

2022

**BÁRBARA PEREIRA
GONÇALVES
TOURAIIS PINTO**

**ATTACHMENT AND DISSOCIATION
MEDIATE ASSOCIATIONS BETWEEN
POLYVICTIMIZATION AND
SOMATIZATION DIFFERENTLY IN KENYAN
MALE AND FEMALE ADOLESCENTS**

2022

**BÁRBARA PEREIRA
GONÇALVES
TOURAIIS PINTO**

**ATTACHMENT AND DISSOCIATION
MEDIATE ASSOCIATIONS BETWEEN
POLYVICTIMIZATION AND
SOMATIZATION DIFFERENTLY IN KENYAN
MALE AND FEMALE ADOLESCENTS**

Dissertação apresentada à Faculdade de Ciências Sociais e Tecnologia da Universidade Europeia, para cumprimento dos requisitos necessários à obtenção do grau de Mestre em *Psicologia Clínica e da Saúde* realizada sob a orientação científica do Doutor Paulo Alexandre da Silva Ferrajão, *Professor Auxiliar* da *Universidade Europeia*.

Acknowledgements

First and foremost, I would like to thank my supervisor, Dr. Paulo Ferrajão, for accepting to guide me through this final phase and believing in me since the beginning, for his continuous availability and help, and also for sharing his experiences and knowledge. Thank you for being everything I believe a supervisor should be.

I would also like to show gratitude to Dr. Ask Elklit for providing the data for this study and revising the article.

To Cláudia, my Master's partner, for always being there, since the beginning until the end. For the sync we have always had and so it may last for a long time. For making me feel understood and for being the defense mechanism for my anxieties. Thank you.

I take this opportunity to express gratitude to those who supported me and my decision on pursuing another Master and Dissertation. For every “if there is anyone who can do it, it is you”, thank you.

To my mother, for always supporting all my decisions, against all odds. For being my parachute when I am free falling. For everything she has done and continues to do for me every day. I will always need you. Thank you.

Finally, I must express my very profound gratitude to Maria, for embarking on all journeys with me, for never doubting even when I do, for always knowing how to motivate and help me, for celebrating my achievements as if they were her own... Again, this Dissertation is as much mine as it is yours. Thank you.

“The only true wisdom is in knowing you know nothing”

Sócrates

“To live is to suffer, to survive is to find meaning in the suffering”

Nietzsche

Resumo

A evidência sugere que os sintomas de somatização são uma consequência comum da experiência de vários eventos potencialmente traumáticos (EPT) entre adolescentes. Fatores como as orientações de vinculação e a dissociação podem influenciar a relação entre a exposição a EPT e a gravidade dos sintomas de somatização. Analisamos a associação entre a exposição direta a EPT e sintomas de somatização em adolescentes quenianos e exploramos o papel mediador das orientações de vinculação e da dissociação nesta associação. Uma amostra de 475 adolescentes quenianos, com uma média de idades de 16.4 anos ($SD= 1.4$), completou questionários de autorrelato validados. Foram testados modelos de mediação múltipla em série através da realização do modelo de equações estruturais de Preacher e Hayes (2008). Os resultados mostraram que a associação entre estas variáveis é diferente para raparigas e para rapazes. Verificou-se que uma maior exposição a EPT está significativamente associada a um nível mais elevado de sintomas de dissociação, que estava então associado a uma maior gravidade dos sintomas de somatização nas raparigas. Além disso, verificou-se que uma maior exposição a EPT está significativamente associada a maiores níveis de vinculação ansiosa, que estão associados a maiores níveis de sintomas de dissociação, que estão então associados a uma maior severidade dos sintomas de somatização nos rapazes. Níveis elevados de vinculação ansiosa e dissociação podem agravar os sintomas de somatização após a exposição a múltiplos EPT de forma diferente consoante o sexo em adolescentes africanos. As implicações para futuras investigações e intervenções individuais e comunitárias são discutidas.

Palavras-chave: eventos potencialmente traumáticos, orientações de vinculação, somatização, adolescência, países de baixo rendimento

Abstract

There is strong evidence that somatization symptoms are a common consequence of the experience of several potentially traumatic events (PTE) among adolescents. Attachment orientations and dissociation may influence the link between exposure to PTE and somatization symptoms severity. We analysed the associations between direct exposure to PTE and somatization symptoms in Kenyan adolescents and explored the mediating role of attachment orientations and dissociation in this association. A sample of 475 Kenyan adolescents, mean age of 16.4 years old ($SD= 1.4$), completed validated self-report questionnaires. Serial multiple mediation models were tested by conducting a structural equation modelling employing Preacher and Hayes' procedures (2008). Results showed that the association between these variables is different for females and males. Higher exposure to PTE was significantly associated with higher level of dissociation symptoms, which was then associated with higher somatization symptoms severity in females. Higher exposure to traumatic events was significantly associated with higher attachment anxiety levels, which was associated with higher levels of dissociation symptoms, which was then associated with higher somatization symptoms severity in males. High levels of attachment anxiety and dissociation might aggravate somatization symptoms following the exposure to multiple PTE differently according to sex in African adolescents. Implications for future research and individual and community interventions are discussed.

Keywords: potentially traumatic events, attachment orientations, somatization, adolescence, lower-middle-income countries

Index

Introduction.....	1
BACKGROUND	
Polyvictimization	6
Polyvictimization and Somatization	9
Dissociation.....	10
Attachment.....	12
Attachment and Dissociation.....	14
Attachment and Somatization.....	15
Attachment and Polyvictimization.....	16
Rationale and Hypotheses.....	16
References.....	18
EMPIRICAL ARTICLE	
Abstract.....	32
Attachment and Dissociation Mediate Associations Between Exposure to Potentially Traumatic Events and Somatization Differently in Kenyan Male and Female Adolescents....	33
Polyvictimization and Somatization	33
Polyvictimization and Dissociation	34
Attachment	35
Attachment, Dissociation and Somatization	35
Attachment and Polyvictimization.....	36
Rationale and Hypotheses	37
Methods	37
Participants	37
Procedure.....	38
Measures.....	38
Data Analysis.....	39
Results	40
Prevalence of Exposure to Traumatic Events.....	40
Correlations Between Study Variables	41
Mean Comparisons Between Males and Females	41
Analysis of Serial Mediation.....	41
Discussion	44
References.....	49

OVERALL DISCUSSION

Overall Discussion	65
Objectives and Hypotheses	66
Limitations.....	71
Implications for Research.....	71
Clinical implications	72
Community Intervention.....	72
Psychological Assessment	74
Clinical Intervention.....	75
References.....	76
Appendices.....	83

List of Tables and Figures

Table 1. Sample Demographic Characteristics.....	53
Table 2. Potential Trauma Events and Life Events According to Exposure and Sex.....	54
Table 3. Correlation Matrix of Study Variables.....	55
Table 4. Means, Standard Deviations and Mean Differences Between Females and Males on Dissociation and Somatization Symptoms, and Attachment Dimensions.....	56
Table 5. Bootstrapped Point Estimate for Direct and Indirect Effects and 95% Confidence Intervals for Predicting Somatization Symptoms by Sums of Direct Exposure to Traumatic Events Through Attachment Anxiety and Dissociation Symptoms in Female Participants.....	57
Table 6. Bootstrapped Point Estimate for Direct and Indirect Effects and 95% Confidence Intervals for Predicting Somatization Symptoms by Sums of Direct Exposure to Traumatic Events Through Attachment Anxiety and Dissociation Symptoms in Male Participants	58
Figure 1. A Serial Mediation Integrated Model for Somatization Symptoms by Attachment Anxiety and Dissociation Symptoms in Female Participants.....	59
Figure 2. A Serial Mediation Integrated Model for Somatization Symptoms by Attachment Anxiety and Dissociation Symptoms in Male Participants.....	60

Appendix Index

Appendix A – Submission Confirmation.....	83
--	-----------

Introduction

There is strong evidence that polyvictimization, that is, the experience of multiple potentially traumatic events (Ferrajão & Elklit, 2021) is markedly prevalent among children and adolescents and may have a strong adverse impact on their mental health (Kaminer et al., 2013). Besides, most of the world's children and adolescents live in low- and lower-middle-income countries (LALMIC). Moreover, evidence suggests that exposure to multiple potentially traumatic events (PTE) is much more prevalent among children and adolescents in these countries than among those who live in high and upper-middle-income countries (Le et al., 2018). For instance, exposure to traumatic events is extremely common among youth in sub-Saharan Africa, namely in Kenya (Harder et al., 2012). In Kenya, adolescents have an extremely high prevalence of exposure to PTE compared to adolescents from other parts of the world (Karsberg & Elklit, 2012). However, polyvictimization research in LALMIC is lacking since studies focus mostly on youth from developed countries (Harder et al., 2012; Kaminer et al., 2013; Le et al., 2018).

In Kenya, there are few community-based mental health services or resources to support youth affected by PTE (Okech, 2012). In this case, more studies that explore the impact of exposure to multiple PTE on adolescents are needed to support interventions that are appropriate to conditions of continuous danger across multiple life domains (Kaminer et al., 2013), including economic precarity and community and war-like violence that occurs even in the most politically stable countries in sub-Saharan Africa (Harder et al., 2012). In conclusion, there is a need for further research in these countries considering that intervention and prevention programs for polyvictimization would be more effective if informed by local empirical evidence (Le et al., 2018). The results of the present study can benefit the development of these programs.

According to literature, medically unexplained somatic symptoms are common consequences of polyvictimization (Charak et al., 2019; Ford et al., 2018). In addition, attachment orientations and dissociation have been identified as two processes that influence individual post-traumatic adjustment, that is, they can act as protective or risk factors (Dell & O'Neil, 2010; Luoni et al., 2018). Thus, this dissertation's research problem is to assess the mediating role of attachment orientations and dissociation in the association between exposure to multiple PTE and somatization symptoms. Its main goals are to analyse the association between direct exposure to traumatic events and somatization symptoms; to assess the association between attachment anxiety and somatization symptoms; to analyse the association between dissociation symptoms and somatization symptoms; to assess the

mediating role of both attachment anxiety and dissociation symptoms in the relationship between exposure to multiple traumatic events and somatization symptoms; and to examine the series of associations between exposure to multiple traumatic events, attachment anxiety, dissociation symptoms and somatization symptoms.

The present dissertation is divided into three sections: Background, Empirical Article and Overall Discussion. In the first one, the study's theoretical background is presented. The variables of the study and the relationships between them are described empirically and conceptually. Besides, the relevance of the study and of the specific chosen sample is explained and the hypotheses are presented. The second section consists of the empirical article. This part comprises four chapters: Introduction, Methods, Results and Discussion. In the Introduction, PTE and polyvictimization are defined, as well as their consequences, especially in adolescents. Then, polyvictimization in the context of LALMIC is discussed. Next, somatization, dissociation and attachment orientations are explained and the associations between them are presented. Finally, the relevance of the study is mentioned, and the hypotheses are formulated. In the Methods, the research methodology adopted for this study is described, a characterization of the participants and instruments is made, and the procedure followed for the data collection and data analysis is explained. In the Results, the outcomes of the data analysis are presented in accordance with the study's objectives. In the Discussion, the hypotheses and results of the study are discussed according to the existing literature and the main conclusions are drawn. Also, study limitations are mentioned. The third and last section is the overall discussion, where results are more profoundly discussed, clinical implications are explained and suggestions for future research are given.

BACKGROUND

Polyvictimization

Potentially traumatic events (PTE) allude to experiences involving the direct or indirect exposure to actual or threatened death, serious injury, or sexual violence. Direct exposure involves directly experiencing the traumatic events. Indirect exposure involves indirectly experiencing the traumatic event by witnessing it, in person, while it happens to someone else, learning that the traumatic events occurred to a close family member or close friend, or experiencing repeated or extreme exposure to aversive details of the traumatic events (American Psychiatric Association [APA], 2013). These traumatic experiences might originate post-traumatic stress disorder symptoms or other psychiatric symptoms such as recurrent distressing dreams or memories related to the traumatic events, flashbacks, dissociative amnesia in both the short and long-term (Bogart et al., 2014; Hughes et al. 2017; Reijntjes et al. 2010).

PTE originate psychological trauma when they overcome the individual's ability to cope with the event itself and its consequences (Ehlers & Clark, 2000; Luoni et al., 2018). Literature has mainly focused on the study of the adverse impact of specific, individual types of traumatic experiences, leaving a gap regarding the effects of multiple kinds of victimization, that is, polyvictimization (Álvarez-Lister et al., 2014; Finkelhor et al., 2007; Ford & Delker, 2018). This is particularly relevant since most individuals experience not only more than one trauma, but more than one type of trauma in their lifetime (Carlson et al., 2011; Contractor et al., 2017).

Finkelhor et al. (2007) initially defined polyvictims as children and adolescents with four or more types of victimization experiences in a year (i.e., those above the mean number of victimizations for all victimized children in their study). However, recent studies define polyvictimization as the experience of multiple lifetime PTE (Ferreira & Elklit, 2021; Zerach & Elklit, 2019). Polyvictimization is a much more powerful predictor of trauma symptoms and has a more damaging impact on mental and physical health than singular victimizations (single or repeated experience of one type of trauma) due to the cumulative and interactive effects between different types of victimization (Contractor et al., 2017; Finkelhor et al., 2007; Gerber et al., 2018). Also, multiple victimizations may indicate that more people and more environments in an individual's life are associated with traumatic reminders that interfere with normal coping of those experiences and their consequences (Finkelhor et al., 2007).

Previous research has identified three conceptualizations of traumatic life events and polyvictimization: the cumulative approach postulates that experiencing various types of

traumatic events leads to poorer outcomes (Arata et al., 2005; Hahm et al., 2010); the hierarchical approach suggests that the combination of some types of traumatic events, such as sexual abuse with other forms of PTE, is associated with worse outcomes than other combinations (Hahm et al., 2010); and the categorical approach proposes that individuals are classified as polyvictims or not based on a postulated rule, such as “only those above the mean number of types of PTE among all victimized children” (Finkelhor et al., 2007). In this dissertation we will use the cumulative approach, which has been the most used in previous studies (Ferreira & Elklit, 2021; Zerach & Elklit, 2019). Thus, only participants exposed to, at least, one PTE were included in this study.

According to some authors (Breslau et al., 2004; McLaughlin et al., 2013), the prevalence and vulnerability of exposure to PTE is higher in teenage years, with two thirds of adolescents reporting having been exposed to traumatic events (Copeland et al., 2007). Furthermore, literature indicates that youth who experience one type of violence are more likely to experience or have experienced other types of PTE. In other words, it is highly probable that polyvictimized children and youth become victims of further trauma (Wolfe, 2018). Experiences of polyvictimization among children and adolescents in low- and lower-middle-income countries (LALMIC) are more prevalent than in high- and upper-middle-income countries and contribute to the burden of poor health in this population (Le et al., 2018).

When it comes to African adolescents, these rates are even higher since experiences considered as potentially severely traumatizing in the Western world (such as rape and physical abuse) are highly prevalent in some African countries, namely Kenya (Karsberg & Elklit, 2012). Therefore, some authors claim that, in some cases, victimization seems to be more of a “condition” than an “event” as described in the early traumatic stress literature (Finkelhor et al., 2007). This is supported by the empirical evidence that suggests that repeated victimizations tend to cluster among a few individuals and among a few places (Outlaw et al., 2002), such as African countries like Kenya. This further emphasizes the need to study youth who have suffered multiple types of victimization and their consequences rather than focusing on the impact of singular traumatic events.

Furthermore, it has been shown that polyvictimization during early developmental periods may have a severe and lifelong biopsychological impact (Ford & Delker, 2018). It interferes with development processes and the attainment of specific developmental achievements (Grasso et al., 2013). The consequences of polyvictimization include several areas, for instance, psychological functioning, cognitive abilities, development of self-esteem,

onset of puberty and formation of interpersonal relationships (Bolger et al., 1998; Mitchell et al., 2020). Mitchell et al. (2020) found that victimization during the earliest stage of development was the most related factor to poor well-being in adulthood when compared to victimization in later childhood and adolescence stages. Therefore, it is likely that the earlier it occurs, the more potential there is to compromise developmental trajectories. The same authors also stated that polyvictimization across multiple stages of development shows the strongest association with poor well-being in adulthood (Mitchell et al., 2020).

Usually, people do not develop a coherent self-structure until late adolescence (Harter, 1999). According to Erikson's Psychosocial Development Theory, adolescents go through the Identity versus Role Confusion stage, where they are supposed to achieve an adequate and cohesive sense of self and identity (Erikson, 1982; Maree, 2021). Early adolescence (12 – 14 years old) is perceived as a developmental phase of fast psychological, cognitive, and social changes (Zerach & Elklit, 2019). During this period, adolescents' identity is fragile and less cohesive as they experiment different roles in the process of individuation and identity formation (Masten & Coastworth, 1998; Zerach & Elklit, 2019).

During this vulnerable period of development, the exposure to traumatic events can disrupt the development of emerging capacities, such as self-regulation, self-definition, and self-perception (Courtois & Ford, 2009; Shonkoff et al., 2012). In turn, the underdevelopment or loss of self-regulatory processes has implications across all biopsychosocial domains and has been associated with difficulties in physical and mental health, interpersonal relations, and behaviour (Choi & Graham-Bermann, 2018). For example, Archer (2005) and Luoni et al. (2018) stated that adolescents with multiple trauma history are more likely to go through significant family problems and to have disciplinary issues at school. They are also frequently described as more aggressive, disobedient, and hostile compared to the adolescents who had experienced single or no trauma (Luoni et al., 2018).

Therefore, the experience of polyvictimization has been associated with many adverse consequences in children and adolescents (e.g., Álvarez-Lister et al., 2014). It is well known that exposure to multiple PTE is a risk factor for numerous psychiatric symptoms (Contractor et al., 2017), both externalizing, such as behaviour problems and substance abuse, and internalizing, for example, symptoms of depression, anxiety, and post-traumatic stress disorder (PTSD), suicidal tendencies and somatization (Álvarez-Lister et al., 2014; Dierkhising et al., 2019).

Polyvictimization and Somatization

As mentioned before, there is a lack of evidence about polyvictimization and its associations with health and well-being outcomes among children and adolescents from LALMIC (Le et al., 2018), namely from African countries such as Kenya. Considering that polyvictimization has a damaging impact on adolescents' mental and physical health, we chose to focus on somatization, which comprises both mental and physical distress. Somatization is defined as the physical manifestation of psychological distress, in other words, individuals feel physically sick and experience bodily sensations and symptoms that cannot adequately be explained by organic reasons (De Gucht & Fischler, 2002).

Literature has shown a clear positive correlation between polyvictimization and somatization. For instance, in one study with adult inpatients and outpatients of a hospital in Austria, a higher number of adverse childhood experiences was associated with higher somatization levels (Riedl et al., 2020). Furthermore, it was found in a sample of adolescents that polyvictims scored higher in somatic complaints compared to non-polyvictims, that is, youth not exposed to PTE or exposed to single victimizations (Charak et al., 2019). Similarly, Álvarez-Lister et al. (2014) found that polyvictimized adolescents had more somatic complaints than those exposed to only one specific type of victimization, in a study with adolescent outpatients (12-17 years old) from Spanish child and adolescent mental health centres. Likewise, Luoni et al. (2018) claimed, in their study with adolescent outpatients (12-18 years old) referred for a psychiatric evaluation at the neuropsychiatric unit at an Italian university, that youth who have experienced multiple PTE were more susceptible to higher rates of somatic symptoms, which may have a negative impact on their quality of life. Additionally, Ford et al. (2013) demonstrated that polyvictimization was significantly positively associated to somatization in a study with adolescents (43% African-American) in juvenile centres.

Even though most studies indicate an association between polyvictimization and somatization symptoms, there are still a few studies that have found inconsistent results. For instance, Ford et al. (2011) observed that polyvictimization was not associated with levels of internalizing symptoms, including somatic complaints, in a study with children and adolescent outpatients from an American psychiatric clinic. Despite finding a relationship between polyvictimization and internalizing symptoms (which included somatic complaints) in a study with a clinical sample of Spanish adolescents, Guerra et al. (2016) observed that the direct effect size of polyvictimization on internalizing symptoms was small, leading them to consider the existence of mediating factors. Other authors, such as Salmon et al. (2003), have

also proposed a mediator (dissociation) of the relationship between exposure to PTE and somatization symptoms. These inconsistencies regarding the relationship between polyvictimization and somatization may be due to the interference of other psychological processes, as it has been discussed. In this study, we suggest that attachment orientations and dissociation might mediate this relationship.

Dissociation

Janet (1889) was the first to describe dissociation as a complex mental process with which the individual reacts to traumatic experiences. This author conceptualized dissociation as a pathological separation between ideas, behaviours and consciousness. In other words, frightening experiences may not fit into existing cognitive schemes, thus, memories of these experiences can be split off from conscious awareness and voluntary control, and fragments of unintegrated events may later show up as pathological automatisms (Van der Kolk & Van der Hart, 1989). The understanding of the nature of pathological dissociation is substantially shaped by its significant connection with trauma and posttraumatic psychiatric sequelae (Putnam, 1997). Currently, in the Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5), dissociation is defined as a “disruption of and/or discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control and behaviour” (APA, 2013, p. 291).

Dissociative symptoms are more frequently observed in individuals who have been exposed to multiple, repeated, and prolonged trauma. These symptoms can affect all areas of psychological functioning and can be experienced both as positive dissociative symptoms and negative dissociative symptoms. Positive symptoms include undesirable trauma-related intrusions in consciousness and behaviour related to the loss of continuity of the subjective experience, such as fragmentation of identity and derealization. Negative symptoms represent the incapacity to access information or check mental functions that are usually easily accessed or controlled, for example, amnesia (Luoni et al., 2018).

Theoretically, two types of dissociation have been identified: psychoform and somatoform (Longo et al., 2021). Psychoform dissociation refers to a disruption in memory, awareness and identity related to a separation of mental contents such as thoughts, memories, and feelings from consciousness; somatoform dissociation refers to dissociative experiences that disturb body-related functions as movements, sensations, and perception (van der Hart et al., 2004). However, previous studies have observed a limited relationship between childhood traumatic experiences and somatoform dissociation (Bohn et al., 2013; Van Dijke et al., 2015). For this reason, we will focus only on psychoform dissociation in this study.

The process of dissociation involves the separation of a group of mental events from normal consciousness (Saxe et al., 1994). Thus, it develops to work as a method of cognitive disengagement from the traumatic experience, in other words, as a defense (Chu & Dill, 1990; Walker et al., 1992). In a context of multiple exposure to PTE, dissociation may emerge as an attempt to protect the individual from overwhelmingly painful experiences (Walker et al., 1992), since dissociative mechanisms may alter perceptions and allow the person to forget or even completely disown the experience (Chu & Dill, 1990).

People who predominantly cope with trauma by dissociating are vulnerable to keep doing so in response to minor stressors. The continued use of dissociation as a defense interferes with the ability to fully attend to life's challenges (Van der Kolk & Fisler, 1995). This complex mental process can cause trauma-related memories and thoughts to separate from conscious awareness, prevent the individual's control and will, and involve both psychological and bodily functions (Janet, 1889; Longo et al., 2021). Besides, these trauma-related memories may have no explicit verbal component, that is, they can be entirely organized on an implicit or perceptual level, without an accompanying narrative, which can complicate the capacity to communicate about the trauma (Van der Kolk & Fisler, 1995). Thus, memories of the trauma tend to be experienced primarily as fragments of the sensory components of the experience: visual images, olfactory, auditory, or kinesthetic sensations, or intense waves of feelings (Van der Kolk & Fisler, 1995).

Dissociation has been associated with a tendency to report unexplained physical symptoms (Saxe et al., 1994; Walker et al., 1992). In fact, somatization disorder is frequently comorbid among patients with dissociative disorders/symptoms (Saxe et al., 1994). At the same time, Luoni et al. (2018) claimed that history of exposure to multiple PTE and dissociative symptoms are associated with somatic complaints and the perception of poorer physical health. According to Saxe et al. (1994), the process of dissociation offers a powerful explanation for the development of somatic symptoms. As a matter of fact, some hypotheses have been proposed. First, traumatic memories may be dissociated from consciousness and expressed in somatic symptoms (Saxe et al., 1994). Second, there is some evidence that the cerebral mechanisms underlying trauma-related dissociation are the same as the ones subjacent to somatic disorders, making it conceivable that somatic symptom disorders may be specific forms of trauma-related dissociative processes (Diseth, 2005). On the one hand, as suggested, dissociation can have a proximal effect on somatization; on the other hand, since attachment is an influential predictor of dissociation (Gušić et al., 2016), it may have a more distal effect on somatization, as well as a mediating effect between PTE and dissociation.

There is a dearth of research on the role of dissociation in the association between polyvictimization and somatization in populations from LALMIC. Thus, this dissertation aims to fill this gap by analysing the mediating role of both dissociation and attachment orientations in the association between polyvictimization and somatization symptoms in a sample of Kenyan adolescents.

Attachment

Attachment theory is a psychological theory proposed by John Bowlby (1969) that explains the affectional bond established between infant and caregiver(s)/attachment figure(s). This bond connects the child to a reduced number of stable and unique figures who provide the experience of felt security, especially when coping with and adapting to threatening events. This affectional tie is built based on interactions and experiences between the child and his/her attachment figures (Bowlby, 1969, 1973, 1980, 1988).

Bowlby's primary definition of attachment was the infant's ability to seek proximity to a specific caregiver (Bowlby, 1969). Overall, attachment is a theoretical framework on the way close relationships provide, or not, a secure base for infants and children that has lifelong implications (Bowlby, 1988). Although the attachment orientation is established in early childhood and tends to be stable across adulthood, research shows that it can change subtly or dramatically depending on context and recent experiences (Mikulincer et al., 2006), especially following stressful and traumatic events (Horesh et al., 2014).

Thus, attachment theory explains individual differences in cognition, affect, behaviour, and emotion regulation skills used to cope with situations of threat (Bowlby, 1973, 1980; Ferrajão & Oliveira, 2015). Attachment patterns provide individuals with self-regulation functions that intervene in the adjustment to stressful experiences. Interactions with attachment figures who are available and responsive in times of need stimulate a sense of attachment security based on expectations that attachment figures will be helpful when needed (Mikulincer et al., 2006). These expectations are part of internal working models. These models are representations of person-environment transactions in general, but specifically of self and others in the context of close relationships (Bowlby, 1969; Mikulincer et al., 2006). Internal working models are based on the individual's own experience with the caregiver(s) and contribute to the development of important self-regulatory and social skills (Bowlby, 1969). These representations are changeable drafts and allow for prediction of likely outcomes of diverse attachment behaviours, that is, they provide dynamic, context-sensitive representations of complex social situations. They include not only representations of attachment figures' responses (internal working models of others), but also representations of

one's own efficacy and value (internal working models of self). Hence, working models organize an individual's memory about an attachment figure and him- or herself during attempts to seek proximity and protection in times of need (Bowlby, 1969; Main et al., 1985; Mikulincer & Shaver, 2016).

A person with a secure attachment style has optimistic and hopeful representations of self and others that encourage more constructive strategies of affect regulation which can help a person heal traumatic damage and restore emotional balance (Mikulincer et al., 2006). Furthermore, in securely attached individuals, threat appraisals increase the mental accessibility of thoughts of positive interactions with attachment figures such as proximity, safety, support, love, and relieve (Mikulincer & Shaver, 2016). However, when attachment figures are not reliably available and supportive, a sense of security is not attained (Mikulincer et al., 2006). In this case, negative working models of self and others are formed based on the expectation that the attachment figure will not be available or will respond negatively to requests of help and comfort (Liotti, 2004). In these individuals, threat appraisals tend to increase access to negative thoughts and memories (e.g., separations, rejections, losses), triggering emotional regulation mental and behavioural processes that can endanger emotional well-being, personal adjustment, relationship satisfaction and stability. These painful series of experiences lead to the adoption of a secondary attachment strategy, other than appropriate proximity seeking (Mikulincer & Shaver, 2016).

These secondary attachment strategies can be conceptualized in two major dimensions: avoidance and anxiety. The first dimension, attachment avoidance, reflects the extent to which a person distrusts others' intentions and goodwill and tends to maintain behavioural independence and emotional distance (Mikulincer et al., 2006). In this dimension, exposure to traumatic experiences encourages attachment deactivation strategies that block access to emotions and discourage acknowledgment of need of support from others (Brennan et al., 1998; Ferrajão & Oliveira, 2015; Mikulincer & Shaver, 2016). The second dimension, attachment anxiety, reflects the extent to which a person worries about the unavailability of others in times of need (Mikulincer et al., 2006). In this dimension, exposure to traumatic experiences encourages attachment hyperactivation strategies that exaggerate threats (also increasing the accessibility and intensity of threat-related thoughts and emotions) and intensify the sense of helplessness and vulnerability (Brennan et al., 1998; Ferrajão & Oliveira, 2015; Mikulincer & Shaver, 2016).

Based on literature findings, individuals with avoidant attachment perceive proximity seeking as dangerous or disallowed, and tend to avoid interactions that require emotional

involvement, intimacy, or interdependence. They also dismiss threats, are unwilling to think about or confront personal weaknesses, and suppress thoughts and fears related to rejection, separation, abandonment, or loss. Besides, they try to exclude from awareness thoughts or feelings that imply vulnerability, or neediness, which results in ignoring important information about psychological or physical threats, personal weaknesses, and attachment figure responses. This can disturb the encoding of information that is congruent with defensively excluded cognitions and emotions (Mikulincer & Shaver, 2016). On the other hand, individuals with anxious attachment make strong efforts to maintain proximity, are typically overdependent on a relationship for comfort and make excessive demands for attention and care. They also have difficulty controlling the spread of activation from one affectively negative thought to another, and their mind can easily become overwhelmed by negative thoughts and feelings (Mikulincer & Shaver, 2016).

Attachment and Dissociation

Attachment orientations can either act as protective or risk factors regarding individual post-traumatic adjustment to the experience of multiple PTE (Zerach & Elklit, 2019).

Attachment is, in fact, an essential factor in the development of trauma-related dissociation specifically (Gušić et al., 2016; Liotti, 1999). According to Nilsson et al. (2011), a secure self-reported attachment style (characterized by low avoidance and low anxiety) can be a protective factor against dissociation when individuals experience PTE. On the contrary, in a study with Swedish adolescents (15 to 20 years old), the same authors found that self-reported insecure attachment (both anxiety and avoidance) was significantly associated with dissociation, even more strongly than the number of self-reported PTE. Similarly, it was observed that self-reported insecure attachment was a stronger predictor of dissociation than trauma exposure in another study with Swedish adolescents (Gušić et al., 2016).

However, while some studies on adults have identified avoidant attachment orientation as a risk factor for the development of dissociative disorders (e.g., Sroufe et al., 2009), there is also evidence that attachment anxiety, but not avoidance, is involved in and enhances the relationship between trauma experience and dissociative experiences (Gušić et al., 2016). Kong et al. (2018) also found that the relationship between childhood trauma and dissociation was mediated by attachment insecurity, nevertheless, it was more greatly affected by attachment anxiety. This may be explained by the following hypotheses. First, considering that dissociation develops as the result of internalizing multiple and reciprocally incompatible models of the self and the attachment figure(s) (Kong et al., 2018; Liotti, 2006, 2013) it is noteworthy that anxiously attached individuals have a negative self-model but a positive view

of others (Ciechanowski, 2002). Second, individuals with high attachment anxiety may deal with threat-related information through specific scripts that lead to vigilant responses and increase the possibility of stress-related pathology and dissociation in the presence of trauma (Mikulincer & Shaver, 2016).

Attachment and Somatization

Insecure attachment has been involved in many psychiatric disorders such as somatization (Stuart & Noyes, 1999). Attachment insecurity is common in individuals with self-reported physical symptoms and different forms of medically unexplained symptoms (Adshead & Guthrie, 2015; McWilliams, 2017). Overall, insecure attachment has been suggested to be a source of the development and persistence of unexplained somatization (Lin et al., 2020). Although research has found an association between insecure attachment and increased somatization, attachment anxiety specifically was associated with severity of somatic symptoms, suggesting that individuals with anxious attachment manifest greater physical impairment (Riem et al., 2018). Other authors have also shown that attachment anxiety orientation is associated with somatic symptoms (Ciechanowski et al., 2002; Lin et al., 2020). In contrast, literature has not established a robust link between attachment avoidance orientation and somatization (e.g., Lin et al., 2020).

The link between anxious attachment and higher somatic symptom reporting may be related to attentional biases towards threatening and/or painful stimuli observed in anxiously attached individuals (Berry & Drummond, 2014). Besides, attachment anxiety has been associated with catastrophizing, heightened pain intensity, pain hypervigilance, increased pain-related fears, and reduced pain threshold and pain control (Berry & Drummond, 2014; Meredith et al., 2008). Furthermore, pain complaint may function as an attachment behaviour, that is, since anxiously attached individuals make excessive demands for attention and care and are usually overly dependent, they can use pain complaint to maintain proximity and draw attention and elicit comfort from attachment figures (Berry & Drummond, 2014; Kolb, 1982). Additionally, the use of hyperactivating strategies may intensify individuals' sense of unavailability of others that precipitates a compensatory focus on bodily sensations, and care-seeking for unexplained medical complaints (Waldinger et al., 2006).

Finally, there is some evidence that attachment insecurity has a mediating role in the association between trauma and somatic symptoms (Riem et al., 2018). However, in a study with Danish adolescents, attachment anxiety was the only attachment orientation that mediated the link between polyvictimization and psychological distress (Zerach & Elklit, 2019). There is a dearth of research on the role of attachment orientations in the association

between polyvictimization and somatization, especially in populations from LALMIC. Thus, one of the aims of this dissertation is to analyse the mediating role of attachment orientations in the effect of polyvictimization on somatization symptoms in a sample of Kenyan adolescents.

Attachment and Polyvictimization

As mentioned before, attachment orientations can change after experiencing traumatic events. For instance, when the trauma occurs in the context of the relationship with the caretaker, the attachment behavioural system can be severely damaged (Luoni et al., 2018). In a study with male adolescent sex offenders, participants who had experienced more types of childhood victimization reported less secure attachment than those who had experienced fewer types of victimization, suggesting that polyvictimization is associated with disrupted caregiver attachment in adolescence (Harrelson et al., 2017). Also, Ross et al. (2019) observed that college students who experienced all three forms of abuse assessed in the study (physical, sexual, and emotion/psychological) presented the most attachment dysfunction, scoring higher for avoidant attachment (men) and higher for both anxious and avoidant attachment (women) than those who experienced intimate partner abuse only.

Research has suggested that attachment orientations are mediating factors of individual responses to exposure to multiple PTE (e.g., Dell & O'Neil, 2010). Therefore, attachment orientation can be a protective factor and may mitigate the impact of traumatic events (Bettmann & Olson-Morrison, 2020). In response to distressing events, attachment orientations may shape individuals' perceptions and reactions (Lim et al., 2020). However, attachment style can also operate as a risk factor, since it is well known that insecure attachment constitutes substantial risk to post-trauma recovery (Lim et al., 2020). It has been shown that polyvictimization is significantly associated to higher levels of attachment anxiety, suggesting that this attachment orientation seems to interfere with adolescents' emotional regulation and increase their vulnerability to psychological distress (Zerach & Elklit, 2019). Although attachment anxiety consistently predicts and is associated with post-trauma psychopathology, the relation between attachment avoidance and post-traumatic symptoms has been far less consistent (Lim et al., 2020). Nonetheless, Kuijpers et al. (2012) found that victims' avoidant attachment is a significant predictor for revictimization (of both physical and psychological abuse) of traumas such as intimate partner victimization.

Rationale and Hypotheses

As previously contemplated, multiple exposure to PTE, attachment anxiety, dissociation and somatization are all associated. The development of somatic symptoms is

one of the least studied consequences of exposure to multiple PTE in African samples, namely Kenyan adolescents. Since the direct association between PTE and somatization has not always been consistent, in this study, we suggest attachment anxiety and dissociation as mediators of this relationship. Attachment orientation is an influential predictor of dissociation. At the same time, the process of dissociation provides a powerful explanation for the development of somatization symptoms. Hence, we considered that attachment anxiety will function as a distal mediator while dissociation will function as a proximal mediator.

There is a lack of research on the association between multiple PTE, attachment anxiety, dissociation, and somatization among adolescents. This lack of research is more evident in samples from LALMIC. To the best of our knowledge, no previous study examined the association between these variables in these populations. Furthermore, the association between PTE and somatization has not always been consistent. Therefore, a better understanding of the mechanisms involved in the onset and maintenance of somatization symptoms in those populations is highly needed. The present study aims to analyse the effect of direct exposure to polyvictimization on somatization symptoms through the mediation of both attachment anxiety (distal factor) and dissociation (proximal factor) in a sample of Kenyan adolescents.

Based on previous findings described above, the following hypotheses were proposed:

- 1) Higher direct exposure to traumatic events will be associated with higher levels of somatization symptoms.
- 2) Higher levels of attachment anxiety will be associated with higher levels of somatization symptoms.
- 3) Higher levels of dissociation symptoms will be associated with higher levels of somatization symptoms.
- 4) Attachment anxiety and dissociation symptoms will mediate the link between the exposure to multiple traumatic events and somatization symptoms.
- 5) Serial multiple mediation models will show that exposure to multiple traumatic events will relate to higher levels of attachment anxiety, that will relate to higher levels of dissociation symptoms, which will then relate to higher levels of somatization symptoms.

References

- Adshead, G., & Guthrie, E. (2015). The role of attachment in medically unexplained symptoms and long-term illness. *BJPsych Advances*, 21(3), 167-174.
<https://doi.org/10.1192/apt.bp.114.013045>
- Álvarez-Lister, M. S., Pereda, N., Abad, J., & Guilera, G. (2014). Polyvictimization and its relationship to symptoms of psychopathology in a southern European sample of adolescent outpatients. *Child Abuse & Neglect*, 38(4), 747-756.
<https://doi.org/10.1016/j.chiabu.2013.09.005>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. <https://doi.org/10.1176/appi.books.9780890425596>
- Arata, C. M., Langhinrichsen-Rohling, J., Bowers, D., & O'Farrill-Swails, L. (2005). Single versus multi-type maltreatment: An examination of the long-term effects of child abuse. *Journal of Aggression, Maltreatment & Trauma*, 11(4), 29-52.
https://doi.org/10.1300/J146v11n04_02
- Archer, R. (2005). *MMPI-A: Assessing adolescent psychopathology*. Routledge.
<https://doi.org/10.4324/9781410612847>
- Bettmann, J. E., & Olson-Morrison, D. (2020). The relationship between adolescent refugees' attachment patterns and their experiences of trauma. *Journal of Ethnic & Cultural Diversity in Social Work*, 29(1-3), 154-170.
<https://doi.org/10.1080/15313204.2018.1555499>
- Berry, J. K., & Drummond, P. D. (2014). Does attachment anxiety increase vulnerability to headache? *Journal of Psychosomatic Research*, 76(2), 113-120.
<https://doi.org/10.1016/j.jpsychores.2013.11.018>
- Bogart, L. M., Elliott, M. N., Klein, D. J., Tortolero, S. R., Mrug, S., Peskin, M. F., Davies, S. L., Schink, E. T., & Schuster, M. A. (2014). Peer victimization in fifth grade and health in tenth grade. *Pediatrics*, 133(3), 440-447. <https://doi.org/10.1542/peds.2013-3510>
- Bohn, D., Bernardy, K., Wolfe, F., & Häuser, W. (2013). The association among childhood maltreatment, somatic symptom intensity, depression, and somatoform dissociative symptoms in patients with fibromyalgia syndrome: a single-center cohort study. *Journal of Trauma & Dissociation*, 14(3), 342-358.
<https://doi.org/10.1080/15299732.2012.736930>

- Bolger, K. E., Patterson, C. J., & Kupersmidt, J. B. (1998). Peer relationships and self-esteem among children who have been maltreated. *Child Development*, 69(4), 1171-1197.
<https://doi.org/10.1111/j.1467-8624.1998.tb06166.x>
- Bowlby, J. (1969). *Attachment and loss* (Volume I). Basic Books.
- Bowlby, J. (1973). *Attachment and loss: Separation, anxiety and anger* (Volume II). Basic Books.
- Bowlby, J. (1980). *Attachment and loss: Loss, sadness and depression* (Volume III). Basic Books.
- Bowlby, J. (1988). *The secure base*. Basic Books.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). *Self-report measurement of adult attachment: An integrative overview*. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46–76). Guilford Press.
- Breslau, N., Wilcox, H. C., Storr, C. L., Lucia, V. C., & Anthony, J. C. (2004). Trauma exposure and posttraumatic stress disorder: A study of youths in urban America. *Journal of Urban Health*, 81(4), 530-544.
<https://doi.org/10.1093/jurban/jth138>
- Carlson, E. B., Smith, S. R., Palmieri, P. A., Dalenberg, C., Ruzek, J. I., Kimerling, R., ... & Spain, D. A. (2011). Development and validation of a brief self-report measure of trauma exposure: The Trauma History Screen. *Psychological Assessment*, 23(2), 463.
<https://doi.org/10.1037/a0022294>
- Ciechanowski, P. S., Walker, E. A., Katon, W. J., & Russo, J. E. (2002). Attachment theory: a model for health care utilization and somatization. *Psychosomatic Medicine*, 64(4), 660-667. <https://doi.org/10.1097/01.PSY.0000021948.90613.76>
- Charak, R., Ford, J. D., Modrowski, C. A., & Kerig, P. K. (2019). Polyvictimization, emotion dysregulation, symptoms of posttraumatic stress disorder, and behavioral health problems among justice-involved youth: A latent class analysis. *Journal of Abnormal Child Psychology*, 47(2), 287-298. <https://doi.org/10.1007/s10802-018-0431-9>
- Choi, K. R., & Graham-Bermann, S. A. (2018). Developmental considerations for assessment of trauma symptoms in preschoolers: A review of measures and diagnoses. *Journal of Child and Family Studies*, 27(11), 3427-3439. <https://doi.org/10.1007/s10826-018-1177-2>
- Chu, J. A., & Dill, D. L. (1990). Dissociative symptoms in relation to childhood physical and sexual abuse. *The American Journal of Psychiatry*.
<https://doi.org/10.1176/ajp.147.7.887>

- Contractor, A. A., Caldas, S., Fletcher, S., Shea, M. T., & Armour, C. (2017). Empirically derived lifespan polytraumatization typologies: A systematic review. *Journal of Clinical Psychology*, 74(7), 1137-1159. <https://doi.org/10.1002/jclp.22586>
- Copeland, W. E., Keeler, G., Angold, A., & Costello, E. J. (2007). Traumatic events and posttraumatic stress in childhood. *Archives of General Psychiatry*, 64(5), 577-584. <https://doi.org/10.1001/archpsyc.64.5.577>
- Courtois, C. A., & Ford, J. D. (Eds.). (2009). *Treating complex traumatic stress disorders: An evidence-based guide*. Guilford Press.
- De Gucht, V., & Fischler, B. (2002). Somatization: a critical review of conceptual and methodological issues. *Psychosomatics*, 43(1), 1-9. <https://doi.org/10.1176/appi.psy.43.1.1>
- Dell, P. F., & O'Neil, J. A. (Eds.). (2010). *Dissociation and the dissociative disorders: DSM-V and beyond*. Routledge. <https://doi.org/10.4324/9780203893920>
- Dierkhising, C. B., Ford, J. D., Branson, C., Grasso, D. J., & Lee, R. (2019). Developmental timing of polyvictimization: Continuity, change, and association with adverse outcomes in adolescence. *Child Abuse & Neglect*, 87, 40-50. <https://doi.org/10.1016/j.chiabu.2018.07.022>
- Diseth, T. H. (2005). Dissociation in children and adolescents as reaction to trauma—an overview of conceptual issues and neurobiological factors. *Nordic Journal of Psychiatry*, 59(2), 79-91. <https://doi.org/10.1080/08039480510022963>
- Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*, 38(4), 319-345. [https://doi.org/10.1016/S0005-7967\(99\)00123-0](https://doi.org/10.1016/S0005-7967(99)00123-0)
- Erikson, E. H. (1982). *The life cycle completed*. W.W. Norton & Company.
- Ferrajão, P., & Elklit, A. (2021). Attachment and social support mediate associations between polyvictimization and psychological distress in early Uganda and Kenya adolescents. *Child Abuse & Neglect*, 121, 105271. <https://doi.org/10.1016/j.chiabu.2021.105271>
- Ferrajão, P., & Oliveira, R. A. (2015). Attachment patterns as mediators of the link between combat exposure and posttraumatic symptoms: A study among Portuguese war veterans. *Military Psychology*, 27(3), 185-195. <https://doi.org/10.1037/mil0000075>
- Finkelhor, D., Ormrod, R. K., & Turner, H. A. (2007). Poly-victimization: A neglected component in child victimization. *Child Abuse & Neglect*, 31(1), 7-26. <https://doi.org/10.1016/j.chiabu.2006.06.008>

- Ford, J. D., & Delker, B. C. (2018). Polyvictimization in childhood and its adverse impacts across the lifespan: Introduction to the special issue. *Journal of Trauma & Dissociation*, 19(3), 275-288. <https://doi.org/10.1080/15299732.2018.1440479>
- Ford, J. D., Grasso, D. J., Hawke, J., & Chapman, J. F. (2013). Poly-victimization among juvenile justice-involved youths. *Child Abuse and Neglect*, 37, 788-800. <https://doi.org/10.1016/j.chiabu.2013.01.005>
- Ford, J. D., Wasser, T., & Connor, D. F. (2011). Identifying and determining the symptom severity associated with polyvictimization among psychiatrically impaired children in the outpatient setting. *Child Maltreatment*, 16(3), 216-226. <https://doi.org/10.1177/1077559511406109>
- Gerber, M. M., Frankfurt, S. B., Contractor, A. A., Oudshoorn, K., Dranger, P., & Brown, L. A. (2018). Influence of multiple traumatic event types on mental health outcomes: does count matter?. *Journal of Psychopathology and Behavioral Assessment*, 40(4), 645-654. <https://doi.org/10.1007/s10862-018-9682-6>
- Grasso, D. J., Greene, C., & Ford, J. D. (2013). *Cumulative trauma in childhood*. In J. D. Ford & C. A. Courtois (Eds.). *Treating complex traumatic stress disorders in children and adolescents: An evidence based guide* (pp. 79-99). Guilford Press.
- Guerra, C., Pereda, N., Guilera, G., & Abad, J. (2016). Internalizing symptoms and polyvictimization in a clinical sample of adolescents: The roles of social support and non-productive coping strategies. *Child Abuse & Neglect*, 54, 57-65. <https://doi.org/10.1016/j.chiabu.2016.03.004>
- Gušić, S., Cardeña, E., Bengtsson, H., & Søndergaard, H. P. (2016). Adolescents' dissociative experiences: The moderating role of type of trauma and attachment style. *Journal of Child & Adolescent Trauma*, 9(4), 341-351. <https://doi.org/10.1007/s40653-016-0107-y>
- Hahm, H. C., Lee, Y., Ozonoff, A., & Van Wert, M. J. (2010). The impact of multiple types of child maltreatment on subsequent risk behaviors among women during the transition from adolescence to young adulthood. *Journal of Youth and Adolescence*, 39(5), 528-540. <https://doi.org/10.1007/s10964-009-9490-0>
- Harder, V. S., Mutiso, V. N., Khasakhala, L. I., Burke, H. M., & Ndeti, D. M. (2012). Multiple traumas, postelection violence, and posttraumatic stress among impoverished Kenyan youth. *Journal of Traumatic Stress*, 25(1), 64-70. <https://doi.org/10.1002/jts.21660>

- Harrelson, M. E., Alexander, A. A., Morais, H. B., & Burkhart, B. R. (2017). The effects of polyvictimization and quality of caregiver attachment on disclosure of illegal sexual behavior. *Journal of Child Sexual Abuse*, 26(5), 625-642.
<https://doi.org/10.1080/10538712.2017.1328474>
- Harter, S. (1999). *The construction of the self. A developmental perspective*. Guilford.
- Horesh, D., Cohen-Zrihen, A., Dor, T. E., & Solomon, Z. (2014). Stressful life events across the life span and insecure attachment following combat trauma. *Clinical Social Work Journal*, 42(4), 375-384. <https://doi.org/10.1007/s10615-014-0477-2>
- Hughes, K., Bellis, M. A., Hardcastle, K. A., Sethi, D., Butchart, A., Mikton, C., Jones, L., & Dunne, M. P. (2017). The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *The Lancet: Public Health*, 2(8), e356–e366.
[https://doi.org/10.1016/S2468-2667\(17\)30118-4](https://doi.org/10.1016/S2468-2667(17)30118-4)
- Janet, P. (1889). *L'automatisme psychologique: Essai ou psychologie expérimentale sur les formes inférieures de l'activité humaine*. Alcan.
- Kaminer, D., du Plessis, B., Hardy, A., & Benjamin, A. (2013). Exposure to violence across multiple sites among young South African adolescents. *Peace and Conflict: Journal of Peace Psychology*, 19(2), 112–124. <https://doi.org/10.1037/a0032487>
- Karsberg, S. H., & Elklit, A. (2012). Victimization and PTSD in a rural Kenyan youth sample. *Clinical Practice and Epidemiology in Mental Health*, 8, Article 91-101.
<https://doi.org/10.2174/1745017901208010091>
- Kolb, L. C. (1982). Attachment behavior and pain complaints. *Psychosomatics: Journal of Consultation and Liaison Psychiatry*, 23(4), 413–425. [https://doi.org/10.1016/S0033-3182\(82\)73404-8](https://doi.org/10.1016/S0033-3182(82)73404-8)
- Kong, S. S., Kang, D. R., Oh, M. J., & Kim, N. H. (2018). Attachment insecurity as a mediator of the relationship between childhood trauma and adult dissociation. *Journal of Trauma & Dissociation*, 19(2), 214-231.
<https://doi.org/10.1080/15299732.2017.1329772>
- Kuijpers, K. F., van der Knaap, L. M., & Winkel, F. W. (2012). Risk of revictimization of intimate partner violence: The role of attachment, anger and violent behavior of the victim. *Journal of Family Violence*, 27(1), 33-44. <https://doi.org/10.1007/s10896-011-9399-8>
- Le, M. T., Holton, S., Romero, L., & Fisher, J. (2018). Polyvictimization among children and adolescents in low-and lower-middle-income countries: A systematic review and

- meta-analysis. *Trauma, Violence, & Abuse*, 19(3), 323-342.
<https://doi.org/10.1177/1524838016659489>
- Liotti, G. (1999). *Disorganized attachment and dissociative psychopathology: The contribution of attachment theory*. In J. Solomon & C. George (Eds.), *Attachment disorganization* (pp. 291–317). Guilford.
- Liotti, G. (2004). Trauma, dissociation, and disorganized attachment: Three strands of a single braid. *Psychotherapy: Theory, Research, Practice, Training*, 41(4), 472.
<https://doi.org/10.1037/0033-3204.41.4.472>
- Liotti, G. (2006). A model of dissociation based on attachment theory and research. *Journal of Trauma & Dissociation*, 7(4), 55-73. https://doi.org/10.1300/J229v07n04_04
- Liotti, G. (2013). Phobias of attachment-related inner states in the psychotherapy of adult survivors of childhood complex trauma. *Journal of Clinical Psychology*, 69(11), 1136-1147. <https://doi.org/10.1002/jclp.22041>
- Lim, B. H., Hodges, M. A., & Lilly, M. M. (2020). The differential effects of insecure attachment on post-traumatic stress: A systematic review of extant findings and explanatory mechanisms. *Trauma, Violence, & Abuse*, 21(5), 1044-1060.
<https://doi.org/10.1177/1524838018815136>
- Lin, H. C., Yang, Y., Elliott, L., & Green, E. (2020). The associations between parental conflict, attachment anxiety, and somatic symptoms in adult children affected by parental separation. *Journal of Divorce & Remarriage*, 61(3), 168-185.
<https://doi.org/10.1080/10502556.2019.1679594>
- Longo, P., Panero, M., Amodeo, L., Demarchi, M., Abbate-Daga, G., & Marzola, E. (2021). Psychoform and somatoform dissociation in anorexia nervosa: A systematic review. *Clinical Psychology & Psychotherapy*, 28(2), 295-312.
<https://doi.org/10.1002/cpp.2517>
- Luoni, C., Agosti, M., Crugnola, S., Rossi, G., & Termine, C. (2018). Psychopathology, dissociation and somatic symptoms in adolescents who were exposed to traumatic experiences. *Frontiers in Psychology*, 9, e2390.
<https://doi.org/10.3389/fpsyg.2018.02390>
- Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development*, 50, 66–104. <https://doi.org/10.2307/3333827>

- Maree, J. G. (2021). The psychosocial development theory of Erik Erikson: critical overview. *Early Child Development and Care*, 191(7-8), 1107-1121.
<https://doi.org/10.1080/03004430.2020.1845163>
- Masten, A. S., & Coatsworth, J. D. (1998). The development of competence in favorable and unfavorable environments: Lessons from research on successful children. *American Psychologist*, 53(2), 205-220. <https://doi.org/10.1037/0003-066X.53.2.205>
- McLaughlin, K. A., Koenen, K. C., Hill, E. D., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2013). Trauma exposure and posttraumatic stress disorder in a national sample of adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(8), 815-830. <https://doi.org/10.1016/j.jaac.2013.05.011>
- McWilliams, L. A. (2017). Adult attachment insecurity is positively associated with medically unexplained chronic pain. *European Journal of Pain*, 21(8), 1378-1383.
<https://doi.org/10.1002/ejp.1036>
- Meredith, P., Ownsworth, T., & Strong, J. (2008). A review of the evidence linking adult attachment theory and chronic pain: Presenting a conceptual model. *Clinical Psychology Review*, 28(3), 407–429. <https://doi.org/10.1016/j.cpr.2007.07.009>
- Mikulincer, M., & Shaver, P. R. (2016). *Attachment in adulthood: Structure, dynamics, and change* (Second Edition). Guilford Press.
- Mikulincer, M., Shaver, P. R., & Horesh, N. (2006). *Attachment bases of emotion regulation and posttraumatic adjustment*. In D. K. Snyder, J. Simpson, & J. N. Hughes (Eds.). *Emotion regulation in couples and families: Pathways to dysfunction and health* (pp. 77–99). American Psychological Association. <https://doi.org/10.1037/11468-004>
- Mitchell, K. J., Moschella, E. A., Hamby, S., & Banyard, V. (2020). Developmental stage of onset, poly-victimization, and persistence of childhood victimization: Impact on adult well-being in a rural community-based study. *Child Maltreatment*, 25(1), 20-31.
<https://doi.org/10.1177/1077559519859080>
- Nilsson, D., Holmqvist, R., & Jonson, M. (2011). Self-reported attachment style, trauma exposure and dissociative symptoms among adolescents. *Attachment & Human Development*, 13(6), 579-595. <https://doi.org/10.1080/14616734.2011.609004>
- Okech, J.E.A. (2012). A multidimensional assessment of children in conflictual contexts: The case of Kenya. *International Journal for the Advancement of Counselling*, 34, 331–348. <https://doi.org/10.1007/s10447-012-9166-4>

- Outlaw, M., Ruback, B., & Britt, C. (2002). Repeat and multiple victimizations: The role of individual and contextual factors. *Violence and Victims*, 17(2), 187-204.
<https://doi.org/10.1891/vivi.17.2.187.33648>
- Putnam, F. W. (1997). *Dissociation in children and adolescents: A developmental perspective*. Guilford Press.
- Reijntjes, A., Kamphuis, J. H., Prinzie, P., & Telch, M. J. (2010). Peer victimization and internalizing problems in children: A meta-analysis of longitudinal studies. *Child Abuse & Neglect*, 34(4), 244-252. <https://doi.org/10.1016/j.chiabu.2009.07.009>
- Riedl, D., Lampe, A., Exenberger, S., Nolte, T., Trawöger, I., & Beck, T. (2020). Prevalence of adverse childhood experiences (ACEs) and associated physical and mental health problems amongst hospital patients: Results from a cross-sectional study. *General Hospital Psychiatry*, 64, 80-86. <https://doi.org/10.1016/j.genhosppsych.2020.03.005>
- Riem, M. M., Doedée, E. N., Broekhuizen-Dijksman, S. C., & Beijer, E. (2018). Attachment and medically unexplained somatic symptoms: The role of mentalization. *Psychiatry Research*, 268, 108-113. <https://doi.org/10.1016/j.psychres.2018.06.056>
- Ross, J. M., Drouin, M., & Coupe, A. (2019). Sexting coercion as a component of intimate partner polyvictimization. *Journal of Interpersonal Violence*, 34(11), 2269-2291.
<https://doi.org/10.1177/0886260516660300>
- Salmon, P., Skaife, K., & Rhodes, J. (2003). Abuse, dissociation, and somatization in irritable bowel syndrome: towards an explanatory model. *Journal of Behavioral Medicine*, 26(1), 1-18. <https://doi.org/10.1023/A:1021718304633>
- Saxe, G. N., Chinman, G., Berkowitz, R., Hall, K., Lieberg, G., Schwartz, J., & Kolk, B. A. V. D. (1994). Somatization in patients with dissociative disorders. *American Journal of Psychiatry*, 151(9), 1329-1334. <https://doi.org/10.1176/ajp.151.9.1329>
- Shonkoff, J. P., Garner, A. S., Siegel, B. S., Dobbins, M. I., Earls, M. F., McGuinn, L., ... & Committee on Early Childhood, Adoption, and Dependent Care. (2012). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*, 129(1), e232-e246.
<https://doi.org/10.1542/peds.2011-2663>
- Sroufe, L. A., Egeland, B., Carlson, E. A., & Collins, W. A. (2009). *The development of the person: The Minnesota study of risk and adaptation from birth to adulthood*. Guilford Press.
- Stuart, S. & Noyes, R., Jr. (1999). Attachment and interpersonal communication in somatization. *Psychosomatics*, 40, 34-43. [https://doi.org/10.1016/S0033-3182\(99\)71269-7](https://doi.org/10.1016/S0033-3182(99)71269-7)

- Van der Hart, O., Nijenhuis, E., Steele, K., & Brown, D. (2004). Trauma-related dissociation: Conceptual clarity lost and found. *Australian & New Zealand Journal of Psychiatry*, 38(11-12), 906-914. <https://doi.org/10.1080/j.1440-1614.2004.01480.x>
- van Dijke, A., Ford, J. D., Frank, L. E., & Van der Hart, O. (2015). Association of childhood complex trauma and dissociation with complex posttraumatic stress disorder symptoms in adulthood. *Journal of Trauma & Dissociation*, 16(4), 428-441. <https://doi.org/10.1080/15299732.2015.1016253>
- Van der Kolk, B. A., & Fisler, R. (1995). Dissociation and the fragmentary nature of traumatic memories: Overview and exploratory study. *Journal of Traumatic Stress*, 8(4), 505-525. <https://doi.org/10.1007/BF02102887>
- Van der Kolk, B. A., & Van der Hart, O. (1989). Pierre Janet and the breakdown of adaptation in psychological trauma. *The American Journal of Psychiatry*, 146(12), 1530–1540. <https://doi.org/10.1176/ajp.146.12.1530>
- Waldinger, R. J., Schulz, M. S., Barsky, A. J., & Ahern, D. K. (2006). Mapping the road from childhood trauma to adult somatization: the role of attachment. *Psychosomatic Medicine*, 68(1), 129-135. <https://doi.org/10.1097/01.psy.0000195834.37094.a4>
- Walker, E. A., Katon, W. J., Neraas, K., Jemelka, R. P., & Massoth, D. (1992). Dissociation in women with chronic pelvic pain. *The American Journal of Psychiatry*. <https://doi.org/10.1176/ajp.149.4.534>
- Wolfe, D. A. (2018). Why polyvictimization matters. *Journal of Interpersonal Violence*, 33(5), 832-837. <https://doi.org/10.1177/0886260517752215>
- Zerach, G., & Elklit, A. (2019). Attachment and social support mediate associations between Polyvictimization and psychological distress in early adolescence. *International Journal of Psychology*, 55(3), 380-391. <https://doi.org/10.1002/ijop.12590>

EMPIRICAL ARTICLE

Title: Attachment and Dissociation Mediate Associations Between Exposure to Potentially Traumatic Events and Somatization Differently in Kenyan Male and Female Adolescents

Authors: Paulo Ferrajão¹, Bárbara Tourais¹, & Ask Elklit²

Address:

¹Faculdade de Ciências Sociais e Tecnologia, Universidade Europeia, Lisbon, Portugal

²National Center for Psychotraumatology, University of Southern Denmark, Odense

Status: Submitted - Traumatology

Corresponding author

Paulo Ferrajão, Universidade Europeia, Quinta do Bom Nome, Estrada da Correia 53, 1500-210 Lisbon, Portugal.

E-mail: paulo.ferrajao@universidadeeuropeia.pt

**Attachment and Dissociation Mediate Associations Between Exposure to Potentially Traumatic
Events and Somatization Differently in Kenyan Male and Female Adolescents**

Paulo Ferrajão & Bárbara Tourais

Faculdade de Ciências Sociais e Tecnologia, Universidade Europeia, Lisbon, Portugal

Ask Elklit

National Center for Psychotraumatology, University of Southern Denmark, Odense

Author Note

Paulo Ferrajão <https://orcid.org/0000-0002-2837-0965>

Bárbara Tourais <https://orcid.org/0000-0002-6307-5195>

Ask Elklit <https://orcid.org/0000-0002-8469-7372>

We have no conflict of interests to disclose

Correspondence concerning this article should be addressed to Paulo Ferrajão, Universidade Europeia, Quinta do Bom Nome, Estrada da Correia 53, 1500-210 Lisbon, Portugal. Email: paulo.ferrajao@universidadeeuropeia.pt

Abstract

There is strong evidence that the experience of several potentially traumatic events (PTE) is a risk factor for higher somatization symptoms severity among adolescents. Attachment orientations and dissociation may influence the link between exposure to PTE and somatization symptoms severity. We analysed the associations between direct exposure to PTE and somatization symptoms in Kenyan adolescents and explored the mediating role of attachment orientations and dissociation in the association between direct exposure to PTE and somatization symptoms severity. A sample of 475 Kenyan adolescents ($M = 16.4$; $SD = 1.4$) completed validated self-report questionnaires. Serial multiple mediation models were tested by conducting a structural equation modelling employing Preacher and Hayes' procedures (2008). The association between these variables is different for females and males. Higher exposure to PTE was significantly associated with higher level of dissociation symptoms, which was then associated with higher somatization symptoms severity in females. Higher exposure to traumatic events was significantly associated with higher attachment anxiety levels, which was associated with higher levels of dissociation symptoms, which was then associated with higher somatization symptoms severity in males. High levels of attachment anxiety and dissociation might aggravate somatization symptoms differently according to sex. These two factors might be seen as possible psychological distress mechanisms subsequent to exposure to multiple PTE in African adolescents.

Keywords: potentially traumatic events, attachment orientations, somatization, adolescence, low and lower-middle-income countries

Attachment and Dissociation Mediate Associations Between Exposure to Potentially Traumatic Events and Somatization Differently in Kenyan Male and Female Adolescents

Potentially traumatic events (PTE) are experiences involving the exposure to actual or threatened death, serious injury, or sexual violence, whether by experiencing the events directly or indirectly (American Psychiatric Association [APA], 2013). These traumatic experiences might originate post-traumatic stress disorder symptoms or other psychiatric symptoms such as recurrent distressing dreams or memories related to the traumatic events, dissociative amnesia in both the short and long term (Bogart et al., 2014; Hughes et al. 2017).

PTE precede psychological trauma when they overcome the individual's ability to cope with the event itself and its consequences (Ehlers & Clark, 2000; Luoni et al., 2018). Literature has mainly focused on the study of the adverse impact of specific, single types of traumatic experiences, leaving a gap regarding the effects of multiple kinds of victimization, that is, polyvictimization (Álvarez-Lister et al., 2014; Finkelhor et al., 2007; Ford & Delker, 2018). This is particularly relevant in adolescents since the prevalence of exposure to traumatic events is higher in teenage years (Breslau et al., 2004), which indicates that adolescents are more vulnerable to PTE exposure (Copeland et al., 2007).

Moreover, the exposure to multiple PTE, that is, polyvictimization, is a much more powerful predictor of trauma symptoms and has a more damaging impact on mental and physical health than single victimizations due to the cumulative and interactive effects between different types of victimization (Briere, 2004; Finkelhor et al., 2007). Meanwhile, the experience of polyvictimization among children and adolescents in low- and lower-middle-income countries (LALMIC) is more prevalent than in high- and upper-middle-income countries, which contributes to the burden of poor health in this population (Le et al., 2018).

When it comes to African adolescents, these rates are even higher since experiences considered as potentially severely traumatizing in the Western world are quite common in some African countries, namely Kenya (Karsberg & Elklit, 2012). Therefore, some authors claim that, in some cases, victimization seems to be more of a “condition” than an “event” in African countries (Finkelhor et al., 2007; Karsberg & Elklit, 2012), which emphasizes the need to study African youth who have suffered multiple types of victimization and their consequences.

Polyvictimization and Somatization

The exposure to multiple PTE is recognized as a risk factor for numerous psychiatric symptoms, namely somatization (Álvarez-Lister et al., 2014; Dierkhising et al., 2019).

Somatization is the physical manifestation of psychological distress, that is, individuals experience bodily sensations and symptoms that cannot adequately be explained by organic reasons (De Gucht & Fischler, 2002). Literature has shown that adolescents exposed to more than one PTE reported higher somatic complaints compared to adolescents not exposed to PTE or exposed to individual victimizations (Álvarez-Lister et al., 2014; Charak et al., 2019; Luoni et al., 2018), and noticed a positive association between exposure to PTE and somatization levels in adolescents (Ford et al., 2013).

Despite some evidence on the association between polyvictimization and somatization symptoms, there are still a few studies that have found inconsistent results. Some studies did not observe an association between polyvictimization and somatization symptoms in adolescent outpatients (Ford et al., 2011), or noticed a small direct effect of polyvictimization on somatization symptoms, leading researchers to consider the existence of mediating factors (Guerra et al., 2016). For example, Salmon et al. (2003) proposed dissociation as a mediator of the relationship between exposure to PTE and somatization symptoms.

Polyvictimization and Dissociation

Dissociation is defined as a “disruption of and/or discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control and behaviour” (APA, 2013, pp. 291). The process of dissociation involves the separation of a group of mental events from normal consciousness (Saxe et al., 1994), as a method of cognitive disengagement from the traumatic experience (Chu & Dill, 1990; Walker et al., 1992). Dissociative symptoms are more frequently observed in individuals who have been exposed to multiple, repeated, and prolonged trauma (Luoni et al., 2018).

In a context of multiple exposure to PTE, dissociation may emerge as an attempt to protect the individual from overwhelmingly painful experiences (Walker et al., 1992), since dissociative mechanisms may allow to forget or even completely disown the experience (Chu & Dill, 1990). This complex mental process can cause trauma-related memories and thoughts to separate from conscious awareness, prevent the individual’s control and will, and involve both psychological and bodily functions (Longo et al., 2021).

Dissociation has been associated with higher report of unexplained physical symptoms (Saxe et al., 1994; Walker et al., 1992), and somatization disorder is frequently comorbid with symptoms of dissociative disorders (Saxe et al., 1994). Likewise, a history of exposure to multiple PTE and dissociative symptoms is associated with higher somatic complaints and the perception of poorer physical health (Luoni et al., 2018). It can be proposed that traumatic memories are dissociated from consciousness and expressed as somatic symptoms (Saxe et

al., 1994). Otherwise, cerebral mechanisms underlying trauma-related dissociation are the same as the ones subjacent to somatic disorders, making it conceivable that somatic symptom disorders may be specific forms of trauma-related dissociative processes (Diseth, 2005).

Attachment

In the meantime, while dissociation has a proximal effect on somatization, attachment orientation is an influential predictor of dissociation (Gušić et al., 2016), so it may have a more distal effect on somatization. Attachment patterns provide individuals with self-regulation functions that intervene in the adjustment to situations of threat. Interactions with attachment figures who are available and responsive in times of need develop a sense of attachment security. A person with a secure attachment style has optimistic and hopeful representations of self and others that foster more constructive strategies of affect regulation which help to cope with trauma experience and restore emotional balance (Mikulincer et al., 2006).

However, when attachment figures are not reliably available, and supportive, a sense of security is not attained (Mikulincer et al., 2006). In this case, negative working models of self and others are formed based on expectations of unavailability and negative responses to requests of help and comfort (Liotti, 2004). In addition, threat appraisals tend to increase access to negative thoughts and memories. This painful series of experiences forces a person to adopt secondary attachment strategies (Mikulincer & Shaver, 2016).

These secondary attachment strategies are conceptualized in two major dimensions: avoidance and anxiety (Mikulincer et al., 2006). Attachment avoidance reflects the extent to which a person distrusts others' intentions and goodwill and tends to maintain behavioural independence and emotional distance. In this dimension, exposure to traumatic experiences encourages attachment deactivation strategies that block access to emotions and discourage acknowledgment of need of support from others. Attachment anxiety reflects the extent to which a person worries about the unavailability of others in times of need. In this dimension, exposure to traumatic experiences encourages attachment hyperactivation strategies that exaggerate threats and intensify the sense of helplessness and vulnerability (Brennan et al., 1998; Mikulincer & Shaver, 2016).

Attachment, Dissociation and Somatization

Attachment is an essential factor in the development of trauma-related dissociation specifically (Gušić et al., 2016; Liotti, 1999; Zerach & Elklit, 2019). A secure self-reported attachment style (characterized by low avoidance and low anxiety) protects against dissociation when individuals experience PTE (Nilsson et al., 2011). On the contrary, it has

been observed that self-reported insecure attachment (both anxiety and avoidance) was a stronger predictor of dissociation than trauma exposure among adolescents (Gušić et al., 2016). However, Kong et al. (2018) found that the relationship between childhood trauma and dissociation was mediated by attachment insecurity, with attachment anxiety being a stronger predictor. It is likely that the negative self-model but positive view of others that characterize anxiously attached individuals lead to the internalization of multiple and reciprocally incompatible models of the self and the attachment figure that are involved in the development of dissociation symptoms (Kong et al., 2018; Liotti, 2006, 2013).

Moreover, attachment insecurity is common in individuals with self-reported physical symptoms and medically unexplained symptoms (Adshead & Guthrie, 2015; McWilliams, 2017). Overall, insecure attachment has been suggested to be a source of the development and persistence of unexplained somatization (Lin et al., 2020). Specifically, it has been observed that attachment anxiety specifically was associated with severity of somatic symptoms (Ciechanowski et al., 2002; Lin et al., 2020; Riem et al., 2018), but a robust link between attachment avoidance and somatization has not been found (e.g., Lin et al., 2020).

Accordingly, increased attentional biases towards painful stimuli and catastrophic misinterpretation of bodily sensations have been observed in anxiously attached individuals (Berry & Drummond, 2014; Meredith et al., 2008). In these individuals, pain complaint may function as an attachment behaviour to maintain proximity and get attention and comfort from attachment figures (Berry & Drummond, 2014), which intensifies compensatory focus on bodily sensations, and care-seeking for unexplained medical complaints (Waldinger et al., 2006). Moreover, previous research indicates that attachment insecurity has a mediating role in the association between trauma and somatic symptoms (Riem et al., 2018).

Attachment and Polyvictimization

Research has suggested that attachment orientations are mediating factors of individual responses to exposure to multiple PTE (e.g., Dell & O'Neil, 2010). Therefore, attachment orientation can be a protective factor and may mitigate the impact of traumatic events (Bettmann & Olson-Morrison, 2020). However, attachment style can also operate as a risk factor, since it is well known that insecure attachment constitutes substantial risk to post-trauma recovery (Lim et al., 2020). It has been shown that polyvictimization is significantly associated to higher levels of attachment anxiety, suggesting that this attachment orientation seems to interfere with adolescents' emotional regulation and increase their vulnerability to psychological distress (Zerach & Elklit, 2019). Although attachment anxiety consistently

predicts and is associated with post-trauma psychopathology, the relation between attachment avoidance and post-traumatic symptoms has been far less consistent (Lim et al., 2020).

Rationale and Hypotheses

As mentioned above, multiple exposure to PTE, attachment anxiety, dissociation and somatization are all associated. However, no previous study has analysed the relationship between these variables. This lack of research is more evident in samples from LALMIC, namely Kenya. Furthermore, the association between PTE and somatization has not always been consistent. Therefore, a better understanding of the mechanisms involved in the onset and maintenance of somatization symptoms in those populations is highly needed. The present study aims to analyse the effect of direct exposure to multiple PTE on somatization symptoms through the mediation of both attachment anxiety (distal factor) and dissociation (proximal factor) in a sample of Kenyan adolescents.

Based on previous findings described above, the following hypotheses were proposed:

1. Higher direct exposure to traumatic events will be associated with higher levels of somatization symptoms.
2. Higher levels of attachment anxiety will be associated with higher levels of somatization symptoms.
3. Higher levels of dissociation symptoms will be associated with higher levels of somatization symptoms.
4. Attachment anxiety and dissociation symptoms will mediate the link between the direct exposure to multiple traumatic events and somatization symptoms.
5. Serial multiple mediation models will show that direct exposure to multiple traumatic events will relate to higher levels of attachment anxiety, that will relate to higher levels of dissociation symptoms, which will then relate to higher levels of somatization symptoms.

Methods

Participants

A sample of 475 school children was selected for this study. Sample characteristics are presented in Table 1. The mean age of the sample was around 16 years old. The percentage of females was higher compared to males. Most of the participants lived with one of their parents and most of the parents (both father and mother) had no education.

<Table 1>

Procedure

The primary aim of the current study was to test the hypotheses mentioned above among Kenyan adolescents. This country was selected because it is a large East African country that has undergone social unrest and civil war. The data was collected in 2012. Data collection was sponsored by the National Center of Psychotraumatology (Odense, Denmark). Three boarding schools - one girls' school and two boys' schools - were selected in Kenya. These schools were indicated by a Danish psychologist who has worked in the Kenyan school system for more than thirty years, based on her view of them as typical schools of the Kenyan school system. The institutional review board of the Assistant District Education Officer of Laikipia North District reviewed and approved the study. The headmasters of the three boarding schools also reviewed and approved the study. All the questionnaires were in English because this is the official language of the Kenya school system. A pilot study was first conducted in the city of Nanyuki with seven respondents at the age of 13-14 years. It was noticed that respondents had some language difficulties, particularly in the questions to be answered by scales. They had a strong tendency to answer in the extremes of the Likert scale-type questions. Therefore, the authors made a great effort to explain the system of the scales and to create an atmosphere where there was no such thing as stupid questions.

Participants in this study completed a questionnaire package containing questions concerning demographic variables and exposure to traumatic events along with the psychological impact of these events. The questionnaires were filled out in the classroom. An average of 15-20 minutes was spent on introduction and explanation before the participants were asked to fill out the questionnaires. Participants spent approximately one and a half hours filling out the questionnaires. The researcher requested that the headmasters of all three schools spared one or more teachers for each class so that they would be able to answer and explain the questions that the researcher was not able to and the teachers were very helpful indeed. The students were given pens and calculators as an appreciation of their help.

Measures

The first part of the questionnaire package contained questions concerning sociodemographic data. Specifically, information on gender, age, highest level of parental education and current living arrangements of the participants was collected.

The second part of the questionnaire contained 20 questions about traumatic events, and it was asked which life events they had experienced directly and indirectly. These events were selected based on empirical and clinical literature, and participants were asked whether they had been exposed to life-threatening experiences (e.g., rape) and stressful family

conditions (e.g., neglect). Only responses in relation to direct exposure were used in this study. This measure has been widely applied cross-culturally (e.g., Böldvarsdóttir & Elklit, 2007).

The third part of the questionnaire included the Revised Adult Attachment Scale and the Trauma Symptom Checklist.

The Revised Adult Attachment Scale (RAAS; Collins & Read, 1990) was used to measure participants' attachment orientations. This self-report scale includes 18 items in which all the responses are scored on a 5-point Likert scale, from "not at all characteristic of me" to "very characteristic of me". The scale covers three dimensions: (a) six items on closeness attachment; (b) six items on dependency attachment and (c) six items comprised the anxious attachment dimension. The sum of items in the anxious dimension was used as the index score of attachment anxiety orientation. The mean of index scores of both closeness and dependency dimensions was used as the index score of attachment avoidance orientation. Cronbach's alpha for the anxiety dimension was .74. Cronbach's alpha for the dependency dimension was .71. Cronbach's alpha for the closeness dimension was .72.

The Trauma Symptom Checklist (TSC-33; Briere & Runtz, 1989) was used to assess both dissociation and somatization symptoms. The TSC-33 includes 33 items rated with reference to the previous month. Items are answered on a 4-point Likert scale from "never" to "very often". The sum of the items that assessed both dissociation and somatization scales served as indexes of dissociation and somatization symptoms severity, respectively. The reliability of the dissociation scale (Cronbach's alpha = .74) and the somatization scale (Cronbach's alpha = .73) was satisfactory.

Data Analysis

Multiple Pearson correlation analyses were conducted to test bi-variate relationships between the study variables. A *t*-test was conducted to compare the mean of direct exposure to traumatic events, attachment dimensions, and dissociation and somatization symptoms between females and males with a Bonferroni correction.

To test our hypothesis of serial mediation, multiple step mediation methodology with a bootstrapped confidence interval for indirect effects was conducted (Model 6; Hayes, 2013). The examination of the models was performed through structural equation modelling (SEM). Specifically, the following was examined: (a) if direct exposure to traumatic events was directly linked to somatization symptoms; (b) if direct exposure to traumatic events was indirectly linked to somatization symptoms through attachment anxiety; (c) if direct exposure to traumatic events was indirectly linked to somatization symptoms through dissociation

symptoms; and (d) if a two-step mediation process existed in which direct exposure to traumatic events was indirectly linked to somatization symptoms through attachment and dissociation.

Before executing analyses, a missing data analysis was conducted. Proportion of missing values in the tested variables ranged from 0 to 5.4%. Missing data occurred because some participants did not respond to all items. Little's Missing Completely at Random test (MCAR) was performed and indicated that data was missing completely at random, $\chi^2(360) = 390.88, p = .13$. The maximum likelihood (ML) module was conducted to perform imputation of missing data. Specifically, each case of available data was used to compute ML estimates. The ML estimate of a parameter was the value of the parameter that was most likely to have resulted in the observed data. The likelihood was computed independently for those cases with complete data on some variables and those with complete data on all variables. These two likelihoods were then maximized together to find the estimates.

Finally, to test the serial mediation model, a SEM (Hoyle & Smith, 1994) strategy utilizing AMOS software (Version 26; Arbuckle, 2012) and the ML method were employed. The following criteria for SEM models fit were adopted: (a) a χ^2 test, (b) the root mean square error of approximation (RMSEA), (c) the comparative fit index (CFI), (d) the normed fit index (NFI), (e) Tucker Lewis Index (TLI), and (f) standardized root mean square residual (SRMR). The following criteria for each model fit were adopted: chi-square value should be non-significant, CFI, TLI and NFI > 0.95 , and the RMSEA and SRMR should range from 0.00 to 0.08. All analyses were controlled for sex and included only participants who had undergone at least one traumatic event. To assess significance of indirect paths, a bootstrapped confidence interval for the ab indirect effect, employing Preacher and Hayes' (2008) procedures, was adopted. A total of 5,000 bootstrapped samples was obtained to estimate indirect effects of each mediator. We computed bias corrected, accelerated 95% confidence intervals (CIs) to measure statistical significance for each mediator's "ab" paths and the two-step mediation. A confidence interval that does not include zero reflects evidence of a significant indirect effect or significant mediation.

Results

Prevalence of Exposure to Traumatic Events

As can be seen in Table 2, the most common events were serious illness and death of someone close, that were reported by more than half of the participants, followed by witnessing other people injured or killed, coming close to being injured or killed, and absence

of a parent. The least prevalent were miscellaneous and rape, followed by pregnancy /abortion and attempted suicide.

<Table 2>

Only 25 participants (5.3%), 12 females and 13 males, did not report at least one traumatic event (direct or indirect exposure). These participants were excluded from subsequent analyses. The average number of traumatic events to which the participants were exposed was 13 (SD = 8.3; range 0-39). A *t*-test was conducted to compare the mean of direct exposure to traumatic events between females and males. All data was tested for normality prior to the analyses using Kolmogorov-Smirnov test, as well as Levene's test for the homogeneity of the variance, and both assumptions were met. The difference between both groups in the number of direct exposure to traumatic events ($t(473) = 4.35; p < .001$) was statistically significant. The mean of direct exposure to traumatic events was higher in females ($M = 6.2; SD = 4.4; 95\% IC: 5.7-6.7$) compared to males ($M = 4.4; SD = 3.7; 95\% IC: 3.9-5.0$).

Correlations Between Study Variables

As can be seen in Table 3, the direct exposure to traumatic events presented a small positive association with attachment anxiety, and dissociation and somatization symptoms were observed. Attachment anxiety was weakly negatively associated with dependence in attachment, and it was weakly positively linked to dissociation and somatization symptoms. Closeness attachment was weakly negatively correlated with dependence in attachment, and dependence in attachment was weakly negatively correlated with dissociation symptoms. Dissociation symptoms presented a medium positive correlation with somatization symptoms. All the remaining associations were non-significant.

<Table 3>

Mean Comparisons Between Males and Females

As can be seen in Table 4, there were no statistically significant differences between females and males on dissociation symptoms, somatization symptoms, attachment anxiety, closeness attachment, and dependence in attachment.

<Table 4>

Analysis of Serial Mediation

Considering that there were statistically significant differences in the means of direct exposure between females and males, the analyses of the models were performed separately for females and males. Moreover, due to the non-significant association between the sum of

traumatic events exposure and both attachment closeness and attachment dependency, our focus was only on the attachment anxiety dimension.

Regarding the female participants, the existence of significant direct relations between the sum of exposure to traumatic events and somatization symptoms was confirmed first. This model fit the observed data well ($\chi^2(1) = 1.16, p = .28$; NFI = .98; CFI = 1.0; TLI = .99; RMSEA = .02; SMSR = .02). The sum of direct exposure to traumatic events was associated significantly with higher levels of somatization symptoms ($b = .13, p < .05$, 95% CI, .08, .18).

Next, a model was specified in which exposure to traumatic events had direct paths to somatization symptoms, as well as indirect paths through the attachment anxiety variable (one-step mediation). The mediation model fit the observed data satisfactorily ($\chi^2(1) = 2.62, p = .11$; NFI = .83; CFI = .87; TLI = .89; RMSEA = .07; SMSR = .04). The direct paths from total exposure to traumatic events to somatization symptoms ($b = .11, p < .05$, 95% CI, .06, .16) remained significant when attachment anxiety was included in the model. When applying the bootstrapping analysis, total indirect effect through attachment anxiety to somatization symptoms ($b = .01, p = .11$, 95% CI, -.01, .03) was not significant. However, higher levels of attachment anxiety were associated with higher levels of somatization symptoms ($b = .42, p < .01$, 95% CI, .14, .70).

Following, it was examined if exposure to traumatic events had direct paths to somatization symptoms, as well as indirect paths through the dissociation variable. The mediation model fit the observed data well ($\chi^2(1) = .31, p = .58$; NFI = 1.0; CFI = 1.0; TLI = 1.0; RMSEA = 0.0; SMSR = .01). The direct paths from total exposure to traumatic events to somatization symptoms ($b = .01, p = .56$, 95% CI, -.04, .06) were no longer significant when the model included dissociation symptoms. When applying the bootstrapping analysis, total indirect effect through dissociation to somatization symptoms ($b = .14, p < .01$, 95% CI, .07, .21) was significant. Thus, direct exposure to traumatic events was significantly associated with higher levels of dissociation symptoms, which were then associated with higher levels of somatization symptoms.

Finally, a model was specified in which exposure to traumatic events had direct paths to somatization symptoms; one-step indirect paths through the attachment anxiety variable; and two-step indirect paths through the attachment anxiety and the dissociation variable. Unstandardized coefficients and bootstrap solutions are presented in Table 5, and unstandardized results are presented in Figure 1. The observed data fit the mediational model well ($\chi^2(1) = .20, p = .66$; NFI = 1.0; CFI = 1.0; TLI = 1.0; RMSEA = 0.0; SMSR = .01). The direct paths from direct exposure to traumatic events to somatization symptoms were not

significant when the model included all mediators. Specifically, the two-step indirect effects results indicated that total exposure to traumatic events was not significantly associated with higher levels of attachment anxiety, but higher levels of attachment anxiety were associated with higher levels of dissociation symptoms, which in turn were associated with higher levels of somatization symptoms. It was observed that only the total direct effect through dissociation to somatization symptoms was significant. Explicitly, the sum of direct exposure to traumatic events was significantly associated with higher levels of dissociation symptoms, which in turn were associated with higher levels of somatization symptoms. After omitting non-significant paths (i.e., direct exposure to traumatic events → attachment anxiety) our final model fit the observed data well ($\chi^2(2) = 2.82, p = .25$; NFI = .97; CFI = .99; TLI = .97; RMSEA = .04; SMSR = .03).

<Table 5>

<Figure 1>

A similar procedure was followed for the group of male participants. First, the model that tested the direct association between the sum of exposure to traumatic events and somatization symptoms showed a good fit to the data ($\chi^2(1) = .40, p = .84$; NFI = .98; CFI = 1.0; TLI = 1.0; RMSEA = 0.0; SMSR = .01). The sum of direct exposure to traumatic events was significantly associated with higher levels of somatization symptoms ($b = .30, p < .05$, 95% CI, .22, .38).

The model in which exposure to traumatic events had direct paths to somatization symptoms and indirect paths through the attachment anxiety variable showed a satisfactory fit to the data ($\chi^2(1) = 2.62, p = .11$; NFI = .83; CFI = .87; TLI = .89; RMSEA = .07; SMSR = .04). The direct paths from total exposure to traumatic events to somatization symptoms ($b = .29, p < .01$, 95% CI, .21, .29) remained significant. When applying the bootstrapping analysis, total indirect effect through attachment anxiety to somatization symptoms ($b = .01, p = .19$, 95% CI, .38, .40) was not significant. Meanwhile, higher levels of direct exposure to traumatic events were associated with higher levels of attachment anxiety ($b = .17, p < .05$, 95% CI, .13, .21).

The model in which exposure to traumatic events had direct paths to somatization symptoms as well as indirect paths through the dissociation variable fit the data well. ($\chi^2(1) = 1.45, p = .48$; NFI = .99; CFI = 1.0; TLI = 1.0; RMSEA = 0.0; SMSR = .02). The direct paths from total exposure to traumatic events to somatization symptoms ($b = .10, p < .05$, 95% CI, .03, .17) remained significant. Total indirect effect through dissociation to somatization symptoms ($b = .26, p < .01$, 95% CI, .14, .38) was significant. Thus, direct exposure to

traumatic events was significantly associated with higher levels of dissociation symptoms, which were then associated with higher levels of somatization symptoms.

Unstandardized coefficients and bootstrap solutions of the two-step mediation model are presented in Figure 2. The observed data fit the mediational model well ($\chi^2(1) = 4.1, p = .13$; NFI = .97; CFI = .98; TLI = .96; RMSEA = .05; SMSR = .03). The direct paths from direct exposure to traumatic events to somatization symptoms remained significant when the model included all mediators. Specifically, the results indicated that direct exposure to traumatic events was significantly associated with higher levels of attachment anxiety that were associated with higher levels of dissociation symptoms, which in turn were associated with higher levels of somatization symptoms. Notably, in the path from attachment anxiety to somatization symptoms, the final model became non-significant. After omitting non-significant paths (i.e., attachment anxiety $\rightarrow$ somatization symptoms) our final model fit the observed data well ($\chi^2(1) = .35, p = .56$; NFI = 1.0; CFI = 1.0; TLI = 1.0; RMSEA = 0.0; SMSR = .01).

<Table 6>

<Figure 2>

Discussion

The main goal of the current study was to analyse the effect of exposure to multiple traumatic events on somatization symptoms through the mediation of both attachment anxiety and dissociation symptoms in a sample of Kenyan adolescents. The current findings indicate that the association between these variables are different for females and males. In female participants, dissociation symptoms, but not attachment anxiety, were a mediator of the association between direct exposure to traumatic events and somatization symptoms. Higher exposure to traumatic events was associated with higher dissociation symptom levels that were then associated with higher somatization symptoms severity in females. Likewise, only dissociation symptoms mediated the association between direct exposure to traumatic events and somatization symptoms in male participants. Higher exposure to traumatic events was associated with higher attachment anxiety levels, which was associated with higher levels of dissociation symptoms, which was then associated with higher somatization symptoms severity in males. To the best of our knowledge, this is the first study to analyse the joint mediating role of attachment orientations and dissociation in adaptation to multiple adverse experiences in adolescents from LALMIC. Our hypotheses will be discussed in turn.

Our first hypothesis was that higher exposure to traumatic events was associated with higher levels of somatization symptoms. This hypothesis was partially supported. It was

observed that higher exposure to traumatic events was associated with higher somatization symptoms severity among male participants. Despite the existence of a significant association between both variables when direct paths were tested, the direct paths from direct exposure to traumatic events to somatization symptoms were no longer significant when the mediators were included in the model in the group of females. The current results may explain previous conflicting results on the association between both variables (Ford et al., 2011; Guerra et al., 2016), because most studies did not control for sex differences. Furthermore, these findings support the conceptualization proposed by some authors that other psychological variables mediate the association between multiple exposure to traumatic events and somatization symptoms (Guerra et al., 2016; Salmon et al., 2003).

Our second hypothesis was that higher levels of attachment anxiety were associated with higher levels of somatization symptoms. This hypothesis was partially supported. Higher levels of attachment anxiety were associated with higher severity of somatization symptoms in female participants. These findings are in accordance with previous studies that found that attachment insecurity, particularly attachment anxiety, is a risk factor for higher levels of somatization symptoms (Ciechanowski et al., 2002; Lin et al., 2020; Riem et al., 2018). This can be related to a low threshold in appraising physical sensations as a matter of concern and/or a tendency to exaggerate pain experiences to draw attention and elicit comfort from attachment figures (Berry & Drummond, 2014; Ciechanowski et al., 2002).

However, attachment anxiety was not associated with somatization symptoms in male participants. These results may have several possible explanations. First, most male participants (70%) did not live with both their parents that may lead them to search for alternative strategies or forms of support for emotion regulation associated with multiple trauma exposure (Pitula et al., 2014), decreasing the influence of attachment orientations on somatization symptoms. Second, the onset of adolescent's psychological separation from parents in Kenyan male participants may foster stronger relationships with extrafamilial figures (Arnett, 2015), namely peers, compared to females that results in transition from extrinsic to intrinsic emotion regulation of psychological consequences associated with multiple exposure to trauma events in males (Sameroff, 2010). Future studies should address these hypotheses in other samples of adolescents.

Our third hypothesis was that higher levels of dissociation symptoms were associated with higher levels of somatization symptoms. This hypothesis was fully supported for both groups. The current findings replicate previous studies on the association between dissociation and somatization symptoms in different samples (Diseth, 2005; Salmon et al.,

2003; Saxe et al., 1994; Walker et al., 1992), indicating that adolescents who strongly experience disruption of and/or discontinuity of stressful or traumatic experiences in their global identity are at greater risk of manifesting their psychological disorder as bodily sensations and symptoms (De Gucht & Fischler, 2002).

Our fourth hypothesis was that attachment anxiety and dissociation symptoms mediated the link between the exposure to multiple traumatic events and somatization symptoms. This hypothesis was partially supported. Only dissociation symptoms mediated the association between exposure to traumatic events and somatization symptoms in both females and males. Considering that participants reported extremely high rates of exposure to traumatic events, it seems that memories of those experiences are dissociated from consciousness as an attempt to cognitively disengage from the multiple exposure, but traumatic experiences are expressed as somatic symptoms (Luoni et al., 2018; Saxe et al., 1994; Walker et al., 1992).

Moreover, attachment anxiety did not mediate the link between polyvictimization and somatization symptoms. The non-significant indirect effect between exposure to traumatic events and somatization symptoms may be explained by different reasons for both sexes. High exposure to violent and/or early traumatic events reported by female participants may indicate that many of these experiences occurred in the context of attachment relationships (Cyr et al., 2010). Therefore, many female participants may possess threatening and/or disorganized representations of attachment figures to respond to psychological distress (Bizzi et al., 2019). Future studies should be conducted to address this hypothesis using a semi-structured interview designed to assess the self-representations and representations of attachment figures.

For males, exposure to multiple traumatic events is associated with stronger worries about the unavailability of significant others and fear of loss in relationships (Brennan et al., 1998). Consequently, it occurs the intensification of hyperactivation strategies through the adoption of demanding support seeking strategies as an attempt to regulate emotions and cope with threatful situations (Sirois et al., 2016). However, intensified use of hyperactivation strategies increases male adolescents' perceptions of unavailability of others that may lead to the use of other strategies in coping with the psychological disorder, namely the development of somatization symptoms (Gušić et al., 2016).

The current study had the following limitations. First, the cross-sectional design precludes causal inferences. It is not feasible to infer causality from the serial mediation analyses. Second, all data were based on self-reporting measures. Third, report of PTE was

retrospective which can be biased by memory issues. Fourth, it was not possible to identify if a specific event had reoccurred. Fifth, despite being regularly used in other countries (e.g., Zerach & Elklit, 2019), the traumatic life-event questionnaire has not been validated yet to the Kenya population. Sixth, the TSC was mainly used to measure somatization symptoms. Future studies should be conducted using measures of DSM-5 criteria. A common problem in the study of somatization is how to distinguish between symptom reporting that is consistent with demonstrable medical illness and symptom reporting that is not. In this study we do not have physical health measures to distinguish between somatic symptoms and symptoms consistent with demonstrable medical illness. Besides, there is no clinical evidence to verify the diagnosis of somatic disorder. Additionally, it is recommended to replicate this mediation hypothesis among other groups of adolescents in different cultures, following specific major traumatic events. Furthermore, the reported pattern of associations should be revalidated in future prospective studies among adolescents from different cultures as well.

The current findings suggest that exposure to traumatic events make adolescence a vulnerable period for many Kenyan adolescents. Our study also suggests that polyvictimization increases the risk of mental health problems among adolescents, not only PTSD but also somatization symptoms. It is advisable that clinicians working in countries characterized by economic precarity and generalized community violence, such as Kenya, should pay attention not only to most well-known traumas, but also to the clients' entire traumatic history. This is particularly relevant since many victims of multiple exposure to PTE present bodily sensations and symptoms that cannot adequately be explained by organic reasons, what leads them to be referred to health services other than mental health services. Therefore, the psychological aspects of the disorder should be addressed in medical facilities.

Moreover, our results indicate the key role of both attachment orientations, especially attachment anxiety, and dissociation, as psychological mechanisms involved in the association between polyvictimization and somatization symptoms differently in males and females. In female adolescents, only dissociation symptoms mediated the association between PTE and somatization symptoms. In male adolescents, effect of PTE on somatization was mediated by dissociation, but PTE were associated with attachment anxiety, which was associated with dissociation symptoms, which was then associated with somatization symptoms. These findings suggest that mental health professionals should pay attention to the links between an internal experience of lack of security and dissociation symptoms as attempts to cope with traumatization differently in males and females. However, both clinical manifestations seem to increase the risk of developing somatic and physical symptoms.

Therefore, adolescents' difficulties in approaching caregivers to gain crucial support following traumatic events, and disruption of and/or discontinuity of traumatic experiences in the adolescents' identity should be a target of treatment.

References

- Adshead, G., & Guthrie, E. (2015). The role of attachment in medically unexplained symptoms and long-term illness. *BJPsych Advances*, 21(3), 167-174.
<https://doi.org/10.1192/apt.bp.114.013045>
- Álvarez-Lister, M. S., Pereda, N., Abad, J., & Guilera, G. (2014). Polyvictimization and its relationship to symptoms of psychopathology in a southern European sample of adolescent outpatients. *Child Abuse & Neglect*, 38(4), 747-756.
<https://doi.org/10.1016/j.chiabu.2013.09.005>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>
- Arnett, J. J. (2015). *Emerging adulthood: The winding road from the late teens through the twenties* (2nd ed.). Oxford University Press.
<https://doi.org/10.1093/oxfordhb/9780199795574.013.9>
- Berry, J. K., & Drummond, P. D. (2014). Does attachment anxiety increase vulnerability to headache? *Journal of Psychosomatic Research*, 76(2), 113-120.
<https://doi.org/10.1016/j.jpsychores.2013.11.018>
- Bettmann, J. E., & Olson-Morrison, D. (2020). The relationship between adolescent refugees' attachment patterns and their experiences of trauma. *Journal of Ethnic & Cultural Diversity in Social Work*, 29(1-3), 154-170.
<https://doi.org/10.1080/15313204.2018.1555499>
- Bizzi, F., Ensink, K., Borelli, J. L., Mora, S. C., & Cavanna, D. (2019). Attachment and reflective functioning in children with somatic symptom disorders and disruptive behavior disorders. *European Child & Adolescent Psychiatry*, 28(5), 705–717.
<https://doi.org/10.1007/s00787-018-1238-5>
- Bödvarsdóttir, I., & Elklit, A. (2007). Victimization and PTSD-like states in an Icelandic youth probability sample. *BMC Psychiatry*, 7, 51. <https://doi.org/10.1186/1471-244X-7-51>
- Bogart, L. M., Elliott, M. N., Klein, D. J., Tortolero, S. R., Mrug, S., Peskin, M. F., Davies, S. L., Schink, E. T., & Schuster, M. A. (2014). Peer victimization in fifth grade and health in tenth grade. *Pediatrics*, 133(3), 440–447. <https://doi.org/10.1542/peds.2013-3510>
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). *Self-report measurement of adult attachment: An integrative overview*. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46–76). Guilford Press.

- Breslau, N., Wilcox, H. C., Storr, C. L., Lucia, V. C., & Anthony, J. C. (2004). Trauma exposure and posttraumatic stress disorder: A study of youths in urban America. *Journal of Urban Health*, 81(4), 530-544. <https://doi.org/10.1093/jurban/jth138>
- Briere, J. (2004). *Trauma types and characteristics*. In J. Briere, *Psychological assessment of adult posttraumatic states: Phenomenology, diagnosis, and measurement* (pp. 5–37). American Psychological Association. <https://doi.org/10.1037/10809-001>
- Briere, J., & Runtz, M. (1989). The Trauma Symptom Checklist (TSC-33): Early data on a new scale. *Journal of Interpersonal Violence*, 4, 151–163. <https://doi.org/10.1177/088626089004002002>
- Charak, R., Ford, J. D., Modrowski, C. A., & Kerig, P. K. (2019). Polyvictimization, emotion dysregulation, symptoms of posttraumatic stress disorder, and behavioral health problems among justice-involved youth: A latent class analysis. *Journal of Abnormal Child Psychology*, 47(2), 287-298. <https://doi.org/10.1007/s10802-018-0431-9>
- Chu, J. A., & Dill, D. L. (1990). Dissociative symptoms in relation to childhood physical and sexual abuse. *The American Journal of Psychiatry*, 147(7), 887–892. <https://doi.org/10.1176/ajp.147.7.887>
- Ciechanowski, P. S., Walker, E. A., Katon, W. J., & Russo, J. E. (2002). Attachment theory: a model for health care utilization and somatization. *Psychosomatic Medicine*, 64(4), 660-667. <https://doi.org/10.1097/01.PSY.0000021948.90613.76>
- Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology*, 58, 644–663. <https://doi.org/10.1037/0022-3514.58.4.644>
- Copeland, W. E., Keeler, G., Angold, A., & Costello, E. J. (2007). Traumatic events and posttraumatic stress in childhood. *Archives of General Psychiatry*, 64(5), 577-584. <https://doi.org/10.1001/archpsyc.64.5.577>
- Cyr, C., Euser, E. M., Bakermans-Kranenburg, M. J., & Van Ijzendoorn, M. H. (2010). Attachment security and disorganization in maltreating and high-risk families: a series of meta-analyses. *Development and Psychopathology*, 22(1), 87–108. <https://doi.org/10.1017/S0954579409990289>
- De Gucht, V., & Fischler, B. (2002). Somatization: a critical review of conceptual and methodological issues. *Psychosomatics*, 43(1), 1-9. <https://doi.org/10.1176/appi.psy.43.1.1>
- Dell, P. F., & O'Neil, J. A. (Eds.). (2010). *Dissociation and the dissociative disorders: DSM-V and beyond*. Routledge. <https://doi.org/10.4324/9780203893920>

- Dierkhising, C. B., Ford, J. D., Branson, C., Grasso, D. J., & Lee, R. (2019). Developmental timing of polyvictimization: Continuity, change, and association with adverse outcomes in adolescence. *Child Abuse & Neglect*, 87, 40-50.
<https://doi.org/10.1016/j.chiabu.2018.07.022>
- Diseth, T. H. (2005). Dissociation in children and adolescents as reaction to trauma—an overview of conceptual issues and neurobiological factors. *Nordic Journal of Psychiatry*, 59(2), 79-91. <https://doi.org/10.1080/08039480510022963>
- Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*, 38(4), 319-345. [https://doi.org/10.1016/S0005-7967\(99\)00123-0](https://doi.org/10.1016/S0005-7967(99)00123-0)
- Finkelhor, D., Ormrod, R. K., & Turner, H. A. (2007). Poly-victimization: A neglected component in child victimization. *Child Abuse & Neglect*, 31(1), 7-26.
<https://doi.org/10.1016/j.chiabu.2006.06.008>
- Ford, J. D., & Delker, B. C. (2018). Polyvictimization in childhood and its adverse impacts across the lifespan: Introduction to the special issue. *Journal of Trauma & Dissociation*, 19(3), 275-288. <https://doi.org/10.1080/15299732.2018.1440479>
- Ford, J. D., Grasso, D. J., Hawke, J., & Chapman, J. F. (2013). Poly-victimization among juvenile justice-involved youths. *Child Abuse & Neglect*, 37, 788-800.
<https://doi.org/10.1016/j.chiabu.2013.01.005>
- Ford, J. D., Wasser, T., & Connor, D. F. (2011). Identifying and determining the symptom severity associated with polyvictimization among psychiatrically impaired children in the outpatient setting. *Child Maltreatment*, 16(3), 216-226.
<https://doi.org/10.1177/1077559511406109>
- Guerra, C., Pereda, N., Guilera, G., & Abad, J. (2016). Internalizing symptoms and polyvictimization in a clinical sample of adolescents: The roles of social support and non-productive coping strategies. *Child Abuse & Neglect*, 54, 57-65.
<https://doi.org/10.1016/j.chiabu.2016.03.004>
- Gušić, S., Cardeña, E., Bengtsson, H., & Søndergaard, H. P. (2016). Adolescents' dissociative experiences: The moderating role of type of trauma and attachment style. *Journal of Child & Adolescent Trauma*, 9(4), 341-351. <https://doi.org/10.1007/s40653-016-0107-y>
- Hayes, A. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. The Guilford Press.

- Hughes, K., Bellis, M. A., Hardcastle, K. A., Sethi, D., Butchart, A., Mikton, C., Jones, L., & Dunne, M. P. (2017). The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *The Lancet: Public Health*, 2(8), e356–e366. [https://doi.org/10.1016/S2468-2667\(17\)30118-4](https://doi.org/10.1016/S2468-2667(17)30118-4)
- Karsberg, S. H., & Elklit, A. (2012). Victimization and PTSD in a rural Kenyan sample. *Clinical Practice and Epidemiology in Mental Health*, 8, Article 91-101. <https://doi.org/10.2174/1745017901208010091>
- Kong, S. S., Kang, D. R., Oh, M. J., & Kim, N. H. (2018). Attachment insecurity as a mediator of the relationship between childhood trauma and adult dissociation. *Journal of Trauma & Dissociation*, 19(2), 214-231. <https://doi.org/10.1080/15299732.2017.1329772>
- Le, M. T., Holton, S., Romero, L., & Fisher, J. (2018). Polyvictimization among children and adolescents in low-and lower-middle-income countries: A systematic review and meta-analysis. *Trauma, Violence, & Abuse*, 19(3), 323-342. <https://doi.org/10.1177/1524838016659489>
- Lim, B. H., Hodges, M. A., & Lilly, M. M. (2020). The differential effects of insecure attachment on post-traumatic stress: A systematic review of extant findings and explanatory mechanisms. *Trauma, Violence, & Abuse*, 21(5), 1044-1060. <https://doi.org/10.1177/1524838018815136>
- Lin, H. C., Yang, Y., Elliott, L., & Green, E. (2020). The associations between parental conflict, attachment anxiety, and somatic symptoms in adult children affected by parental separation. *Journal of Divorce & Remarriage*, 61(3), 168-185. <https://doi.org/10.1080/10502556.2019.1679594>
- Liotti, G. (1999). *Disorganized attachment and dissociative psychopathology: The contribution of attachment theory*. In J. Solomon & C. George (Eds.), *Attachment disorganization*. Guilford.
- Liotti, G. (2004). Trauma, dissociation, and disorganized attachment: Three strands of a single braid. *Psychotherapy: Theory, Research, Practice, Training*, 41(4), 472. <https://doi.org/10.1037/0033-3204.41.4.472>
- Liotti, G. (2006). A model of dissociation based on attachment theory and research. *Journal of Trauma & Dissociation*, 7(4), 55-73. https://doi.org/10.1300/J229v07n04_04
- Liotti, G. (2013). Phobias of attachment-related inner states in the psychotherapy of adult survivors of childhood complex trauma. *Journal of Clinical Psychology*, 69(11), 1136-1147. <https://doi.org/10.1002/jclp.22041>

- Longo, P., Panero, M., Amodeo, L., Demarchi, M., Abbate-Daga, G., & Marzola, E. (2021). Psychoform and somatoform dissociation in anorexia nervosa: A systematic review. *Clinical Psychology & Psychotherapy*, 28(2), 295-312. <https://doi.org/10.1002/cpp.2517>
- Luoni, C., Agosti, M., Crugnola, S., Rossi, G., & Termine, C. (2018). Psychopathology, dissociation and somatic symptoms in adolescents who were exposed to traumatic experiences. *Frontiers in Psychology*, 9, e2390. <https://doi.org/10.3389/fpsyg.2018.02390>
- McWilliams, L. A. (2017). Adult attachment insecurity is positively associated with medically unexplained chronic pain. *European Journal of Pain*, 21(8), 1378-1383. <https://doi.org/10.1002/ejp.1036>
- Meredith, P., Ownsworth, T., & Strong, J. (2008). A review of the evidence linking adult attachment theory and chronic pain: Presenting a conceptual model. *Clinical Psychology Review*, 28(3), 407–429. <https://doi.org/10.1016/j.cpr.2007.07.009>
- Mikulincer, M., & Shaver, P. R. (2016). *Attachment in adulthood: Structure, dynamics, and change* (Second Edition). Guilford Press.
- Mikulincer, M., Shaver, P. R., & Horesh, N. (2006). Attachment bases of emotion regulation and posttraumatic adjustment. In D. K. Snyder, J. Simpson, & J. N. Hughes (Eds.). *Emotion regulation in couples and families: Pathways to dysfunction and health* (pp. 77–99). American Psychological Association. <https://doi.org/10.1037/11468-004>
- Nilsson, D., Holmqvist, R., & Jonson, M. (2011). Self-reported attachment style, trauma exposure and dissociative symptoms among adolescents. *Attachment & Human Development*, 13(6), 579-595. <https://doi.org/10.1080/14616734.2011.609004>
- Pitula, C. E., Thomas, K. M., Armstrong, J. M., Essex, M. J., Crick, N. R., & Gunnar, M. R. (2014). Peer victimization and internalizing symptoms among post-institutionalized, internationally adopted youth. *Journal of Abnormal Child Psychology*, 42(7), 1069–1076. <https://doi.org/10.1007/s10802-014-9855-z>
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879–891. <https://doi.org/10.3758/BRM.40.3.879>
- Riem, M. M., Doedée, E. N., Broekhuizen-Dijksman, S. C., & Beijer, E. (2018). Attachment and medically unexplained somatic symptoms: The role of mentalization. *Psychiatry Research*, 268, 108-113. <https://doi.org/10.1016/j.psychres.2018.06.056>

- Salmon, P., Skaife, K., & Rhodes, J. (2003). Abuse, dissociation, and somatization in irritable bowel syndrome: towards an explanatory model. *Journal of Behavioral Medicine*, 26(1), 1-18. <https://doi.org/10.1023/A:1021718304633>
- Sameroff, A. (2010). *Dynamic developmental systems: Chaos and order*. In G. W. Evans & T. D. Wachs (Eds.), *Chaos and its influence on children's development: An ecological perspective* (pp.255-264). American Psychological Association.
- Saxe, G. N., Chinman, G., Berkowitz, R., Hall, K., Lieberg, G., Schwartz, J., & Kolk, B. A. V. D. (1994). Somatization in patients with dissociative disorders. *American Journal of Psychiatry*, 151(9), 1329-1334. <https://doi.org/10.1176/ajp.151.9.1329>
- Sirois, F., Millings, A., & Hirsch, J. (2016). Insecure attachment orientation and well-being in emerging adults: The roles of perceived social support and fatigue. *Personality and Individual Differences*, 101, 318-321. <https://doi.org/10.1016/j.paid.2016.06.026>
- Waldinger, R. J., Schulz, M. S., Barsky, A. J., & Ahern, D. K. (2006). Mapping the road from childhood trauma to adult somatization: the role of attachment. *Psychosomatic Medicine*, 68(1), 129-135. <https://doi.org/10.1097/01.psy.0000195834.37094.a4>
- Walker, E. A., Katon, W. J., Neraas, K., Jemelka, R. P., & Massoth, D. (1992). Dissociation in women with chronic pelvic pain. *The American Journal of Psychiatry*, 149(4), 534–537. <https://doi.org/10.1176/ajp.149.4.534>
- Zerach, G., & Elklit, A. (2019). Attachment and social support mediate associations between polyvictimization and psychological distress in early adolescence. *International Journal of Psychology*, 55(3), 380-391. <https://doi.org/10.1002/ijop.12590>

Table 1*Sample Demographic Characteristics*

	n	%
Sex		
Females	314	66.1
Males	161	33.9
Living with		
Both parents	138	29.1
One of their parents	290	61.1
Other arrangements (uncles, siblings, grandparents, or other relatives)	47	9.8
Father education		
No education	234	49.3
Primary school	84	17.7
Six years of education	79	16.6
High school	45	9.5
College	14	2.9
University	19	4.0
Mother education		
No education	241	50.7
Primary school	107	22.5
Six years of education	89	18.7
High school	26	5.5
College	11	2.3
University	1	0.2

Note. N = 475.

Table 2*Potential Trauma Events and Life Events According to Exposure and Sex*

	Female		Male		Total	
	n	%	n	%	n	%
Traffic accident	72	22.9	19	11.8	91	19.2
Other serious accidents	75	23.9	24	14.9	99	20.8
Physical assault	75	23.9	32	19.9	107	22.5
Rape	36	11.5	11	6.8	47	9.9
Witnessed other people injured or killed	145	46.2	39	24.2	184	38.7
Came close to being injured or killed	138	43.9	42	26.1	180	37.9
Threats of violence	112	35.7	50	31.1	162	34.1
Near-drowning	87	27.7	23	14.3	110	23.2
Attempted suicide	55	17.5	18	11.2	73	15.9
Robbery/theft	114	36.3	48	29.8	162	34.1
Pregnancy /abortion	49	15.6	17	10.6	66	13.9
Serious illness	181	57.6	80	49.7	261	54.9
Death of someone close	174	55.4	84	52.2	258	54.3
Divorce	101	32.2	39	24.2	140	29.5
Sexual abuse	75	23.9	20	12.4	95	20.0
Physical abuse	96	30.6	36	22.4	132	27.8
Severe childhood neglect	97	30.9	24	14.9	121	25.5
Humiliation or persecution (bullying)	109	34.7	45	28.0	154	32.4
Absence of a parent	122	38.9	55	34.2	177	37.3
Miscellaneous	35	11.1	7	4.3	42	8.8

Note. *N* = 475. 314 participants were female and 161 were male.

Table 3*Correlation Matrix of Study Variables*

	1	2	3	4	5	6
1. Direct exposure to traumatic events	-	.12*	.01	.04	.24***	.19***
2. Anxiety attachment		-	-.07	-.23***	.19***	.18***
3. Closeness attachment			-	-.11*	-.01	-.02
4. Dependence in attachment				-	-.11*	-.02
5. Dissociation symptoms					-	.47***
6. Somatization symptoms						-

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

Table 4

Means, Standard Deviations and Mean Differences Between Females and Males on Dissociation and Somatization Symptoms, and Attachment Dimensions

	Females (<i>n</i> =302)		Males (<i>n</i> =148)		<i>t</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Dissociation symptoms	12.80	2.73	12.67	2.82	.49	.05
Somatization symptoms	6.88	1.98	6.68	1.91	1.03	.10
Anxiety attachment	2.88	.78	3.01	.80	-1.59	.16
Closeness attachment	3.48	.66	3.38	.72	1.44	.15
Dependence in attachment	2.89	.66	2.79	.71	1.53	.15

Table 5

Bootstrapped Point Estimate for Direct and Indirect Effects and 95% Confidence Intervals for Predicting Somatization Symptoms by Sums of Direct Exposure to Traumatic Events Through Attachment Anxiety and Dissociation Symptoms in Female Participants

	Point estimate	SE	BCa 95% CI (lower, upper)
Somatization symptoms			
Direct effect of direct exposure	.01	.02	(-.04, .06)
Indirect via anxiety attachment	.02	.01	(.00, .04)
Indirect via dissociation symptoms	.21	.04	(.07, .28)***
Indirect via anxiety attachment and dissociation symptoms	.15	.20	(-.11, .41)

Note. BCa = bias corrected and accelerated; CI = confidence intervals; Confidence intervals that do not include 0 (null association) are significant. ** $p < .01$. *** $p < .001$.

Table 6

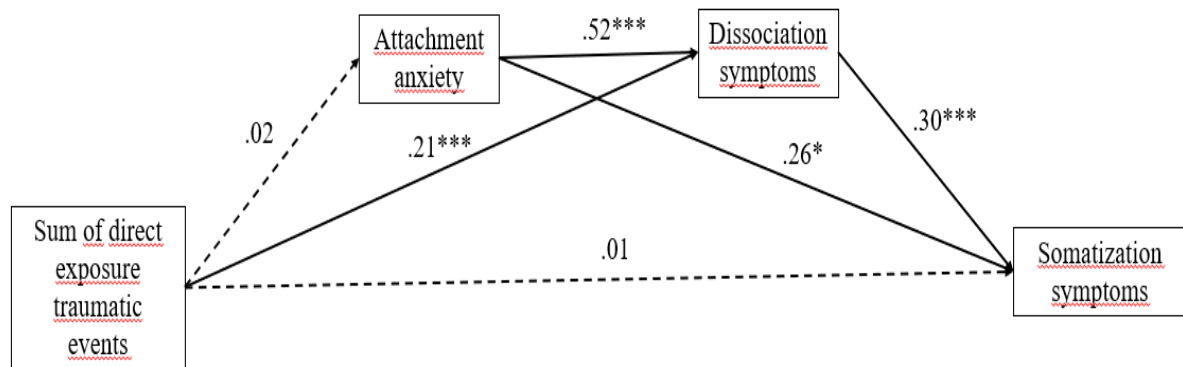
Bootstrapped Point Estimate for Direct and Indirect Effects and 95% Confidence Intervals for Predicting Somatization Symptoms by Sums of Direct Exposure to Traumatic Events Through Attachment Anxiety and Dissociation Symptoms in Male Participants

	Point estimate	SE	BCa 95% CI (lower, upper)
Somatization symptoms			
Direct effect of direct exposure	.18	.04	(.10, .25)*
Indirect via anxiety attachment	.10	.17	(-.23, .43)
Indirect via dissociation symptoms	.23	.06	(.11, .35)*
Indirect via anxiety attachment and dissociation symptoms	.46	.05	(.36, .56)***

Note. BCa = bias corrected and accelerated; CI = confidence intervals; Confidence intervals that do not include 0 (null association) are significant. ** $p < .01$. *** $p < .001$.

Figure 1

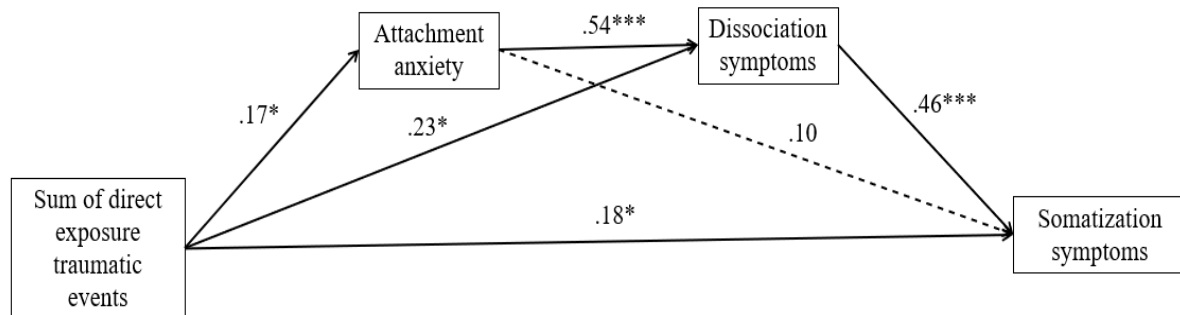
A Serial Mediation Integrated Model for Somatization Symptoms by Attachment Anxiety and Dissociation Symptoms in Female Participants



Note. Rectangles indicate measured variables. Unidirectional arrows depict hypothesized directional links. Standardized maximum likelihood parameters are used. Bold line estimates are statistically significant and dashed lines are insignificant. $N = 314$; * $p < .05$, *** $p < .001$.

Figure 2

A Serial Mediation Integrated Model for Somatization Symptoms by Attachment Anxiety and Dissociation Symptoms in Male Participants



Note. Rectangles indicate measured variables. Unidirectional arrows depict hypothesized directional links. Standardized maximum likelihood parameters are used. Bold line estimates are statistically significant and dashed lines are insignificant. $N = 161$; $*p < .05$, $***p < .001$.

OVERALL DISCUSSION

Overall Discussion

Objectives and Hypotheses

The empirical article presented in the current dissertation successfully addressed the main objectives of our investigation: to analyse the association between direct exposure to traumatic events and somatization symptoms; to assess the association between attachment anxiety and somatization symptoms; to analyse the association between dissociation symptoms and somatization symptoms; to assess the mediating role of attachment anxiety and dissociation symptoms in the relationship between exposure to multiple traumatic events and somatization symptoms; and to examine the series of associations between exposure to multiple traumatic events, attachment anxiety, dissociation symptoms and somatization symptoms.

Thus, the main goal of the current study was to analyse the effect of exposure to multiple traumatic events on somatization symptoms through the mediation of both attachment anxiety and dissociation symptoms in a sample of Kenyan adolescents. As presented in the results of our empirical study, most of our hypotheses were supported. Our findings highlighted, in line with previous research, the role of attachment and dissociation as mediators of the association between exposure to PTE and somatization (Riem et al., 2018; Salmon et al., 2003; Zerach & Elklit, 2019).

The current findings indicate that the association between these variables is different for females and males. In female participants, our results showed that dissociation symptoms, but not attachment anxiety, were mediators of the association between direct exposure to traumatic events and somatization symptoms. Serial multiple mediation model results indicated that higher exposure to traumatic events was significantly associated with higher dissociation symptom levels, which was then associated with higher somatization symptoms severity. Likewise, only dissociation symptoms mediated the association between direct exposure to traumatic events and somatization symptoms in male participants. However, serial multiple mediation model results indicated that higher exposure to traumatic events was significantly associated with higher attachment anxiety levels, which was associated with higher levels of dissociation symptoms, which was then associated with higher somatization symptoms severity in males. To the best of our knowledge, this is the first study to analyse the joint mediating role of attachment orientations and dissociation in adaptation to multiple adverse experiences in early adolescence among a sample from LALMIC.

The prevalence of exposure to PTE is higher in teenage years (McLaughlin et al., 2013). However, adolescents from LALMIC, particularly from Kenya, are even more vulnerable to polyvictimization than those from other parts of the world (Karsberg & Elklit,

2012; Le et al., 2018). Furthermore, it is likely that polyvictimized children and youth become victims of further trauma (Wolfe, 2018), making victimization a condition rather than an isolated event (Finkelhor et al., 2007). Adolescents in Kenya are frequently exposed to war-like violence, which may explain the very high average number of traumatic events to which our participants were directly exposed. Congruous with this context of economic precarity and generalized community violence, the PTE which participants in general were more commonly exposed to were serious illness, death of someone close, witnessing other people being injured or killed, coming close to being injured or killed and absence of a parent. It seems that the experience of trauma in Kenyan adolescents is not limited to the exposure to a single form of adversity but encompasses the co-occurrence of multiple victimizations (Claussen & Crittenden, 1991; Contractor et al., 2017). The present results suggest that due to the context of adversity and violence some events (e.g., serious illness, death of someone close) become common in the lives of adolescents (Finkelhor et al., 2007; Karsberg & Elklit, 2012).

It is important to mention that other studies such as a metanalysis with children, adolescents and adults (Tolin & Foa, 2008) and a study with Swedish adolescents (Gušić et al., 2016) found that even though females were more likely than males to manifest posttraumatic symptoms, they were less likely to experience PTE compared to males. One possible interpretation of the higher frequency of symptoms (and PTSD diagnosis) among women and girls is that they are more likely than their male counterparts to experience major traumatic events (e.g., sexual assault). In contrast, in our study, the mean number of traumatic events to which female participants were directly exposed to was significantly higher compared to males. For this reason, we tested the model separately for female participants and male participants. However, regarding the attachment, dissociation and somatization scales, there were no significant differences between female and male participants, which indicates that other factors may influence the relationship between exposure to PTE and somatization symptoms. Our hypotheses will be discussed in turn.

Our first hypothesis was that higher exposure to traumatic events was associated with higher levels of somatization symptoms. The results presented in the empirical article of this dissertation indicated that this hypothesis was partially supported. First, it was observed that higher exposure to traumatic events was associated with higher somatization symptoms severity among male participants. However, the pattern of the relationship between both variables was dissimilar in female participants. Despite the existence of a significant association between both variables when direct paths were tested, the direct paths from direct

exposure to traumatic events to somatization symptoms were no longer significant when the mediators were included in the model in the group of females. The current results may explain previous conflicting results on the association between exposure to traumatic events and somatization symptoms (Ford et al., 2011; Guerra et al., 2016), because most studies that analysed the relationship between both variables did not control for sex differences. Furthermore, the current findings support the conceptualization proposed by some authors that the association between multiple exposure to traumatic events and somatization symptoms is mediated by other psychological variables (Guerra et al., 2016; Salmon et al., 2003).

Our second hypothesis was that higher levels of attachment anxiety were associated with higher levels of somatization symptoms. The results presented in the empirical article of this dissertation showed that this hypothesis was partially supported. It was observed that higher levels of attachment anxiety were associated with higher severity of somatization symptoms in female participants. These findings are in accordance with previous studies that found that attachment insecurity, particularly attachment anxiety, is a risk factor for higher levels of somatization symptoms (Ciechanowski et al., 2002; Lin et al., 2020; Riem et al., 2018). This can be related to a low threshold in appraising physical sensations as a matter of concern and/or a tendency to exaggerate pain experiences to draw attention and elicit comfort and protection from attachment figures or health professionals through physical complaints or somatic symptoms (Berry & Drummond, 2014; Ciechanowski et al., 2002).

However, attachment anxiety was not associated with somatization symptoms in male participants. These results may have several possible explanations. First, considering that most male participants (70%) did not live with their parents, they may search for alternative strategies or forms of support for emotion regulation associated with multiple trauma exposure (Pitula et al., 2014), which may reduce the influence of attachment orientations on somatization symptoms. Another explanation could be related with the developmental period of our participants, that is, adolescence. Specifically, the psychological and social changes that occur in adolescence involve the onset of adolescent's psychological separation from parents and stronger relationships with extrafamilial figures, namely peers (Arnett, 2015; Steensma et al., 2014). Considering that previous studies found that peer relationships and internalized symptoms were associated (Kim & Cicchetti, 2010; Reijntjes et al., 2010), it can be proposed that peer relationships can mediate the link between multiple exposure to traumatic events and somatization symptoms in male Kenyan adolescents. Another explanation may be that male participants show a gradual decrease in reliance on social and

external regulation as a result of transition from extrinsic to intrinsic emotion regulation of psychological consequences associated with multiple exposure to trauma events (Sameroff, 2010).

Our third hypothesis was that higher levels of dissociation symptoms were associated with higher levels of somatization symptoms. The results presented in the empirical article of this dissertation demonstrated that this hypothesis was fully supported for both groups. The current findings replicate previous studies that observed an association between dissociation and somatization symptoms in different samples (Diseth, 2005; Saxe et al., 1994; Salmon et al., 2003; Walker et al., 1992). The current results suggest that both female and male adolescents presenting higher dissociation symptoms severity have increased risk of developing somatic and physical symptoms. It seems that adolescents who strongly experience disruption of and/or discontinuity of stressful or traumatic experiences in their global identity are at greater risk of manifesting their psychological disorder as bodily sensations and symptoms (De Gucht & Fischler, 2002).

Our fourth hypothesis was that attachment anxiety and dissociation symptoms mediated the link between the exposure to multiple traumatic events and somatization symptoms. The results presented in the empirical article of this dissertation suggested that this hypothesis was partially supported. The current results indicate that only dissociation symptoms mediated the association between exposure to traumatic events and somatization symptoms in both females and males. Dissociation cannot be a sufficient explanation since it has also been implicated in linking trauma to several other psychological disorders (e.g., Kent et al., 1999). However, the present evidence provides a basis for a serial model, of which dissociation is a key component. Considering that the adolescents in our sample reported extremely high rates of exposure to traumatic events, it can be proposed that the memories of those experiences are dissociated from consciousness as an attempt to cognitively disengage from the multiple exposure, but traumatic experiences are expressed as somatic symptoms (Luoni et al., 2018; Saxe et al., 1994; Walker et al., 1992). The trauma-related mental events (e.g., memories, sensations, feelings) that are stored outside of conscious awareness through dissociative processes have the capacity to influence consciousness in the development of symptoms. Affects related to traumatic events often cannot be stored in a semantic and linguistic way. These extreme emotions may interfere with the processing of the experience on a symbolic level, which can complicate the capacity to communicate about the traumatic experience. Without the ability to symbolize affect and to put these feelings into words, individuals have a reduced capacity to make the conscious connection between the perception

of a traumatic event and the bodily sensations associated with it. Hence, an individual's somatic symptoms become unconscious representations of traumatic events, and it can be proposed that they constitute one of the manifestations of the dissociative process (Saxe et al., 1994; Van der Kolk & Fisler, 1995).

In the current study, attachment anxiety did not mediate the link between polyvictimization and somatization symptoms. The non-significant indirect effect between exposure to traumatic events and somatization symptoms may be explained by different reasons for both sexes. Attachment anxiety involves individuals' concern about the unavailability of other people to cope with psychological stress triggered by stressful or adverse experience (Mikulincer et al., 2006). High exposure to violent and/or early traumatic events reported by female participants, namely severe childhood neglect and rape, may indicate that many of these experiences occurred in the context of attachment relationships (Cyr et al., 2010; Schore, 2003). As a result, many female participants possess representations of attachment figures as threatening and lack of an organized attachment model to adequately respond to psychological distress rather than experiencing concerns about the unavailability of attachment figures associated with multiple exposure to traumatic events (Bizzi et al., 2010). Future studies should be conducted to address this hypothesis using a semi-structured interview designed to assess the children's self-representations and representations of attachment figures. For males, exposure to multiple traumatic events is associated with stronger worries about the unavailability of significant others and fear of loss in relationships (Brennan et al., 1998). Consequently, the use of attachment hyperactivation strategies is intensified through the adoption of demanding support seeking strategies as an attempt to regulate emotions and cope with threatful situations (Sirois et al., 2016). However, intensified use of hyperactivation strategies increase male adolescents' perceptions of unavailability of others (Charuvastra & Cloitre, 2008), which may lead to the use of other strategies in coping with the psychological distress that may influence the development of somatization symptoms (Gušić et al., 2016).

The results obtained in the empirical article presented in this dissertation provide a relevant contribution to previous knowledge about vulnerability and protective factors related to the impact of the exposure to multiple traumatic events on adolescents' mental health, particularly in Kenyan adolescents. This body of work intended to fill a gap in research, highlighting the mediating role of attachment orientations, specifically attachment anxiety, and dissociation in the association between exposure to multiple PTE and somatization in a sample of Kenyan adolescents, and their impact on the development and maintenance of

trauma-related psychological symptoms, specifically somatization symptoms. Also, results showed that the association between these variables is different for females and males. To the best of our knowledge, this is the first study to examine the association between these variables and this mediation model following polyvictimization in a sample of adolescents from a LALMIC, namely Kenya.

Limitations

The current study has several limitations that should be mentioned. First, the cross-sectional design disallows causal inferences. It is not feasible to infer causality from the serial mediation analyses. Future studies should consider a longitudinal design. Second, all data were based on self-report measures, which are susceptible to the participants' subjectivity and social desirability bias. In future studies, other instruments should be considered (e.g., adult attachment interview). Third, report of PTE was retrospective which can be biased by memory issues. Fourth, it was not possible to identify if a specific event had reoccurred (i.e., repeated trauma). Fifth, although it is regularly used in other countries (e.g., Zerach & Elklit, 2020), the traumatic life-event questionnaire has not been validated yet to the Kenya population. Despite this, it has already been used in this population in another study (Ferrajão & Elklit, 2021). Sixth, even though an effort was made to answer every question, language difficulties felt by participants might still have interfered. Seventh, the data used in this study was collected in 2012, so, in some ways, it can be out of date. It would be interesting, in future studies, to test the present model with new data. Lastly, the Trauma Symptom Checklist was mainly used to measure somatization symptoms. Future studies should be conducted using measures of DSM-5 criteria. A common problem in the study of somatization is how to distinguish between symptom reporting that is consistent with demonstrable medical illness and symptom reporting that is not. In this study we do not have physical health measures to distinguish between somatic symptoms and symptoms consistent with demonstrable medical illness. Besides, there is no clinical evidence of somatic disorder, that is, no clinical evidence to verify this diagnosis. Furthermore, the same mediation hypothesis and reported pattern of associations should be revalidated in future prospective studies among adolescents from different cultures as well.

Implications for Research

Future studies on polyvictimization in LALMIC children and adolescents are essential. Quantitative studies could consider other instruments, for instance, studies conducted to address these hypotheses should consider using a semi-structured interview (e.g., adult attachment interview) designed to assess the adolescents' self-representations and

representations of attachment figures (internal working models). Regarding somatization symptoms, in order to properly identify and assess them, a clinical interview should be conducted, and DSM-5 criteria should be taken into consideration. It would also be interesting to test the present model with new recent data. Furthermore, other study methodologies should be considered, for instance, qualitative studies in order to understand the participants' individual experiences. Qualitative methodologies allow a deeper understanding of the experience and consequences of polyvictimization. Although these studies are less generalizable, they can provide important information for future individual and community interventions. Additionally, other study designs should also be considered, namely longitudinal, in order to understand long-term consequences of polyvictimization and/or the impact of eventual interventions.

Other variables could be also interesting to study in this context. Since disorganized attachment is deeply linked to polyvictimization and dissociation (Liotti, 2004), this variable should be included in future studies. Considering that some studies found that peer relationships and internalized symptoms were associated (Kim & Cicchetti, 2010; Reijntjes et al., 2010), peer relationships could then be included in future studies. Additionally, individuals with high levels of somatization and attachment insecurity tend to have problems with mentally representing emotions, which may result in an implicit manifestation of emotion, that is, the physiological experience of that emotion (Mikic & Terradas, 2014; Riem et al., 2018). Thus, mentalization deficits have been identified in individuals with somatization complaints since elements that cannot be mentalized are expressed in physical symptoms (Lecours & Bouchard, 1997; Riem et al., 2018). These deficits may lead to difficulties with identifying own feelings, and misinterpretation of physical sensations (Riem et al., 2018). Hence, mentalization can also be an interesting variable to include in future studies. Finally, future studies should also address the same mediation hypotheses and reported pattern of associations in other samples of adolescents, inclusively from different countries and cultures.

Clinical implications

The results obtained in this dissertation provide useful indications for intervention with these adolescents in three different areas: community intervention, psychological assessment and clinical/psychotherapeutic intervention.

Community Intervention

Many models of trauma treatment for children (both individual interventions and community-based interventions) have been designed around a focus on one trauma or type of

trauma (Grossman & Tierney, 1998), therefore, there is a need for trauma interventions that focus on the exposure to multiple types of traumatic events.

As mentioned before, most of the world's youth and war-like violence is concentrated in developing countries, such as Kenya, yet there is limited mental health data within affected countries (Harder et al., 2012). Besides, there are very few intervention and prevention programs for polyvictimization in Kenya, and they would be more effective if informed by local evidence (Le et al., 2018). This study is a contribution for research in LALMIC and can work as a basis for community interventions in these countries, specifically Kenya. Thus, effective prevention programs can be developed that will not only educate youth about violence but that will be sensitive to the needs of polyvictimized children and adolescents who will take part in them. One of the reasons why polyvictimization continues to be a part of so many children's lives could be the disconnected way the community systems approach the problem. By raising awareness of the problem of polyvictimization, communities and their individuals will become better at identifying it. That is a first step toward reducing it. A next step requires using the available information about polyvictimization to create policies that reduce its incidence. Community-based interventions need to be comprehensive and developmentally timed. They also need to address both the complex internal symptoms caused by victimization (chronic negative views of relationships and negative views of self, attachment problems, coping with overwhelming feelings), repair and build connections to social networks, help children to develop skills to avoid victimization, and address safety concerns in all environments in which the child lives (Grossman & Tierney, 1998). Literature indicates that connecting victimized youth to community resources is highly beneficial (Banyard et al., 2013; Grossman & Tierney, 1998). These programs can provide supportive safety nets that exist in the communities. While all children need such resources, those who have been polyvictimized may be particularly isolated from these ties and thus may benefit even more (Grossman & Tierney, 1998). Growing body of research on youths who live in high-risk environments suggests that supportive relationships with, for instance, unrelated adults can mitigate adversities' negative effects on youth development. For example, evidence supports the effectiveness of high-quality mentoring programs such as the Big Brothers Big Sisters program (Grossman & Tierney, 1998). Although not a substitute for therapeutic interventions provided by mental health professionals, engaging children in these types of programs may be a particularly effective component of intervention for polyvictimized children and adolescents (Banyard et al., 2013).

The current findings suggest that exposure to traumatic events make adolescence a vulnerable period for many Kenyan adolescents. Our study also suggests that polyvictimization increases the risk of mental health problems among adolescents, such as somatization symptoms. It is advisable that clinicians working in countries characterized by economic precarity and generalized community violence, such as Kenya, should pay attention not only to most well-known traumas, but also to the clients' entire traumatic history. This is particularly relevant since many victims of multiple exposure to PTE present bodily sensations and symptoms that cannot adequately be explained by organic reasons, what leads them to be referred to health services other than mental health services. Therefore, the psychological aspects of the disorder should be addressed in medical facilities. Besides, individuals with somatic symptoms tend to visit health services frequently and, since their symptoms may not have organic reasons, they leave without a solution. Intervention and prevention programs for polyvictimization and its consequences may also contribute to decrease somatization symptoms and, consequently, reduce the health care use and costs (Tomenson et al., 2012).

Psychological Assessment

According to Le et al. (2018), more evidence is needed about the relationship between polyvictimization and physical health or quality of life of children and adolescents. Our study provides evidence about the relationship between polyvictimization and somatization, which greatly impacts children's and adolescents' physical health and quality of life (Leonidou et al., 2019; Meyer et al., 2020).

This study showed that attachment anxiety is associated with higher levels of dissociation. It also suggests, in line with other studies, that individuals who develop trauma-related dissociation have worse post-traumatic outcomes, namely, higher levels of somatization symptoms. Besides, literature (e.g., Zoroglu et al., 2002) suggests that dissociative disorders generally have their onset during childhood, however, less than 3% of diagnoses are made in children under 12, and less than 8% are made during adolescence (12-19 years old). Given that treatment is much more successful during childhood, early recognition and diagnosis of dissociative symptoms and disorders have vital importance. Also, although dissociation develops as a defense, it involves impairing symptoms, such as positive psychoform dissociative symptoms (e.g., flashbacks) or positive somatoform dissociative symptoms (e.g., trauma-related pain), that can hardly be described as defensive phenomena (Van der Hart et al., 2004), making it crucial to clinically intervene in dissociation.

Clinical Intervention

In a clinical intervention with polyvictims, focusing on and reducing the dissociation symptoms might help, in turn, decrease the levels of somatization symptoms. Apart from knowing that attachment anxiety may be an important risk factor for dissociation, we also know that secure attachment style may be a protective factor. So, creating a repairing relationship with the individual in a clinical context and intervening on dysfunctional internal representations may be protective against dissociation and, indirectly, against somatization symptoms.

Our results indicate the key role of both attachment orientations, especially attachment anxiety, and dissociation, as psychological mechanisms involved in the association between polyvictimization and somatization symptoms. In female adolescents, only dissociation symptoms mediated the association between PTE and somatization symptoms. In male adolescents, effect of PTE on somatization was mediated by dissociation, but PTE were associated with attachment anxiety, which was associated with dissociation symptoms, which was then associated with somatization symptoms. These findings suggest that mental health professionals should pay attention to the links between an internal experience of lack of security and dissociation symptoms as attempts to cope with traumatization differently in males and females. However, both clinical manifestations seem to increase the risk of developing somatic and physical symptoms. Therefore, adolescents' difficulties in approaching caregivers to gain crucial support following traumatic events, and disruption of and/or discontinuity of traumatic experiences in the adolescents' identity should be a target of treatment.

In a clinical context, attachment anxiety should be particularly addressed in male adolescents since it is the first psychological mechanism in the chain of associations between polyvictimization and somatization symptoms. When it comes to female adolescents, it is hypothesized that they might have been exposed to early traumatic experiences that impacted attachment. In this case, effective treatment should focus on the desensitization and reorganization of traumatic memories and representations of the attachment figures. Reducing threat symptoms and restructuring negative representations of attachment figures may contribute to decreasing dissociation symptoms. Besides, since female adolescents seem to be more aware of external rather than internal threats (as a result of losing contact with their internal reality) mentalization based treatment may be effective.

Mentalization is the mental process by which an individual implicitly and explicitly interprets his/her actions and the actions of others as meaningful according to intentional

mental states such as personal desires, needs, feelings, beliefs, and reasons (Bateman & Fonagy, 2004). Mentalization is not a static, unitary capacity, but a dynamic, multifaceted ability that has particular salience in the context of attachment relationships. Temporary lapses in mentalization are part of normal functioning, but individuals who are insecurely attached struggle to continue to mentalize under stressful circumstances, and fail to recovery from lapses of mentalization (Bateman & Fonagy, 2013; Fonagy et al., 2002). Mentalization based treatment uses a collection of specific techniques to encourage mentalization in individuals whose early environmental experiences have made them vulnerable to losing mentalization when confronted with severe stress. This treatment also encourages a powerful attachment relationship between therapist and patient (Bateman & Fonagy, 2013). There is growing evidence that mentalization may be particularly important in the context of trauma (e.g., Ensink et al., 2017; Fonagy & Luyten, 2009). Besides, mentalization difficulties in the aftermath of traumatic experiences contribute to higher levels of dissociation in youths (Ensink et al., 2017), so working on them may also help decrease dissociative symptoms.

References

- Arnett, J. J. (2015). *Emerging adulthood: The winding road from the late teens through the twenties* (2nd ed.). Oxford University Press.
<https://doi.org/10.1093/oxfordhb/9780199795574.013.9>
- Bateman, A., & Fonagy, P. (2004). *Psychotherapy for borderline personality disorder: Mentalization based treatment*. Oxford University Press.
- Bateman, A., & Fonagy, P. (2013). Mentalization-based treatment. *Psychoanalytic Inquiry*, 33(6), 595-613. <https://doi.org/10.1080/07351690.2013.835170>
- Berry, J. K., & Drummond, P. D. (2014). Does attachment anxiety increase vulnerability to headache? *Journal of Psychosomatic Research*, 76(2), 113-120.
<https://doi.org/10.1016/j.jpsychores.2013.11.018>
- Bizzi, F., Ensink, K., Borelli, J. L., Mora, S. C., & Cavanna, D. (2019). Attachment and reflective functioning in children with somatic symptom disorders and disruptive behavior disorders. *European Child & Adolescent Psychiatry*, 28(5), 705–717.
<https://doi.org/10.1007/s00787-018-1238-5>
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). *Self-report measurement of adult attachment: An integrative overview*. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46–76). Guilford Press.
- Charuvastra, A., & Cloitre, M. (2008). Social bonds and posttraumatic stress disorder. *Annual Review of Psychology*, 59, 301–328.
<https://doi.org/10.1146/annurev.psych.58.110405.085650>
- Ciechanowski, P. S., Walker, E. A., Katon, W. J., & Russo, J. E. (2002). Attachment theory: a model for health care utilization and somatization. *Psychosomatic Medicine*, 64(4), 660-667. <https://doi.org/10.1097/01.PSY.0000021948.90613.76>
- Claussen, A. H., & Crittenden, P. M. (1991). Physical and psychological maltreatment: Relations among types of maltreatment. *Child Abuse & Neglect*, 15(1-2), 5-18.
[https://doi.org/10.1016/0145-2134\(91\)90085-R](https://doi.org/10.1016/0145-2134(91)90085-R)
- Contractor, A. A., Caldas, S., Fletcher, S., Shea, M. T., & Armour, C. (2017). Empirically derived lifespan polytraumatization typologies: A systematic review. *Journal of Clinical Psychology*, 74(7), 1137-1159. <https://doi.org/10.1002/jclp.22586>
- Cyr, C., Euser, E. M., Bakermans-Kranenburg, M. J., & Van Ijzendoorn, M. H. (2010). Attachment security and disorganization in maltreating and high-risk families: a series of meta-analyses. *Development and Psychopathology*, 22(1), 87–108.
<https://doi.org/10.1017/S0954579409990289>

- De Gucht, V., & Fischler, B. (2002). Somatization: a critical review of conceptual and methodological issues. *Psychosomatics*, 43(1), 1-9.
<https://doi.org/10.1176/appi.psy.43.1.1>
- Diseth, T. H. (2005). Dissociation in children and adolescents as reaction to trauma—an overview of conceptual issues and neurobiological factors. *Nordic Journal of Psychiatry*, 59(2), 79-91. <https://doi.org/10.1080/08039480510022963>
- Ensink, K., Bégin, M., Normandin, L., Godbout, N., & Fonagy, P. (2017). Mentalization and dissociation in the context of trauma: Implications for child psychopathology. *Journal of Trauma & Dissociation*, 18(1), 11-30.
<https://doi.org/10.1080/15299732.2016.1172536>
- Ferrajão, P., & Elklit, A. (2021). Attachment and social support mediate associations between polyvictimization and psychological distress in early Uganda and Kenya adolescents. *Child Abuse & Neglect*, 121, 105271.
<https://doi.org/10.1016/j.chiabu.2021.105271>
- Finkelhor, D., Ormrod, R. K., & Turner, H. A. (2007). Poly-victimization: A neglected component in child victimization. *Child Abuse & Neglect*, 31(1), 7-26.
<https://doi.org/10.1016/j.chiabu.2006.06.008>
- Ford, J. D., Wasser, T., & Connor, D. F. (2011). Identifying and determining the symptom severity associated with polyvictimization among psychiatrically impaired children in the outpatient setting. *Child Maltreatment*, 16(3), 216-226.
<https://doi.org/10.1177/1077559511406109>
- Fonagy, P., G. Gergely, E. Jurist, L. Elliot, & M. Target. (2002). *Affect regulation, mentalisation and the development of the self*. The Other Press.
- Fonagy, P., & Luyten, P. (2009). A developmental, mentalization-based approach to the understanding and treatment of borderline personality disorder. *Development and Psychopathology*, 21, 1355–1381. <http://doi.org/10.1017/S0954579409990198>
- Grossman, J. B., & Tierney, J. P. (1998). Does mentoring work? An impact study of the Big Brothers Big Sisters program. *Evaluation Review*, 22(3), 403-426.
<https://doi.org/10.1177/0193841X9802200304>
- Guerra, C., Pereda, N., Guilera, G., & Abad, J. (2016). Internalizing symptoms and polyvictimization in a clinical sample of adolescents: The roles of social support and non-productive coping strategies. *Child Abuse & Neglect*, 54, 57-65.
<https://doi.org/10.1016/j.chiabu.2016.03.004>

- Gušić, S., Cardeña, E., Bengtsson, H., & Søndergaard, H. P. (2016). Adolescents' dissociative experiences: The moderating role of type of trauma and attachment style. *Journal of Child & Adolescent Trauma*, 9(4), 341-351. <https://doi.org/10.1007/s40653-016-0107-y>
- Harder, V. S., Mutiso, V. N., Khasakhala, L. I., Burke, H. M., & Ndeti, D. M. (2012). Multiple traumas, postelection violence, and posttraumatic stress among impoverished Kenyan youth. *Journal of Traumatic Stress*, 25(1), 64-70. <https://doi.org/10.1002/jts.21660>
- Karsberg, S. H., & Elklit, A. (2012). Victimization and PTSD in a rural Kenyan sample. *Clinical Practice and Epidemiology in Mental Health*, 8, Article 91-101. <https://doi.org/10.2174/1745017901208010091>
- Kent, A., Waller, G., & Dagnan, D. (1999). A greater role of emotional than physical or sexual abuse in predicting disordered eating attitudes: The role of mediating variables. *International Journal of Eating Disorders*, 25(2), 159-167. [https://doi.org/10.1002/\(SICI\)1098-108X\(199903\)25:2%3C159::AID-EAT5%3E3.0.CO;2-F](https://doi.org/10.1002/(SICI)1098-108X(199903)25:2%3C159::AID-EAT5%3E3.0.CO;2-F)
- Kim, J., & Cicchetti, D. (2010). Longitudinal pathways linking child maltreatment, emotion regulation, peer relations, and psychopathology. *Journal of Child Psychology and Psychiatry*, 51(6), 706–716. <https://doi.org/10.1111/j.1469-7610.2009.02202.x>
- Le, M. T., Holton, S., Romero, L., & Fisher, J. (2018). Polyvictimization among children and adolescents in low-and lower-middle-income countries: A systematic review and meta-analysis. *Trauma, Violence, & Abuse*, 19(3), 323-342. <https://doi.org/10.1177/1524838016659489>
- Lecours, S., & Bouchard, M. A. (1997). Dimensions of mentalisation: Outlining levels of psychic transformation. *International Journal of Psycho-Analysis*, 78, 855-875.
- Leonidou, C., Panayiotou, G., Bati, A., & Karekla, M. (2019). Coping with psychosomatic symptoms: The buffering role of psychological flexibility and impact on quality of life. *Journal of Health Psychology*, 24(2), 175-187. <https://doi.org/10.1177/1359105316666657>
- Liotti, G. (2004). Trauma, dissociation, and disorganized attachment: Three strands of a single braid. *Psychotherapy: Theory, Research, Practice, Training*, 41(4), 472. <https://doi.org/10.1037/0033-3204.41.4.472>
- Lin, H. C., Yang, Y., Elliott, L., & Green, E. (2020). The associations between parental conflict, attachment anxiety, and somatic symptoms in adult children affected by

- parental separation. *Journal of Divorce & Remarriage*, 61(3), 168-185.
<https://doi.org/10.1080/10502556.2019.1679594>
- Luoni, C., Agosti, M., Crugnola, S., Rossi, G., & Termine, C. (2018). Psychopathology, dissociation and somatic symptoms in adolescents who were exposed to traumatic experiences. *Frontiers in Psychology*, 9, 2390.
<https://doi.org/10.3389/fpsyg.2018.02390>
- McLaughlin, K. A., Koenen, K. C., Hill, E. D., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2013). Trauma exposure and posttraumatic stress disorder in a national sample of adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(8), 815-830. <https://doi.org/10.1016/j.jaac.2013.05.011>
- Meyer, R. M., Fleischman, K. M., Young, C. M., & Gold, J. I. (2020). Somatization, fatigue, and quality of life in children and adolescents with chronic pain. *Journal of Child and Family Studies*, 29(5), 1293-1300. <https://doi.org/10.1007/s10826-019-01624-0>
- Mikic, N., & Terradas, M. M. (2014). Mentalization and attachment representations: A theoretical contribution to the understanding of reactive attachment disorder. *Bulletin of the Menninger Clinic*, 78(1), 34. <http://doi.org/10.1521/bumc.2014.78.1.34>
- Mikulincer, M., Shaver, P. R., & Horesh, N. (2006). *Attachment bases of emotion regulation and posttraumatic adjustment*. In D. K. Snyder, J. Simpson, & J. N. Hughes (Eds.). *Emotion regulation in couples and families: Pathways to dysfunction and health* (pp. 77–99). American Psychological Association.
<https://doi.org/10.1037/11468-004>
- National Children’s Advocacy Center. (2013). *Treatment models for poly-victimization*. National Children’s Advocacy Center.
- Pitula, C. E., Thomas, K. M., Armstrong, J. M., Essex, M. J., Crick, N. R., & Gunnar, M. R. (2014). Peer victimization and internalizing symptoms among post-institutionalized, internationally adopted youth. *Journal of Abnormal Child Psychology*, 42(7), 1069–1076. <https://doi.org/10.1007/s10802-014-9855-z>
- Reijntjes, A., Kamphuis, J. H., Prinzie, P., & Telch, M. J. (2010). Peer victimization and internalizing problems in children: A meta-analysis of longitudinal studies. *Child Abuse & Neglect*, 34(4), 244-252. <https://doi.org/10.1016/j.chiabu.2009.07.009>
- Riem, M. M., Doedée, E. N., Broekhuizen-Dijksman, S. C., & Beijer, E. (2018). Attachment and medically unexplained somatic symptoms: The role of mentalization. *Psychiatry Research*, 268, 108-113. <https://doi.org/10.1016/j.psychres.2018.06.056>

- Salmon, P., Skaife, K., & Rhodes, J. (2003). Abuse, dissociation, and somatization in irritable bowel syndrome: towards an explanatory model. *Journal of Behavioral Medicine*, 26(1), 1-18. <https://doi.org/10.1023/A:1021718304633>
- Sameroff, A. (2010). *Dynamic developmental systems: Chaos and order*. In G. W. Evans & T. D. Wachs (Eds.), *Chaos and its influence on children's development: An ecological perspective* (pp.255-264). American Psychological Association.
- Saxe, G. N., Chinman, G., Berkowitz, R., Hall, K., Lieberg, G., Schwartz, J., & Kolk, B. A. V. D. (1994). Somatization in patients with dissociative disorders. *American Journal of Psychiatry*, 151(9), 1329-1334. <https://doi.org/10.1176/ajp.151.9.1329>
- Schore, A. N. (2003). *Affect regulation and the repair of the self*. W W Norton & Co.
- Sirois, F., Millings, A., & Hirsch, J. (2016). Insecure attachment orientation and well-being in emerging adults: The roles of perceived social support and fatigue. *Personality and Individual Differences*, 101, 318-321. <https://doi.org/10.1016/j.paid.2016.06.026>
- Steensma, T. D., Zucker, K. J., Kreukels, B. P. C., VanderLaan, D. P., Wood, H., Fuentes, A., & Cohen-Kettenis, P. T. (2014). Behavioral and emotional problems on the Teacher's Report Form: A cross-national, cross-clinic comparative analysis of gender dysphoric children and adolescents. *Journal of Abnormal Child Psychology*, 42(4), 635–647. <https://doi.org/10.1007/s10802-013-9804-2>
- Tomenson, B., McBeth, J., Chew-Graham, C. A., MacFarlane, G., Davies, I., Jackson, J., Littlewood, A., & Creed, F. H. (2012). Somatization and health anxiety as predictors of health care use. *Psychosomatic Medicine*, 74(6), 656–664. <https://doi.org/10.1097/PSY.0b013e31825cb140>
- Van der Hart, O., Nijenhuis, E., Steele, K., & Brown, D. (2004). Trauma-related dissociation: Conceptual clarity lost and found. *Australian & New Zealand Journal of Psychiatry*, 38(11-12), 906-914. <https://doi.org/10.1080/j.1440-1614.2004.01480.x>
- Van der Kolk, B. A., & Fisler, R. (1995). Dissociation and the fragmentary nature of traumatic memories: Overview and exploratory study. *Journal of Traumatic Stress*, 8(4), 505-525. <https://doi.org/10.1007/BF02102887>
- Walker, E. A., Katon, W. J., Neraas, K., Jemelka, R. P., & Massoth, D. (1992). Dissociation in women with chronic pelvic pain. *The American Journal of Psychiatry*. <https://doi.org/10.1176/ajp.149.4.534>
- Wolfe, D. A. (2018). Why polyvictimization matters. *Journal of Interpersonal Violence*, 33(5), 832-837. <https://doi.org/10.1177/0886260517752215>

- Zerach, G., & Elklit, A. (2019). Attachment and social support mediate associations between Polyvictimization and psychological distress in early adolescence. *International Journal of Psychology*, 55(3), 380-391. <https://doi.org/10.1002/ijop.12590>
- Zoroglu, S. S., Sar, V., Tuzun, U., Tutkun, H., & Savas, H. A. (2002). Reliability and validity of the Turkish version of the Adolescent Dissociative Experiences Scale. *Psychiatry and Clinical Neurosciences*, 56(5), 551-556. <https://doi.org/10.1046/j.1440-1819.2002.01053.x>

Appendices

Appendix A – Submission Confirmation

de: Traumatology <em@editorialmanager.com>

responder a: Traumatology <smouton@apa.org>

para: Paulo Ferrajão <pauloferrajao@gmail.com>

data: 27 de jun. de 2022 17:13

assunto: Submission Confirmation for Attachment and Dissociation Mediate

Associations Between Exposure to Potentially Traumatic Events and Somatization Differently
in Kenyan Male and Female Adolescents - [EMID:57d82b5a6685b9cf]

enviado por: editorialmanager.com

Traumatology <em@editorialmanager.com>

27 de jun. de 2022 17:13 (há 6 dias)

Dear Dr. Ferrajão,

Your submission entitled "Attachment and Dissociation Mediate Associations Between Exposure to Potentially Traumatic Events and Somatization Differently in Kenyan Male and Female Adolescents" has been received by journal Traumatology

You will be able to check on the progress of your paper by logging on to Editorial Manager as an author. The URL is <https://www.editorialmanager.com/trm/>.

Your manuscript will be given a reference number once an Editor has been assigned.

Please note that you may also confirm or Authenticate your ORCID iD by clicking here Your ORCID iD: 0000-0002-2837-0965 is already linked and Authenticated.

Thank you for submitting your work to this journal.

Kind regards,

Traumatology