Emotion dysregulation as a mechanism linking child maltreatment exposure and self-harm behaviors in adolescents

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\textbf{A B S T R A C T}

Although child maltreatment exposure is a recognized risk factor for self-harm, mechanisms underlying this relationship remain unclear. Self-harm may function as a compensatory strategy to regulate distressing emotions. This cross-sectional study examines if emotion dysregulation mediates between the severity of maltreatment exposure and self-harm, adjusting for demographic variables and depressive symptoms. Participants were 108 adolescent patients recruited from a psychiatric hospital in Singapore (mean age 17.0 years, \textit{SD} = 1.65; 59.3\% female). Study measures included the Childhood Trauma Questionnaire (CTQ-SF), Functional Assessment of Self-Mutilation (FASM), Difficulties in Emotion Regulation Scale (DERS), and the Patient Health Questionnaire (PHQ-8). Path analysis was conducted to examine the direct and indirect effects of maltreatment exposure on self-harm via emotion dysregulation, controlling for demographic variables and depressive symptoms. Indirect effects were tested using bootstrapped confidence intervals (CI). Results showed that self-harm was highly prevalent in our sample (75.9\%). Emotion dysregulation and depressive symptoms were found to be associated with higher self-harm frequency. In addition, results from path analysis showed that the association between the severity of maltreatment exposure and self-harm frequency was significantly mediated by emotion dysregulation $\beta=0.07, p<0.05, 95\% CI [0.02, 0.16]$. Thus, emotion dysregulation may be a proximal mechanism linking maltreatment exposure and adolescent self-harm. Notably, self-harm may represent maladaptive attempts to manage emotion dysregulation that may have resulted from maltreatment. Findings from the study have implications for the prevention and treatment of self-harm in maltreated youth.

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1. Introduction

Self-harm refers to a range of deliberate self-injurious behaviors, with or without suicidal intent, and commonly include behaviors such as self-inflicted cutting, scratching, hitting, and/or burning of skin (Lang & Sharma-Patel, 2011; Muehlenkamp, Claes, Havertape, & Plener, 2012). Although self-harm behaviors are largely nonfatal, individuals who engage in self-harm may sustain injuries requiring medical attention and are also at greater risk for suicide (Muehlenkamp & Gutierrez, 2007; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006). This is especially concerning given that the onset of self-harm behaviors typically occurs in adolescence (Nock, 2010), with average prevalence rates of 13%–23% among adolescents (Jacobson & Gould, 2007; Muehlenkamp et al., 2012), and 34%–61% among adolescent clinical samples (psychiatric inpatients/outpatients) (DiClemente, Ponton, & Hartley, 1991; Jacobson, Muehlenkamp, Miller, & Turner, 2008; Tuiska et al., 2009). Understanding how distal and proximal associative risk factors contribute to the etiology of self-harm is critical in informing the prevention and treatment of adolescent self-harm behaviors.

Exposure to childhood maltreatment is recognized to be a salient risk factor for self-harm (Ford & Gómez, 2015; Gratz, 2003; Hawton, Saunders, & O’Connor, 2012; Lang & Sharma-Patel, 2011). Research has provided extensive evidence for the association between self-harm and childhood sexual abuse, physical abuse, neglect and emotional abuse (Gratz, Conrad, & Roemer, 2002; Madge et al., 2011; Muehlenkamp, Kerr, Bradley, & Adams Larsen, 2010; Wan, Chen, Sun, & Tao, 2015; Whitlock, Eckenrode, & Silverman, 2006; Yates, Carlson, & Egeland, 2008). Moreover, cumulative exposure to multiple adverse childhood experiences has been associated with a dose-response increase in risk of adolescent self-harm and other risk behaviors (Layne et al., 2014).

Although the association between maltreatment exposure and self-harm is well-established, the mechanisms linking childhood experiences of maltreatment to adolescent self-harm remain unclear (Bentley, Nock, & Barlow, 2014; Nock, 2009). Nonetheless, emotion regulation (or dysregulation) appears to be one of the more promising pathways most supported by the current body of studies (Klonsky, 2007, 2009; Lang & Sharma-Patel, 2011). Emotion regulation refers to a range of processes that function to monitor, evaluate, and/or modulate emotional experiences (Gratz & Roemer, 2004; Koole, 2009). Adaptive emotion regulation has been broadly conceptualized to include (1) awareness and identification of emotions, (2) recognition and acceptance of emotions, (3) distress tolerance, (4) control of impulsive or emotional reactivity, and (5) the ability to use goal-directed regulatory strategies to modulate emotions and/or influence behaviors (Berking & Lukas, 2015; Gratz & Roemer, 2004; Koole, 2009). Both developmental and functional models of self-harm propose that self-harm behaviors may function as a compensatory strategy to cope with and regulate distressing emotions that may result from early exposure to adverse environments (Bentley et al., 2014; Ford & Gómez, 2015; Gratz, 2003; Laye-Gindhu & Schonert-Reichl, 2005; Nock & Prinstein, 2004; Yates, 2004, 2009; Yates et al., 2008). Consistent with this view are studies showing the association between maltreatment exposure and emotion dysregulation (Maughan & Cicchetti, 2002; Shields, Cicchetti, & Ryan, 1994; Trickett, Negriff, Ji, & Peckins, 2011), and studies on emotion dysregulation and self-harm (Gratz & Chapman, 2007; Gratz & Roemer, 2008; Gratz & Tull, 2010; Kranzler, Fehling, Anestis, & Selby, 2016; Tan, Rehfuss, Suarez, & Parks-Savage, 2014).

Empirical evidence on the emotion dysregulation pathway between child maltreatment exposure and self-harm however appears to be mixed. Specifically, emotion dysregulation has been shown to moderate the association between interpersonal difficulties (family and peer problems) and adolescent self-harm (Adrian, Zeman, Erdley, Lisa, & Sim, 2011; Sim, Adrian, Zeman, Cassano, & Friedrich, 2009), while related constructs such as distress intolerance, impulsivity, self-criticism, and alexithymia have been shown to mediate the association between maltreatment exposure and self-harm (Arens, Gaher, Simons, & Dvorak, 2014; Glassman, Weierich, Hooley, Deliberto, & Nock, 2007; PauDio & McCulloch, 2004; Swannell et al., 2012). However, other studies have also showed that although emotion dysregulation mediated between maltreatment exposure and self-harm likelihood, this association was not observed when other potential mediators such as depressive and posttraumatic stress symptoms were taken into account (Shenk, Noll, & Cassarly, 2010).

Based on the literature reviewed above, there is converging evidence to suggest that emotion dysregulation may be a mechanism linking maltreatment exposure and self-harm. However, there remains a paucity of studies that provide empirical evidence for the role of emotion dysregulation as a proximal associative factor through which childhood experiences of maltreatment may lead to self-harm behaviors. To the best of our knowledge, no study has examined maltreatment exposure, self-harm, and the mediating role of emotion dysregulation among adolescent psychiatric patients. The present study thus sought to examine the emotion dysregulation pathway based on a sample of adolescent patients in a psychiatric setting. We hypothesized that emotion dysregulation mediates the association between the severity of maltreatment exposure and self-harm, while controlling for depressive symptoms.

2. Methods

2.1. Participants and procedure

Participants were 108 adolescent patients recruited from a child and adolescent outpatient clinic at a psychiatric hospital in Singapore. Adolescent patients were randomly approached and invited to participate in the study. All participants provided informed consent prior to study inclusion and completed a set of questionnaires. Given the potential for adolescents to conceal self-harm behaviors, a waiver of parental consent was obtained so as to minimize possible underreporting. The
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