Emotion regulation and depressive symptoms: Examining the mediation effects of school connectedness in Chinese late adolescents

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**Abstract**

This study tested Gross’s process model of emotion regulation in a Chinese adolescent sample. It hypothesized that emotion regulation strategies (cognitive reappraisal and expressive suppression) would predict adolescents’ perception of school connectedness and depressive symptoms. It also posited that school connectedness may be a possible mediator between emotion regulation and depressive symptoms. Participants were 504 adolescents aged 16–18 from two Chinese public upper secondary schools. Structural equation modeling analyses indicated that reappraisal and suppression significantly associated with school connectedness and depressive symptoms, and school connectedness mediated the link between emotion regulation and depressive symptoms, even when the general emotion experiences were controlled. Although boys unexpectedly reported higher level depressive symptoms, the hypothesized model was invariant across gender except for the link between suppression and depressive symptoms. These findings demonstrate that it is meaningful to involve both emotion regulation processes and school connectedness in explaining adolescent depressive symptoms.

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**Introduction**

Depression is a prevalent affective disorder. It has been associated with high risk for suicidal behavior, poor educational attainment, and other adolescent health problems (Fletcher, 2008; Keenan-Miller, Hammen, & Brennan, 2007). Acknowledging that adolescent depression is rarely the result of a single risk factor (Cicchetti & Toth, 1998), remarkable progress has been made in explaining the development of depression, especially from the socio-emotional perspective. It is worth mentioning that a recent meta-analysis highlighted the particular contribution of emotion regulation processes to depressive psychopathology (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Emotion regulation processes unfold along emotional response tendencies to social cues, which may affect individuals’ social adaptation in various contexts (Gross & John, 2003). As for adolescents, they spend many hours in educational contexts with peers and teachers, who may exert a large influence on adolescents’ social relationships by presenting acceptance, care, closeness, and support (Huberty, 2012, chap. 4).

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“The extent to which students feel personally accepted, respected, included, and supported by others in the school social environment” was the definition of school belonging provided by Goodenow (1993, p. 80), often used also as the definition of “school connectedness” (see Millings, Buck, Montgomery, Spears, & Stallard, 2012; Shochet, Dadds, Ham, & Montague, 2006). Such psychological “school connectedness” or “school membership” (Wehlage, 1989) is developed through the reciprocal social connections between the student and others in the school and represents the quality of school social relationships (Goodenow, 1993). Therefore, as an indicator of social adjustment in educational contexts, school connectedness may also be affected by the emotion regulation processes. Although studies aimed at examining the social outcomes of emotion regulation exist (e.g., Gross & John, 2003), little attention has been given to understanding the ways in which emotion regulation processes may connect to adolescents’ perception of school connectedness.

Moreover, school connectedness has been recently identified as a potential protective factor of adolescents’ depressive symptoms (Millings et al., 2012; Shochet et al., 2006). Due to the evidenced associations between emotion regulation processes and depressive outcomes, it appears that school connectedness may act as a possible mediator between emotion regulation and depressive symptoms. Nevertheless, to the author’s knowledge, there are no studies which have focused on examining the relationship between adolescent emotion regulation, experiences of school connectedness, and depressive symptoms simultaneously. Meanwhile, because the significant findings regarding the way in which emotion regulation predicts social and depressive outcomes mainly came from Western adult samples, obtaining evidence from eastern adolescent samples is also desirable. The main aim of this study was therefore (a) to examine whether emotion regulation processes would significantly associate with depressive symptoms and school connectedness; (b) to test whether school connectedness would negatively predict depressive symptoms; and (c) to test whether school connectedness would be a possible mediator of the link between emotion regulation and depressive symptoms using a Chinese late adolescent sample.

Emotion regulation and depression

Emotion regulation can be understood as the process whereby we manage our own emotions (Koole, 2009). Two well-examined processes or strategies in current literature are cognitive reappraisal (reappraisal) and expressive suppression (suppression), which were developed based on Gross’s process model of emotion regulation (1998a, 2001). Reappraisal as a form of antecedent-focused strategy refers to giving a new personal meaning to an emotion-eliciting situation, which could alter eliciting emotions. For example, when people want to reduce the experience of negative emotions (such as sadness or anger), they may change what they are thinking about (Gross & John, 2003). Suppression is a form of response modulation which involves suppressing ongoing emotion-expressive behaviors. For example, some people control their emotions by not expressing them (Gross & John, 2003). These two strategies functioning in different emotion regulation stages may result in different affective, cognitive, and social consequences (Butler et al., 2003; Gross, 1998b; Gross & John, 2003; Gross & Levenson, 1995; Richard & Gross, 2000). Reappraisal has often been discussed as having advantageous outcomes or lower costs in the adaptation process, while suppression has negative outcomes.

Depressive symptoms as detrimental outcomes of unsuccessful emotion regulation have been widely investigated by researchers from different areas. Gross and John (2003) found that suppressors reported more symptoms of depression than reappraisers across three depression measures. In a recent meta-analysis focusing on cross-sectional studies, suppression was positively associated with depressive disorder while reappraisal was negatively associated; the presence of suppression was associated with higher depression vulnerability than the absence of reappraisal (Aldao et al., 2010). Betts, Gullone, and Allen (2009) conducted a correlational study regarding relations between emotion regulation and adolescent depressive symptoms and concluded that the habitual use of expressive suppression may serve as a risk factor for symptoms of depression whilst reappraisal may be a protective factor. Due to the higher risk of depression across adolescence (Merikangas et al., 2010), it is reasonable to expect a significant association between emotion regulation (suppression and reappraisal) and the depressive symptoms among late adolescents.

Social outcomes of emotion regulation

Given that reappraisal changes concurrent emotions and suppression inhibits emotional expressive behaviors, the use of these strategies would probably interfere with social interaction and lead to consequent reactions in other people (Gross, 2001). The question of what consequences reappraisal and suppression might have for social functioning was tested initially in a cross-sectional study by Gross and John (2003) using undergraduate samples. Results indicated that suppressors are less likely to experience positive emotions than reappraisers; suppression negatively predicted social support and peer-rated relationship closeness, whereas reappraisal positively predicted peer-rated relationship closeness and likeability. Although the social benefits for reappraisal are not distinct in every aspect, the social costs of suppression are evident.

A similar proposal regarding the social effects of reappraisal and suppression on interpersonal communication has been tested experimentally, arguing that suppression may disrupt communication, decrease responsiveness, and inhibit relationship formation in social interaction (Butler et al., 2003). Recently, Srivastava, Tamir, McGonigal, John, and Gross (2009) reported that suppression (reappraisal was not included) could predict low social connection (social support, peer status, social satisfaction) before and during the transition from high school to the first term in college. A longitudinal study also provided evidence for the link between suppression and poorer social functioning in a sample of college students from the perspective of social connection and added that reappraisal could significantly improve students’ social connection (English,
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