



## Emotion regulation in first episode adolescent non-suicidal self-injury: What difference does a year make?



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### A B S T R A C T

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We examined the roles of cognitive reappraisal, expressive suppression, and rumination in first episode non-suicidal self-injury (NSSI) among adolescents, and the impact of age-related differences in emotion regulation use. Adverse life events and psychological distress played a significant role in NSSI onset. Being male and less use of cognitive reappraisal contributed to NSSI risk but only in regard to 12-month incidence; this effect was not observed when predicting 24-month incidence. Neither expressive suppression nor rumination was related to NSSI onset in our sample. Age-related differences in emotion regulation were found, but did not modify the above relationships. Findings hint at the possible impact of developmental changes in adolescents' cognitive-emotional processing and their subsequent risk of NSSI. Results support further investigation into prevention and early intervention initiatives aimed at assisting adolescents cope with acute life stressors to prevent/delay first episode NSSI.

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Non-suicidal self-injury (NSSI) is the deliberate damage to the body in the absence of fatal intent (Nock, 2009). It is distinguished from suicide where self-inflicted harm is intended to be fatal (Klonsky, May, & Glenn, 2013; Nock, 2012) and other self-harm behaviours, such as substance use, where physical damage to the body is unintended (Nock, 2009). NSSI typically first occurs between 12 and 14 years of age (Jacobson & Gould, 2007), with lifetime prevalence among adolescents estimated at 12.5%–25.6% (Muehlenkamp, Claes, & Plener, 2012; Swannell, Martin, Page, Hasking, & St. John, 2014). It is associated with poorer physical health and well-being (Martin, Swannell, Harrison, Hazell, & Taylor, 2010), and a range of internalising and externalising disorders (Bjärehed, Wangby-Lundh, & Lundh, 2012; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006). Additionally, adolescents with longer NSSI histories are potentially at a higher risk of suicide (Howe-Martin, Murrell, & Guarniccia, 2012), over and above psychopathology and a range of psychosocial factors (see Hamza, Stewart, & Willoughby, 2012; Whitlock et al., 2013). Research on NSSI as a discrete construct is therefore important. Predictors of behaviour onset are not well understood, and are therefore particularly worthy of investigation if prevention efforts are to succeed.

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## Emotion regulation and NSSI

There is general consensus that NSSI is motivated by seeking relief from emotional distress (Klonsky, 2009; Nock & Prinstein, 2004; Nock, Prinstein, & Sterba, 2009), and is indicative of a maladaptive response to acute stressors (Andrews, Martin, Hasking, & Page, *in press*; Borrill, Fox, Flynn, & Roger, 2009; Williams & Hasking, 2010). As such, how adolescents regulate their emotions when faced with stressful situations and life events is pertinent in the aetiology of the behaviour.

Emotion regulation refers to the processes involved in initiating, maintaining and modifying emotional experience (Gross, 1998a, 1998b) and includes cognitive reappraisal, expressive suppression, and rumination (see Aldao, Nolen-Hoeksema, & Schweizer, 2010; Webb, Miles, & Sheeran, 2012). Cognitive reappraisal refers to changing one's interpretation of emotionally salient stimuli (e.g. interpreting a remark as benign/neutral instead of insulting/personal), whereas expressive suppression refers to the suppression of emotional behaviour (e.g. masking expressions of joy in the company of a friend who is feeling sad). Rumination is defined as "a tendency to repetitively think about the causes, situational factors, and consequences of one's negative emotional experience – in other words continuously thinking about and focusing attention on emotionally relevant stimuli (Selby & Joiner, 2009; at p. 220).

Previous research suggests each of these emotion regulation processes are implicated in NSSI. Difficulties with cognitive reappraisal distinguished self-injurers from non-self-injurers (Martin et al., 2010). Increasing expressive suppression is related to increasing NSSI severity among 18–30 year olds (Hasking, Momeni, Swannell, & Chia, 2008). Both of these processes predict continuation of NSSI among adolescents (Andrews, Martin, Hasking, & Page, 2013). Finally, increased tendency to engage in rumination is related to increased frequency of NSSI episodes (Bjärehed & Lundh, 2008; Hilt, Cha, & Nolen-Hoeksema, 2008). Specific mechanisms for the contribution of these emotion regulation processes in NSSI are unclear. However, a recent cross-sectional study on adolescent NSSI (Voon, Hasking, & Martin, 2014) suggests these emotion regulation processes may moderate the impact of acute life stressors and psychological distress; although, clearly, further research is warranted.

While previous findings show these emotion regulation processes are salient in NSSI, to our knowledge few studies have specifically examined their contribution in first episode NSSI and the extent they may modulate the impact of risk factors such as adverse life events and distress. Preliminary findings are mixed regarding the role of cognitive reappraisal and expressive suppression in NSSI onset (Andrews et al., *in press*; Tatnell, Kelada, Hasking, & Martin, 2014). Whether a tendency to engage in ruminative thinking predicts NSSI onset is also unclear.

## Age-related differences in adolescent emotion regulation

Adolescence is characterised by changes in brain regions which are implicated in cognitive functioning in general and emotion regulation in particular. Giedd (2008) observed that neural systems responsible for the ability to control behavioural and emotional impulses, as well as the regulation of emotion (i.e. "executive function") tend to mature at different rates, with increases in cortical matter in these areas peaking late in the second decade (i.e. 10–20 years old). This has implications for cognitive-emotional processing and explains how adolescents may have close to adult levels of logic and reasoning, yet have different capacities for applying them when making decisions under conditions of stress and emotional arousal (Steinberg, 2005). Studies report the ability to apply logical decision-making under conditions of low emotional arousal is evident across adolescence, but applying them under conditions of high emotional arousal tends to develop later in adolescence (Albert & Steinberg, 2011; Steinberg, 2005; Zelazo & Carlsson, 2012).

Accordingly, use of emotion regulation processes under investigation are also subject to change across age-groups. Research suggests adolescents' use of cognitive reappraisal tends to decrease from early to mid-adolescence, followed by an increase in reappraisal from mid-adolescence onwards (Gullone, Hughes, King, & Tonge, 2010; Gullone & Taffe, 2012). Additionally, effectiveness of reappraisal in reducing negative emotion increases with age (Silvers et al., 2012). Age-related differences have also been reported for expressive suppression and rumination. Engaging in expressive suppression decreases from early to mid-adolescence and stabilises thereafter (Gullone et al., 2010; Gullone & Taffe, 2012); while engaging in rumination continually increases with age across adolescence (Hampel & Petermann, 2005; Jose & Brown, 2008). As far as we are aware, no studies have examined whether these age-related differences in emotion regulation have an impact on adolescents' risk of first episode NSSI. Such knowledge would be beneficial in the development of targeted preventive interventions.

## Study aims and hypotheses

The current study seeks to extend previous research and examines (i) the role of cognitive reappraisal, expressive suppression and rumination in first episode NSSI among adolescents, and (ii) whether there are age-related differences in how these emotion regulation processes feature in NSSI onset. In regard to the first question, given NSSI is a response to acute stressors and emotional distress, we specifically explored how the relationships between adverse life events, psychological distress and NSSI are moderated by these emotion regulation processes.

Broadly, as NSSI is related to experience of emotional distress, and as reappraisal reduces experience of emotional distress including depressive and anxious symptoms (see Betts, Gullone, & Allen, 2009; Gross & John, 2003; Hughes, Gullone, Dudley, & Tonge, 2010; Hughes, Gullone, & Watson, 2011), we expect greater use of cognitive reappraisal to be associated with lower

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