



Adolescent harm avoidance as a longitudinal predictor of maladaptive cognitive emotion regulation in adulthood: The mediating role of inhibitory control



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ABSTRACT

The current study investigates the effect of adolescent harm avoidance (HA) on maladaptive cognitive emotion regulation strategies (mCER) in early adulthood. The mediating role of inhibitory control and the moderating effect of gender on this link were also examined. Longitudinal data from 261 adolescents (147 female) were collected in three phases (T0, T1 and T2) over approximately 10 years. Results revealed that, after controlling for HA in adulthood (T2), female adolescents' HA (T0) significantly predicted mCER strategies after 10 years (T2), whereas male adolescents' HA only predicted catastrophizing. In addition, attentional impulsivity (T1) significantly mediated the relation between HA and mCER, though only among women. There was no significant indirect effect for emotional interference and stop-signal reaction time. Results revealed gender and measure specific associations between HA and inhibitory control and suggest that HA could induce inhibitory deficits leading to mCER.

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Cognitive emotion regulation strategies are defined as cognitive strategies for responding to stressful events and handling emotionally arousing information (Garnefski, Kraaij, & Spinhoven, 2001). Maladaptive cognitive emotion regulation strategies (mCER) such as self-blame, rumination, catastrophizing, blaming others and suppression have been shown to have a detrimental impact on mental health (Barnow, Aldinger, Ulrich, & Stopsack, 2013; Izadpanah et al., 2016) and quality of life (Elphinston, Feeney, Noller, Connor, & Fitzgerald, 2013) among early adolescents and young adults. Studying the period between adolescence and adulthood seems to be important for understanding the development of cognitive emotion

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regulation strategies as the application of these strategies increases from adolescence to adulthood and these strategies are improved, modified and mastered within this period (Garnefski & Kraaij, 2006). However, the existing literature on the predictors and underlying mechanism of mCER in adolescence and adulthood is surprisingly scarce (Jose, Wilkins, & Spendelov, 2012; Zetsche & Joormann, 2011). Understanding these mechanisms is of great importance for early treatment of psychopathology among at risk adolescents as it creates implications for designing preventive programs (Aldao & Nolen-Hoeksema, 2010; Barnow, Löw, Dodek, & Stopsack, 2014).

Developmental predictors of mCER

Temperament has been proposed as a blueprint and foundation for emotional development (Southam-Gerow & Kendall, 2002). Previous researchers have studied the temperamental construct of negative affectivity in relation to emotion regulation (Tortella-Feliu, Balle, & Sesé, 2010). Harm avoidance (HA) is one of these constructs and has also been closely related to trait anxiety (e.g., Caci, Robert, & Boyer, 2004). HA has been associated with psychopathologies characterized by emotional dysregulation, such as major depressive disorder (Barnow, Rüge, Spitzer, & Freyberger, 2005; Cloninger, Svrakic, & Przybeck, 2006). High scores in HA reflect traits like fearfulness of uncertainty, shyness with strangers, fatigability, and anticipatory worries (Cloninger, 1994a). In addition, HA has been related to strong reactions and attentional biases towards negative stimuli (Cloninger, 1987). Limited studies have investigated the association between HA and emotion regulation (Manfredi et al., 2011; Schreiber, Grant, & Odlaug, 2012). Schreiber et al. (2012) provided support for the association between HA and difficulties in emotion regulation. In their study, 194 young adults were separated into low, average, and high levels of emotion dysregulation. They found higher levels of HA among those with more emotion regulation difficulties. To our knowledge, the only study testing the relation between HA and mCER, concentrated exclusively on rumination (Manfredi et al., 2011). In their study, Manfredi et al. (2011) found that adults with higher levels of HA scored higher in the mCER strategy “rumination”. So far, no study to our knowledge investigates the relationship between HA and other mCER strategies. However, adolescents with higher HA might develop a tendency to use strategies such as rumination, self-blame, and catastrophizing as dysfunctional means of coping with their worries, uncertainty or shyness—all features of trait HA (Carleton, Sharpe, & Asmundson, 2007; Henderson, 2002; Liao & Wei, 2011). Further, given the association between negative affectivity and mCER strategies such as self-blame, blaming others and catastrophizing (Gilbert & Miles, 2000; Gunthert, Cohen, & Armeli, 1999; Martin & Dahlen, 2005), we assumed that HA—as a construct of negative affectivity—might also be associated with higher usage of these strategies. Although the above mentioned cross-sectional findings support a positive link between HA and emotion dysregulation among young adults, no study has longitudinally investigated the influence of adolescent HA on emotion dysregulation in adulthood.

Inhibitory control as an underlying mechanism

Although Manfredi et al. (2011) and Schreiber et al. (2012) provided initial evidence suggesting a relationship between HA and emotion dysregulation, the mechanism behind this link remains unclear. One possible mechanism for this association might rely on the implications of inhibitory control. Inhibitory control refers to the ability to suppress inappropriate responses or attention tendencies in order to act appropriately on the task at hand (Dempster, 1992; Nigg, 2000). Although no study has investigated the link between HA and inhibitory control deficits, past evidence suggests such an association (Hansenne, 1999; Most, Chun, Johnson, & Kiehl, 2006). A vast majority of studies have demonstrated that chronic negative affect contributes to inhibitory control deficits (Zetsche, D’Avanzato, & Joormann, 2012). However, there are no studies on the link between trait negative affect and inhibitory control. It has been suggested that affective states associated with personality traits might be a potential mechanism that leads to inhibitory control deficits (Hahn, Buttaccio, Hahn, & Lee, 2015; Watson & Clark, 1992). Similarly, in line with the state-trait model of anxiety (Eysenck, 1982), HA might predict performance impairment in inhibitory control tasks through determining state anxiety (see also Matthews & Deary, 2000b, pp. 70–90). Accordingly, Matthews, Joyner, Gilliland, Huggins, and Falconer (1999) showed that trait negative affectivity (measured with neuroticism) predicted higher levels of distraction and interfering cognitions during an Emotional Stroop Task, which might interfere with inhibitory control processes. Further, HA is characterized by attentional bias towards negative stimuli, which can slow down the process of naming the color of emotional words and result in lower inhibitory control of the emotional stimuli (Matthews & Deary, 2000a). Accordingly, past findings have shown that individuals with high HA have difficulty inhibiting irrelevant information when searching for targets during an attentional task (Most et al., 2006; Most, Chun, Widders, & Zald, 2005). HA has shown to be associated with an automated pattern of attending to neutral and emotional stimuli (Hansenne et al., 2003; Mardaga & Hansenne, 2009) and a strong attentional bias towards emotionally negative stimuli (Cloninger, 1994b; Zhang et al., 2013), both of which might cause difficulties in suppressing irrelevant information and facilitate the interference of negative emotional information leading to inhibitory control deficits (Matthews & Deary, 2000a; Weierich, Treat, & Hollingworth, 2008). In addition, HA has been associated with higher levels of self-report inhibitory control (Schreiber et al., 2012). Higher HA scores have also been associated with psychopathologies characterized by low inhibitory control (Kusunoki et al., 2000; Lyoo, Lee, Kim, Kong, & Kwon, 2001).

Further, numerous studies support the proposition that inhibition deficits are related to the mCER strategy rumination (Joormann, 2006; Whitmer & Banich, 2007; Zetsche et al., 2012). For instance, Joormann (2006) showed that an inhibition deficit as assessed by negative priming was associated with more rumination. Similarly, deficits in inhibiting neutral

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