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# Research in Autism Spectrum Disorders

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## Brief Report

### Brief report: Cross-sectional interactions between expressive suppression and cognitive reappraisal and its relationship with depressive symptoms in autism spectrum disorder



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## ABSTRACT

**Background:** The aim of this study was to explore and characterize the nature of the inter-relationship between cognitive reappraisal and expressive suppression emotion regulation strategies and depressive symptoms.

**Method:** One hundred and twenty-one adolescents and adults with ASD aged 14–79 years ( $M_{\text{age}} = 32.18$ ;  $SD_{\text{age}} = 15.71$ ) completed the Emotion Regulation Questionnaire, Patient Health Questionnaire-9, and Autism Spectrum Quotient-Short (AQ-Short). Individuals were recruited into two nation-wide studies. Participants self-reported a clinical diagnosis of ASD and had an AQ-Short score above the suggested cut-off of 65. Correlation and regression analyses, independent-samples *t*-tests, Kruskal-Wallis, and post-hoc Mann-Whitney *U* tests were conducted. **Results:** Higher depression levels were related to high suppression and low reappraisal use. Both suppression and reappraisal predicted variance in symptoms of depression over and above ASD traits. Individuals who self-reported high suppression and low reappraisal use expressed higher depressive symptoms than individuals who reported high use of both suppression and reappraisal.

**Conclusions:** This is the first study in ASD that aimed to characterize the interactions between adaptive (reappraisal) and maladaptive (suppression) strategy use. Our results demonstrate that reappraisal may serve as a protective factor for mental health in individuals who habitually use maladaptive strategies such as suppression.

## 1. Introduction

A majority of individuals with Autism Spectrum Disorder (ASD) have at least one co-morbid mental health condition (American Psychiatric Association, 2013; Croen et al., 2015; Totsika, Hastings, Emerson, Lancaster, & Berridge, 2011). Depression is of particular concern for individuals with ASD due to its high prevalence, ranging in adults from 53% – 70% across studies (Lugnegård, Hallerbäck, & Gillberg, 2011; Hofvander et al., 2009), and significantly affect various aspects of life including loss of interest in

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activities, increase in maladaptive behaviours, decrease in adaptive functioning, and appetite and sleep problems (Stewart, Barnard, Pearson, Hasan, & O'Brien, 2006). Therefore, depression is an important target for intervention; however, factors related to the occurrence of depression in ASD are currently poorly understood. In non-ASD populations, emotion dysregulation is a trans-diagnostic factor that increases the risk for a range of psychopathology outcomes, including depression (Gross & Jazaieri, 2014). Although individuals with ASD have impaired ability to regulate their emotions (Mazefsky et al., 2013), the nature of these deficits and their impact on mental health and well-being are currently unclear.

### 1.1. Cognitive reappraisal and expressive suppression

A large number of empirical studies on emotion regulation (ER) in non-ASD populations have focused on the psychological benefits of habitually using one ER strategy over another (e.g., Aldao, Nolen-Hoeksema, & Schweizer, 2010), thus strategies are categorised as either adaptive or maladaptive. Cognitive reappraisal and expressive suppression are two of the most extensively studied strategies in the ER literature. Reappraisal is a form of cognitive change that involves re-interpreting a situation to modify its emotional impact (Lazarus & Alfert, 1964). Both self-report and experimental studies suggest that reappraisal is associated with better subjective well-being and lower occurrence of anxiety and depression (Garnefski, Legerstee, Kraaij, Van Den Kommer, & Teerds, 2002; Graziano et al., 2007; Gross & Muñoz, 1995; John & Gross, 2004; Joormann & Gotlib, 2010). On the other hand, suppression is a form of response modulation that involves inhibiting the expression of emotions (Gross & Levenson, 1993) and is associated with more negative and less positive emotions, disruptions in communication and social bonds in relationship formation, and a range of mental health disorders including depression (Aldao et al., 2010; Berking & Wupperman, 2012; Butler et al., 2003; Campbell-Sills et al., 2006; Compare, Zarbo, Shonin, Van Gordon, & Marconi, 2014; Gross & John, 2003). Thus overall, reappraisal is considered to be an adaptive response and suppression is considered maladaptive. This conceptualization is further supported by neurophysiological studies suggesting that using suppression in response to stressful events is associated with increased and prolonged activation of the sympathetic nervous system and decreased amygdala and insular responses, while reappraisal has opposite effects (Goldin et al., 2008; Gross & Levenson, 1993; Gross, 1998).

### 1.2. Emotion regulation strategy use in ASD

ER impairments have been suggested to underlie emotional and behavioural problems in ASD (Weiss, Thomson, & Chan, 2014). The majority of research on ER in ASD to date has focused on comparing the frequency of ER strategy use between ASD and typically developing individuals, mostly relying on self-reports (e.g., Samson, Huber, & Gross, 2012). Researchers have only recently begun assessing ER and its relationship with psychopathology in ASD (see Bruggink, Huisman, Vuijk, Kraaij, & Garnefski, 2016; Mazefsky, Borue, Day, & Minshew, 2014; Pouw, Rieffe, Stockmann, & Gadow, 2013; Rieffe et al., 2011; Rieffe et al., 2014; Samson, Hardan, Lee, Phillips, & Gross, 2015), with only two studies thus far specifically examining the relationship between reappraisal and suppression use and psychopathology in ASD. Samson et al. (2015) showed that reappraisal, measured by both self- and parent-reported ER Questionnaire (ERQ; Gross & John, 2003), predicted maladaptive behaviour (encompassing internalizing and externalizing symptoms and other behaviours) in a sample of 8–20-year-olds. Surprisingly, suppression did not predict maladaptive behaviour, a finding that does not align with most previous research in non-ASD populations, and further, no correlation analysis was conducted to assess associations between suppression and maladaptive behaviour. Similarly, using the Cognitive ER Questionnaire (CERQ; Garnefski, Kraaij, & Spinhoven, 2001) as the ER measure, Bruggink et al. (2016) found that positive reappraisal predicted anxiety but it was not associated with depression, again, a finding that is not consistent with previous non-ASD research.

It is currently unclear why research findings around the associations between reappraisal, suppression, and psychopathology symptoms in ASD do not align with non-ASD literature. Some inconsistencies might be due to the inability of younger children and parents to accurately self-report/other-report on ER strategy use, and the different ER measures used across studies. Venturing out of traditional forms of ER research may also provide us with other explanations; we suggest the relationships between ER and psychopathology may be more complex than the simple one-to-one relationships generally assumed (i.e., between reappraisal and psychopathology symptoms, and between suppression and psychopathology symptoms). A study by Aldao and Nolen-Hoeksema (2012) demonstrated that adaptive strategies had a negative association with psychopathology symptoms only at high levels of maladaptive strategy use. Therefore, suppression may interact with reappraisal in their relationship with psychopathology symptoms. However, this possibility has not been explored previously in ASD, since the statistical approaches used in existing ASD research do not allow us to unravel any interactions between adaptive and maladaptive strategies.

### 1.3. Current study

The aim of the current study was to explore the relationships between self-reported reappraisal, suppression and symptoms of depression in older adolescents and adults with ASD. In the general population, depression has been found to show a distinct trajectory across the lifespan; the symptoms of depression increase from young adulthood to middle adulthood, with a protracted decline towards older adulthood (Kessler et al., 2005; Sutin et al., 2013). However, very little is known about the progression of depression from adolescence to older adulthood in ASD. One of the few studies that has explored age-related patterns of mental health conditions in ASD across the lifespan suggested that depressive symptomatology was high across younger, middle-aged and older adults (Lever & Geurts, 2016). Since ASD is a lifelong condition and depression has pronounced negative impact on quality of life and all aspects of functioning, it is important to understand the factors impacting on high rates of depression across the lifespan.

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