



## Examining the role of attentional control in terms of specific emotion regulation difficulties<sup>☆</sup>



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### ABSTRACT

Despite the fact that attentional control is often used as an emotion regulation strategy, empirical research has yet to examine the relationship between attentional control and emotion regulation difficulties. Therefore, the aim of the current study was to examine the unique associations between attentional control in terms of specific emotion regulation difficulties (i.e., with emotional clarity and awareness, impulse control, emotional acceptance, the ability to engage in goal directed behavior when upset, and access to effective emotion regulation strategies when upset). Participants were 355 undergraduate students (67.9% female;  $M_{age} = 19.38$ ,  $SD = 2.08$ , Range = 18–42 years) who completed self-report measures for course credit. Partially consistent with hypotheses, after controlling for the effects of gender, negative affect, and non-criterion emotion regulation difficulties, greater attentional control was significantly associated with fewer difficulties with emotional clarity (2.7% variance) and the ability to engage in goal-directed behavior when upset (6% variance). These findings suggest that interventions that focus on improving attentional control (e.g., mindfulness training, attention bias modification) may be useful in improving difficulties with emotion regulation.

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### 1. Introduction

Emotion regulation is broadly defined as the ability to adaptively enhance or dampen momentary emotional experiences and encompasses emotional regulatory strategies, such as situation selection, attentional deployment, cognitive reappraisal, and suppression (Gross, 1998). Recent conceptualizations of emotion regulation suggest that it is a multi-dimensional construct comprised of: (1) being aware of one's emotions and clear about which emotion is being experienced; (2) the ability to control impulsive behaviors when experiencing negative emotions; (3) acceptance of one's emotional responses; (4) the ability to engage in goal directed behavior when experiencing negative emotions; and (5) the ability to access to effective emotion regulation strategies when experiencing negative emotions (Gratz & Roemer, 2004). Extant work has found that greater difficulties across these emotion regulation domains are associated with anxiety and depression symptomatology, including generalized anxiety disorder, posttraumatic stress, health anxiety, obsessive-compulsive symptoms, panic attacks, social anxiety

disorder, and major depression (Bardeen & Fergus, 2014; Brockmeyer et al., 2012; Fergus & Bardeen, 2014; Mennin, McLaughlin & Flanagan, 2009; O'Bryan, McLeish, Kraemer, & Fleming, 2015; Salters-Pedneault, Roemer, Tull, Rucker, & Mennin, 2006; Tull & Roemer, 2007). Deficits in emotion regulation are also central to other psychological disorders, such as borderline personality disorder, eating disorders, and substance use disorders (Axelrod, Perepletchikova, Holtzman, & Sinha, 2011; Gianini, White, & Masheb, 2013; Salsman & Linehan, 2012).

As difficulties with emotion regulation appear to be a common factor underlying many different types of psychopathology (i.e., transdiagnostic), an important next step in this line of work is to identify malleable factors that may improve one's ability to effectively regulate emotions. For example, one study found that lower levels of distress tolerance are significantly associated with the use of maladaptive emotion regulation strategies (e.g., rumination, suppression, avoidance; Jeffries, McLeish, Kraemer, Avallone, & Fleming, 2016). Additionally, greater trait mindfulness is associated with fewer emotion regulation difficulties (Vujanovic, Bonn-Miller, Bernstein, McKee, & Zvolensky, 2010), and this association appears to be partially accounted for by coping self-efficacy, which was negatively associated with emotion regulation difficulties (Luberto, Cotton, McLeish, Mingione, & O'Bryan, 2014). Lastly, fear of body sensations, which is closely tied to anxiety sensitivity (i.e., fear of anxiety and arousal related sensations; Reiss & McNally, 1985), has also been demonstrated to predict lack of emotional clarity and emotional nonacceptance among individuals endorsing recent uncued panic attacks (Tull, Rodman, & Roemer, 2008).

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Another factor to examine in this regard is attentional control, defined as the ability to maintain attention on a desired stimulus by resisting the urge to shift attention elsewhere as well as the ability to shift attention to a desired stimulus by avoiding focusing on extraneous stimuli (Derryberry & Reed, 2002; Derryberry & Rothbart, 1988). Extant research has demonstrated significant associations between deficits in attentional control and numerous forms of psychopathology (Bardeen, Fergus, & Orcutt, 2015; Judah, Grant, Mills, & Lechner, 2014; Macatee et al., 2016; Ólafsson et al., 2011; Reinholdt-Dunne, Mogg, & Bradley, 2013). Indeed, poorer attentional control is associated with greater symptoms of general anxiety, depression, worry, and obsessive-compulsive symptoms (Judah et al., 2014; Macatee et al., 2016; Ólafsson et al., 2011; Reinholdt-Dunne et al., 2013). Moreover, attentional control abilities are significantly lower among individuals diagnosed with generalized anxiety disorder and obsessive compulsive disorder relative to nonclinical controls (Olatunji, Ciesielski, & Zald, 2011).

According to the process model of emotion regulation, attentional deployment is considered to be an antecedent-focused emotion regulation strategy that may be implemented in order to regulate the momentary experience of emotions (Gross, 1998). Specifically, adaptively regulating one's attention away from a negative emotion-inducing stimulus that is competing with a desired stimulus happens earlier in the emotion generation process, thereby preventing the emotion from persisting longer than desired and, in turn, preventing the use of potentially more maladaptive emotion regulation strategies later in the emotion generation process (e.g., suppression). On the other hand, greater attentional control may allow individuals to sustain attention, when appropriate, on negatively valenced stimuli, thereby allowing the emotion to habituate rather than engaging in maladaptive regulatory strategies. Thus, attentional control may largely override the habitual use of strategies responsible for the exacerbation and maintenance of psychopathology (e.g., avoidance, suppression).

In line with this theory, higher levels of attentional control are associated with better recovery from a negative mood induction (Bardeen & Read, 2010), less fearful responding to laboratory-induced panic symptoms (Richey, Keough, & Schmidt, 2012), and lower levels of self-reported rumination (Tortella-Feliu et al., 2014). Further, poorer attentional control has been shown to interact with distress intolerance, anxiety sensitivity, and experiential avoidance in predicting greater posttraumatic stress disorder symptoms and anxiety symptoms (Bardeen & Fergus, 2016; Bardeen, Tull, Stevens, & Gratz, 2014). Attentional control also serves as an explanatory mechanism underlying the relationship between negative repetitive thinking aimed at regulating emotion (i.e., worry, rumination) and symptoms of anxiety and depression (Mills et al., 2016). Longitudinal work also suggests that attentional control may protect against the development of posttraumatic stress symptoms (Bardeen et al., 2015).

Taken together, extant research indicates that both emotion regulation difficulties and attentional control are associated with psychopathology (Bardeen et al., 2015; Judah et al., 2014; Macatee et al., 2016; Ólafsson et al., 2011; Olatunji et al., 2011; Reinholdt-Dunne et al., 2013). Moreover, better attentional control seems to result in improved emotion regulation abilities (e.g., Bardeen & Fergus, 2016; Bardeen & Read, 2010; Bardeen et al., 2014; Mills et al., 2016; Richey et al., 2012; Tortella-Feliu et al., 2014; Vine & Aldao, 2014). However, no research, to date, has examined the role of attentional control in terms of specific emotion regulation difficulties. Such an investigation of the specific emotion regulation difficulties, as opposed to emotion regulation difficulties more broadly, is necessary in order to identify specific targets for prevention and intervention efforts. Moreover, determining which of these difficulties is most influenced by attentional control may point to specific populations for which attention-related interventions may be most relevant and effective. Therefore, the aim of the current study was to examine unique associations between attentional control in terms of specific emotion regulation difficulties among college students. This population is particularly appropriate for the current

investigation given that young adulthood is often when symptoms of psychopathology emerge (Kessler et al., 2005). Thus, using a sample of college students provides us the ability to examine these issues among individuals who are particularly "at-risk" for developing psychopathology, which is necessary to better understand the role of psychopathological risk factors. It was hypothesized that, after controlling for the effects of gender, negative affect, and each of the non-criterion emotion regulation difficulties, better attentional control would be significantly associated with fewer difficulties with emotional clarity, emotional awareness, impulse control, emotional acceptance, the ability to engage in goal directed behavior when upset, and access to effective emotion regulation strategies when upset. Gender was chosen as a covariate on an a priori basis due to well-documented gender differences in rates of disorders where emotion regulation difficulties are prominent (e.g., depression, anxiety; McLean, Asnaani, Litz, & Hofmann, 2011; Nolen-Hoeksema, 2001) as well as gender differences in attentional control and emotion regulation (Gratz & Roemer, 2004; Nolen-Hoeksema, 2012; Ólafsson et al., 2011; Zlomke & Hahn, 2010). Negative affect was chosen as a covariate given its relation to both attentional control and emotion regulation and in order to ensure that findings were not due to a broad-based propensity to experience negative mood states (Bradley et al., 2011; Jefferies, Smilek, Eich, & Enns, 2008). Non-criterion emotion regulation difficulties were controlled for in order to test for specificity of attentional control to each of these domains.

## 2. Method

### 2.1. Participants

Participants were 355 undergraduate psychology students (67.9% female;  $M_{age} = 19.38$ ,  $SD = 2.08$ , Range = 18–42 years). In terms of the racial composition of the sample, 86.2% self-identified as Caucasian, 6.8% African American, 3.9% Asian, 2.5% multiracial, 0.3% American Indian or Alaskan Native, and 0.3% as Native Hawaiian or other Pacific Islander. Only 2.8% of the sample reported Hispanic ethnicity.

### 2.2. Measures

#### 2.2.1. Positive and negative affect schedule (PANAS)

The PANAS (Watson, Clark, & Tellegen, 1988) is a measure of general positive and negative emotional states commonly used in psychopathology research (Watson, 2000). In the present study, only the negative affect subscale (PANAS-NA) was used as an index of the broad-based disposition to experience negative affective states (e.g., anger, anxiety, depression, guilt). Higher scores on this measure indicate a greater tendency to experience negative affect. Internal consistency for the PANAS-NA in the current sample was good ( $\alpha = 0.87$ ).

#### 2.2.2. Attentional control scale- short form (ACS-S)

The ACS-S (Judah et al., 2014) is a 12-item self-report measure that is a shortened version of the Attentional Control Scale (ACS; Derryberry & Reed, 2002). Specifically, the ACS-S removes eight of the original ACS items that did not load onto either of the two identified factors (Judah et al., 2014). Respondents indicate on a 4-point Likert-type scale (1 = *almost never* to 4 = *always*) the extent to which each item applies to them. The ACS-S assesses two aspects of attentional control: focusing (i.e., "When I need to concentrate and solve a problem, I have trouble focusing my attention") and shifting (i.e., "It is easy for me to alternate between two different tasks"). Higher scores on the ACS-S indicate a greater capacity to regulate attention. The ACS-S has demonstrated good internal consistency and adequate concurrent validity, such that higher levels of attentional control are significantly positively correlated with lower levels of cognitive failures, worry, and social anxiety (Judah et al., 2014). As the total score has demonstrated good psychometric properties (Judah et al., 2014) and to be consistent with previous research (e.g., Bardeen & Fergus, 2016), only the ACS-S total score was used in the

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