

**THE ROLE OF EMOTIONAL REGULATION IN THE RELATIONSHIP BETWEEN
TRAUMATIC EXPOSURE AND SUICIDE IDEATION AMONG ADOLESCENTS**

FREDERICK WILLEM COENRAAD VAN NIEKERK

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Supervisor: Dr A. A. George

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Declaration

I, Frederick Willem Coenraad van Niekerk, hereby declare that this thesis submitted by me for the Magister Societatis Scientiae (Clinical Psychology) degree at the University of the Free State is my own independent work and has not previously been submitted by me at another university or faculty. I hereby acknowledge that financial assistance was received from the National Research Foundation (NRF) towards completion of this study. All findings, opinions and conclusions are attributed to the author. I further cede copyright of this thesis in favour of the University of the Free State.

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Frederick W.C. van Niekerk

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Date

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Comments on the Text

This thesis is submitted for the Magister Societatis Scientiae (Clinical Psychology) degree at the University of the Free State by the author. It is written in an article format based on the 6th edition of the *Publication Manual of the American Psychological Association* (APA) (2010). This document was language and APA writing edited by a qualified writing professional, namely, Mrs L. Lake.

All citation, referencing and formats adhered to the APA-6 (2010) writing style unless specified below:

1. The font style and size of this article is Times New Roman, 12pt. It uses 1.5 line and paragraph spacing with 2 spaces between sentences.
2. Pages 2, 4, 13, 16, 17, 19, 21, 22 and 26 appear with additional spacing due to formatting and ease of reading.
3. Tables and figures are included in the text to facilitate ease of reading. Tables 3, 4 and 6 are displayed with titles longer than the width of the tables due to necessity, as shorter titles may degrade the impact the title of these tables.
4. Pages are numbered at the bottom right corner to facilitate a more logical sequence and ease of reading.
5. On page 17 the Statistical Package for the Social Sciences (SPSS v. 22) (IBM Corp., 2013) computer software is cited, although the APA manual (APA, 2010) mentions SPSS as being standard software and necessary to be cited. It was decided to keep the citation for adherence to uniformity in the text.

Statement by the language editor

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I hereby declare that I language edited a Master's thesis authored by Mr Frederick Willem Coenraad van Niekerk with the title:

“The role of emotional regulation in the relationship between traumatic exposure and suicide ideation among adolescents”.

Jennifer Lake

A handwritten signature in black ink, appearing to read 'Lake', written in a cursive style.

Accredited Professional Text Editor, SATI (APEd)
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Abstract

Globally, adolescents need to develop emotional regulation skills to manage ever burgeoning challenges. Rising incidence of suicidal behaviours and escalation in the environmental stressors of South African society further warrant adolescents' development of appropriate management strategies with regard to their emotions. This study aimed to investigate the role of emotional reactivity, as an indicator of emotional regulation, in the relationship between traumatic exposure and suicide ideation among adolescents. A biographical questionnaire, the emotional reactivity sub-scale of the Resiliency Scales for Children and Adolescents (*RSCA*), the Suicidal Ideation Questionnaire for Adolescents (*SIQ-A*), and the Stressful Life Events Screening Questionnaire (*SLESQ*) were used to gather information from participants. The study was approached using a cross-sectional and correlation design. Results were analysed by means of an analysis of variance for the main effects between trauma exposure, emotional reactivity and suicide ideation as well as a moderated regression analysis to explore the moderating effect of emotional reactivity on the remaining variables. The results of the main effects were indicative of a significant and unique contribution by both trauma exposure and emotional reactivity to the variance in suicide ideation. The regression analysis, however, found that emotional reactivity does not have a moderating effect on the relationship between traumatic exposure and suicide ideation. Further research on stressful life experiences, emotional regulation and suicide ideation is recommended using alternative measurements for emotional regulation/dysregulation in future research.

Key words: Adolescents; emotional regulation; emotional dysregulation; emotional reactivity; suicide; suicide behaviours; suicide ideation; traumatic exposure; stressful life events; Free State

Opsomming

Adolessente wêreldwyd moet emosionele reguleringsvaardighede ontwikkel ten einde die toenemende uitdagings waarvoor hulle te staan kom, te bestuur. Die stygende voorkoms van selfmoordgedrag en die toename in omgewingstressors in die Suid-Afrikaanse samelewing is verdere redes waarom adollesente toepaslike bestuurstrategieë ten opsigte van hulle emosies moet ontwikkel. Hierdie studie poog om die rol van emosionele reaktiwiteit as aanduider van emosionele regulering te ondersoek, spesifiek in die verhouding tussen traumatiese blootstelling en selfmoordideeë onder adollesente. 'n Biografiese vraelys, die emosionele reaktiwiteitsubskaal van die *Resiliency Scales for Children and Adolescents (RSCA)*, die *Suicidal Ideation Questionnaire for Adolescents (SIQ-A)*, en die *Stressful Life Events Screening Questionnaire (SLESQ)* is gebruik om inligting van deelnemers te werf. Die studie is benader volgens 'n deursnee- en korrelasionele ontwerp. Resultate is ontleed deur middel van 'n variansieontleding vir die vernaamste effekte tussen traumablootstelling, emosionele reaktiwiteit en selfmoordideeë, asook deur middel van 'n gemodereerde regressieontleding om die modererende effek van emosionele reaktiwiteit in die oorblywende veranderlikes te ondersoek. Die resultate van die vernaamste effekte het getoon dat traumablootstelling en emosionele reaktiwiteit 'n beduidende en unieke invloed op die variansie in selfmoordideeë het. Die regressieontleding het egter getoon dat emosionele reaktiwiteit nie 'n modererende effek op die verhouding tussen traumatiese blootstelling en selfmoordideeë het nie. Verdere navorsing op stresvolle lewenservaringe, emosionele regulering en selfmoordideeë word aanbeveel deur alternatiewe metings vir emosionele regulering/disregulering in toekomstige navorsing te gebruik.

Slutelwoorde: Adollesente; emosionele regulering; emosionele disregulering; emosionele reaktiwiteit; selfmoord; selfmoordgedrag; selfmoordideeë; traumatiese blootstelling; stresvolle lewensgebeurtenisse; Vrystaat

Introduction and Orientation

Adolescence is known to be a challenging phase along the pathway of human development (Romero, Master, Paunesku, Dweck, & Gross, 2014). This phase of adjustment, from childhood to adulthood, entails constant renovations and renegotiation of the adolescent's personal worldview, sense of self and identity (Blakemore, 2008; McAdams & Olson, 2010; Seiffge-Krenke, 2006). In addition, adolescence is considered to be a period of increased stress resulting from multi-layered developmental stressors (Blakemore, 2008; McAdams & Olson, 2010; Seiffge-Krenke, 2006). Fulfilment of various developmental facets during these transient years are thought to be taxing to the adolescent's emotional and coping resources, leading to an increase in mood disturbances, which may ultimately have a negative effect on his/her emotional wellbeing (Larson & Sheeber, 2009). Living in a developing country, South African adolescents are confronted with various political as well as psychosocial challenges, extending from different socioeconomic backgrounds through to increased exposure to violence (Barbarin & Richter, 2003; Botha & Cilliers, 2012). As a result, adolescents are frequently faced with having to find their social and political identities within this transmuting plural society (Cakal, Hewstone, Schwär, & Heath, 2011). Having greater emotional regulation abilities was found useful in negating the demands and stressors of natural development and societal expectations (Greenberg, 2007; Louw, Louw, & Ferns, 2007). Even though most adolescents find they are able to cope with the emotional and social demands placed on them, some show a predisposition towards increasing impulsive behaviours, such as suicide and self-harm (Donson, 2008; Glenn & Klonsky, 2013; Silvers et al., 2012; White, 2009).

The Integrated Stress and Coping Process Model proposed by Moos and Schaefer (1993) serves as a useful guiding framework for exploring, organising and conceptualising the interaction of traumatic exposure and emotional regulation that may influence suicide ideation (See model in Figure 1). Moos and Schaefer (1993) theorised that environmental and personal dispositional factors influence life crises, cognitive appraisal and coping mechanisms and are responsible for the individual's emotional and behavioural consequences. Through integrating the bidirectional and reciprocal interaction of a number of interacting concepts, Moos and Schaefer's (1993) model affords the exploration of negative health outcomes, of which suicide ideation (Panel 5) is the main focus. Panel 4 is omitted from this study as the focus does not fall on coping.

Suicide Ideation and Behaviour

According to the World Health Organization (WHO) (2010), it is estimated that one million adolescents commit suicide annually. This figure is expected to increase to approximately 1.53 million by the year 2020 (WHO, 2010). Stark et al. (2010) state that 11.5% of deaths reported in the 11-20 year age range in South Africa are suicide related. Sorsdahl, Stein, Williams and Nock (2011) support the notion that South Africa has a high incidence of suicide behaviour. A national youth risk behaviour survey investigating youth wellness published two reports, in 2005 and 2010 respectively. In these reports it warned against the increasing tendency observed with regard to adolescent suicide behaviour in South Africa (Reddy et al., 2010; Shilubane et al., 2013). This included a rise in suicide behaviour from 18% to 19% in the adolescent population between 2002 and 2008 (Shilubane et al., 2013). More alarmingly, the survey further reported that in South Africa 20.7% of secondary school learners presented with suicide ideation six months prior to the survey and 16.8% had intended to commit suicide in the six months following administration of the survey (Reddy et al., 2010; Shilubane et al., 2013). Locally, adolescents in the Free State province present with high prevalence of anxiety, mood disorders and substance abuse (Mashego & Madu, 2009; Stark et al., 2010). Further exploration on adolescent suicide and suicide behaviour supports this rising trend in the Free State (Du Plessis, 2012).

Suicide behaviour is a broad term that includes a set of emotionally precipitated self-harming behaviours, ranging from non-fatal to fatal behaviours (Schlebusch, 2005). This includes cognitions to commit an act to end one's own life (Schlebusch, 2005). Suicide is viewed as self-inflicted, injurious behaviour that leads to death. Suicide ideation is described as the existence of suicide thoughts or cognitions without action being taken to commit suicide (Silverman, Berman, Sanddal, O'Carroll, & Joiner, 2007). Although the presence of suicide ideation is not the main contributing or determining factor, it is considered a significant risk for completed suicide behaviour (Miranda, Ortin, Scott, & Shaffer, 2014).

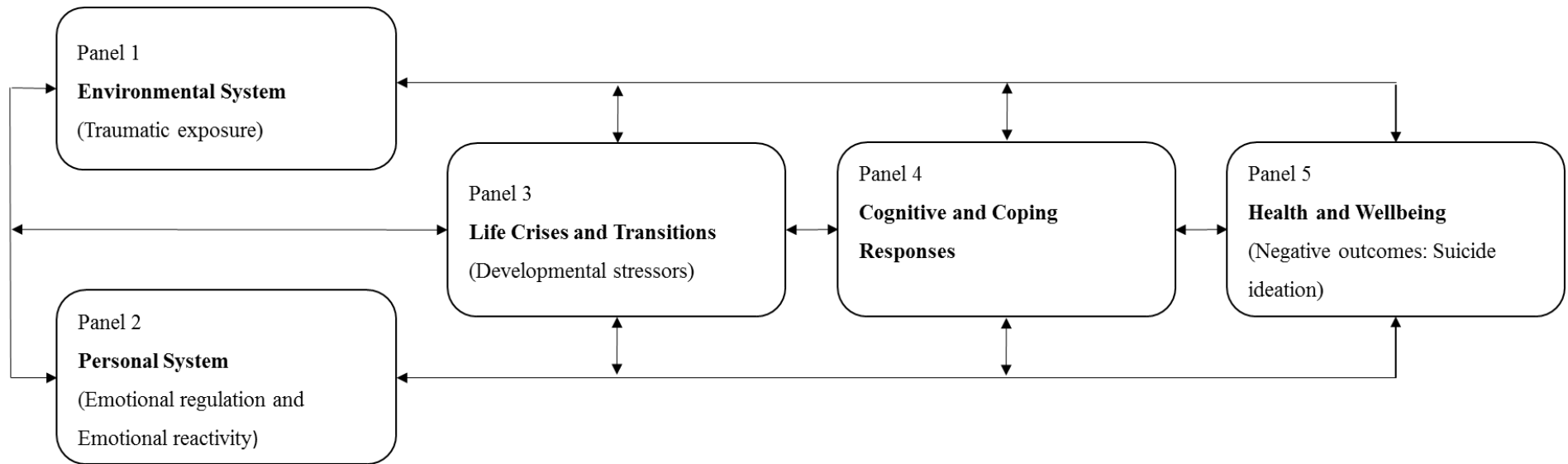


Figure 1. The Integrated Stress and Coping Process Model (Moos & Schaefer, 1993).

Consequently, the risk of suicide is described as the likelihood of possible suicide attempts, the maintenance or intensification of suicide behaviours, and/or the necessity for monitoring in the prevention of attempts or repeated attempts (George, 2009; Pienaar & Rothmann, 2005; Schlebusch, 2005). Suicide attempts are considered unsuccessful self-injurious behaviour where the intent was to end one's life, while para-suicide behaviour involves the individual engaging in unsuccessful, potentially lethal, self-injurious behaviour with the intent to manage intrinsic conflict (Schlebusch, 2005). In addition, para-suicide may be used as a form of manipulation in the benefit of the adolescent as they may present with coping and assertive skills (Schlebusch, 2012). Studies that have focused on risk factors under South African adolescents (Du Plessis, 2012; George, 2009; Loots, 2008; Tancred, 2010; Wolmarans, 2010) propose common trends in the identification of predisposing factors for suicide behaviours. These risk factors include psycho-social aspects (e.g., support from family and friends, instability in the family system, socioeconomical struggles, substance abuse and stressful life events), personal dispositions (e.g., emotional arousal, self-esteem, hope, resilience and sense of coherence), as well as cognitive and coping strategies (e.g., passive-emotional coping, cognitive-appraisal and rumination) (Du Plessis, 2012; George, 2009; Loots, 2008; Tancred, 2010; Wolmarans, 2010). It is furthermore known that there are high levels of pathology, including depression and anxiety, observed in these populations that lead to the prevalence of suicide behaviours (Mashego & Madu, 2009).

Suicide behaviour is considered a negative health outcome (Panel 5) and has been linked to a multifaceted interaction of individual, social and developmental factors (Boden et al., 2013; Miranda, Tsypes, Gallagher, & Rajappa, 2013; Sorsdahl et al., 2011). These multifaceted factors further contribute to developmental stressors and dysfunctions such as anxiety, substance abuse, emotional dysregulation and possible exposure to traumatic events (American Psychiatric Association, 2013; Boden et al., 2013; Miranda et al., 2013; Sorsdahl et al., 2011). In line with Moos and Schaefer's Integrated Stress and Coping Process Model, the fluid vulnerability theory (FVT) of suicide, proposed by Rudd (2006), argues that suicide ideation is the result of interacting fixed or long-lasting predispositions and current triggers. In conceptualising the bidirectional interactions that lead to negative or positive health outcomes (Moos & Schaefer, 1993), it is thus important to view the adolescent in the context of normal development, and stressors associate with this life phase.

Adolescent Development

The main theme of adolescent development (Panel 3) is the movement from dependency to a more independent, mature and autonomous being (Erikson, 1963, 1968; Geldard & Geldard, 2010; Louw et al., 2007). Maturation is guided and shaped by integrated multidimensional developmental processes such as biological and pubertal changes, societal pressures, personal cognitions and the development of social and personal beliefs (Erikson, 1963, 1968; Norris & Richter, 2005; McAdams & Olson, 2010; Seiffge-Krenke, 2006). In addition, the adolescent life stage is viewed as a novel period of experimentation in life experiences and abstract thought that is vital to identity development (Erikson, 1963, 1968; Marcia, 1980). Experimentation in abstract thought and life experiences may expose the adolescent to developmental stressors and increase the risk for developmental pathology (Silk, Steinberg, & Morris, 2003; Louw et al., 2007). Throughout, the adolescent will be exposed to the risk of developmental pathology, due to normal and pathological developmental stressors (Boeninger, Masyn, Feldman, & Conger, 2010; Silk et al., 2003). It is, therefore, important for adolescents to develop attributes or abilities to manage these stressors (Holodynski, 2004; Lanteigne, Flynn, Eastabrook, & Hollenstein, 2014). The unsuccessful management of developmental tasks may lead to the adolescent experiencing crises in identity formation and world view, and intrinsic stress may develop as a consequence (Erikson, 1963, 1968; Louw et al., 2007).

Another contributing factor toward intrinsic stress is the adolescent's newly developed self-awareness (Elkind, 1967; Schwartz, Maynard, & Uzelac, 2008). This increases the self-focus of the adolescent, which further contributes to the re-emergence of egocentrism and causes high levels of self-consciousness (Elkind, 1967; Schwartz et al., 2008). This constant self-monitoring increases the risk of using inappropriate coping strategies such as self-harm, suicide behaviour or engagement in risky, detrimental and dangerous behaviour (Boden et al, 2013; Louw et al. 2007; Schwartz et al., 2008).

Risky and reckless behaviour can be viewed as inappropriate or dysfunctional coping responses applied by the adolescent to distress or intense emotions (Dahl, 2004; Streeck, 1999). Researchers (Cicchetti & Luciana, 2013; Dahl, 2004; Haynie, Soller, & Williams, 2014; Schwartz et al., 2008) argue that the experience of intrinsic stress and over- or underestimation of their fallacy of death may drive adolescents to engage in behaviours that result in negative health consequences. According to the dual systems model, the developing

brain may predispose adolescents to experience intense emotions, with less control to manage affective stimuli (Burnett, Thompson, Bird, & Blakemore, 2011; Steinberg, 2010; Willoughby, Good, Adachi, Hamza, & Tavernier, 2014). As a result, high levels of emotional reactivity, impulsivity and inappropriate management of emotional experiences may ensue (Burnett et al., 2011; Haas, Anderson, & Filkowski, 2015; Willoughby et al., 2014). This may be a consequence of the brain developing faster in the affective systems and slower in the cognitive systems (Steinberg, 2010). In addition, the adolescent is susceptible to peer opinion and pressures, and, therefore, vulnerable to participate in self-harming behaviour, as the peers serve as a model for managing intrinsic stressors (Haynie et al., 2014). Israelashvili, Gilad-Osovitzki and Asherov (2006) contended that adolescents have an inadequate coping arsenal due to limited life experience. Therefore, the adolescent makes use of the communal viewed strategies, which may have negative health outcomes, e.g., self-harming behaviour or drug abuse (Glenn & Klonsky, 2013; Shilubane et al., 2013). The adolescent's belief about the group, personal esteem and effective management of stressors all have negative health outcomes such as depression, self-harm, suicide and other risky and reckless behaviour that may be observed in peer groups (Glenn & Klonsky, 2013; Silvers et al., 2012; White, 2009). To understand the impact of interacting environmental factors on the adolescent's development, it is important to view the adolescent in the context of environmental influences (Moos & Schaefer, 1993) such as traumatic exposure or events (Panel 1).

Traumatic Exposure

As mentioned, South African adolescents are influenced by environmental and systemic factors such as traumatic and stressful life events (Panel 1) (Sorsdahl et al., 2011). Studies have reported that three quarters of the South African population will be exposed to various forms of trauma in their lifetime (Sorsdahl et al., 2011). Studies by Hoffman (2002) as well as McGowan and Kagee (2013) reported that South African tertiary-level students are commonly exposed to at least two traumatic experiences, and approximately 90% of these are exposed to at least one traumatic experience by the time they reach tertiary education. Trauma is regarded as the direct or vicarious experience of life stressors which are harmful to the individual's biological and mental health (American Psychiatric Association, 2013; Sadock, Sadock, & Ruiz, 2015). Sorsdahl et al. (2011) and Seiffge-Krenke (2004) include

exposure to physically and emotionally threatening life events that are experienced directly, witnessed or vicariously made aware by relatives or other persons whom have been exposed to traumatic events. These events can include crime, domestic violence, life-threatening events, child abuse, political trauma, natural disasters, and sexual assault (Sorsdahl et al., 2011; Seiffge-Krenke, 2004). The exposure to traumatic situations is recognised as a risk factor in the development of psychological disorders, and has been linked to the development of self-harm and increased suicide behaviour (Sorsdahl et al., 2011; Kaminer, Du Plessis, Benjamin, & Hardy, 2013; Whitlock, 2010; Williams et al., 2007). Moreover, the frequency, severity and number of traumatic life experiences were found to increase the likelihood of developing pathology and severity of symptoms experienced in conditions such as posttraumatic stress disorder (PTSD), depression and anxiety disorders (Korgaonkar et al., 2013; Revington, Martin, & Seedat, 2011).

In exploring conditions such as PTSD, anxiety and suicide ideation, it was observed that there may be a possible interactive relationship in both the development and the experience of these conditions and symptoms (Chemtob, Madan, Berger, & Abramovitz, 2011; Dunn, McLaughlin, Slopen, Rosand, & Smoller, 2013; Zetterqvist, Lundh, & Svedin, 2013). Early stressful life experiences have been identified to facilitate negative developmental patterns regarding self-regulation and attachment formation (Dunn et al., 2013). In contrast, social support and attachment have been linked to healthy and more effective coping in adolescence (Rutter & Behrendt, 2004; Maimon, Browning, & Brooks-Gunn, 2010). Worldwide, it is considered that the main source of support is found in the adolescent's family (Larson, Wilson, & Mortimer, 2002; Maimon et al., 2010). Authors (Loots, 2008; Read, Ouimette, White, Colder, & Farrow, 2011) argue that adolescents who are regularly exposed to domestic violence may present with indecisiveness, low self-expression, inappropriate problem-solving skills, melancholy, isolation and seclusion. These same patterns in behaviour are observed in sexual abused adolescents (Nduna & Jewkes, 2012; Nduna, Jewkes, Dunkle, Shai, & Colman, 2010). It is argued that domestic instabilities may preclude the adolescent from seeking appropriate support (Maimon et al., 2010). Further, adolescents seek supportive structures in their peer groups to assist in new found acceptance although this may expose the adolescent to crime and threatening situations (Flannery, Singer, Van Dulmen, Kretschmar, & Belliston, 2007; Nduna et al., 2010; Kaminer et al., 2013). Poor support networks have been associated with suicide risk and the

exacerbation of comorbid psychological pathologies (George & Van den Berg, 2011; Maimon et al., 2010; Wilcox et al., 2010).

In conceptualising traumatic life events it becomes apparent that these events may predispose the adolescent to poor adjustment and the development of behavioural and psychological pathologies, which, ultimately, causes negative health outcomes (George & Van den Berg, 2011; Kaminer et al., 2013; Korgaonkar et al., 2013). According to Moos and Schaefer (1993) environmental factors such as traumatic life events or stressors do not exclusively impact on health. However, personal dispositions such as emotional regulation (Panel 2) contribute as part of a range of factors which ultimately result in positive or negative health outcomes.

Emotional Regulation

Emotional regulation (Panel 2) is described as the process of redirection, controlling or modification of emotional arousal (Rajappa, Gallagher, & Miranda, 2012). More practically demonstrated, Greenberg (2007) views emotional regulation as an intrinsic human ability to generate as well as manage emotions, while Phillips and Power (2007) view one's awareness and reactive abilities as salient to emotional regulation. Emotional reactivity is the involuntary and intense reaction to an emotional stimulus (Nelson, Shankman, Olino, & Klein, 2011; Prince-Embury, 2008; Silvers et al., 2012). Emotional dysregulation is considered to be a compromised state in emotional regulation and is referred to as an inappropriate emotional response in relation to what is socially acceptable (Miranda et al., 2013; Miranda et al., 2014; Rajappa et al., 2012). Emotional regulation is a key developmental task that assists adolescents in managing their environmental stressors (Beauchaine, Gatzke-Kopp, & Mead, 2007; MacPherson, Cheavens, & Fristad, 2013). In a study exploring which stressors adolescents experienced as most dissatisfying, participants reported that they found not being able to regulate their emotions or emotional responses as stressful (George & Van den Berg, 2011). In exploring these core concepts of emotional regulation it should be noted that emotional regulation cannot be viewed on a single dimension, but rather as the result of a multidimensional interaction of adaptive emotional control of functional and dysfunctional emotions (Rajappa et al., 2012; Thompson, 1994).

Emotional reactivity is understood as the emotional arousal experience of the adolescent as a response to different stimuli, the intensity of emotional arousal and the return

to the pre-arousal level (Nock, Wedig, Holmberg, & Hooley, 2008). Prince-Embury (2008) motivates that adolescents' sensitivity, recovery time and impairment after emotional arousal all play a key factor in the reaction to the emotion arousing stimulus and are thus key identifiers of emotional reactivity. Heightened negative emotional reactivity has been found to reflect poor emotional regulation, as emotional regulation manages these activated responses (Davis et al., 2014). Thus, heightened emotional reactivity may cause an adolescent to be more vulnerable to poor emotion regulation or emotional dysregulation (Davis et al., 2014; Prince-Embury, 2011; Rajappa et al., 2012).

Researchers (Boden et al., 2013; MacPherson et al., 2013; Sorsdahl et al., 2011) have suggested that reduced control in emotional regulation contributes to the negative effects of both the experience of trauma and suicide ideation. It stands to reason that effective emotional regulation can assist the adolescent in managing their environment (Boden et al., 2013; Gross & Thompson, 2007; Rajappa et al., 2012). Gross' model of emotional regulation (Gross, 1998) consists of five stages which are summarised across two main areas, namely antecedent strategies and response-focused strategies (Forkmann et al., 2014; Gross, 1998). Antecedent strategies in emotional regulation are employed before the emotional response is projected or fully produced, and focus on the situations that elicit emotions (Gross, 1998). Response-focused strategies occur after the development of the emotional response (Gross, 1998). Gross (1998) describes four sequentially staged strategies as selection and situation modification, followed by attentional development and cognitive reappraisal. These strategies are considered useful in regulating emotions, and are necessary to cope successfully (Gross, 1998). Expressive suppression, identified as a response-focused strategy, focuses on the suppression of emotion expression as viewed by others (Forkmann et al., 2014). Unlike cognitive reappraisal (which can negate the negative effect on the individual), suppression of the emotional response hampers the emotional regulatory experience and may cause negative influences on emotional wellbeing and social responsiveness (Forkmann et al., 2014; Gaher, Hofman, Simons, & Hunsaker, 2013; Gross & Thompson, 2007). Individuals making use of suppression strategies are reported to have more depressive symptoms, lower self-worth, lower life satisfaction and they generally present with poorer wellbeing (Forkmann et al., 2014).

There is a precedent that supports adolescents engaging in dysfunctional behaviour (Basterfield, Reardon, & Govender, 2014; Kim-Spoon, Holmes, & Deater-Deckard, 2015; Siegel, 2015), supporting the argument that heightened emotional reactivity and the

dysregulation of emotions may contribute to risky and suicide behaviours (Boden et al., 2013; Marusak, Martin, Etkin, & Thomason, 2015; Miranda et al., 2013). The argument can be made that risky behaviours are not only due to poor regulation abilities, but possibly due to emotional dysregulation (Rajappa et al., 2012). Emotional dysregulation, similar to emotional regulation, stems from multiple domains (Gratz & Roemer, 2004). Gratz and Roemer (2004) similarly conceptualised emotional dysregulation in six dimensions, i.e., lacking mindfulness or appropriately recognised emotions (awareness); poor organisation in identifying appropriate current emotional experiences (clarity); unwillingness to give attention or acceptance to unpleasant emotions or distress (non-acceptance); lacking management over compulsions towards behavioural triggers by negative emotions (impulse); deficient skills to achieve the current goals under negative emotions (goals); and the belief that the experience of emotion cannot be managed, as they may lack the method to manage the emotional experience (strategies). By integrating the emotional regulation and dysregulation processes, it may be argued that compromised emotional awareness, lower emotional clarity and increased the emotional arousal/reactivity may impact the likelihood of the individual incorporating cognitive reappraisal, which may ultimately influence the manner emotions are regulated (Rajappa et al., 2012).

In light of conceptualising emotional regulation as a personal deposition that, together with environmental and developmental factors, ultimately results in the negative health outcome of suicide ideation, it would be ill-conceived not to consider the unique and macro-relationships of emotional regulation, trauma exposure and suicide ideation. Instead, the model proposed by Moos and Schaefer (1993) allows for the investigation of the bidirectional reciprocal influence of these domains on each other and the development of suicide ideation as a negative health outcome.

Interaction between traumatic exposure and emotional regulation. According to Marusak et al. (2015), continued exposure to traumatic experiences may lead to heightened emotional arousal, poor emotion regulation abilities or emotional dysregulation. Studies exploring stressful life exposure and emotional regulation support the possibility that trauma exposure has a bidirectional relationship to emotional regulation as a whole (Boden et al., 2013; Gaher et al., 2013; Goldsmith, Chesney, Heath, & Barlow, 2013; Marusak et al., 2015; Punamäki, Peltonen, Diab, & Qouta, 2014). Gaher et al. (2013) proposed that poorly

regulated emotions may be caused by traumatic events, as the ability to develop the correct labelling of emotions and emotional states is influenced and possibly compromised by traumatic experiences. The ability to correctly identify emotions is considered an essential developmental task during adolescence (Louw et al., 2007). This supports adolescents in making sense of their social and personal context, and guides their actions (Louw et al., 2007). Goldsmith et al. (2013) further state that victims of traumatic incidents often separate or internalise the traumatic event. Gaher et al. (2013) proposed that this has a negative impact on distress tolerance and disinhibition of emotional arousal, as the awareness and/or description of emotions and/or mood becomes impaired.

Early traumatic events affect the development of cognitive and emotional facets as well as the ultimate appraisal of such events (Dunn et al., 2013). It is argued that early trauma impacts on the development of neurological patterns that are associated with cognitive and emotional reactivity in adolescents (Dunn et al., 2013). These include their conceptual understanding of the experience of trauma (Dunn et al., 2013). Conceptual understanding facilitates cognitive reappraisal and thus effective emotional regulation (Gaher et al., 2013). As a result, traumatic events may predispose the young brain to poor emotional regulation (Dunn et al., 2013). Research further elaborates and motivates the importance of emotional identification in being able to express appropriate emotions to the relevant context (Gaher et al., 2013; Gross & Thompson, 2007). Thus, early traumas influence a key aspect in the emotion regulation process, namely the semantics of emotions (Gaher et al., 2013; Gross & Thompson, 2007).

Emotional regulation is an effective coping mechanism in the successful management of traumatic or stressful situations (Lilly, London, & Bridgett, 2014). Thus, an understanding of the semantics of emotions assists in coping with the traumatic event and to relieve the severity of the arousal experienced (Kulkarni, Pole, & Timko, 2013; Lilly et al., 2014). This understanding assists the individual to recall and employ effective cognitive reappraisal skills and to experience lower emotional reactivity after the traumatic exposure (Gaher et al., 2013; Gross & Thompson, 2007; Lilly et al., 2014). Lilly et al. (2014) report that children who are exposed to early traumatic events may be vulnerable to poor emotional regulation, as there is a high correlation with poor behaviour control in later life. Arguably it may be that early traumatic experiences negatively influence the developmental process of semantics (understanding) of emotions and, thus, effective emotional regulation as a whole (Lilly et al., 2014). Poor emotional regulation has, therefore, been cited as a contributing factor in

depression, anxiety and associated suicide behaviour (American Psychiatric Association, 2013; Boden et al., 2013; Miranda et al., 2013; Sorsdahl et al., 2011).

Interaction between suicide ideation and emotional regulation. Authors (Forkmann et al., 2014; Miranda et al., 2013; Miranda et al., 2014; Rajappa et al., 2012) have established a link between emotional dysregulation and suicide ideation. This trend was further observed in a study by Wolmarans in 2010. Using Free State adolescents as a sample group, Wolmarans (2010) found that emotional regulation as a passive-emotional coping style showed a positive correlation with suicide ideation. There is evidence that poor emotional regulation and emotional reactivity impact on suicide ideation, similar to trauma experiences (Forkmann et al., 2014; Gaher et al., 2013; Kulkarni et al., 2013). Compromised emotional awareness and emotional suppression explain certain general qualities of emotional regulation (Miranda et al., 2013; Rajappa et al., 2012). However, models proposed by Gross (1998), as well as Gratz and Roemer (2004) reveal that complex emotional regulation strategies are used as a tool to negate disagreeable emotional states. The chronic absence of functional emotional regulation strategies or prevailing dysfunctional strategies may lead to a limitation in the management of the individual's emotional state (Forkmann et al., 2014). Thus, higher levels of suppression and lower levels of cognitive reappraisal may lead to higher levels of suicide ideation (Forkmann et al., 2014).

Emotional regulation serves an adaptive function in the management of strong emotions (Rajappa et al., 2012). Miranda et al. (2013) motivated that cognitive reappraisal can assist in the down-regulation of emotional experiences, thus allowing the individual to manage suicide ideation more effectively. Emotional reactivity is a set part of emotional regulation that focuses on a set of skills that regulate emotions (Prince-Embury, 2007). Increased emotional reactivity has been associated with poor emotional regulation, and emotional regulation has, therefore, been found to influence suicide ideation in adolescents (Rajappa et al., 2012). However, postulating that emotional arousal is the only factor in poor emotional regulation may be ill-advised, as this ignores how individuals may view their emotional regulation abilities (Rajappa et al., 2012). Individuals who feel that they lack influence over their emotional regulation abilities, might eventually have feelings of powerlessness over emotional arousal (reactivity) in emotionally stimulating situations (Rajappa et al., 2012). This may lead the individual to perceive that they cannot change or escape the stressful situation, predisposing the individual toward suicide ideation/behaviour (Rajappa et al., 2012).

This study utilised the core structure and mechanisms of the Integrated Stress and Coping Process Model (Moos & Schaefer, 1993) as a theoretical framework for underpinning this research. Not all components were included for purposes of this study as, evidenced by having omitted the cognitive component (Panel 4). The rationale for this was that coping is not the primary variable under investigation. From the above literature it can be seen that a possible argument can be made regarding emotional regulation as a necessary functional quality in the achievement of healthy adolescent development, as it assists in the more effective management of socially challenging and or traumatic experiences. This is evident in qualities such as the experience of poor emotional reactivity and regulation which are negative predisposing factors for both suicide ideation and trauma exposure. In view of this, this study lends itself to the possible influence of emotional regulation as a variable that may impact on the development of suicide ideation after traumatic and stressful life events.

The aim of the present study is to investigate the role of emotional regulation in the relationship between traumatic exposure and suicide ideation in adolescents in the Free State province of South Africa. The research objectives are:

- To investigate the incidence of suicide ideation, frequency of traumatic exposure and level of emotional regulation amongst a sample of adolescents in the Free State;
- To investigate the relationships between suicide ideation (Panel 5), trauma exposure (Panel 1) and emotional regulation (Panel 2); and
- Lastly, to investigate if emotional regulation has a moderating effect in the relationship between traumatic exposure and suicide ideation.

Methodology

To address the research objective of this study, namely to determine if emotional regulation contributes in the relationship between traumatic exposure and suicide ideation in adolescents, the following procedure was followed:

Research Design

A non-experimental, cross-sectional and correlation design was employed in this study (Terre Blanche, Durrheim, & Painter, 2012). The calculation of correlations allows the researcher to investigate relationships between variables; allowing the benefit of quantitative data for statistical relationship analyses (Terre Blanche et al., 2012). The identified dependent variable is suicide ideation, with the independent variable being trauma exposure and the moderator variable being emotional reactivity.

Participants and Data Gathering

The current study utilised existing data obtained from the Adolescent Risk and Resilience research survey conducted in the Free State province in 2012. Respondents included 988 Grade 10 pupils from nine different schools in the Free State province. Randomised stratified sampling was used to select the nine schools out of the five regions in the Free State, which included respondents from both urban and rural areas, as well as from different socioeconomic backgrounds. The defining characteristics of the sample group were as follows:

- The mean age of the participants was 16.34 with a standard deviation of 0.834 years.
- The division of gender consisted of 413 (42.1%) male and 568 (57.9%) female participants.
- Four racial groups were proportionally identified, namely black (71.1%), white (17.1), coloured (8.6%) and Asian (2.4%).
- Lastly, the participants' first language was identified as Sesotho (44.6%), Afrikaans (28.3%), Setswana (13.3%), IsiXhosa (10.3%), English (4.7%), IsiZulu (3.2%) and Sepedi (0.3%).

Informed consent and permission were received from the Department of Education, principals of the participating schools, and the parents of the prospective participants. The goals of the study, the voluntary nature of participating, potential benefits and risks held by the study, as well as concepts such as anonymity and confidentiality were explained to all parties. Participants were informed that they could withdraw from the research at any time during the data collection phase. After being fully informed, participants were given a formal opportunity to provide their assent prior to data collection.

A test battery was administered during a school day and lasted two to three hours, with a 30-minute break halfway through the session. Questionnaires were translated from English into Afrikaans and Sesotho using the back-translation method (Brislin, 1986). Answer booklets containing the questionnaires were presented to the participants to complete in groups of 20 to 30, under the supervision of registered psychologists and psychometrics. Participation was voluntary and anonymous, and all data was managed confidentially by the administrators. The learners received feedback after testing and possible concerns were addressed.

Measuring Instruments

The following instruments were utilised during the data gathering session:

A researcher-compiled biographical questionnaire was administered to obtain information about the participants' age, gender and race as well as other basic demographic information. To ensure anonymity, the participants' names were not included.

The *Suicidal Ideation Questionnaire for Adolescents (SIQ-A; Reynolds, 1988)* allowed the researcher to evaluate the frequency and intensity of suicide cognitions. This questionnaire consists of 30 items with answers ranging from 'never' to 'everyday' on a seven-point Likert scale. The SIQ-A is scored in a clinical setting, with scores higher than 31 indicating high suicide ideation and ever-increasing severity of suicide cognitions by the uppermost scores (Reynolds & Mazza, 1999). Pienaar and Rothmann (2005) demarcated categories of suicide ideation severity when they used the adult version of the SIQ in a South African study in 2005. These categories include low risk (≤ 16), average risk (17-31) and high risk (≥ 32) (Pienaar & Rothmann, 2005). The total SIQ-A score was used as a measurement of suicide ideation in this study. Reynolds and Mazza (1999) identified an internal consistency

reliability coefficient of 0.91 for this measure. More recent South African studies reported Cronbach alpha-coefficients above 0.95 for studies conducted by George (2009) and Du Plessis (2012).

The *Resiliency Scales for Children and Adolescents* (RSCA; Prince-Embury, 2007) measure the attributes of children and adolescents with regard to resiliency. The RSCA consists of three global self-reporting subscales consisting of 20-24 items each. The subscales are: Sense of Mastery (measures optimism, self-efficacy, adaptability); Sense of Relatedness (measures trust, support, comfort, tolerance); and Emotional Reactivity (measures sensitivity, recovery, impairment) (Prince-Embury, 2007). For the purpose of this study the emotional reactivity subscale was used. This subscale includes assessing the individual's emotional sensitivity, recovery and impairment, with higher scores indicative of greater vulnerability and lower scores representing lower vulnerability to emotional reactivity (Prince-Embury, 2007, 2011). The internal consistency for the reactivity scale is reported to be 0.89 for adolescents (Prince-Embury, 2010). A South African study by De Villiers (2009) on children in a place of safety reported a Cronbach alpha-coefficient of 0.919 for emotional reactivity.

A shortened version of the *Stressful Life Events Screening Questionnaire* (SLESQ; Goodman, Corcoran, Turner, Yuan, & Green, 1998) was administered. The questionnaire measures the frequency of exposure to traumatic events and not the degree of traumatisation experienced by the participant. The questionnaire consisted of 12 dyad items of "yes" and "no." If a participant answered "yes", the questionnaire further probed the frequency and duration of these incidents. Participants who obtain higher scores on this measure have merely been exposed to a greater variety of different stressors or traumatic events than participants with lower scores (Elhai & Simons, 2007). Goodman et al. (1998) found a gamma alpha-coefficient ranging from 0.76 for men and 0.85 for women with PTSD. No South African studies which had computed alpha-coefficients could be found for this scale (Databases used for investigation: EbscoHost, Nipad, Google Scholar, 30 July 2015). The terms "stressful life events" and "traumatic exposure" are used interchangeably throughout this study.

Data Analysis

The Statistical Package for the Social Sciences (SPSS v. 22) (IBM Corp., 2013) was used to compute and analyse descriptive and multivariate statistics. Descriptive statistics were calculated for each of the scales and subscales. In preparation for the linear regression analysis, the assumptions of linearity and homoscedasticity were investigated and were met (Cohen, Cohen, West, & Aiken, 2003; Kutner, Nachtsheim, Neter, & Li, 2005). In addition, no multicollinearity was found between the independent variables (Cohen et al., 2003; Kutner et al., 2005). Furthermore, a number of outliers were found in the dataset, but with no influential points or high leverage values (Cohen et al., 2003; Kutner et al., 2005). It was thus decided to keep the outliers in the dataset. There was evidence that the assumption of normality had been violated, but since regression is fairly robust against violations of this assumption (Cohen et al., 2003; Kutner et al., 2005), the analysis was run regardless. A product-term regression analysis was utilised to determine the relationships of suicide ideation as dependent variable, and trauma exposure and emotional regulation as independent variables (Terre Blanche et al., 2012). Lastly, a moderated regression analysis was utilised to determine whether emotional regulation moderates the relationship between traumatic exposure and suicide ideation (Stangor, 2011; Terre Blanche et al., 2012).

Results

The descriptive statistics (alpha-coefficients, means and standard deviations) are summarised in Table 1.

Table 1.

Summary of Descriptive Statistics

	Alpha-coefficients	Mean	SD	Min - Max	N
Resiliency Scales for Children and Adolescents - Emotional Reactivity Subscale	0.902	30.85	14.86	0.00 – 80.00	988
Suicidal Ideation Questionnaire	0.978	38.77	42.89	0.00 – 108.00	988
Stressful Life Events Screening Questionnaire	-	2.82	1.95	0.00 – 12.00	988

The emotional reactivity subscale of the RSCA displayed an alpha-coefficient of 0.902, whereas an alpha-coefficient of 0.978 was found for the SIQ-A. According to the guidelines for non-cognitive constructs (Nunnally & Bernstein, 1994), both of these scales presented with Cronbach alpha-coefficients above the satisfactory level (≥ 0.70). An alpha reliability coefficient was not calculated for the SLESQ due to the independent nature of each traumatic event on the scale. The researcher did not expect the responses to present with inter-item consistency as independent items present with poor inter-item reliability.

The study's participants obtained a mean of 30.85 for emotional reactivity and a standard deviation of 14.86. This is slightly lower than the respective mean of 32.22 and standard deviation of 14.93 found by Wolmarans (2010) who examined a younger group of adolescents (mean age of 13.99). Similarly, the mean of the study was found to be lower than that of a sample of American adolescent sample, that was drawn from a psychiatric institution, in a study conducted by Prince-Embury (2010), namely 59.55.

A mean suicide ideation score of 38.77 with a standard deviation of 42.89 was obtained for the study's participants. Earlier South African studies reported means of 39.51 (George, 2005) and 40.80 (Wolmarans, 2010) and did not differ significantly. The original American sample, however, reported a substantially lower mean score of 17.76 (Reynolds, 1988).

The current participant group reported a mean of 2.82 traumatic events, with a standard deviation of 1.95. This reveals that all of the secondary learners in this sample group had been exposed to nearly three different traumatic events in their lifetime. No comparative data was found that specifically reviewed the SLESQ (Goodman et al., 1998) amongst South African adolescents. The databases that were searched for this investigation in July 2015 included EbscoHost, Nipad and Google Scholar.

Table 2.

Frequency of Traumatic Events and Themes

Traumatic themes	Frequency	%
Lost loved one due to trauma	419	42.8%
Exposure to corpse(s)	348	35.4%
Loved one has a life-threatening illness	328	33.6%
Robbery by force/threat	312	31.7%
Been seriously injured	286	29.5%
Feared serious injury or death	279	28.4%
Involuntary separation from loved one	181	18.4%
Physical assault	175	17.9%
Witnessed violence	170	17.3%
Domestic violence	108	11.1%
Natural disasters	94	9.6%
Sexual assault	83	8.5%

Table 2 indicates that the most frequently reported traumatic events involved the personal loss of loved ones due to trauma, followed by exposure to corpses or dead persons, as measured by the SLESQ. Other commonly reported traumatic exposure included loved ones suffering from life-threatening illnesses and being robbed through the use of force. Natural disasters and sexually assault were reported less frequently for this group of adolescents.

Table 3.

Model Summary with Suicide ideation as Dependent Variable and Trauma Exposure and Emotional Reactivity as Predictors

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.392 ^a	.153	.152	39.50534

a. Predictors: (Constant), Trauma total score, Emotional Reactivity total

Table 4.

ANOVA with Suicide Ideation as Dependent Variable and Traumatic Exposure and Emotional Reactivity as constant and predictors

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	276679.773	2	138339.886	88.641	.000 ^{b*}
	Residual	1526336.833	978	1560.672		
	Total	1803016.606	980			

b. Predictors: (Constant), Trauma total score, Emotional Reactivity total

* $p \leq 0.01$

Tables 3 and 4 summarise the model and ANOVA analyses conducted. From Tables 3 and 4 it can be seen that traumatic exposure and emotional reactivity statistically explain 15.3% of the variance in suicide ideation ($R^2 = 0.153$; $F = 88.641$; $p=0.000$) which is significant on the 1% level.

Table 5.

Coefficients with Suicide Ideation as Dependent Variable

Model		Unstandardised Coefficients		Standardised Coefficients		Collinearity Statistics		
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-.523	3.262		-.160	.873		
	Emotional reactivity total	1.025	.086	.355	11.938	.000*	.979	1.022
	Traumatic exposure total	2.687	.656	.122	4.095	.000*	.979	1.022

* $p \leq 0.01$

Table 5 reveals that both emotional reactivity ($t=11.938$; $p=0.000$) and traumatic exposure ($t=4.095$; $p=0.000$) made statistically significant, unique contributions to the

prediction of suicide ideation, significant on the 1% level. From the B-values in the unstandardised coefficients column, one can see that a one unit increase in emotional reactivity led to a 1.025 unit increase in suicide ideation. Similarly, a one unit increase in traumatic exposure led to a 2.687 unit increase in suicide ideation.

Moderated Multiple Regression

A moderated multiple regression analysis was conducted to explore the role of emotional regulation in the relationship between trauma exposure and suicide ideation (Terre Blanche et al., 2012). The identified moderating variable is emotional reactivity. The moderating variable affects the strength and/or direction of the relationships of the predictor variables, namely suicide ideation as the dependent variable and trauma exposure as the independent variable (Terre Blanche et al., 2012).

Table 6.

Moderated Multiple Regression (Dependent Variable: Suicide Ideation; Independent Variable: Trauma Exposure; Moderator Variable: Emotional Reactivity)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.392 ^a	.153	.152	39.50534	.153	88.641	2	978	.000	
2	.393 ^b	.155	.152	39.49584	.001	1.470	1	977	.226	2.016

a. Predictors: (Constant), ER_centred, Trauma_centred

b. Predictors: (Constant), ER_centred, Trauma_centred, Trauma_C_X_ER_C

When testing to see if emotional reactivity made a significant contribution in the product-term analysis (Table 6, model 2), no significant increase in the variance of suicide ideation [$R^2_{\text{change}} = 0.001$; $F(1,977)=1.470$; $p=0.226$] was found. This means that emotional reactivity does not significantly moderate the relationship between traumatic exposure and suicide ideation.

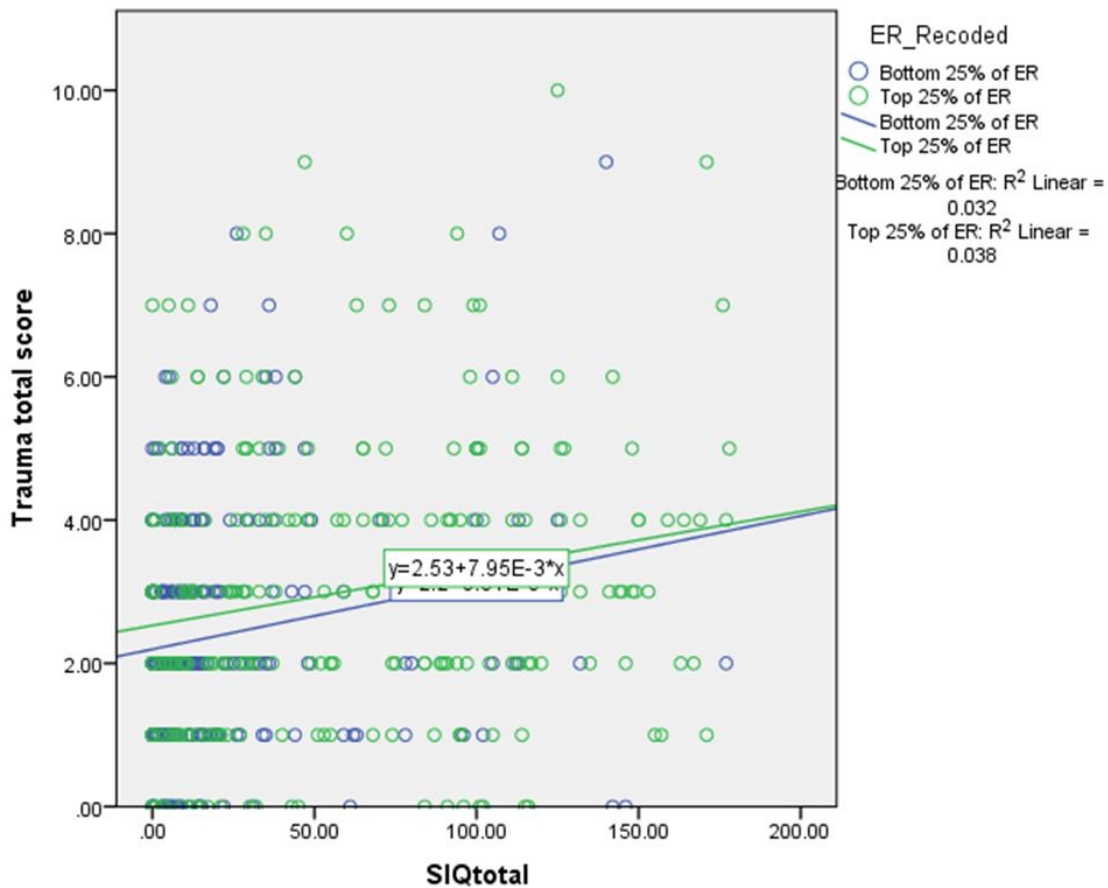


Figure 2. Regression lines for high and low emotional reactivity

Further explanation of the product-term interaction can be seen in Figure 2. The correlation coefficients and plots above demonstrate that a statistically significant positive relationship was found between trauma exposure and suicide ideation for individuals with low emotional reactivity scores ($r=0.178$; $p=0.004$). Thus, an increase in traumatic exposure was associated with an increase in suicide ideation for individuals with low emotional reactivity scores. It can also be seen that a very similar significant positive correlation coefficient was found between trauma and suicide ideation for individuals with high emotional reactivity scores ($r=0.195$; $p=0.003$). From this analysis, it seems clear that emotional reactivity does not influence the relationship between trauma and suicide ideation.

Recapitulation and Discussion

The primary aim of this study was to investigate the role of emotional regulation in the relationship between traumatic exposure and suicide risk. Secondary to the above aim, this study aimed to explore the main effects of emotional reactivity and trauma exposure on suicide ideation.

Before discussing these aims, the descriptive statistics will be reviewed. The alpha-coefficient values were found to be above the acceptable level of 0.70 for the emotional reactivity subscale of the RSCA and the SIQ-A, as stipulated by Nunnally and Bernstein (1994). An alpha reliability coefficient was not calculated for the SLESQ due to the independent nature and nominal data of each traumatic event on the scale. The alpha-coefficient values obtained for this study are similar to earlier studies conducted on learners in the Northern Cape (George, 2009) and Free State provinces (De Villiers, 2009), and concur with the original measuring instrument's expected ranges (Prince-Embury, 2007; Reynolds & Mazza, 1999).

The results reflect a slightly lower level of emotional reactivity than for an earlier South African adolescent sample (Wolmarans, 2010) and much lower when compared to the Prince-Embury's original sample (2010). The differences found in the present results and that of the earlier South African study (Wolmarans, 2010) can be accredited to the general older age of the participants. Neurological maturation in the emotional sectors of the brain may mediate the intensity of the emotional arousal experience by the older adolescent (Steinberg, 2010; Willoughby et al., 2014). Prince-Embury's (2010) sample of adolescents was drawn from a clinical context. Prince-Embury (2010) motivates that adolescents with psychiatric conditions may feel overwhelmed by their emotional reactivity, suggesting that higher emotional reactivity is expected in the clinical sample of American adolescents.

The study reports expected high levels in suicide ideation, similar to levels found in earlier South African studies (George, 2005; Wolmarans, 2010). Present findings indicate that, although there is a time lapse, the reported levels of suicide ideation have not changed significantly. This finding is an emulation of multiple South African studies which supports the notion that South African adolescents are vulnerable to suicide behaviours (Du Plessis, 2012; George, 2009; Loots, 2008; Mashego & Madu, 2009; Schlebusch, 2005; Shilubane et al., 2013; Stark et al., 2010; Tancred, 2010; Reddy et al., 2010; Wolmarans, 2010). Further

explanations of high levels of suicide ideation are supported by earlier studies that were conducted in the Northern Cape and Free State provinces (Du Plessis, 2012; George, 2009; Loots, 2008; Tancred, 2010; Wolmarans, 2010). These population groups presented with a set of common trends in personal dispositions, psycho-social stressors, as well as cognitive and coping strategies that can be generalised to the current population and thus accounting for the similar finding in suicide ideation (Du Plessis, 2012; George, 2009; Loots, 2008; Tancred, 2010; Wolmarans, 2010). The current study reported higher suicide ideation levels than the original American adolescent sample (Reynolds, 1988). This could be ascribed to socioeconomic differences between first world and developing countries, availability and access to health and other supportive services, as well as the passage of time between the two studies (Du Plessis, 2012; Wolmarans, 2010).

Current findings report that adolescents are exposed to nearly three traumatic events in their lifetime. Supportive studies by Hoffman (2002) as well as McGowan and Kagee (2013) found a range of one to two lifetime traumatic events among tertiary students in Pretoria and Stellenbosch. In comparison, the higher levels of traumatic exposure can potentially be explained by the escalating violent crimes, mortality rates, community violence and socioeconomical situation of South Africa, predisposing adolescents to experience higher frequencies and different types of stressful life events (Atwoli et al., 2013; Kaminer et al., 2013; McGowan & Kagee, 2013).

The present study reveals that the most frequently reported traumatic themes involved loss of loved ones due to trauma, exposure to corpses and loved ones having a life-threatening illness. Comparatively, Hoffman (2002) as well as McGowan and Kagee (2013) found similar traumatic exposure themes, with personal loss of loved ones due to trauma, witness of death and injury and violent robberies as the most recounted themes under tertiary students. The similarities and differences can be explained by increasing violent crimes, including domestic violence, and inappropriate access to healthcare, which may lead higher mortality rates and thus the adolescent's exposure of corpses (Atwoli et al., 2013; Kaminer et al., 2013). In addition, the category of witness of death and injury is measured separately in the present study, whereas it is combined in the measurement used by Hoffman (2002). This may possibly lead to a lower frequency of witnessing actual corpses reported in Hoffman's study (2002). Similarly, McGowan and Kagee (2013) made adjustments to the SLESQ to accommodate the measurement of xenophobia.

Natural disasters and sexual assault were less commonly reported for this group of adolescents. Hoffman (2002) as well as McGowan and Kagee (2013) also reported sexual assault as the least frequently reported traumatic event. Hoffman (2002) found that natural disasters were similarly less frequently reported, which is a possible indication of the less frequent occurrence of natural disasters in South Africa. The lower levels of sexual violence can also be attributed to the under-reporting of sexual violence in the general population, especially by males (McGowan & Kagee, 2013). In addition, lower frequencies in natural disasters can be attributed to the geographic and climatological features of South Africa (Hoffman, 2002). The cumulative effect of multiple trauma exposure and types of exposures may further support the argument that South African adolescents are at risk of developing pathologies such as PTSD and depression as cumulative negative health outcomes (Atwoli et al., 2013; McGowan & Kagee, 2013).

Before exploring the moderated regression analysis, the main effect relationships were analysed. It would appear from the current results that both trauma exposure and emotional reactivity made significant and unique contributions on the 1% level, collectively explaining 15.3% of the variance in suicide ideation. This finding suggests that suicide ideation is significantly positively influenced by exposure to stressful and traumatic life experiences. This is in line with the current view of positive correlations between stressful life experiences and suicide ideation (Dunn et al., 2013; Williams et al., 2007; Zetterqvist et al., 2013). This interaction suggests that traumatic experiences may impair individuals' management of emotional distress, leading to suicide behaviours (Dunn et al., 2013; Mashego & Madu, 2009; Rudd, 2006; Sorsdahl et al., 2011; Williams et al., 2007; Zetterqvist et al., 2013). Additionally, a positive relationship was found between suicide ideation and emotional reactivity, which implies that suicide ideation is significantly positively influenced by emotional reactivity. This result is in line with the current view of emotional reactivity and suicide ideation, suggests that the identification of emotional reactivity serves as an indicator of adolescent suicide risk (Davis et al., 2014; Nock et al., 2008). In addition, these results are supported by earlier findings which have concluded that high levels of emotional reactivity predispose the adolescent to feel helpless about their emotional arousal, leading to rumination about their perceived lack of control over intense emotions (Davis et al., 2014; Nock et al., 2008; Rajappa et al., 2012). Consequently, the individual feels trapped in his/her emotions, thereby increasing the risk for suicide ideation/behaviour (Rajappa et al., 2012).

An investigation of the possible influence that emotional regulation contributes in the relationship between trauma exposure and suicide ideation was conducted by performing a moderated regression analysis. When measuring both high and low emotional reactivity as product-term to determine the effect of traumatic exposure on suicide ideation, no significant differences were noted. This finding implies that emotional reactivity, as a sub-component of emotional regulation, does not have a statistically significant moderator effect in the relationship between traumatic exposure and suicide ideation among adolescents. Initially this finding was unexpected as emotional dysregulation and compromised regulation occur in heightened states of emotional reactivity due to poor recovery from emotional arousal (Davis et al., 2014, Prince-Embury, 2011; Rajappa et al., 2012). This in turn may suppress the identification of emotional states causing feelings of hopelessness and the development of suicide ideation (Rajappa et al., 2012). Thus, the expectation was that increased emotional reactivity may disrupt appropriate emotional regulation, causing emotional dysregulation and hence an increase in the risk for suicide ideation (Davis et al., 2014; Miranda et al., 2013; Rajappa et al., 2012). Additionally, it was surmised that higher levels of emotional reactivity may exacerbate the experience of the traumatic events (Davis et al., 2014; Silvers et al., 2012; Kulkarni et al., 2013). Similarly, it is inferred that higher emotional regulation abilities may assist in managing the feelings of being overwhelmed with the experience of the trauma, negating suicide ideation (Boden et al., 2013; Punamäki et al., 2014; Rajappa et al., 2012).

Retrospectively, literature supports the current result, as there is an expectation of raised emotional reactivity or emotional arousal as a consequence of traumatic exposure, regardless of inherent emotional reactivity. The inherent emotional reactivity would, therefore, not exert a significant influence in the relationship between traumatic exposure and suicide ideation (Dunn et al., 2013; Gaher et al., 2013, Goldsmith et al., 2013; Marusak et al., 2015).

Limitations and Recommendations

As a cross-sectional design, data from this study focussed on a narrow age margin, which does not allow for generalisation to the broader group applicable in this developmental age. A longitudinal study may have yielded a richer source of results considering the opportunity to observe the effects of participant maturation and social changes that could influence variable outcomes.

Even though the measuring instruments used were proven to be of high internal consistency or reliability, they had been standardised in first-world settings. The SLESQ only permitted reflection on the frequencies of trauma exposure and not the degree of affected traumatising, which rendered the interpretation of trauma exposure more linear in nature. Using a measure that reflects greater depth trauma exposure interpreting could yield a more comprehensive picture of one's state of traumatising.

The use of the emotional reactivity subscale of the RSCA to measure a subcomponent of emotional regulation, namely emotional reactivity, may need reconsideration. Theoretically, emotional reactivity has a direct influence on the emotional regulation process. What this study therefore implies is that emotional reactivity is not a significant moderator and that emotional regulation cannot be discounted completely. Using an instrument that is specifically designed to measure emotional regulation (suppression and reappraisal) or emotional dysregulation (awareness, clarity, non-acceptance, impulse, goals and strategies) may yield different results.

Despite these limitations this study expanded on previous research efforts and supports the distinct relationships between emotional regulation, especially emotional reactivity, traumatic exposure and suicide ideation. Additionally, South African adolescents are exposed to a high incidence of stressful life events. The present findings support that these stressful events have a direct influence on suicide ideation. Similarly, the findings presuppose that elevated emotional reactivity leads to a rise in suicide ideation for a South African adolescent population. The findings clarify that inherent emotional reactivity does not influence the relationship between traumatic exposure and suicide ideation on the basis that heightened emotional arousal is expected in high frequencies of traumatic exposure.

In view of this it can be recommended that a similar longitudinal study is completed in which the investigation can be directed at exploring other variables that may more clearly

explain the relationship between exposure to trauma and the development of suicide ideation. Lastly, it is recommended that follow-up studies be conducted to explore the relationship between suicide ideation and trauma exposure, using an alternative measure for emotional regulation. These findings and future research may contribute to a better understanding of the phenomenon of adolescent suicide and could assist the helping professions to identify possible interventions.

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