



Effects of dispositional and temporarily primed attachment security on response inhibition following ego-depletion among Chinese college students



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ABSTRACT

Attachment security refers to individuals' ability of viewing attachment figures as a secure base for exploration and a safe haven in times of need. Two studies examined whether dispositional and temporarily primed attachment security could improve response inhibition following ego-depletion among Chinese college students. We manipulated ego-depletion with a stressful task — preparing a three-minute speech within 5 min and assessed response inhibition with Stroop color naming tasks. Study 1 randomly assigned participants to the ego-depletion and control groups and assessed dispositional attachment anxiety and avoidance. Results showed that participants in the ego-depletion group reacted slower to incongruent trials than their counterparts. Whereas attachment avoidance predicted faster reactions to incongruent trials in the ego-depletion group, such relationship was absent in the control group. Study 2 randomly asked participants to visualize a responsive and available other (attachment security priming condition) or an acquaintance (acquaintance priming condition). Results indicated that following ego-depletion, attachment avoidance again predicted faster reactions to incongruent trials, and participants from the attachment security priming condition also reacted faster to incongruent trials than those from the acquaintance priming condition. Findings offer additional support for social defense theory and the broaden-and-build cycle of attachment security.

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1. Introduction

Response inhibition, as an important aspect of executive functioning, refers to the ability to purposefully inhibit dominant, automatic or prepotent responses (Denckla, 1996; Miyake et al., 2000; Pennington & Ozonoff, 1996). The burgeoning literature has demonstrated that the depletion of psychological resources may disrupt executive functions, bringing in a wide variety of behavioral problems (e.g., addictions, violence, eating disorders) (Baumeister, Vohs, & Tice, 2007; Hagger, Wood, Stiff, & Chatzisarantis, 2010). Fortunately, the depleted psychological resources could be restored by sleep (Muraven & Baumeister, 2000) and positive affect (Tice, Baumeister, Shmueli, & Muraven, 2007). The present study proposed boosting attachment security as another potential way of restoring psychological resources following ego-depletion. Attachment theorists (Mikulincer & Shaver, 2007a) conceptualize attachment security as the ability of using attachment figures as a secure base for exploration and a safe haven in times of need. While attachment security could be developed from repeated

interactions with attachment figures in daily life (Bowlby, 1973, 1982), it can also be naturally or experimentally activated by attachment-related cues (e.g., a couple holding hands) (Mikulincer & Shaver, 2007a). Recent findings derived from attachment theory (Bowlby, 1982) have shown that attachment security, both dispositional and temporarily enhanced, is remarkably beneficial for psychosocial functioning under threatening situations. However, relatively unknown is its effect on basic cognitive functioning. To address this gap, the present study examined whether dispositional and experimentally primed attachment security could compensate for response inhibition despite the ego-depleted state.

1.1. Dispositional and temporarily primed attachment security

Attachment theory (Bowlby, 1982) assumes that human beings are equipped with an innate attachment behavioral system that actuates them to maintain a sense of security through a typical cycle of attachment systems' activation and deactivation. As attachment theorists (Ainsworth, 1973; Bowlby, 1973, 1982) further elaborate, when individuals encounter threats or difficulties, the attachment system will be activated, driving them to seek proximity from attachment figures. When attachment figures are available for providing care or support,

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individuals could reestablish a sense of attachment security. The regained attachment security in turn deactivates attachment systems and helps to terminate proximity bids and to engage in non-attachment activities (e.g., exploration) (Ainsworth, 1973).

According to attachment theory, a relatively stable sense of attachment security is primarily developed from the history of interacting with supportive, helpful, and compassionate attachment figures such as mother in infancy (Ainsworth, 1973; Bowlby, 1982) and romantic partners in adulthood (Hazan & Shaver, 1987). In addition to the normative source of attachment security, there is extensive empirical support for the tremendous differences in attachment (in)securities resulting from heterogeneous interaction experience with attachment figures (Ainsworth, 1973; Hazan & Shaver, 1987; Mikulincer & Shaver, 2003). Individual variances in attachment (in)securities have been conceptualized along two orthogonal dimensions, attachment anxiety and avoidance (Brennan, Clark, & Shaver, 1998). While attachment anxiety is characterized by the fear of being rejected, abandoned, or ignored by attachment figures, attachment avoidance is featured by the discomfort with closeness and dependence, perceiving others as distrustful and unavailable when needed (Brennan et al., 1998; Hazan & Shaver, 1987). At the opposite end, attachment security is depicted as low in attachment anxiety and avoidance, viewing the self as worthy and lovable and believing others as available and responsive in times of need (Bowlby, 1973, 1982).

Recent literature stimulated by attachment theory demonstrates that another source of attachment security is the activation of attachment security-related mental representations in both natural and laboratory settings (Mikulincer & Shaver, 2007a). Researchers posit that individuals tend to internalize attachment figures and develop mental representations for these attachment figures, which is essential to maintain attachment security and enhance the ability of self-smoothing without actual proximity-seeking behaviors (Mikulincer & Shaver, 2004). Confirming the idea, the growing literature has consistently shown that regardless of dispositional attachment orientations, the sense of attachment security could be momentarily enhanced by a variety of attachment-related cues including the recollection of attachment figures, the recall of comforting interactions with attachment figures, and the subliminal presentation of pictures indicating secure attachment figures (e.g., face) or their availability (e.g., a couple holding hands) (Mikulincer, Hirschberger, Nachmias, & Gillath, 2001; Mikulincer & Shaver, 2001; Mikulincer et al., 2003). Encouragingly, findings from two intervention studies found that repeatedly primed attachment security could lead to long-lasting improvement in attachment security regardless of the dispositional attachment insecurity (Carnelley & Rowe, 2007; Gillath, Selcuk, & Shaver, 2008).

1.2. *The broaden-and-build effect of attachment security under threatening situations*

Drawing upon the extant adult attachment research, Mikulincer and Shaver (2007b) proposed that attachment security exerts broaden-and-build effects on psychosocial adjustment under threatening situations through multiple psychosocial processes. First, attachment security may facilitate positive appraisal of stressful situations, preserving psychological resources that otherwise might be used for defensive coping with non-attachment activities. Second, attachment security may enrich perceived psychosocial resources and help maintain self-efficacy in demanding situations. Third, attachment security may directly increase the capability of managing stresses due to more accessible and more elaborated secure-base scripts (Mikulincer & Shaver, 2007b; Mikulincer, Shaver, Sapir-Lavid, & Avihou-Kanza, 2009).

These aforementioned theoretical analyses have been empirically verified by correlational studies on dispositional attachment orientations. Numerous research has shown that attachment avoidance is related to lower perceived ability to cope with distress, greater reliance on emotion-focused coping and distancing strategies, less endorsement

of support seeking, less perceived social support, and lower accessibility of inner resources in stressful situations (Berant, Mikulincer, & Florian, 2001; Fraley, Fazzari, Bonanno, & Dekel, 2006; Mikulincer & Florian, 1998). By contrast, attachment anxiety is associated with greater perceived stress, exaggerated negative emotions, greater endorsement of emotion-focused strategies, and slower emotional recovery during life stresses (Berant et al., 2001; Fraley et al., 2006; Zakin, Solomon, & Neria, 2003).

There has also been mounting evidence for the favorable responses toward stress produced by temporarily enhanced attachment security. For instance, a set of studies showed that the primed attachment security through exposure to attachment-related cues reduced the endorsement of defensive self-regulatory strategies (e.g., self-handicap, self-enhancing social comparison) and self-blame, and facilitated support seeking following stressful events (e.g., negative feedback) (Arndt, Schimel, Greenberg, & Pyszczynski, 2002; Rowe & Carnelley, 2003; Schimel, Arndt, Pyszczynski, & Greenberg, 2001). Other studies found that individuals reported higher self-esteem and more positive expectations toward relationship partners when primed with a loving other or a smiling face relative to their control counterparts (Baccus, Baldwin, & Packer, 2004; Mikulincer et al., 2001; Rowe & Carnelley, 2003).

1.3. *The role of attachment security in response inhibition following ego-depletion*

As reviewed, literature has well documented the broaden-and-build cycle of attachment security on psychosocial functioning but not on basic cognitive functioning (e.g., response inhibition). We argue that attachment security may also have potential to counteract ego-depletion and compensate for response inhibition. The strength model of self-control (Baumeister, 2002; Baumeister et al., 2007) posits that executive functioning, as the agentic aspect of self, depends crucially on limited psychological resources akin to a muscle. That is, executive functioning may diminish following the depletion of individuals' resources, and could be replenished by a wide range of psychosocial resources such as rest and positive affect (Baumeister et al., 2007; Muraven & Baumeister, 2000; Tice et al., 2007). Given the broaden-and-build effects of attachment security for psychosocial functioning under stressful situations, it is plausible that attachment security can restore the individuals' resources and effectively buffer against the harmful effects of ego-depletion on response inhibition.

The argument has received preliminary empirical support from social cognitive studies on attachment security. For instance, an experimental study showed that Israeli undergraduates experiencing post-traumatic stress displayed more dysfunctional executive functioning, as indicated by longer color-naming latencies for terror-related words in the Stroop task, than healthy counterparts; such differences disappeared when participants were primed with words related to attachment security, but stood when primed with neutral or positive words (Mikulincer, Shaver, & Horesh, 2006). Similarly, another study found that women diagnosed with eating disorder had worse executive functioning as indicated by slower reactions to words about food and body shape in the Stroop task compared to healthy counterparts. Such difference in executive functioning between patients with eating disorder and healthy counterparts was positively related to dispositional attachment anxiety and avoidance, and was dramatically reduced in the attachment security priming condition but not in the neutral condition (Admoni, 2006).

Noteworthy, attachment security has also been found to improve social behaviors monitored by executive functioning such as altruism and persistence following ego-depletion. For instance, a study indicated that dispositional attachment anxiety and avoidance were negatively associated with persistence in cognitive tasks following the feedback about failure (Mikulincer & Shaver, 2004). Another study found that dispositional attachment anxiety and avoidance were negatively related to the observed support-providing behaviors after the manipulation of

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