me.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

9. If I needed a ride to the airport very early in the morning, I would have a hard time finding someone to take me.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

10. I feel like I'm not always included by my circle of friends.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

11. There really is no one who can give me an objective view of how I'm handling my problems.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

12. There are several different people I enjoy spending time with.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

13. I think that my friends feel that I'm not very good at helping them solve their problems.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

14. If I were sick and needed someone (friend, family member, or acquaintance) to take me to the doctor, I would have trouble finding someone. ____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

15. If I wanted to go on a trip for a day (e.g., to the mountains, beach, or country), I would have a hard time finding someone to go with me.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

16. If I needed a place to stay for a week because of an emergency (for example, water or electricity out in my apartment or house), I could easily find someone who would put me up.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

17. I feel that there is no one I can share my most private worries and fears with.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

18. If I were sick, I could easily find someone to help me with my daily chores.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

19. There is someone I can turn to for advice about handling problems with my family.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

20. I am as good at doing things as most other people are.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

21. If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

22. When I need suggestions on how to deal with a personal problem, I know someone I can turn to.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

23. If I needed an emergency loan of $100, there is someone (friend, relative, or acquaintance) I could get it from.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

24. In general, people do not have much confidence in me.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

25. Most people I know do not enjoy the same things that I do.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

26. There is someone I could turn to for advice about making career plans or changing my job.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

27. I don't often get invited to do things with others.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

28. Most of my friends are more successful at making changes in their lives than I am.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

29. If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment (the plants, pets, garden, etc.).
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

30. There really is no one I can trust to give me good financial advice.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

31. If I wanted to have lunch with someone, I could easily find someone to join me.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

32. I am more satisfied with my life than most people are with theirs.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

33. If I was stranded 10 miles from home, there is someone I could call who would come and get me.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

34. No one I know would throw a birthday party for me.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

35. It would be difficult to find someone who would lend me their car for a few hours.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

36. If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

37. I am closer to my friends than most other people are to theirs.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

38. There is at least one person I know whose advice I really trust.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

39. If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

40. I have a hard time keeping pace with my friends.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

Scoring

The ISEL consists of a list of 40 statements concerning the perceived availability of potential social resources. The items are counterbalanced for desirability that is, half the items are positive statements about social relationships (e.g., "If I needed help fixing an appliance or repairing my car, there is someone who would help me."), while half are negative statements (e.g., "I don't often get invited to do things with others.").

The ISEL was designed to assess the perceived availability of four separate functions of social support as well as providing an overall support measure. The items which comprise the ISEL fall into four 10-item subscales. The "tangible" subscale is intended to measure perceived availability of material aid; the "appraisal" subscale, the perceived availability of someone to talk to about one's problems; the "selfesteem" subscale, the perceived availability of a positive comparison when comparing one's self to others; and the "belonging" subscale, the perceived availability of people one can do things with. Subscale independence was maximized by selecting items (from a larger item pool) which were highly correlated with items in their own subscale and at the same time minimally correlated with other subscales.

Appraisal items: 1, 6, 11, 17, 19, 22, 26, 30, 36, 38
Tangible items: 2, 9, 14, 16, 18, 23, 29, 33, 35, 39
Self- esteem items: 3, 4, 8, 13, 20, 24, 28, 32, 37, 40
Belonging items: 5, 7, 10, 12, 15, 21, 25, 27, 31, 34
Items that are reverse- coded: 3, 6, 9, 10, 11, 13, 14, 15, 17, 24, 25, 27, 28, 29, 30, 34, 35, 36, 39, 40.

Interpersonal Support **Instructions:** This scale is made up of a list of statements each of which may or may not be true about you. Use the following scale: **0 = Definitely False** **1 = Probably False** **2 = Probably True** **3 = Definitely True** For **each** statement ENCIRCLE 3 "definitely true" if you are sure it is true about you OR 2 "probably true" if you are not abolutely certain. Similarly, you should encircle 0 "definitely false" if you are sure the statement is false and 1 "probably false if you think it is false but you are not absolutely certain.	**Definitely False**	**Probably False**	**Probably True**	**Definitely True**
1.There are several people that I trust to help solve my problems	0	1	2	3
2. If I needed help fixing an appliance or repairing my car, there is someone who would help me.	0	1	2	3
3. Most of my friends are more interesting than I am	0	1	2	3
4. There is someone who takes pride in my accomplishments	0	1	2	3
5.When I feel lonely, there are several people I can talk to.	0	1	2	3
6. There is no one that I feel comfortable to talking about intimate personal problems	0	1	2	3
7. I often meet or talk with family or friends.	0	1	2	3
8. Most people I know think highly of me.	0	1	2	3
9. If I needed a ride to the airport very early in the morning, I would have a hard time finding someone to take me.	0	1	2	3
10. I feel like I'm not always included by my circle of friends.	0	1	2	3
11. There really is no one who can give me an objective view of how I'm handling my problems.	0	1	2	3
12. There are several different people I enjoy spending time with.	0	1	2	3
13. I think that my friends feel that I'm not very good at helping them solve their problems.	0	1	2	3
14. If I were sick and needed someone (friend, family member, or acquaintance) to take me to the doctor, I would have trouble finding someone	0	1	2	3
15. If I wanted to go on a trip for a day (e.g., to the mountains, beach, or country), I would have a hard time finding someone to go with me.	0	1	2	3
16. If I needed a place to stay for a week because of an emergency (for example, water or electricity out in my apartment or house), I could easily find someone who would put me up.	0	1	2	3
17. I feel that there is no one I can share my most private worries and fears with.	0	1	2	3
18. If I were sick, I could easily find someone to help me with my daily chores.	0	1	2	3
19. There is someone I can turn to for advice about handling problems with my family.	0	1	2	3
20. I am as good at doing things as most other people are.	0	1	2	3
21. If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.	0	1	2	3
22. When I need suggestions on how to deal with a personal problem, I know someone I can turn to.	0	1	2	3

23. If I needed an emergency loan of $100, there is someone (friend, relative, or acquaintance) I could get it from.	0	1	2	3
24. In general, people do not have much confidence in me.	0	1	2	3
25. Most people I know do not enjoy the same things that I do.	0	1	2	3
26. There is someone I could turn to for advice about making career plans or changing my job	0	1	2	3
27. I don't often get invited to do things with others.	0	1	2	3
28. Most of my friends are more successful at making changes in their lives than I am.	0	1	2	3
29. If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment (the plants, pets, garden, etc.).	0	1	2	3
30. There really is no one I can trust to give me good financial advice.	0	1	2	3
31. If I wanted to have lunch with someone, I could easily find someone to join me.	0	1	2	3
32. I am more satisfied with my life than most people are with theirs.	0	1	2	3
33. If I was stranded 10 miles from home, there is someone I could call who would come and get me.	0	1	2	3
34. No one I know would throw a birthday party for me.	0	1	2	3
35. It would be difficult to find someone who would lend me their car for a few hours.	0	1	2	3
36. If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.	0	1	2	3
37. I am closer to my friends than most other people are to theirs.	0	1	2	3
38. There is at least one person I know whose advice I really trust.	0	1	2	3
39. If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.	0	1	2	3
40. I have a hard time keeping pace with my friends.	0	1	2	3