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Trauma and self-harming behaviors in high school students:

The mediating role of identity formation

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Trauma and self-harming behaviors in high school students:

The mediating role of identity formation

Abstract

Introduction. This study investigated the link between trauma and self-harming behaviors in South African high school students, and examined the mediating role of identity formation. Traumatic experiences have been commonly associated with self-harming behaviors in adolescents. However, research addressing this association in non-Western countries is limited.

Methods. A total of 552 South African high school students aged 13-21 (60.4% female; $M_{\text{age}} = 16$ years) were included in the study. Students completed self-report questionnaires on traumatic experiences, identity formation, and self-harming behaviors (disturbed eating behaviors and suicidal thoughts and behaviors).

Results. Structural equation modelling indicated that the association between traumatic experiences and self-harming behaviors was partially mediated by identity formation. Traumatic experiences were associated with more identity diffusion, bulimia, and suicidal thoughts and behaviors. Identity diffusion, in turn, was associated with more drive for thinness, bulimia, body dissatisfaction, and suicidal thoughts and behaviors. Identity consolidation was positively associated with drive for thinness and negatively with body dissatisfaction and suicidal thoughts and behaviors. No moderation effects by gender or age were found.

Conclusions. Traumatic experiences were associated with higher levels of identity diffusion, which, in turn, were associated with more self-harming behaviors in South African high school students. These findings suggest the importance of focusing on identity diffusion in prevention and intervention programs targeting self-harming behaviors.

Keywords: traumatic experiences, identity formation, self-harming behaviors, adolescence, South Africa

Introduction

Adolescence is a highly sensitive period for the onset of self-harming behaviors, such as disturbed eating behaviors and suicidal thoughts and behaviors, which can have a devastating impact on adolescents' lives (Nock et al., 2013; Pearson et al., 2017). One important vulnerability factor in the development of self-harming behaviors is childhood traumatic experiences (Dube et al., 2001). In addition, self-harming behaviors have also been linked to developmental processes such as identity formation and identity has been found to play an important role in the association between trauma and self-harming behaviors in Western studies (Klimstra & Denissen, 2017; Vartanian et al., 2018). However, knowledge about the link between trauma and identity in non-Western countries such as South Africa, is lacking. In the present study, we examined the role of identity in the association between trauma and self-harming behaviors in a sample of South African high school students.

Self-harming behaviors and traumatic experiences

Self-harming behaviors include deliberate and (in)direct injury to one's own body with and without the intention to die (Favazza, 1998). Important self-harming behaviors commonly developing during adolescence, are disturbed eating behaviors (DEB; Quick & Byrd-Bredbenner, 2013). Disturbed eating behaviors are unhealthy weight control behaviors that can render individuals vulnerable to develop a clinical eating disorder (Garner, 2004). Lifetime prevalence rates of disturbed eating behaviors in Western countries are situated around 50-60% in adolescents (Quick & Byrd-Bredbenner, 2013). Also in non-Western countries such as South Africa, high prevalence rates of disturbed eating behaviors have been identified. A study among South African males and females indicated that approximately 45% of participants reported body image dissatisfaction and up to 84% had a distorted body image (McHiza et al., 2015). Relatedly, up to 37% of female South African students indicated the use of unhealthy weight

control behaviors and approximately 4% reported bingeing/purging behaviors (Senekal et al., 2016).

Related prevalent self-harming behaviors among adolescents are suicidal thoughts and behaviors. In Western countries, estimated lifetime prevalence rates of suicide ideation, plans, and attempts are respectively 12.1%, 4.0%, and 4.1% in adolescents (Nock et al., 2013). In South Africa, the prevalence rates are even higher, being respectively 12.0%, 18.3%, 14.8% (Mashego & Madu, 2009). The median age of onset for suicidal thoughts and behaviors has been found to be between 14 and 15 years in both Western and non-Western countries (Mortier et al., 2018). Hence, developmental factors in adolescence should be taken into account as possible underlying mechanisms in the vulnerability to suicidal thoughts and behaviors.

Traumatic experiences have been recognized to play a crucial role in the development of self-harming behaviors (Nock et al., 2013; Smyth et al., 2008). Self-harming behaviors can function as a way to escape from the overwhelming and negative feelings related to trauma, when more adaptive coping strategies are unavailable (Gurung, 2018). Whereas several South African studies already linked trauma to suicidal thoughts and behaviors (Sorsdahl et al., 2011), studies investigating the link between trauma and disturbed eating behaviors in South Africa are lacking. As South Africa is characterized by a violent historical context in the battle for liberation and by high rates of political and interpersonal violence (Williams et al., 2007), it is important to examine the potential association between such a high burden of trauma and self-harming behaviors, as well as the role of developmental mechanisms in this link.

Identity formation as a potential mediator

Adolescence and emerging adulthood are challenging life periods characterized by making crucial life choices and defining important values and goals, a process referred to as identity formation (Erikson, 1968). During this process, youth are triggered by existential questions about who they are, where they are heading to in life, and what is important in their

life (Schwartz et al., 2011a). According to Erikson (1968), successful identity development implies that adolescents select goals, values, and ideals that are important for them, resulting in *identity synthesis*. Youth can also fail to develop a sense of direction in life, and experience a fragmented sense of self or *identity confusion*. However, some individuals persistently experience difficulties in defining themselves, resulting in severe and long-lasting feelings of incoherence, referred to as *identity diffusion* (Erikson, 1968; Kaufman et al., 2014). Additionally, the pressure of obtaining a firm identity, can for some adolescents and emerging adults result in the experience of discomfort and uncertainty in several identity domains, also referred to as identity distress (Berman et al., 2004).

Inspired by Marcia's (1966) paradigm, Luyckx and colleagues (2008) developed a dynamic process model with three exploration processes and two commitment processes, which can be seen as behavioral indicators of identity synthesis and confusion. Youth may start with exploring potential identity alternatives (*exploration in breadth*) before making identity choices (*commitment making*). Thereafter, individuals evaluate their commitments by comparing them to their personal standards and values (*exploration in depth*), which can result in feeling confident and certain about these commitments (*identification with commitment*). However, if youth feel uncertain about their explorations, they might get stuck in a maladaptive identity process where they repeatedly ask themselves the same identity questions without making life decisions (*ruminative exploration*; Luyckx et al., 2008).

In an attempt to integrate different identity frameworks, Schwartz (2007) coined the term *identity consolidation* to describe successful identity development. Identity consolidation can be considered as a synthesized and autonomous sense of self, that can foster decision making and the experience of an autonomous life course. As this construct was proposed to combine the separate but overlapping theories about identity, identity consolidation can be determined by the inclusion of different identity variables (Schwartz, 2007). In this study,

identity consolidation was measured by identity synthesis (from an Eriksonian perspective) and the two commitment processes (as described in the dynamic process model of Marcia and Luyckx). Subsequently, identity diffusion was determined by identity confusion (from an Eriksonian perspective), ruminative exploration, and the level of experienced identity distress (Berman et al., 2004).

Identity formation can be of great importance in adolescents' psychosocial functioning (Crocetti et al., 2011). Individuals with a consolidated identity report more subjective well-being and less psychosocial distress (Crawford et al., 2004). Alternatively, individuals lacking a stable identity, experience more internalizing problems (Crocetti et al., 2011) and more disturbed eating behaviors, non-suicidal self-injury, and suicidal behaviors (Gandhi et al., 2017; Sokol & Eisenheim, 2016; Verschueren et al., 2018). Relatedly, low self-esteem has been forwarded as a possible antecedent for the development of self-harming behaviors in South African adolescents (Gitau et al., 2014; Wild et al., 2004).

A crucial factor in the development of one's identity is the impact of negative (early) life events, as they can impact the way in which individuals develop a coherent and stable identity (Vartanian et al., 2018). The severe distress related to traumatic experiences can lead to renewed identity-questioning in adolescents and may result in a variety of identity changes (e.g., identity loss, identity delay, or identity resilience; Waterman, 2020). A recent qualitative study has indeed indicated that the way individuals make meaning of their experienced traumatic life events can have an impact on their level of experienced identity distress (Marin & Shkreli, 2019). However, the way traumatic experiences are perceived and interpreted can be affected by identity functioning as well, pointing to a possible reciprocal relationship between trauma and identity (Berman, 2016). In spite of these theoretical suggestions about how trauma relates to identity in adolescence, empirical evidence on this link, especially in non-Western cultures, is very limited. Given the high levels of traumatic experiences in non-Western

countries such as South Africa (Williams et al., 2007) and indications that trauma could also hinder the development of a consolidated identity in South African youth (Adams et al., 2012), this study examines how trauma relates to identity in this specific cultural group.

The present study

In this study, we examined identity formation as a mediating mechanism in the pathway from trauma to self-harming behaviors in South African adolescents. We hypothesized that traumatic life experiences would be associated with more identity diffusion and less identity consolidation (Berman, 2016). Furthermore, identity diffusion would be related to more self-harming behaviors and identity consolidation to less self-harming behaviors (Sokol & Eisenheim, 2016; Verschueren et al., 2018).

Additionally, we examined whether these associations are moderated by age and gender. With regard to gender, girls generally score higher on disturbed eating behaviors and suicidal thoughts and behaviors in South Africa (Gitau et al., 2014; Meehan et al., 2007) and experience generally more identity diffusion and less identity synthesis (Bogaerts et al., 2019). However, the relationship between identity and disturbed eating behaviors was not significantly different for boys and girls in Western countries (Verschueren et al., 2018). Similarly, no gender differences have been found in the pathway from traumatic experiences to disturbed eating behaviors via self-concept clarity, which is somewhat similar to identity consolidation (Vartanian et al., 2018). Therefore, we hypothesized that our model would not differ across gender. With regard to age, previous research has found higher prevalence rates of disturbed eating behaviors among younger adolescents as compared to older adolescents (Quick & Byrd-Bredbenner, 2013), whereas suicidal thoughts and behaviors are more prevalent among older adolescents (Mortier et al., 2018). Concerning identity, especially the transition to emerging adulthood is characterized by high scores on both exploration and commitment processes (Luyckx et al., 2013) and high levels of identity distress (Palmeroni et al., 2019). However, the

relationship between identity and disturbed eating behaviors did not differ between younger and older adolescents (Verschuere et al., 2018). Hence, we expected no differences in the associations between the study variables for younger versus older adolescents.

Method

Participants

A total of 552 South African high school students (60.4% girls) participated in the study, with a mean age of 15.66 ($SD=1.80$; range 13-21). Initially, 563 students participated but data from nine students were excluded because of incomplete or invalid questionnaire completion, and two participants of 12 and 22 years of age were excluded to limit the age range. A total of 88.5% identified themselves as black, 11.1% as mixed, and 0.4% as other. With respect to specific ethnic background (only percentages exceeding 1% are reported), 34.4% indicated Xhosa, 31.9% Sesotho, 9.6% Tswana, 2.9% Afrikaans, and 2.5% Zulu (11.2% indicated that they did not know or that is was not applicable).

Procedure

Two high schools situated in the Motheo (Bloemfontein) district, South Africa, and considered “township” schools characteristic of Quintiles 3 and 4 were included. These quintiles refer to a categorization system introduced by the post-apartheid South African government, which categorizes all public schools into five quintiles representing factors such as average income, unemployment rates, and general literacy levels in the school’s geographical area (Dass & Rinquest, 2017). Quintile 1 schools are considered to be the most economically disadvantaged schools and qualify for the greatest state funding, whereas Quintile 5 schools are the most affluent schools. Quintile 1, 2 and 3 schools are non-fee paying schools (White & van Dyk, 2019).

After obtaining permission from the university’s Ethics Committee and the Free State Department of Education, the principals of the two schools were approached. Students could

only participate after completing an informed consent form and those younger than 18 also required parental consent to participate in the study. A total of 1,967 students were approached and were provided with the information letters and the relevant informed consent forms. A total of 563 participants completed the required informed consent forms and participated in the data-collection (participation rate of 28.62%). This lower participation rate can be a result of the sensitive content of the study and the fact that we needed informed consent from the parents. Data collection took place during school hours and was supervised by researchers involved in the present study.

Questionnaires

All questionnaires were administered in English.

Traumatic experiences. Traumatic experiences were assessed with 9 items from the Brief Trauma Questionnaire (Schnurr et al., 1999). Participants had to indicate (*yes/no*) if they had ever been confronted with stressful or disturbing events, including serious car accidents or accidents at work, natural or technological disasters, life-threatening illness, witness of violent death, and physical or sexual abuse. The item that assesses if participants served in a war-zone was removed from the questionnaire, as this item was not deemed applicable to this young South African sample. The Kuder-Richardson 20 reliability coefficient ($>.70$ =acceptable) was .54.

Identity formation. Identity was assessed using three questionnaires. First, participants completed the Dimensions of Identity Development Scale (DIDS; Luyckx et al., 2008). Three identity processes were used in the present study (commitment making, identification with commitment, and ruminative exploration), each being measured by five items. Each item was rated on a 5-point rating scale, ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Cronbach's alphas of the subscales were .75, .74, and .72, respectively.

Second, participants completed the 12-item identity subscale from the Erikson Psychosocial Stage Inventory (EPSI; Rosenthal et al., 1981; Schwartz et al., 2009). Six items tap into identity synthesis and 6 into identity confusion. The rating scale ranges from 0 (*Strongly Disagree*) to 4 (*Strongly Agree*). Cronbach's alphas for identity synthesis and confusion were .70 and .57, respectively. Due to the lower alpha coefficient for identity confusion ($<.60$), a principal component analysis was conducted on the 12 items using a Promax rotation. Based on a visual inspection of the scree plot and the eigenvalue >1 criterion, 2 factors had to be retained. Both subscales of identity synthesis and confusion emerged clearly, although two items loading on the identity confusion-factor (items 1 and 11) had cross-loadings exceeding .30 on the identity synthesis-factor. After deleting these two items from the identity confusion-subscale, Cronbach's alpha increased to .61. Hence, these remaining four items were used to construct the identity confusion-score. The correlation between the identity confusion-scores with the original six items and with the four items was .90 ($p<.001$).

Third, participants completed the Identity Distress Survey (IDS; Berman et al., 2004). This 10-item survey measures distress associated with unresolved identity issues. The items are rated on a 5-point rating scale ranging from 1 (*Not at all*) to 5 (*Very severely*). The first seven items rate the amount of distress experienced in seven different identity domains (long-term goals, career choice, friendships, sexual orientation and behavior, religion, values or beliefs, and group loyalties). Two additional items assess the amount of discomfort experienced and the degree of interference of these identity issues in daily life. The last item gives an indication of the duration of identity-related distress. Cronbach's alpha for the total scale was .68.

Eating behaviors and body image. Participants completed three subscales (drive for thinness, bulimia, and body dissatisfaction) from the Eating Disorder Inventory-3 (EDI-3; Garner, 2004), which has been demonstrated to be a valid questionnaire in community samples (Lehmann et al., 2013; Nyman-Carlsson et al., 2015). A total of 23 items were scored on a 6-

point Likert-type scale ranging from 1 (*Never*) to 6 (*Always*). Cronbach's alphas were .60, .70, and .63, respectively.

Suicidal thoughts and behaviors. Participants completed the four-item Suicide Behavior Questionnaire - Revised (Osman et al., 2001) which provides a total score tapping into suicidal ideation, intent, and attempt. The four items (with response options differing across the four items) read: "Have you ever thought about or attempted to kill yourself?", "How often have you thought about killing yourself in the past year?", "Have you ever told someone that you were going to commit suicide, or that you might do it?", and "How likely is it that you will attempt suicide someday?". The Cronbach's alpha coefficient was .74.

Statistical analyses

Primary path analyses. Path analysis with structural equation modeling was conducted in MPLUS 7. All models were estimated using robust maximum likelihood estimation (MLR) to account for non-normality (Kline, 2005). Hybrid models using observed and latent variables were estimated. Identity consolidation and identity diffusion were modeled as latent variables. The identity synthesis-subscale of the EPSI and the commitment dimensions of the DIDS were modeled as indicators of identity consolidation, whereas the identity confusion-subscale of the EPSI, ruminative exploration of the DIDS, and the identity distress-score (IDS) were modeled as indicators of identity diffusion. Based on modification indices, error covariances within a single latent factor were allowed between commitment making and identification with commitment and between identity distress and identity confusion. In all models, paths from the control variables age and gender (0=boys, 1=girls) to all study variables were included. Non-significant paths from these control variables were trimmed to make the models more parsimonious. To evaluate model fit, we used the Yuan-Bentler scaled (YBS) chi-squared index, which should be as small as possible; the Root Mean Square Error of Approximation (RMSEA), which should be less than .08, and preferably .06; the Standardized Root Mean

Square Residual (SRMR), which should be less than .10; and the Comparative Fit Index (CFI), which should exceed .90, and preferably .95 (Hu & Bentler, 1999; Kline, 2005).

To test for mediation, three models were estimated (Holmbeck, 1997): (a) a direct effects model including trauma as predictor of drive for thinness, bulimia, body dissatisfaction, and suicidal thoughts and behaviors; (b) a full mediation model in which trauma is indirectly related to these variables through identity consolidation and identity diffusion; and (c) a partial mediation model including both direct paths from trauma to outcomes, and indirect paths through identity consolidation and identity diffusion. Full mediation is demonstrated when the addition of the direct paths does not improve model fit. The significance of indirect effects was tested using the Model Indirect command in MPLUS. Multi-group analyses were conducted to assess whether factor loadings and directional paths in the final mediation model would differ for boys versus girls and for younger versus older participants. To categorize participants according to age, a median-split procedure was applied: group 1 consisted of 13-15 year old participants (54%), whereas group 2 consisted of 16-21 year olds (46%). A constrained model (with all factor loadings and directional paths set equal across gender or across age-groups) was compared with an unconstrained model (with all factor loadings and directional paths allowed to vary across gender or across age-groups). The null hypothesis of invariant coefficients across gender or age-group would be rejected if at least two of the following criteria were satisfied in favor of the unconstrained model (Cheung & Rensvold, 2002): YBS $\Delta\chi^2$ significant at $p < .05$; $\Delta CFI \geq .01$; and $\Delta RMSEA \geq .015$.

Results

Preliminary Analyses

Table 1 presents descriptive statistics and Pearson correlations among the different variables. Trauma and drive for thinness were positively related to identity confusion and identity distress, whereas bulimia, body dissatisfaction, and suicidal thoughts and behaviors

were positively related to identity confusion, identity distress, and ruminative exploration. In addition, body dissatisfaction was negatively related to identity synthesis, commitment making, and identification with commitment, whereas suicidal thoughts and behaviors were negatively related to identity synthesis. Finally, trauma was positively related to drive for thinness, bulimia, and suicidal thoughts and behaviors. Table 2 shows the number of participants who reported a specific type of trauma.

Associations with Age and Gender

Age was positively related with ruminative exploration ($r=.11, p<.01$), identity distress ($r=.15, p<.001$), trauma ($r=.10, p<.05$), and suicidal thoughts and behaviors ($r=.09, p<.05$). Further, two one-way multivariate analyses of variances were conducted to examine gender differences. Whereas no gender differences emerged for identity variables ($F(6,502)=0.55, p=.77, \eta^2=.01$), a significant multivariate effect was found for trauma, drive for thinness, bulimia, body dissatisfaction, and suicidal thoughts and behaviors ($F(5,502)=9.07, p<.001, \eta^2=.08$). Follow-up univariate analyses indicated that, for trauma ($F(1,506)=10.32, p<.01, \eta^2=.02$), boys scored significantly higher than girls ($M=2.41, SD=1.76$; and $M=1.92, SD=1.66$, respectively); for suicidal thoughts and behaviors ($F(1,506)=15.59, p<.001, \eta^2=.03$), girls scored significantly higher than boys ($M=6.05, SD=3.52$; and $M=4.88, SD=2.84$, respectively).

Primary Path Analyses

The direct effects model in which all non-significant paths from the control variables (i.e., age and gender) to the study variables were trimmed, provided an adequate fit ($\chi^2(6)=4.68, p=.59$; CFI=1.000; RMSEA=.000; SRMR=.014). With respect to the control variables, age positively predicted trauma ($\beta=.08, p<.05$) and suicidal thoughts and behaviors ($\beta=.09, p<.05$). Gender negatively predicted trauma ($\beta=-.13, p<.01$) and positively predicted suicidal thoughts and behaviors ($\beta=.23, p<.001$). Further, with respect to the direct effects, trauma positively

predicted drive for thinness ($\beta=.14, p<.01$), bulimia ($\beta=.30, p<.001$), and suicidal thoughts and behaviors ($\beta=.38, p<.001$), but was unrelated to body dissatisfaction ($\beta=.04, p=.29$).

The full mediation model in which all non-significant paths from the control variables to the study variables were trimmed, provided a less than adequate fit across all fit indices ($\chi^2(48)=159.70, p<.001$; CFI=0.888; RMSEA=.065; SRMR=.050). With respect to the measurement part of the model, the standardized factor loadings for the latent identity consolidation variable varied between .45 and .94 (all $ps<.001$); for the latent identity diffusion variable, these values ranged between .43 and .68 (all $ps<.001$). Due to this less than adequate fit, however, we proceeded to the partial mediation model.

The partial mediation model in which all non-significant paths from the control variables to the study variables were trimmed, provided an adequate fit to the data ($\chi^2(44)=111.19, p<.001$; CFI=0.933; RMSEA=.053; SRMR=.044). Figure 1 provides a graphical depiction of this final partial mediation model. Trauma positively predicted identity diffusion, bulimia, and suicidal thoughts and behaviors. Identity diffusion, in turn, positively predicted drive for thinness, bulimia, body dissatisfaction, and suicidal thoughts and behaviors. Identity consolidation positively predicted drive for thinness and negatively body dissatisfaction and suicidal thoughts and behaviors. All indirect effects from trauma to the outcome variables through identity diffusion were significant at $p<.001$, except for the indirect effect linking trauma to body dissatisfaction which was significant at $p<.01$.

Multi-group analyses demonstrated that all factor loadings and directional paths included in the final partial mediation model could be set as equal for boys and girls ($\Delta\chi^2(18)=15.27, p=.24$; $\Delta\text{CFI}=.003$ [in favor of the more parsimonious, constrained model]; $\Delta\text{RMSEA}=.008$ [in favor of the more parsimonious, constrained model]) and for younger versus older participants ($\Delta\chi^2(18)=12.00, p=.85$; $\Delta\text{CFI}=.006$ [in favor of the more parsimonious, constrained model]; $\Delta\text{RMSEA}=.008$ [in favor of the more parsimonious,

constrained model]). Hence, no evidence for moderation of factor loadings or directional paths by gender or age was found.

Discussion

The present study among South African adolescents investigated a model linking traumatic experiences to disturbed eating behaviors and suicidal thoughts and behaviors via identity formation. First, some gender and age differences were found. In line with previous research (Shilubane et al., 2012), girls reported higher levels of suicidal thoughts and behaviors, whereas boys reported more traumatic experiences. Surprisingly, no gender differences were found with respect to disturbed eating behaviors, which is in contrast to previous results in both Western and South African samples (Le Grange et al., 2004; Quick & Byrd-Bredbenner, 2013). This could possibly be explained by the fact that previous samples consisted of both black and white adolescents, whereas our sample predominantly included black participants. Suicidal thoughts and behaviors were positively related to age, which is in line with previous findings (Mortier et al., 2018). Finally, as hypothesized, higher levels of ruminative exploration and identity distress were found for older adolescents, emphasizing how challenging the period of adolescence and the transition to adulthood can be. The different important life choices these youth have to make, can cause high stress levels and uncertainty (Palmeroni et al., 2019).

Trauma and self-harming behaviors

In line with previous findings in both Western and South African studies (Dube et al., 2001; Stein et al., 2010), adolescents who reported more traumatic experiences, also reported higher levels of bulimia symptoms and suicidal thoughts and behaviors. No differences across gender and age were found for this association. Also in Western studies the association with trauma was found to be more prevalent in patients with a diagnosis of bulimia nervosa or binge eating disorder, which are both eating disorders characterized by high levels of bulimia symptoms (Caslini et al., 2016).

Identity formation as a mediator

On top of the direct effects linking traumatic experiences to self-harming behaviors, significant indirect effects were found through identity diffusion. No significant age or gender differences were found for the associations among the variables.

First, students who reported more traumatic experiences (e.g., sexual abuse, physical abuse, or witnessing violence) in their lives, indicated higher levels of identity diffusion. These results corroborate the existing body of research suggesting that the relationship between trauma and identity would apply to a variety of types of trauma within diverse populations, such as adolescents from different cultures and clinical populations (Park, 2019; Penner et al., 2019). In turn, identity diffusion was positively associated with drive for thinness, bulimia, body dissatisfaction, and suicidal thoughts and behaviors. As mentioned by previous theorists, individuals may engage in self-harming behaviors to escape from negative feelings and thoughts related to experiencing identity diffusion. Further, some individuals may consider these behaviors as a source for achieving a pseudo-identity (i.e. identifying with a self-harming behavior to compensate for the lack of a stable identity; Sokol & Eisenheim, 2016; Verschueren et al., 2018).

In contrast to our expectations, identity consolidation did not mediate the relationship between trauma and self-harming behaviors. However, we found a negative relationship between identity consolidation and body dissatisfaction and suicidal thoughts and behaviors. These results add to previous research suggesting the protective role of successful identity development against several self-harming behaviors (Verschueren et al., 2018; Verschueren et al., 2017). On the other hand, South African adolescents experiencing more identity consolidation generally also reported higher levels of drive for thinness. Although previous findings in Western countries were inconsistent about the role of identity in striving for a thin body (Casper, 1983; Verschueren et al., 2018), replication of our results is needed to clarify if

the intention to achieve a thin body is indeed associated with a more stable sense of identity in South African adolescents.

Important to note is that although identity diffusion and identity consolidation are generally conceptualized as rather opposite constructs, the correlation coefficients between their indicators were rather low in the present study (ranging from $r = -.33$ to $.07$). A possible explanation for these low correlations could be that identity is a domain-specific variable, which is not taken into account in the questionnaires used in our study. It is indeed possible that individuals differ in their identity functioning across several identity domains (e.g., long-term goals, friendships, values, and beliefs) resulting in, for example, being identity achieved in one domain, whereas feeling less secure in another identity domain (Schwartz et al., 2011b).

Implications

Our findings highlight the importance of identifying both trauma and identity diffusion as potential risk factors for self-harming behaviors. These findings emphasize the need of targeting these risk factors in prevention and intervention programs and to pay attention to identity diffusion in adolescents with a history of traumatic experiences. For example, recent qualitative research has indicated that the integration of negative life events into one's identity could decrease the occurrence of other detrimental mental health outcomes (Marin & Shkreli, 2019). Incorporating identity-related discussions in the treatment of traumatic experiences, such as exploring identity alternatives and determining future goals and values, could enhance the development of more adaptive behaviors. This exploration of identity alternatives and related self-discovery can take place in different contexts, ranging from individual psychotherapy to group interventions in educational settings (Archer, 1994; Schwartz & Petrova, 2018). However, as most research on identity interventions has been carried out in Western samples, further research in a non-Western context (such as South Africa) is necessary.

Limitations

Although this study provides important information about the underlying factors associated with self-harming behaviors in South African adolescents, several limitations need to be mentioned. First, the self-report questionnaires were administered in English, which is not the first language of the participants. Although they studied English in high school, it could be that this has limited the understanding of the questions/responses. Additionally, collecting all data with self-report measures can yield increased correlations between the study variables due to shared method variance. Second, as our study is cross-sectional in nature, it is not possible to investigate directionality of effects. Longitudinal research is required to assess developmental relationships between the study variables. Based on previous longitudinal research in Western samples, prospective research could reveal bi-directional relationships between identity formation and self-harming behaviors (Verschueren et al., 2018). Third, additional studies among adolescents in different countries across the globe are needed to determine if the same underlying factors contribute to self-harming behaviors in various adolescent populations worldwide. Finally, future research could consider body image as an underlying mechanism in the association between identity and self-harming behaviors. The relationship between identity distress and body image has previously been demonstrated (Kamps & Berman, 2011) and body image has been linked to several self-harming behaviors. A negative body image is considered as an important and consistent risk factor for the development of disturbed eating behaviors (Rohde et al., 2015), and has also been demonstrated as an underlying vulnerability factor for suicidal ideation in adolescents (Brausch & Muehlenkamp, 2007).

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Table 1

Descriptive Statistics and Correlations Among Study Variables.

	<i>M</i>	<i>SD</i>	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.Identity synthesis	3.09	0.71	.41***	.53***	-.33***	-.10*	.01	-.08	.07	-.04	-.21***	-.22***
2.CM	4.22	0.67		.54***	-.17***	-.07	.07	.04	.07	-.02	-.11*	-.05
3.IC	4.16	0.72			-.25***	-.08	-.00	-.00	.02	-.02	-.18***	-.07
4.Identity confusion	1.38	0.93				.35***	.34***	.22***	.15***	.29***	.19***	.27***
5.RE	3.15	0.98					.32***	.06	.08	.25***	.11*	.16***
6.Identity distress	2.76	0.75						.32***	.28***	.39***	.14**	.33***
7.Trauma	2.12	1.71							.14**	.30***	.05	.36***
8.DT	2.80	0.96								.27***	.26***	.06
9.B	2.39	0.93									.20***	.18***
10.BD	2.63	0.97										.12**
11.STB	5.56	3.27										--

Note. CM = Commitment Making; IC = Identification with Commitment; RE = Ruminative Exploration; DT = Drive for thinness; B = Bulimia; BD = Body dissatisfaction; STB = Suicidal Thoughts and Behaviors.

* $p < .05$. ** $p < .01$. *** $p < .001$

Table 2

Number of Participants who Reported a Specific Type of Trauma.

Trauma type	<i>N</i> = 552	
Serious car accident	114	20.7%
Natural or technological disaster	50	9.7%
Life-threatening illness	45	8.7%
Physical punishment as child	206	37.3%
Physical assault	178	32.2%
Unwanted sexual contact	74	13.4%
Seriously injured or feared to be injured/killed	160	29%
Violent death of close friend/family member	216	39.1%
Witnessing that someone was seriously injured/killed	120	21.7%

Figure captions

Figure 1.

Final partial mediation model. All coefficients are standardized.

Body dissatisfaction was positively related to drive for thinness ($r=.25, p<.001$) and bulimia, ($r=.15, p<.001$), bulimia was positively related to drive for thinness ($r=.16, p<.001$).

Synth = identity synthesis; conf = identity confusion; CM = commitment making; IC = Identification with commitment, RE = Ruminative Exploration

* $p < .05$. ** $p < .01$. *** $p < .001$.

