The role of resilience in the relationship between exposure to trauma and suicide ideation

By

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Declaration

I (Nico Venter) declare that this dissertation (in article format) hereby submitted by me for the Magister Artium degree (Counselling Psychology) at the University of the Free State is my own independent work and has not previously been submitted by me to another university/faculty. I furthermore cede copyright of this dissertation in favour of the University of the Free State.

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Nico Venter **Date**

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Abstract

The relationship between exposure to trauma and suicide ideation has been established in literature. It is thus important to gain a better understanding of the factors than can buffer the negative outcomes of trauma exposures. Resilience is deemed to play a role in this regard and the aim of this study was to determine if resilience moderates the relationship between trauma exposure and suicide ideation. A total of 1001 adolescent participants from various schools across the Free State province participated in the study, with ages ranging from 14 to 16 years. A quantitative, correlational, non-experimental design was used. A hierarchical regression analysis was conducted to determine the role of resilience in the relationship between trauma exposure and suicide ideation. The results indicated that resilience does indeed moderate the relationship between trauma exposure and suicide ideation. Individuals with lower resilience score higher on suicide ideation. In contrast, individuals with high resilience revealed significantly lower scores on suicide ideation. These results can aid therapists in assisting clients to deal with trauma by focusing on the strengthening of their resilience.

Keywords: Resilience; trauma exposure; suicide ideation; adolescence; age; Free State Province

Opsomming

Die verband tussen trauma en selfmoordideasie is reeds deur verskeie navorsingsartikels bewys. Dus is dit belangrik om'n beter begrip te verkry van die verskeie faktore wat as buffer kan optree teen negatiewe uitkomste nadat 'n individu aan trauma blootgestel is. Veerkragtigheid kan moontlik'n rol speel in dié opsig, en die doel van die studie was om te bepaal of veerkragtigheid die verhouding tussen blootstelling aan trauma en selfmoordideasie modereer. 'n Totaal van 1001 adolessente deelnemers van verskeie skole in die Vrystaat provinsie het aan die studie deelgeneem. Die ouderdomme het gewissel van 14 tot 16 jaar. Die studie het gebruik gemaak van 'n kwantitatiewe, korrelasionele, nie-eksperimentele ontwerp. 'n Hiërargiese regressie-analise is gedoen om te bepaal of veerkragtigheid 'n rol speel in die verhouding tussen blootstelling aan trauma en selfmoordideasie. Die resultate het aangedui dat veerkragtigheid die verhouding tussen blootstelling aan trauma en selfmoordideasie modereer. Individue met lae veerkragtigheid het hoër tellings in selfmoordideasie getoon. Daarteenoor het individue met hoë veerkragtigheid beduidende laer tellings van selfmoordideasie getoon. Na aanleiding van die resultate kan terapeute hul kliënte wat deur trauma geraak is,help deur op die versterking van veerkragtigheidte fokus.

Sleutelwoorde: Veerkragtigheid; blootstelling aan trauma; selfmoordideasie; adolessente; ouderdom; Vrystaat Provinsie

Introduction and literature review

Trauma exposure is prevalent in South Africa with more than 70% of the South African population having been exposed to at least one traumatic event in their lifetime (Atwoli et al., 2013). Furthermore, Botha (2014) found that 86% of young adolescents have been exposed to at least one traumatic event by the age of 14 years, whereas Suliman, Kaminer, Seedat and Stein (2005) reported that by late adolescence 91% of South African children have been exposed to trauma.

The impact of trauma exposure during childhood is severe compared to the impact of these events in adulthood (Ogle, Rubin & Siegler, 2013). Traumatic experiences during childhood are more influential in the identity development process than trauma experienced later in life (Ogle, Rubin, Berntsen & Siegler, 2013). It also appears that differences can be seen in the brain-imaging visualisations of adolescents as opposed to adults who have experienced a traumatic event, e.g. in the hippocampal volume and corpus callosum (Rinne-Albers, Van der Wee, Lamers-Winkelman & Vermeiren, 2013). Furthermore, the individual's reaction to trauma differs between early adolescence and late adolescence. For example, young adolescents experience a greater startle response and greater memory deficits compared to older adolescents (Crane et al., 2014; National Institute of Mental Health, 2012; Wolitzky-Taylor et al., 2013). A traumatic event during childhood also increases the likelihood of Post-Traumatic Stress Disorder (PTSD) to develop after a traumatic event in adulthood (Breslau, Chilcoat, Kessler & Davis, 1999).

Trauma exposure increases a person's level of psychological distress (McMullen, O'Callaghan, Richards, Eakin & Rafferty, 2012), with PTSD and depression being the two most commonly diagnosed disorders in adolescents after exposure to a traumatic event (Ellis, Macdonald, Lincoln & Cabral, 2008). Furthermore, a number of studies have also indicated the relationship between trauma and suicide ideation (Plener, Singer & Goldbeck, 2011; Sorsdahl, Stein, Williams & Nock, 2011). However, not all traumatic experiences lead to mental disorders or suicide ideation. According to various researchers (e.g. Kumpfer, 1999; Kashdan & Kane, 2011; Powell, Gilson& Collin, 2012) positive adaption is possible and personal growth can occur after being exposed to trauma (Jin, Xu & Liu, 2014). Resilience is one of the factors that can contribute to post-traumatic growth after an individual has been exposed to a traumatic event (Min et al., 2014).

Traumatic events

According to the Diagnostic and Statistical Manual 5 (DSM-5) (American Psychiatric Association, 2013) a traumatic event includes exposure to actual or threatened death, serious injury or sexual violation. Exposure to such an event is followed by psychological distress such as re-experiencing the event, avoiding associations with the event, negative cognitions and mood, arousal, and the traumatic event elicits emotional responses such as shock, denial, flashbacks and memory loss (American Psychological Association, 2014). Furthermore, trauma can be classified into the different types that an individual may experience, but also the different effects between a single traumatic event and multiple traumatic events, which will be discussed in the next section.

Types of trauma. The traumatic events that are frequently experienced by non-clinical population groups include life-threatening events, robbery or mugging, traumatic bereavement, sexual trauma, family-related trauma and witnessing a traumatic event (Goodman, Corcoran, Turner, Yuan & Green, 1998; Kilpatrick et al., 2013), which are also prevalent in South Africa (Atwoli et al., 2013).

Life-threatening events include chronic or life-threatening illnesses, accidents and physical injury (Gomes et al., 2010). Vehicle accidents contribute to symptoms of Acute Stress Disorder (Suliman, Troeman, Stein & Seedat, 2014). In the Free State province 6.9% of adolescents treated for PTSD are those who have experienced vehicle accidents, and 3.5% have experienced illness such as HIV (Calitz, De Jongh, Horn, Nel & Joubert, 2014).

A robbery or mugging is defined as any attempt by an offender to take things of value from a victim and in so doing to induce fear (Adler, Mueller & Laufer, 2001). The victim's subjective perception and emotional reaction to this event could increase the risk for them developing PTSD (Fichera et al., 2015). Furthermore, Staubli, Killias and Frey (2014) found that having been a victim of robbery also has a negative effect on life satisfaction. In the African context, the effect of robbery includes fear of future crime and lower subjective well-being (Powdthavee, 2003; Sulemana, 2015). In South Africa, 11% of homicides occur during robbery (Swart, Seedat & Nel, 2015).

Sexual trauma is defined to include any sexual assault, attempted sexual assault or molestation (Kaltman, Krupnick, Stockton, Hooper& Green, 2005). Sexual trauma may be the least common type of trauma, but is seen as the most severe (Breslau, Troost, Bohnert & Luo,

2012; Atwoli et al., 2013). Sexual trauma may lead to what is termed mental contamination, defined as disgust with oneself or the perpetrator and which can result in depression or obsessive compulsive disorder (Badour, Ojserkis, Mckay & Feldner, 2014). According to Calitz et al. (2014), 27.6% of adolescents treated for PTSD in the Free State province are those who have experienced sexual violence.

Family-related trauma includes child or adult physical assault or abuse. According to Figley (1989) there are four different ways in which a family can be traumatised. The first is through simultaneous effects, which occurs when the trauma affects all the family members. The second is through vicarious effects, which is the traumatisation of other family members when one family member has been traumatised. The third is through secondary traumatic stress, which occurs when other family members are traumatised because they are exposed to a traumatised family member, and the fourth is intra-familial, i.e. when a family member is traumatised by other family members. Family-related trauma in the Free State province accounted for up to 34.5% of reported cases of PTSD (Calitz et al., 2014). The death of a family member can also be traumatising for children. Family-bereaved adolescents can develop a significantly higher percentage of internalising problems compared to non-bereaved adolescents (Stikkelbroek, Bodden, Reitz, Vollebergh & Van Baar, 2016). In South Africa it is also seen that bereaved children and adolescents' mental health is affected after the loss of a parent (Collishaw, Gardner, Aber & Cluver, 2015). However, not all children are affected negatively and up to 35.4% has good mental health despite being orphaned, which is often attributed to resilience (Collishaw et al., 2015).

Witnessing a traumatic event can also lead to PTSD or depression (Calitz et al., 2014; Lipsky, Kernic, Qiu & Hasin, 2015). According to Atwoli et al. (2013) the witnessing of a traumatic event is one of the leading types of trauma in South Africa and indeed in the Free State province, 34.5% of adolescents treated for PTSD are those who have witnessed trauma (Calitz et al., 2014). As already mentioned, the majority of South Africans will have experienced more than one traumatic event during their lifetime.

Multiple traumatic events. According to Terr (1991), two types of trauma prevalence can be identified. Type I trauma refers to a single traumatic event. Jonkman, Verlinden, Bolle, Boer and Lindauer (2013) found that even a single traumatic event may lead to severe PTSD and other trauma-related disorders. Type II trauma refers to a unit of related traumatic experiences, which can be divided into two categories. These are ongoing

traumatic events such as poverty, hunger or ongoing wars, as well as the second category, i.e. past extended traumatic conditions which are presently ceased (Kira, 2001). Kira (2001) further identified a third type of traumatic experience, namely type III trauma which simply implies the cascading of traumatic events. Type III trauma affects a person in one or more areas of functioning, which can lead to more severe effects on psychological health (Kira, 2001). Disorders such as personality disorders, somatisation or dissociation can be more prevalent in individuals who have been exposed to Type III trauma (Kira, 2001). According to Atwoli et al. (2013), the average person in South Africa will be exposed to 4.3 potentially traumatic events in their lifetime. Although both single and multiple traumas may cause trauma-related symptoms (Jonkman et al. 2013; Suliman et al., 2009), multiple traumas have a far more severe effect on the development of mental disorders among adolescents (Suliman et al., 2009).

Children who are exposed to multiple traumas tend to have lower levels of resilience than children exposed to just a single traumatic event (Collin-Vezina, Coleman, Milne, Sell & Daigneault, 2011; Fossion et al., 2013). These results were also found by Botha (2014) in a South African study, namely that a great number of traumatic experiences decreases the resilience of adolescents. However, there are studies such as that of Peltonen, Qouta, Diab and Punamaki (2014), which have indicated that even children exposed to severe war losses, atrocities and destruction display high levels of resilience. These results can be explained by factors such as social relations, which include school, family and societal relations (Peltonen et al., 2014).

It is concerning that all the mental disorders associated with trauma exposure (single or multiple) may lead to an increased risk of suicide (American Psychiatric Association, 2013). Various studies have reported an increased risk of suicide ideation in individuals suffering from PTSD, hyperarousal symptoms, and depression (Prinstein et al., 2008; Steyn, Vawda, Wyatt, Williams & Madu, 2013; Waldrop et al., 2007).

Suicide ideation

Suicidal behaviours can be categorised as follows: suicidal attempts, suicide ideation and suicide thoughts (Bhatta, Jefferis, Kavadas, Alemagno & Shaffer-King, 2014). A suicide attempt can be defined as non-fatal, self-injurious behaviour with the intention to die (Palmer, 2008). In a study by Kokkevi, Rotsika, Arapaki and Richardson (2012), 10.5% of adolescents across Europe report suicide attempts. According to Pleneret al. (2011), 23.3% of German adolescents who attempted suicide had been exposed to one traumatic event, while 39.5% had been exposed to multiple traumas. In a South African study by Sorsdahl et al. (2011), 30.2% of South African individuals who reported suicide attempts had been exposed to trauma.

Suicide ideation may refer to the risk of and preoccupation with suicide (Brent, 1989; Brown, Beck, Steer & Grisham, 2000). The Center for Disease Control and Prevention (2013) defines suicide ideation as thinking about, considering or planning suicide. According to Palmer (2008) suicide ideation may vary in the degree of severity and specificity of the suicide plans. Plener et al. (2011) found that 78.1% of adolescents with suicide ideation had been exposed to trauma six months prior to the suicidal behaviour. According to Sorsdahl et al. (2011), 23.3% of South African individuals who present with suicide ideation have been exposed to trauma. Mashego and Madu (2009) found the prevalence of suicide ideation among adolescents in the Free State to be 12%. These prevalence statistics correspond to national statistics indicating that 10.9% of South African adolescents report suicide ideation (Govender et al., 2013).

The prevalence of suicide ideation seems to differ with age. According to Wild, Flisher and Lombard (2004) suicide ideation increases in the time span between Grade 8 to Grade 11. Furthermore, gender differences are evident, with more girls than boys attempting suicide in early adolescence (Chau et al., 2014).

Risk factors for suicide ideation. Risk factors can be defined as conditions that increase the likelihood of a negative outcome (Deković, 1999). Mental illness, for example, is a risk factor for suicide ideation (Taliaferro & Muehlenkamp, 2014). Certain demographic factors can also increase the risk for suicide ideation. These demographics include gender, familial background, income and age. According to Delfabbro, Winefield and Winefield (2013) females are more prone to suicide ideation than males. According to Monnin, et al. (2012), a study among patients treated for suicide attempts found that women have a higher

rate of mental disorders, while men are more prone to substance abuse. Furthermore, women tend to be more cognitively impulsive, which could increase the risk for suicide (Monnin et al., 2012; Kleiman, Riskind, Schaefer & Wiengarden, 2012). However, a recent American study indicated that gender does not play a significant role in suicide ideation (Hooper et al., 2015). Shilubane et al. (2014) reported similar results in South Africa in that their study did not find a significant gender difference with regard to adolescent suicide ideation due to factors that affect both genders, e.g. depression, financial status and academic performance.

Broken or disintegrated families, i.e. a biological family whose members have become separated, constitute another factor that may contribute to suicide ideation among adolescents (Delfabbro et al., 2013; Lee, Tsai, Chen & Huang, 2014). This is due to disruption in the family structure which leads to lower levels of well-being (Zhai et al., 2015). Family separation also influences adolescents' levels of social support and a lack of social support can increase the risk of suicide ideation (Gallagher, Prinstein, Simon & Spirito, 2014).

Living in low income or impoverished areas is also associated with suicide ideation (Waldrop et al., 2007; Delfabbro et al., 2013). Especially those adolescents who live in poverty and who have been exposed to violence are prone to suicide ideation (Waldrop et al., 2007). Poverty can lead to an increased risk for hunger and mental health issues, which can lead to a higher risk for suicide ideation (McIntyre, Williams, Lavorato & Patten, 2013). Exposure to trauma exacerbates the negative impact of these existing risk factors (Briggs et al., 2012; Fenton et al., 2013).

Studies conducted amongst adolescents also report certain intrapersonal factors as risk factors for suicide ideation. These include maladaptive coping strategies (Yao et al., 2014; Zhang, Wang, Xia, Liu & Jung, 2012), hopelessness and a negative body image (Taliaferro & Muehlenkamp, 2014), as well as negative self-reference and rumination of negative affect (Burke et al., 2015).

Ghannam and Thabet (2014) found that resilience can protect adolescents from the effects of trauma. Resilience can have a positive effect on activities such as school engagement, prosocial behaviour and civic engagement (Ungar, Liebenberg, Dudding, Armstrong & Van de Vijver, 2013). Moljord, Moksnes, Espnes, Hjemdal and Eriksen (2014) found that resilience decreases depressive symptoms among adolescents and increases their personal competence, social resources, and family cohesion.

Protective factors. Protective factors can be seen as personal, social and institutional factors that reduce the likelihood of problematic behaviour and are associated with a positive outcome (Jessor, 1993). Various factors can be seen as offering protection against suicide ideation.

Social support plays an important role as a protective factor (Armstrong & Manion, 2013; Taliaferro & Muehlenkamp, 2014). Social support refers to relationships with family members and peers, with parent connectedness being the most significant protective factor (Taliaferro& Muehlenkamp, 2014). The more meaningful the engagement, the smaller the risk for suicide ideation (Armstrong & Manion, 2013).

Life satisfaction is associated with lower levels of suicide ideation (Chioqueta & Stiles, 2007). In the South African context, hope and coping were significantly correlated with life satisfaction among adolescents (Basson, 2008). In another South African study, Botha (2014) found that traumatic experiences decrease life satisfaction, with differences being revealed amongst members of the white and black South African populations in that trauma did not significantly affect life satisfaction levels amongst the latter (Botha, 2014).This finding could have been influenced by various factors, such as past trauma, coming from disadvantaged backgrounds or cultural differences (Botha, 2014). According to Fergusson et al. (2015), lower levels of life satisfaction are associated with higher levels of mental disorders, such as major depressive disorder, anxiety disorder and substance abuse, which in turn can increase the risk for suicide ideation.

According to Yao et al. (2014) and Mirkovic et al. (2015), active coping reveals a negative correlation with suicide ideation among adolescents. Active coping is the utilisation of psychological and behavioural resources to deal with a problematic situation (Carroll, 2013).

Furthermore, resilience can act as a protective factor against suicide ideation (Asante & Meyer-Weitz, 2015; Shenouda & Basha, 2014; Stratta et al., 2014). Increased resilience moderates the relationship between hopelessness and suicide ideation (Johnson, Gooding, Wood & Tarrier, 2010), and decreased resilience is associated with an increase in suicidal behaviours (Lui, Fairweather-Schmidt, Roberts, Burns & Anstey, 2014). A recent South African study (Van der Walt, Suliman, Martin, Lammers & Seedat, 2014) found no significant relationship between resilience and PTSD among adolescents, suggesting that the complexity of resilience in the South African context is not yet fully understood. It is thus important to

gain a better understanding of the role of resilience in South African adolescents exposed to trauma.

Resilience

Not everybody who is exposed to trauma may ultimately develop a disorder (Atwoli et al., 2013; Pietrzak et al., 2010). According to Pietrzak et al. (2010), resilience, along with other psychosocial resources such as social support, acts as a buffer against trauma. Indeed many adolescents show high levels of resilience after adversity (Klasen et al., 2010). Botha (2014) found that the high prevalence of traumatic experiences in South Africa can decrease resilience.

Resilience can be present in all of the individual's life stages, but also presents itself in the form of family resilience and community resilience (Walsh, 2006). This characteristic explains the individual's and the group's ability to overcome adversity. According to Naglieri, LeBuffe and Ross (2013) resilience can be conceptualised as achieving positive outcomes, attainment or adaptation after adversity. Tugade and Fredrickson (2004) defined resilience as the ability to overcome negative situations, whereas Fergus and Zimmerman (2005) defined it as the process of overcoming the negative effect of risk exposure, as coping successfully with traumatic experiences and as avoiding the negative trajectories associated with risk. These definitions have one thing in common: the process of *how* the individual copes with adversity to achieve a positive outcome.

Resilience is often conceptualised from both a systemic and a developmental perspective. Kumpfer (1999), for example, developed a systemic model of resilience. According to Kumpfer (1999), a stressor or challenge activates the resilience process. In the present study, the stressor or challenge being studied is exposure to trauma. During the resilience process, both external and internal factors play a role in achieving adaptive outcomes. Internal factors include cognitive, emotional, physical and spiritual factors, while external factors refer to the role of the school, family or the community. These factors predict the outcome of this process, which can range from better-than-usual functioning, to maladaptive outcomes. In the present study, suicide ideation is seen as a maladaptive outcome in this process.

Prince-Embury (2006), identified three developmental tasks that are indicative of resilience. These are: a sense of mastery; a sense of relatedness; and emotional regulation. A sense of mastery refers to the sense of power over one's own life (Moilanen & Shen, 2013). A

sense of relatedness is how connected an individual sees himself to others (Shen, McCaughtry, Martin, Fahlman & Garn, 2012). Both are associated with increased resilience (Gomez, Vincent & Toussaint, 2013; Skinner, Pitzer & Steele, 2013). In a study by Zunic-Pavlovic, Pavlovic, Kovacevic-Lepojevic, Glumbic and Kovacevic (2013), a sense of mastery and relatedness were correlated with lower levels of antisocial behaviour, anger and negative sense of self. Peltonen et al. (2014) reported that resilient children maintain better friendships than children with lower resilience. Emotional reactivity, which is a tendency to experience frequent and intense emotional arousal (Karras et al., 2006), on the other hand, is related with lower levels of resilience (Gomez et al., 2013; Skinner et al., 2013). According to Skinner et al. (2013), emotional reactivity is indeed negatively correlated with adaptive behaviour.

In South Africa resilience is defined in the context of relatedness within the community (Theron, Theron & Malindi, 2013). In a study by Van Breda (2015), it was found that South African youths who have high resilience scores tend to be from poor communities and foster homes. According to Van Breda (2015) this can be explained by the therapeutic value that is gained from foster homes, which are aimed at personal development. In the South African context the importance of family and social relationships for resilience is emphasized (Theron & Theron, 2013; Vermeulen & Greeff, 2015).

When individuals are exposed to trauma, interventions can be implemented that can increase their resilience levels in order to help them with adaptive coping after trauma (Wolmer, Hamiel, Barchas, Slone & Laor, 2011; Pat-Horenczyk et al., 2012). Similarly, there are interventions that are aimed at reducing suicide ideation, but also at increasing resilience, such as the Schematic Appraisal Model of Suicide (Johnson et al., 2010). These programmes thus support the notion that interventions aimed at increasing resilience can help individuals that have been exposed to trauma, thus decreasing suicide ideation. De Villiers and Van den Berg (2012) found that sense of relatedness and sense of mastery increase resilience in a therapeutic process. Enhancing resilience in a therapeutic process can be beneficial for an individual who has undergone trauma.

From the above it can be seen that the South African adolescent population has a high prevalence of exposure to trauma. There are various studies that have confirmed the relationship between trauma and suicide ideation. Certain factors, such as resilience, can prevent a negative outcome after exposure to trauma. This study will look at resilience as a

possible protective factor against suicide ideation after the individual has been exposed to trauma.

Methodology

The aim of the study is to determine the role of resilience in the relationship between trauma exposure and suicide ideation. Thus, the following research hypotheses will be investigated:

1. There is a significant relationship between trauma exposure and suicide ideation.
2. Resilience plays a moderating role in the relationship between trauma exposure and suicide ideation.
3. Age has a mediating effect on the relationship between trauma exposure and suicide ideation.

Research design

A quantitative, correlational non-experimental design (Salkind, 2013) was used in this study. More specifically, a correlational design is used to examine the relationship between variables (MacDonald, Wong & Dionne, 2015). Trauma exposure is the predictor variable, suicide ideation the outcome variable, and resilience the moderating variable.

Participants

An existing data set from a larger project on risk and resilience among Free State adolescents was used that was collected by the University of the Free State. A random sample of two schools in each of the five districts in the Free State province was selected to participate in this study. Both rural and urban areas were included. A total number of 1001 (N=1001) learners participated in the study. Their ages ranged from 14 to 18 years, with an average age of 16.35 years.

A percentage of 41.8% of the participant group was male, and 57.5% were female. According to national statistics (Statistics South Africa [STATSSA], 2014) the proportion of males in South Africa is 49% and of females is 51%. Males were therefore slightly under-represented in the present study.

Table 1

Racial representation of the participant group

Racial Category	*Frequency*	*Percentage*	*Cumulative Percentage*
Asian	24	2.4	2.4
Black	711	71.0	74
Coloured	88	8.8	82.9
White	169	16.9	99.9
Other	1	0.1	100.0
Total	993	99.2	
Missing data	8	0.8	
	1001	100.0	

According to a census conducted in 2011, the population distribution in the Free State is as follows: Black 84.8%, white 12.1%, Coloured 3.0% and Asian 0.1% (STATSSA, 2014). Although the black participants were slightly under-represented compared to the provincial statistics, they still comprised the majority of the participant group.

Table 2 indicates the representation of language groups in the present study. The majority of participants were SeSotho- (44.2%), and Afrikaans-speaking (23.2%), which corresponds to the census data yielded in 2011 (STATSSA, 2014).

Table 2

Language groups according to frequency

Language Groups	Frequency	Percentage	Cumulative Percentage
English	46	4.6	4.7
Afrikaans	232	23.2	28.2
Xhosa	103	10.3	38.6
Zulu	31	3.1	41.7
Sesotho	442	44.2	86.5
Tswana	130	13.0	99.7
Pedi	3	0.3	100.0
Total	987	98.6	
Missing data	14	1.4	
	1001	100.0	

Data collection

The data were collected by means of a survey that was administrated during school hours under the supervision of registered psychologists and psychometrists. The questionnaires were made available in English, Afrikaans and Sesotho. The questionnaires were translated by accredited translators using the back-translation method (Brislin, 1970).

Measuring instruments

A biographical questionnaire consisting of 25 questions was compiled by the research team in order to gather information regarding the demographic composition of the participant group. In addition, the data obtained for the following three instruments were used in the present study.

1. A shortened version of *The Stressful Life Events Questionnaire* (SLEQ: Goodman et al., 1998) was used to determine if the learners had been exposed to trauma. The questionnaire consists of 13 items. These questions are answered as either "Yes" or "No". A higher number indicates a higher number of traumatic events experienced by the individual. Since it is not expected that incidences of exposure to different types of trauma are necessarily interrelated, the reliability of this scale was not calculated. However, Goodman et al. (1998) indicated that the SLEQ had a good test-retest

reliability of 0.73, and an adequate validity score of 0.64. Participants reported being exposed to an average of 2.8 traumatic events.

2. The *Resiliency Scales for Children and Adolescents* (RSCA:Prince-Embury, 2006) consists of 64 questions that are answered on a 5-point Likert-type scale. The questionnaire consists of three subscales, i.e. sense of mastery (item count), sense of relatedness (how many items) and emotional reactivity (item count) (Prince-Embury, 2006). A total resilience score, or resilience index, is calculated by adding the total scores for the sense of mastery and sense of relatedness scales (Prince-Embury, 2006). The Cronbach alpha-coefficients calculated for the present study were 0.847 and 0.891 for the two scales respectively, indicating that the data is reliable and can be used in further analysis. The results indicated a mean score of 115.10, the standard deviation was 23.26, the minimum score was 0 and the highest score was 176. Emotional reactivity was not included in this study, as emotional reactivity is indicated as a risk index and not a resilience index.
3. The *Suicidal Ideation Questionnaire for Adolescents* (SIQ-A: Reynolds & Mazza, 1999) was used for formal assessment of the participants' suicide ideation levels. The questionnaire consists of 30 items and measure suicide behaviour and thought. Questions are answered on a 7-point Likert-type scale. Low risk is indicated as a score lower than 16; average risk is between 17 and 31; high risk is a score higher than 32 (Pienaar & Rothman, 2005). The Cronbach alpha-coefficient calculated for the present study was 0.978, indicating high internal consistency. The participants' scores ranged from 0 to 180, with a mean score of 39.92. The standard deviation on the SIQ-A was 42.89.

Ethical considerations

Permission to conduct the study was obtained from the Free State Department of Education. Permission was also obtained from the principals of the schools and written permission was obtained from parents as well as assent from the participants themselves. The ethical guidelines set by the Health Professions Council of South Africa (HPCSA) were adhered to, according to the Health Professions Act of 1974 (Government Gazette, 2006). The project was also approved by the Faculty of the Humanities at the University of the Free State.

Participants were informed that their participation was voluntary and that all results would be kept confidential. The participants also informed that they would be permitted to withdraw from the study at any time. Fieldworkers were available to debrief the learners if they experienced any negative effects due to their involvement in the study.

Data analysis

Version 22 of the Statistical Package for the Social Sciences (SPSS) was used to conduct the data analysis. A two-way analysis of covariance (ANCOVA) was conducted with trauma exposure and age as predictor variables, suicide ideation as the outcome variable, and resilience as the covariate. Preliminary checks were conducted to ensure that there was no violation of the assumptions of normality, linearity, homogeneity of variances, homogeneity of regression slopes, and reliable measurement of the covariate. Although the overall model residuals were not normally distributed ($p<0.05$), an ANCOVA is fairly robust to deviations from normality, and thus it was decided to continue with the analysis.

Any cases with standardised residual scores greater than ±3 standard deviations were considered as outliers and indeed a few outliers were found in the data. However, since these were not due to data entry errors, it was decided not to delete them from the analysis.

Results

The traumatic event that emerged as being the most prevalent, as indicated in Figure 1, was the loss of a loved one (42.3%). This was followed by exposure to a corpse (35.5%), and experiencing a life-threatening injury (33%). The event with the lowest frequency was sexual assault, with 8.4% of the participants indicating that they had been exposed to this type of trauma.

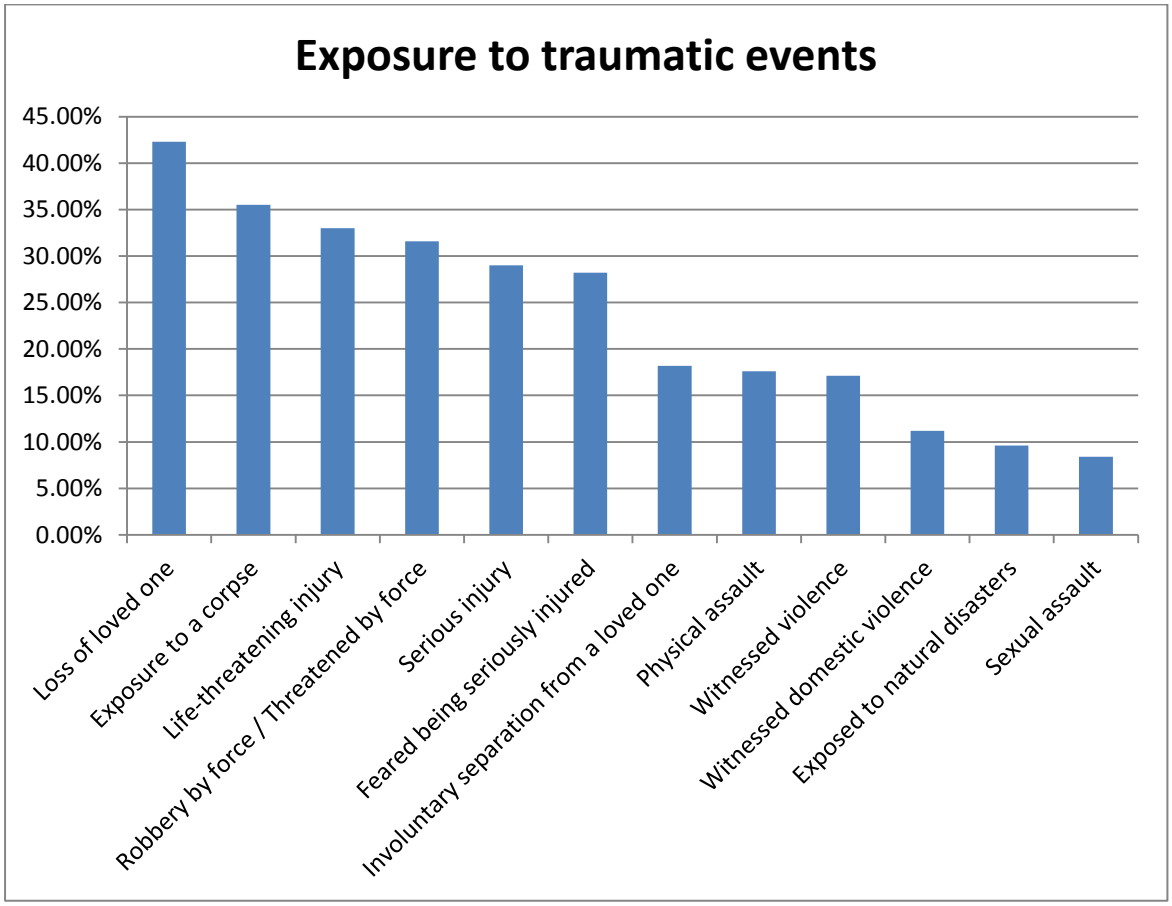

Figure 1. Frequency of exposure to traumatic events

Trauma exposure was recorded in three categories, namely individuals who had not experienced trauma, individuals who had experienced between one and four traumatic events, and individuals who had experienced more than five traumatic events, as indicated in Table 3. Furthermore, younger adolescents (aged 14 to 15 years) were compared with older adolescents (aged 16 to 18 years), also indicated in Table 3.

Table 3

Descriptive statistics

Dependent variable: SIQ-A Total				
Trauma exposure	Age	Mean	SD	N
No traumatic events	14 to 15	15.50	24.12	10
	16 to 18	32.89	41.74	81
	Total	30.98	40.46	91
1 to 4 traumatic events	14 to 15	35.44	41.41	21
	16 to 18	37.07	42.63	153
	Total	36.87	42.46	174
5 or more traumatic events	14 to 15	49.43	43.23	21
	16 to 18	48.51	43.80	153
	Total	48.62	43.61	174
Total	14 to 15	36.25	41.15	117
	16 to 18	38.73	42.97	850
	Total	38.43	42.74	967

Table 4

Tests of between-subject effects

Dependent variable: SIQ-A Total						
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected model	231326.64	6	38554.44	24.13	0.00	0.13
Intercept	384537.29	1	384537.29	240.74	0.00	0.20
Resilience	203588.68	1	203588.68	127.46	0.00	0.12
Trauma exposure	15606.75	2	7803.37	4.89	0.01	0.01
Age	695.19	1	695.19	0.44	0.51	0.00
Trauma_Age	881.76	2	440.88	0.28	0.76	0.00
Error	1533412.40	960	1597.30			
Total	3192882.00	967				
Corrected Total	1764739.03	966				

No significant interaction effects were found between trauma and age on suicide ideation scores, after the effect of resilience had been controlled for (F=0.276; p=0.759) (Table 4). In addition, no main effect was found for age on suicide ideation scores, after the

effects of resilience had been controlled for (F=0.435; p=0.510) (Table 4). However, a significant main effect was found for trauma on suicide ideation scores, after the effect of resilience had been controlled for (F=4.885; p=0.008) (Table 4). Thus, a statistically significant difference, as indicated in Table 4, in suicide ideation scores between individuals with different levels of exposure to trauma was found. In order to determine the nature of these differences, post-hoc tests were conducted.

Table 5

Pairwise comparison

Dependent Variable: SIQ-A Total						
(I) Trauma exposure		**Mean Difference (I-J)**	**Std. Error**	**Sig.[b]**	**Interval for Difference[b]**	
					Lower Bound	**Upper Bound**
No traumatic events	1 to 4 traumatic events	-11.42	7.08	0.32	-28.41	5.56
	5 or more traumatic events	-23.97*	8.15	0.01	-43.52	-4.41
1-4 traumatic events	No traumatic events	11.42	7.08	0.32	-5.56	28.41
	5 or more traumatic events	-12.54*	5.19	0.05	-24.98	-0.10
5 or more traumatic events	No traumatic events	23.97	8.15	0.01	4.41	43.52
	1 to 4 traumatic events	12.54*	5.19	0.05	0.10	24.98

Based on estimated marginal means.
* The mean difference is significant at the .05 level.
[b] Adjustment for multiple comparisons: Bonferonni

From Table 5 it can be seen that a significant difference in SIQ-A scores was found between individuals exposed to no traumatic events, and individuals exposed to five or more traumatic events (p=0.010); as well as individuals exposed to 1 to 4 traumatic events and individuals exposed to 5 or more traumatic events (p=0.047).

A hierarchical regression analysis (Salkind, 2013) was further conducted to determine the role of resilience in the relationship between trauma exposure and suicide ideation. Preliminary analyses were done to ensure that the assumptions of normality, linearity, multicollinearity and homoscedasticity were not violated. The residuals were not normally distributed, but since the regression analysis is fairly robust against the violation of the assumption of normality, it was decided to continue with the analysis.

Table 6

Model summary[c]

Model	R	R^2	Adjusted R^2	Std. error of the estimate	Change statistics				
					R^2 Change	F Change	df1	df2	Sig. F Change
1	0.383[a]	0.147	0.145	39.708	0.147	83.579	2	973	0.000
2	0.392[b]	0.154	0.151	39.558	0.007	8.386	1	972	0.004

[a] Predictors: (Constant), Resilience-centred, Trauma-centred

[b] Predictors: (Constant), Resilience-centred, Trauma-centred, Trauma-centred X Resilience-centred

[c] Dependent Variable: SIQ-A total

The addition of the product term resulted in a significant increase in the variance explained in suicide ideation [R^2 Change = 0.007; $F_{(1,972)}$=8.386; p=0.004] (Table 6). This means that resilience is a significant moderator in the relationship between trauma exposure and suicide ideation. In other words, the relationship between trauma exposure and suicide ideation differs with different levels of resilience.

A quartile analysis was conducted to determine the moderator effect as indicated in Table 7. The scores obtained for trauma exposure were plotted against the scores for suicide ideation, first for participants obtaining the lowest 25% of resilience scores, and then for participants obtaining the highest 25% of resilience scores.

Table 7

Correlations for the two resilience groups

Lower 25%	Pearson correlation[a]	0.282*
	Sig. (2 tailed)	0.000
	N	255
Upper 25%	Pearson correlation[a]	0.107
	Sig. (2 tailed)	0.104
	N	231

*Correlation significant at the 0.01 level
a. Correlation between SIQ Total score and Trauma Total score

There is a statistically significant positive relationship between trauma and suicide ideation for individuals with low resilience scores (r=0.282; p=0.000). In other words, an increase in traumatic event exposure was associated with an increase in suicide ideation for individuals with low resilience scores.

For individuals with high resilience scores, there was no significant relationship between trauma and suicide ideation (r=0.107; p=0.104). Thus, an increase in trauma was not associated with a significant increase in suicide ideation for individuals with high resilience scores.

Regression lines of resilience in the relationship between trauma exposure and suicide ideation

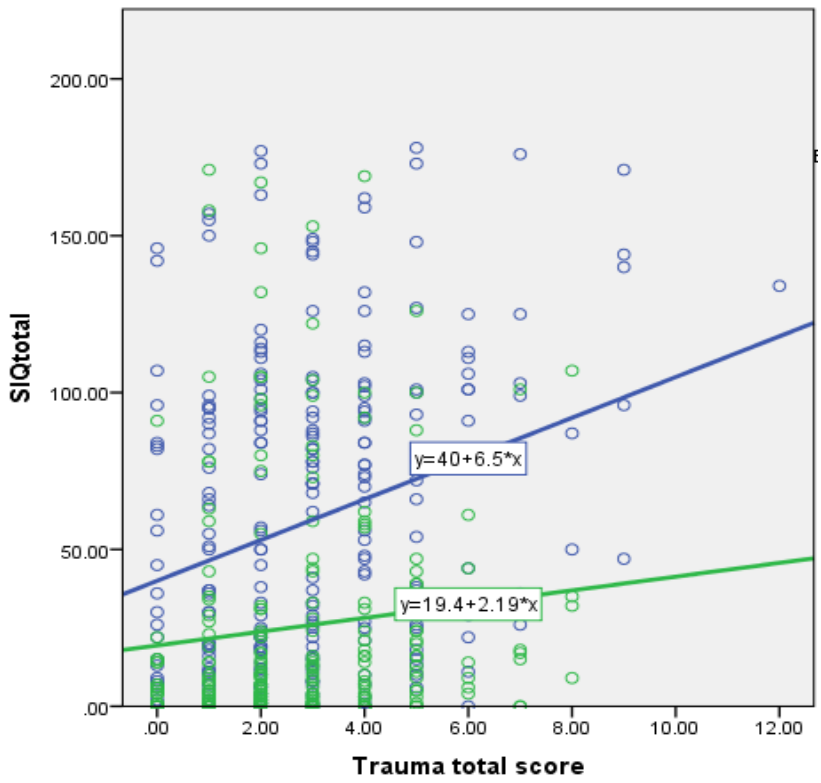

Figure 2. Regression lines for high and low resilience

Figure 2 shows the regression lines for high resilience (green line), R^2 linear=0.011, and low resilience (blue line), R^2 linear=0.080. The regression slope for the group with lower resilience is steeper than for the group with higher resilience. Thus, resilience buffers the effects of trauma on suicide ideation, serving as a protective factor against suicidal ideation for adolescents exposed to trauma.

Discussion

It has long been known that resilience acts as a protective factor and promotes mental health. However, the extent and complexity of resilience as a protective factor appears to not be fully understood as yet (Lui, Fairweather-Schmidt, Roberts, Burns & Anstey, 2016; Wietse, Song & Jordans, 2013). The aim of this study was to determine if resilience plays a role in the relationship between suicide ideation and exposure to trauma. The findings indicate that resilience significantly moderates this relationship. This implies that suicide ideation in persons who have been exposed to trauma is significantly decreased by resilience. The results are in accordance with the results of studies that have revealed resilience to be a buffer against suicide ideation (Asante & Meyer-Weitz, 2015; Pietrzak et al., 2010; Shenouda & Basha, 2014; Stratta et al., 2014), specifically, and against negative outcomes after exposure to trauma generally (Ghannam & Thabet, 2014; Klasen et al., 2010). Individuals with low resilience were more prone to experience suicide ideation, as confirmed by Lui et al. (2014). In contrast, individuals with high resilience were significantly less likely to experience suicide ideation, which indicates the protective properties of resilience. This finding is in contrast with what Lui et al. (2016) recently found, namely that resilience alone does not act as a protective factor against suicide ideation. A recent South African study also indicated that resilience acts as a protective factor against negative mental health outcomes (Collishaw et al., 2015). The present study specifically investigated suicide ideation as a negative outcome, and therefore contributes to the South African literature on the important role of resilience in adolescence. The results of this study indicated the positive influence that the enhancement of resilience through therapy can have in overcoming adversity and in acting as a protective factor against negative outcomes after trauma exposure.

Resilience was conceptualised in the present study as consisting of a sense of mastery and a sense of relatedness, which in turn are important developmental tasks associated with adolescence. Another South African study by De Villiers and Van den Berg (2012) also indicated that levels of relatedness and mastery increased after therapeutic intervention to increase resilience.

Furthermore, the findings of this study are in line with those of other international studies, such as that conducted by King, Wardecker and Edelstein (2015), which found that mastery can be a protective factor against childhood trauma.

Given the profound developmental changes between early and late adolescence, the effect of age in the relationship between trauma exposure and suicide ideation was also investigated. However, age was found not to be a significant moderator in this relationship. Thus, if an adolescent with low resilience is exposed to trauma, they are more likely to develop suicide ideation, regardless of their age. Previous international studies (McMullen et al., 2012; Ellis et al., 2008) have also reported finding no age differences in negative outcomes following traumatic experiences. It may be that the impact of trauma exposure – and indeed multiple exposures as is the case in South Africa – on adolescents' well-being is so significant that developmental factors associated with age do not play a role in mental health outcomes under conditions of trauma.

The number of traumatic events was found to increase with age. Furthermore, the increase in traumatic events increases the likelihood of adolescents being exposed to the development of suicide ideation. These findings are concerning and may hint at the fact that little has changed in this regard over the past decade, as older studies made similar findings (Atwoli et al., 2013; Mashego & Madu, 2009; Suliman et al., 2009). Thus, the high prevalence of trauma in South Africa is indeed a significant risk factor for well-being in adolescence.

In summary, the findings confirm that resilience is a protective factor when adolescents are exposed to trauma. Thus, the importance of fostering resilience in adolescents is evident. This finding may also inform therapeutic interventions aimed at assisting adolescents during and after traumatic incidents.

Conclusion

The findings of the present study add to the body of knowledge on resilience and specifically its protective properties. The significant differences between high resilience and low resilience have been indicated with regards to the relationship between trauma exposure and suicide ideation. These results indicate the importance of resilience in protecting adolescents from the effects of exposure to trauma. Furthermore, the results indicated that age does not play a protective role in the relationship between trauma exposure and suicide ideation. Individuals are uniformly affected by trauma, regardless of age. Thus, the increase of age, also increase the number of traumatic experiences, which could have devastating effects on adolescents, such as suicide ideation. The results indicate that the enhancement of resilience can be used as a therapeutic tool in assisting to protect individuals from the effects of traumatic

events. However, further research will be necessary to determine the effect of resilience training in a therapeutic setting. This research can also provide more clarity on the protective properties of resilience.

The study's limitations are such that the sample was not entirely representative of the Free State adolescent population. This could lead to the results not being applicable to all populations. Furthermore, cultural differences could also influence the results. Thus, future research should focus on specific population groups and should be aimed at investigating whether the same results apply to all population groups. Furthermore, the female-male ratio was also not representative of the population, which could influence the results. Another limitation constitutes the self-report questionnaires that were filled in by the participants themselves. This could have led to response bias (Adrian, 1986) in the form of respondents providing extreme answers or answers which they deemed socially acceptable. To minimise response bias, researchers can make use of confidential, self-administered questionnaires, which was done in this research (Nederhof, 1985). Furthermore, rapport can be built with the participants, which can decrease response bias and will lead to respondents providing more honest responses (Nederhof, 1985).

The recommendations of the present study are that the same investigation should be replicated in the other South African provinces. This will provide greater clarity on the protective properties of resilience, especially against suicide ideation. Future studies will also provide clarity deeper understanding of what could make a contribution to improving resilience in the South African context, whereas this study focused specifically on sense of mastery and sense of relatedness. Longitudinal studies of the same population group may be beneficial in determining the differences in resilience levels with age.

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