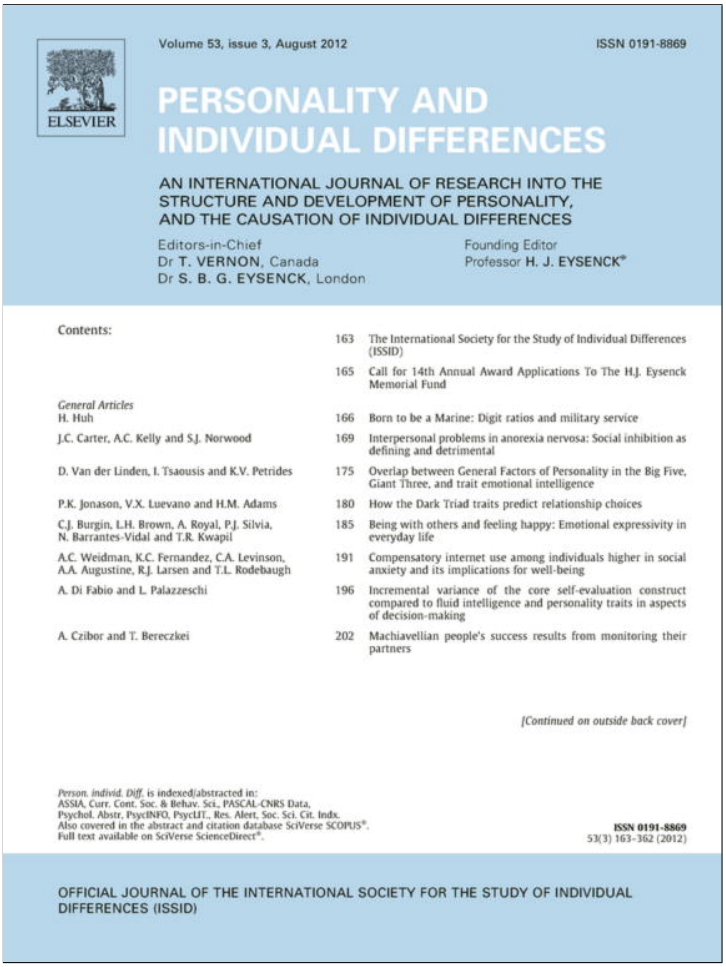

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Attentional control moderates the relationship between activation of the cognitive attentional syndrome and symptoms of psychopathology

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ABSTRACT

Wells's (2009) metacognitive theory suggests that inflexible and recurrent styles of thinking in response to negative thoughts, feelings, and beliefs exacerbate symptoms of psychopathology. Such styles of thinking underlie the cognitive attentional syndrome (CAS). Using a large nonclinical sample ($N = 456$), the present study examined whether attentional control moderates the relationship between activation of the CAS and symptoms of psychopathology (i.e., depression, anxiety, and stress symptoms). Consistent with predictions, relationships between activation of the CAS and assessed symptoms became increasingly stronger as attentional control *decreased*. Thus, for individuals who have a relative inability to disengage and shift attention from threat information (i.e., low attentional control), use of CAS-relevant coping strategies (e.g., rumination, worry) appears to be associated with especially deleterious psychological effects. Conceptual and therapeutic implications are discussed.

1. Introduction

A transdiagnostic approach is based on the notion that the focus of theory and treatment should be on features that cut across psychological disorders (Mansell, Harvey, Watkins, & Shafran, 2008). Wells's (2009) metacognitive model offers a promising transdiagnostic approach for conceptualizing and treating psychopathology, particularly for mood and anxiety disorders. According to Wells, metacognitive theory "deals with the way that people think and it assumes the problem rests with inflexible and recurrent styles of thinking in response to negative thoughts, feelings and beliefs" (p. 3). Wells termed this style of thinking as the cognitive attentional syndrome (CAS), which is marked by repetitive forms of thought (e.g., rumination, worry) and other maladaptive coping behaviors (e.g., thought suppression).

The CAS is believed to develop due to metacognitive beliefs about the usefulness of repetitive forms of thought and maladaptive coping behaviors. For example, an individual might hold positive beliefs about using repetitive forms of thought to reduce the likelihood of perceived threat (e.g., *Worrying about the future means I can avoid danger*; Wells, 2009). Such metacognitive beliefs purportedly lead to the development of a propensity for responding to negative thoughts, feelings, and beliefs with CAS-relevant coping strategies that maintain negative emotionality and strengthen maladaptive beliefs (Wells, 2009). Wells's metacognitive theory differs from more traditional cognitive-behavioral perspectives in that it suggests that maladaptive beliefs are influenced by CAS-relevant coping strategies. That is, the theory holds that CAS-relevant coping strategies – and not the underlying maladaptive beliefs per se – lead to emotional and behavioral consequences. Wells asserts that the use of CAS-relevant coping strategies is associated with a number of deleterious outcomes, including development of attentional bias for perceived threat. A bias for attending to threat is thought to exacerbate mood and anxiety symptoms. As such, reducing use of CAS-relevant coping strategies is a core treatment goal of metacognitive therapy (Wells, 2009).

Consistent with metacognitive theory, individual differences in the ability to disengage from threat have been implicated in the maintenance and exacerbation of psychopathology. More specifically, Mathews (2004) stated that the "failure to disengage attention from threat information may be one causal factor in maintaining anxiety, by increasing the awareness of potential dangers. If so, then good attentional control may help to counter these adverse consequences, whereas poor control may exacerbate them." (p. 1023). In support of Mathews's assertion, research has shown that attentional control (AC: i.e., the use of top-down executive attentional processes to regulate bottom-up emotional responses; Derryberry & Reed, 2002) is positively associated with indicators of positive well-being (e.g., positive affect) and inversely associated with indicators of negative well-being (e.g., neuroticism: Compton, 2000; Eisenberg, Fabes, Guthrie, & Reiser, 2000).

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Research has provided additional support for the possibility that AC might serve as a protective individual difference variable against psychological symptoms. For example, research has shown that higher AC is associated with significantly faster recovery from trauma re-telling induced negative affect (Bardeen & Read, 2010) and lower AC is associated with externalizing behaviors and relatively poor social adaptation (Eisenberg et al., 2000). Further, AC has been shown to moderate the relation between emotional distress (i.e., trait anxiety, posttraumatic stress symptoms) and the ability to disengage from threat stimuli (Bardeen & Orcutt, 2011; Derryberry & Reed, 2002). That is, individuals with higher levels of emotional distress have greater difficulty disengaging from threat stimuli; however, among these individuals, those with higher AC disengage and shift attention significantly faster from threat information than those with lower AC (Bardeen & Orcutt, 2011). Taken together, findings suggest that higher levels of AC facilitate disengagement from threat, which in turn may improve emotional well-being.

Based on this information, AC may help link activation of the CAS to symptoms of psychopathology. This possibility is consistent with Spada, Georgiou, and Wells (2010), who proposed that the occurrence of symptoms of psychopathology is due to the *joint* impact of CAS-relevant metacognitive beliefs and AC. More specifically, Spada et al. opined that "individuals experiencing high states of anxiety may do so because of a combination of maladaption in metacognitions and dysfunction in attentional control" (p. 65). However, despite proposing that these two variables work in concert with one another, Spada et al. only examined the main effects of CAS-relevant metacognitive beliefs and AC in relation to symptoms of psychopathology, with both of these variables evidencing unique relations with symptoms of psychopathology (i.e., state anxiety).

As described above, it is our position that such main effects might be qualified by an interactive effect between maladaption in metacognitions and AC. More specifically, individuals high versus low in AC may be able to more easily disengage from threat information associated with use of CAS-relevant coping strategies. The relative inability of individuals with low AC to disengage from threat information in combination with the use of CAS-relevant coping strategies may lead to an exacerbation of mood and anxiety symptoms. Alternatively, the relative ability of individuals with high AC to disengage from threat associated with use of CAS-relevant coping strategies should serve as a protective factor against the deleterious effects of such coping strategies on psychological symptoms. If this pattern of relations is tenable, AC should moderate the relationship between activation of the CAS and symptoms of psychopathology. That is, the relationship between activation of the CAS and these symptoms should grow increasingly stronger as AC *decreases*. The present study sought to examine this possibility.

2. Methods

2.1. Participants

The sample consisted of 456 undergraduate students recruited through introductory psychology courses at a Midwestern US university. Students received partial course credit for participation. The sample had a mean age of 19.7 years ($SD = 3.1$) and was 55.5% female. Participants predominantly self-identified as White (61.0%), with a relative minority self-identifying as Black (17.8%), Asian (9.2%), and "Other" (10.4%). Approximately 1.6% of participants did not report their racial identification. Approximately 9.9% of participants self-identified as being of Hispanic or Latino decent. Of the 456 participants, five participants (1.1% of total sample) omitted responses to all of the study measures and were excluded from reported analyses.

2.2. Measures

2.2.1. Cognitive attentional syndrome-1 (CAS-1; Wells, 2009)

The CAS-1 is a 16-item measure developed to assess activation of the CAS. The first two items assess the degree to which individuals have been dwelling on or worrying about problems and focusing attention on threats, respectively. The next six items relate to the frequency in which individuals have used strategies to cope with negative feelings or thoughts (e.g., *Tried not to think about things*; *Tried to control my emotions*). Responses to these initial eight items are provided on a 0–8 scale. The final eight items assess the degree to which individuals hold metacognitive beliefs about the CAS (e.g., *Worrying helps me cope*; *Analyzing my problems will help me find answers*) and are all rated on a 0–100 scale, with each response option increasing by 10. To reduce the impact of the final eight items on the total scale score, the original item responses to these eight items were transformed to ensure observed responses fell between 0 and 8 (like responses to the other CAS-1 items). The 16 CAS-1 items were then summed to create a total scale. Presently, limited data pertaining to the psychometric properties of the CAS-1 exist; however, it is the only known measure that simultaneously assesses all components of the CAS and thus was used in the present study. Higher CAS-1 scores are indicative of *greater* activation of the CAS. In the present study, the CAS-1 demonstrated good internal consistency (Cronbach's $\alpha = .86$).

2.2.2. Attentional control scale (ACS; Derryberry & Reed, 2002)

The ACS is a 20-item measure designed to assess one's general capacity to control attention (e.g., *When I need to concentrate and solve a problem, I have trouble focusing my attention; When trying to focus my attention on something, I have difficulty blocking out distracting thoughts*). Responses are provided on a 1–4 scale. The ACS has shown adequate psychometric properties (Derryberry & Reed, 2002). Additionally, lower ACS scores are associated with greater difficulty disengaging from threat stimuli in anxious individuals (Derryberry & Reed, 2002). Eleven ACS items are reverse-scored. The ACS total scale score was used in the present study. Higher ACS scores are indicative of greater AC. In the present study, the ACS demonstrated good internal consistency (Cronbach's $\alpha = .86$).

2.2.3. Depression, anxiety, and stress scale-21-item version (DASS-21; Lovibond & Lovibond, 1995)

The DASS-21 is a 21-item measure that assesses depression (low positive affect: *I felt down-hearted and blue*), anxiety (physiological hyperarousal: *I felt I was close to panic*), and stress (tension/irritability: *I found it difficult to relax*; *I found myself getting agitated*) symptoms using three, 7-item scales. The DASS-21-stress scale is believed to assess symptoms relevant to both depression and anxiety (e.g., general distress; Antony, Bieling, Cox, Enns, & Swinson, 1998). Responses are provided on a 0–3 scale. The DASS-21 scales have shown adequate psychometric properties in prior studies, including DASS-21-depression sharing a strong convergent correlation ($r = .79$) with another index of depression symptoms, DASS-21-anxiety sharing a strong convergent correlation ($r = .85$) with another index of anxiety symptoms, and DASS-21-stress sharing a strong convergent correlation ($r = .68$) with another index of general distress (Antony et al., 1998). Higher scores on the DASS-21 scales are indicative of *greater* symptomatology. In the present study, each of the DASS-21 scales demonstrated good internal consistency (Cronbach's αs ranged from .85 to .91).

2.3. Procedure

This study was approved by the local university-based institutional review board. For this study, participants completed a fixed-order questionnaire packet that included the above mea-

sures. Informed consent and questionnaire administration was completed on an online computerized survey program. Participants were informed that their responses were confidential and that they were free to withdraw from the study at any time.

2.4. Data analytic strategy

Aiken and West's (1991) recommendations for testing continuous interaction effects were used, in which the predictors (CAS-1 and ACS) initially were mean centered and entered simultaneously in Step 1 of a hierarchical regression. An interaction effect then was computed (calculated as the product of the mean centered predictors) and entered in Step 2 of each regression model predicting one of the DASS-21 scales.

Graphs and simple regression equations (simple effects) were used to further investigate significant interaction terms. Following Aiken and West (1991), two simple regression equations were constructed (using ±1 *SD* from the ACS mean) for each model to depict the interaction effect. To plot these equations, two values of CAS-1 (±1 *SD* from CAS-1 mean) then were substituted into the equations. Significance of the simple slopes of these regression equations were tested at both low (−1 *SD*) and high (+1 *SD*) ACS values to examine the relations between activation of the CAS and psychological symptoms at different levels of AC.

3. Results

3.1. Moderating role of AC

3.1.1. Depression

Descriptive statistics and zero-order correlations among the study variables are presented in Table 1. Regression results revealed that both the CAS ($\beta = .45$) and AC ($\beta = -.16$) were significantly associated with depression scores in Step 1 ($R^2 = .26$; $ps < .01$). As predicted, the interaction between the CAS and AC ($\beta = -.14$) explained additional significant variance ($\Delta R^2 = .02$, $p < .01$) in depression scores in Step 2. Simple effects of this interaction are depicted in Fig. 1. As shown, the CAS shared a significant positive association with depression scores at both low levels of AC (simple effect: $\beta = .60$, $p < .01$) and high levels of AC (simple effect: $\beta = .30$, $p < .01$).

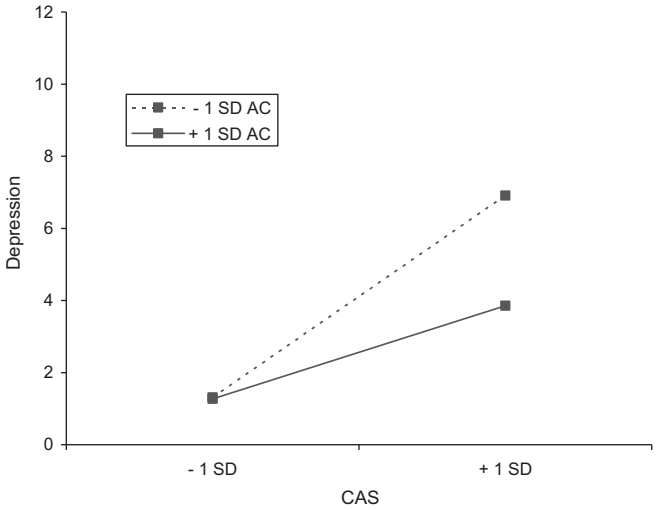

Fig. 1. Moderating effect of attentional control (AC) on the relationship between activation of the cognitive attentional syndrome (CAS) and depression symptoms. AC = Attentional control scale; CAS = cognitive attentional syndrome-1; Depression = depression scale of depression, anxiety, stress scale-21-item version.

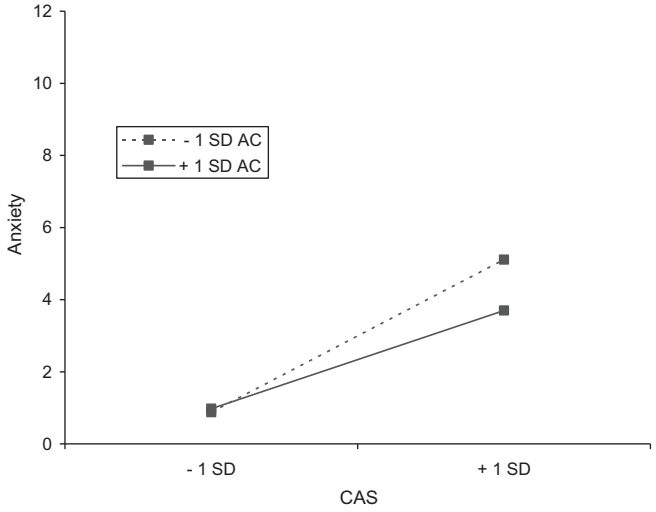

Fig. 2. Moderating effect of attentional control (AC) on the relationship between activation of the cognitive attentional syndrome (CAS) and anxiety symptoms. AC = attentional control scale; CAS = cognitive attentional syndrome-1; Anxiety = anxiety scale of depression, anxiety, stress scale-21-item version.

3.1.2. Anxiety

Regression results revealed that both the CAS ($\beta = .47$, $p < .01$) and AC ($\beta = -.09$, $p < .05$) were significantly associated with anxiety scores in Step 1 ($R^2 = .25$). As predicted, the interaction between the CAS and AC ($\beta = -.10$) explained additional significant variance ($\Delta R^2 = .01$, $p < .05$) in anxiety scores in Step 2. Simple effects of this interaction are depicted in Fig. 2. As shown, the CAS shared a significant positive association with anxiety scores at both low levels of AC (simple effect: $\beta = .57$, $p < .01$) and high levels of AC (simple effect: $\beta = .37$, $p < .01$).

3.1.3. Stress

Regression results revealed that both the CAS ($\beta = .54$) and AC ($\beta = -.15$) were significantly associated with stress scores in Step 1 ($R^2 = .35$; $ps < .01$). As predicted, the interaction between the CAS and AC ($\beta = -.14$) explained additional significant variance ($\Delta R^2 = .02$, $p < .01$) in stress scores in Step 2. Simple effects of this

Table 1
Descriptive statistics and zero-order correlations.

Variable	Mean	(*SD*)	1	2	3	4
1. Cognitive attentional syndrome-1	41.55	(20.68)	–			
2. Attentional control scale	51.73	(9.10)	−.23	–		
3. DASS-21-depression	3.50	(4.56)	.49	−.27	–	
4. DASS-21-anxiety	2.76	(3.68)	.49	−.20	.67	–
5. DASS-21-stress	4.28	(4.50)	.57	−.28	.78	.75

Note: $N = 451$. All *r*s significant at $p < .01$ (two-tailed). DASS-21 = depression, anxiety, stress scale-21-item version.

interaction are depicted in Fig. 3. As shown, the CAS shared a significant positive association with stress scores at both low levels of AC (simple effect: $\beta = .68$, $p < .01$) and high levels of AC (simple effect: $\beta = .40$, $p < .01$).

4. Discussion

Consistent with its purported deleterious effects, activation of the CAS was significantly positively correlated with all of the assessed symptoms of psychopathology (i.e., depression, anxiety, and stress symptoms). Moreover, and as predicted, AC moderated the relationship between activation of the CAS and each of these symptoms. That is, relationships between activation of the CAS and symptoms grew increasingly stronger as AC *decreased*. Following from metacognitive theory (Wells, 2009), findings suggest that use of CAS-relevant coping strategies, such as rumination or worry, exacerbate mood and anxiety symptoms at heightened rates for individuals who have a relative inability to disengage and shift attention from threat information (i.e., low AC).

Metacognitive theory (Wells, 2009) posits that CAS-relevant coping-strategies serve to maintain a sense of threat, thus resulting in the exacerbation and maintenance of mood and anxiety symptoms. As previously discussed, AC appears to be a strong candidate variable to link activation of the CAS to such symptoms, as extant research has found that high AC facilitates disengagement from threat (Bardeen & Orcutt, 2011) and is associated with recovery from laboratory induced negative affect (Bardeen & Read, 2010). Overall, the present findings add to existing research (e.g., Bardeen & Read, 2010; Derryberry & Reed, 2002; Mathews, 2004) implicating AC as a protective individual difference variable against psychological symptoms.

Emerging neural theories of attention and accompanying data indicate that the protective nature of AC might relate to increased functioning of top-down control processes within the prefrontal cortex of the brain. In particular, Bishop (2008) asserted that the ability to attend to task-relevant information when faced with distracters (e.g., threat-related stimuli) is driven, in large part, by the ability to use top-down control processes, such as AC, that are located within the lateral prefrontal cortex (LPFC). Extant data suggest that individuals with heightened levels of psychological symptoms suffer from neutral deficits in the ability to effectively recruit AC in the service of disengaging from threatening stimuli. For example, state anxiety has been found to share a *negative* association with LPFC activity during tasks in which individuals were asked to focus on task-relevant neutral stimuli rather than task-irrelevant threatening stimuli (e.g., fearful facial expressions; Bishop, Duncan, Brett, & Lawrence, 2004).

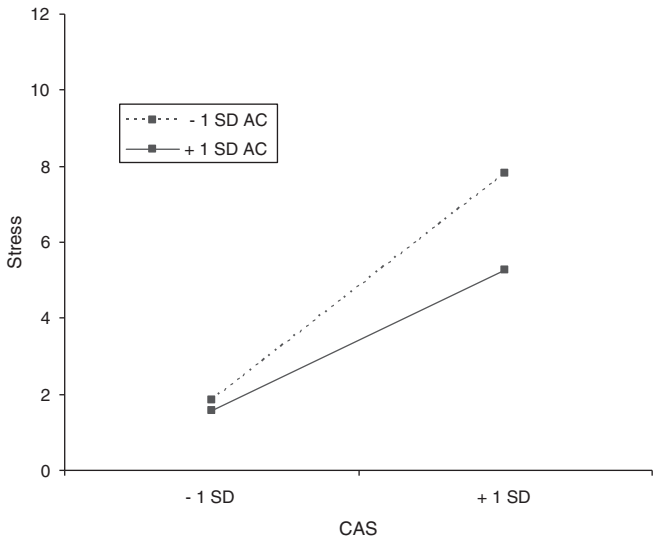

Fig. 3. Moderating effect of attentional control (AC) on the relationship between activation of the cognitive attentional syndrome (CAS) and stress symptoms. AC = attentional control scale; CAS = cognitive attentional syndrome-1; Stress = stress scale of depression, anxiety, stress scale-21-item version.

Bishop (2009) proposed that weaknesses in neural regions that likely lead to impoverished AC (i.e., prefrontal cortex regions) might reflect processing style deficits that can be modified via training that helps individuals maintain attentional focus. As such, and consistent with the present results, intervention strategies that seek to improve AC might be especially useful in reducing the impact of the activation of the CAS on psychological symptoms. Pursuant to this assertion, one important facet of Wells's (2009) metacognitive therapy includes an attentional training technique (ATT) that seeks to improve AC. Although ATT is one specific facet of the larger metacognitive treatment package, some studies have found that ATT by itself successfully reduces mood and anxiety symptoms (Papageorgiou & Wells, 2000; Wells, 1990). Moreover, other stand alone attention modification techniques have garnered increased attention in the literature for their ability to reduce symptoms of psychopathology (see Bar-Haim, 2010, for a review). Of note, preliminary results suggest that attention modification techniques might exert their effect via strengthening mechanisms in the lateral prefrontal cortex region of the brain (Browning, Holmes, Murphy, Goodwin, & Harmer, 2010). As noted, this brain region is linked to the deployment of top-down executive processes such as AC (Bishop, 2008). Thus, and consistent with both the present findings and metacognitive theory, attention modification techniques may help reduce symptoms of psychopathology by increasing AC, thus allowing for more flexible regulation of emotion and a reduction in the use of CAS-relevant coping strategies.

Limitations surrounding the present study must be acknowledged. First, our monomethod assessment likely inflated the estimated relations among study variables. However, correlated measurement error—which might be expected with monomethod assessment—does not appear to produce spurious interactions; rather, it may attenuate them (Evans, 1985). This assessment limitation is therefore not likely responsible for the observed significant interaction effects. Second, the observed interactions explained only modest unique variance in symptom scores. Of note, statistical constraints on the magnitude of effect sizes of interactions from non-experimental designs have been well documented (e.g., McClleland & Judd, 1993). Further, the percent of explained variance accounted for by these interactions fell within a range considered to be meaningful (i.e., at least 1%; Evans, 1985). Third, the CAS-1 was primarily developed to assess activation of the CAS within therapeutic settings (Wells, 2009) and thus limited data exist related to its psychometric properties. However, as described, the CAS-1 provides an advantage when assessing activation of the CAS in that this measure simultaneously assesses all core components of the CAS. Further, the present study provides preliminary support for the use of the CAS-1 in research settings. Fourth, generalization of our findings to clinical populations would be assured with replication in clinical samples with a larger number of individuals scoring on the higher end of the distribution of symptoms scores. Finally, the cross-sectional design limits causal conclusions. The use of experimental and longitudinal designs in future studies would address the direction of relations among the CAS, attention to threat, AC, and emotional functioning. Related to this limitation, some researchers have argued that the ACS measures metacognitive beliefs about AC rather than AC per se (Spada et al., 2010). As such, experimental designs that include laboratory-based tasks assessing AC might be particularly useful when examining relations among those constructs. With these caveats

in mind, the present study further supports the importance of AC in relation to mood and anxiety disorders; a conclusion that might ultimately lead to the increased use of attention training-based interventions as adjunct, or stand-alone, interventions for treating mood- and anxiety-related pathology.

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage.

Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the depression anxiety stress scales in clinical groups and a community sample. *Psychological Assessment, 10*, 176–181.

Bardeen, J. R., & Orcutt, H. K. (2011). Attentional control as a moderator of the relationship between posttraumatic stress symptoms and attentional threat bias. *Journal of Anxiety Disorders, 25*, 1008–1018.

Bardeen, J. R., & Read, J. P. (2010). Attentional control, trauma, and affect regulation: A preliminary investigation. *Traumatology, 16*, 11–18.

Bar-Haim, Y. (2010). Research review: Attention bias modification (ABM): A novel treatment for anxiety disorders. *Journal of Child Psychology and Psychiatry, 51*, 859–870.

Bishop, S. J. (2008). Neural mechanisms underlying selective attention to threat. *Annals of the New York Academy of Sciences, 1129*, 141–152.

Bishop, S. J. (2009). Trait anxiety and impoverished prefrontal control of attention. *Nature Neuroscience, 12*, 92–98.

Bishop, S., Duncan, J., Brett, M., & Lawrence, A. D. (2004). Prefrontal cortical function and anxiety: Controlling attention to threat-related stimuli. *Nature Neuroscience, 7*, 184–188.

Browning, M., Holmes, E. A., Murphy, S. E., & Goodwin & Harmer, C. J. (2010). Lateral prefrontal cortex mediates the cognitive modification of attentional bias. *Biological Psychiatry, 67*, 919–925.

Compton, J. R. (2000). Ability to disengage attention predicts negative affect. *Cognition and Emotion, 14*, 401–415.

Derryberry, D., & Reed, M. A. (2002). Anxiety-related attentional biases and their regulation by attentional control. *Journal of Abnormal Psychology, 111*, 225–236.

Eisenberg, N., Fabes, R. A., Guthrie, I. K., & Reiser, M. (2000). Dispositional emotionality and regulation: Their role in predicting quality of social functioning. *Journal of Personality Social Psychology, 78*, 136–157.

Evans, M. G. (1985). A Monte Carlo study of the effects of correlated method variance in moderated multiple regression analysis. *Organizational Behavior and Human Decision Processes, 36*, 305–323.

Lovibond, S. H., & Lovibond, P. E. (1995). *Manual for the depression anxiety stress scales*. Sydney: Psychology Foundation.

Mansell, W., Harvey, A., Watkins, E. R., & Shafran, R. (2008). Cognitive behavioral processes across psychological disorders: A review of the utility and validity of the transdiagnostic approach. *International Journal of Cognitive Therapy, 1*, 181–191.

Mathews, A. (2004). On the malleability of emotional encoding. *Behaviour Research and Therapy, 42*, 1019–1036.

McClleland, G. H., & Judd, C. M. (1993). Statistical difficulties of detecting interactions and moderator effects. *Psychological Bulletin, 114*, 376–390.

Papageorgiou, C., & Wells, A. (2000). Treatment of recurrent major depression with attention training. *Cognitive and Behavioral Practice, 7*, 407–413.

Spada, M. M., Georgiou, G. A., & Wells, A. (2010). The relationship among metacognitions, attentional control, and state anxiety. *Cognitive Behaviour Therapy, 39*, 64–71.

Wells, A. (1990). Panic disorder in association with relaxation induced anxiety: An attentional training approach to treatment. *Behavior Therapy, 21*, 273–280.

Wells, A. (2009). *Metacognitive therapy for anxiety and depression*. New York: Guilford Press.