

Evidence of Broad Deficits in Emotion Regulation Associated with Chronic Worry and Generalized Anxiety Disorder

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Abstract This study examined the relationship between emotion regulation deficits and GAD-related outcomes in an analogue sample. Consistent with hypotheses, general emotion dysregulation was associated with reports of chronic worry and with analogue GAD status. Also, specific regulation deficits, including deficits in emotional clarity, acceptance of emotions, ability to engage in goal directed behaviors when distressed, impulse control, and access to effective regulation strategies, were associated with worry and analogue GAD above and beyond variance contributed by negative affectivity. These findings provide additional preliminary evidence for an emotion regulation deficit model of GAD and are discussed in terms of clinical implications and directions for future research.

Keywords Generalized anxiety disorder · Anxiety disorders · Emotion regulation · Emotions · Anxiety

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Introduction

While the past two decades have seen a remarkable increase in the study of generalized anxiety disorder (GAD), it continues to be the most poorly understood and least effectively treated of the anxiety disorders (Brown, Barlow, & Liebowitz, 1994). Even among the most recent and effective psychotherapeutic treatments for GAD, fewer than 60% of clients meet criteria for high end-state functioning at follow-up assessment (Borkovec & Costello, 1993; Ladouceur et al., 2000). Many theorists (e.g., Mennin, 2004; Roemer & Orsillo, 2002) have suggested that GAD is poorly treated because the symptoms of the disorder challenge traditional cognitive behavioral approaches to treatment; GAD does not easily lend itself to exposure treatment, as there is no clear target of anxiety, nor does it lend itself to traditional cognitive techniques, such as cognitive restructuring, as the worries seen in GAD often cover a wide-range of topics. A more complete understanding, then, of both the nature of GAD and its central feature, worry, and of the individual difference factors that may contribute to the development of GAD, is necessary in order to improve upon existing treatment packages.

A promising development in the study of GAD is Borkovec's avoidance model of worry (Borkovec, Alcaine, & Behar, 2004), in which he proposes that worry is a cognitive activity that is negatively reinforced by diminished emotional distress and arousal. This theory is an integration of empirical evidence that worry interferes with the physiological (Borkovec & Hu, 1990) and subjective (Wells & Papageorgiou, 1995) components of the emotional response, and is consistent with evidence that worry, as a verbal-linguistic activity, is relatively isolated from the autonomic nervous system (Borkovec et al., 2004; see also Lang, 1985). Negative mood induction does lead to increases in catastrophic worry (Startup & Davey, 2001), suggesting that the process of worry may be a conditioned response activated by negative emotional states. And worriers themselves endorse this function of worry; worrying to distract oneself from more emotional topics is the only self-reported reason to worry that distinguishes between clinical and subclinical worriers (e.g., Borkovec & Roemer, 1995).

Thus, Borkovec's model suggests that the diminished emotional experience associated with worry may be one factor that motivates both strategic and automatic worrying. While this attenuated experience of distress may seem to have positive short-term consequences, there is mounting evidence that worry may maintain the experience of emotional distress in three ways. First, as suggested by Borkovec and colleagues (2004), worry may reduce functional exposure and interfere with emotional processing (see also Foa & Kozak, 1986), thereby maintaining associations around the threatening material. Also, because we have little instrumental control over internal experiences, suppression of distressing thoughts and feelings through worry may paradoxically intensify the emotional experiences and lead to increased intrusion of the material (see Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Wegner, 1994). Finally, the dominant theories of emotion emphasize its functional value, including informing organisms about which stimuli should be approached or avoided, and serving as a system of communication (Izard, 1971; Frijda, 1988). The avoidance of emotion through worry may interfere with practical value of the emotional response, leading to less adaptive functioning and more distress over time.

While Borkovec's avoidance model of worry (2004) is quite comprehensive in its explanation of the cycle of worry maintenance, the model does not address the origins of the emotional avoidance likely associated with GAD (e.g., Mennin, Turk, & Heimberg,

2004; Mennin, Heimberg, Turk, & Fresco, 2002). Mennin and colleagues have suggested that important individual differences in the experience and regulation of emotion may account for the development of worry as an avoidance strategy (Mennin, Heimberg, Turk, & Fresco, 2005; Mennin et al., 2002). Specifically, they suggest that individuals with GAD experience and express more emotional intensity, have more difficulty identifying and understanding primary (positive and negative) emotions, have difficulty accepting or allowing emotional responses, instead tending to have negative reactions to their emotional responses, and experience difficulty engaging effective emotion management strategies when experiencing negative emotions (Mennin et al., 2005). This experience of emotion as intense, unclear, and aversive, combined with a lack of effectual regulation strategies, may motivate individuals to seek means of emotional avoidance, and for some may lead to the development of GAD. As the cycle of worry becomes more frequent and intense, it is also possible that emotion regulation deficits contribute to the maintenance of the disorder; as anxiety is maintained and intensified through attempted avoidance, the individual may feel increasingly confused by and averse to their emotional experience, thereby motivating further automatic or strategic attempts to avoid through worry.

Theorists have suggested that emotion dysregulation underlies many forms of psychopathology (e.g., Gross & Munoz, 1995; Kring & Bachorowski, 1999). Indeed, dysregulation and disruption of emotion have been associated with depression (e.g., Rude & McCarthy, 2003), and anxiety, including panic disorder (Baker, Holloway, Thomas, Thomas, & Owens, 2004), and posttraumatic stress disorder (e.g., Cloitre, Scarvalone, & Difede, 1997). While this area of research is in its infancy, recent findings also provide preliminary support for the presence of emotion regulation deficits in individuals with GAD and chronic worry. Individuals with GAD in an analogue population report greater negative emotional impulse strength and negative expressivity compared to controls (Mennin et al., 2005), and emotional intensity distinguishes individuals with GAD from those with other anxiety disorders (e.g., social anxiety disorder; Turk, Heimberg, Luterek, Mennin, & Fresco, 2005). Additionally, individuals with GAD in both analogue and clinical samples exhibit less clarity of emotional responses, more difficulty understanding and describing emotional experiences, and less ability to repair negative mood, than controls (Mennin et al., 2005). Finally, there is evidence that in both clinical and non-clinical samples, symptoms of GAD and chronic worry are associated with a tendency to attempt to control and avoid negatively evaluated internal experiences (Roemer, Salters, Raffa, & Orsillo, 2005) and with a tendency to react to emotional responses as if they are threatening (Roemer et al., 2005; Mennin et al., 2005).

The current study is meant to extend preliminary evidence of emotion regulation deficits and disruption in chronic worry and GAD using a newly established and psychometrically sound measure of emotion dysregulation, the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS, described in more detail below, assesses both general deficits of emotion regulation and deficits in specific domains of regulation. Specifically, this measure is based on a model of emotion dysregulation that emphasizes the function of emotions and equates dysregulation with (1) deficits in awareness and understanding (i.e., clarity) of emotional experience, (2) minimal access to strategies to manage one's emotions, (3) non-acceptance of emotions (i.e., reactivity to one's emotional state), and (4) impaired ability to act in desired ways regardless of emotional state (i.e., impulsivity and an inability to engage in goal-directed behavior). We hypothesized that self-reported chronic worry, the central feature of

GAD, and analogue GAD diagnostic status, would be associated with deficits in emotion regulation across multiple domains. Additionally, we hypothesized that these deficits would be associated with chronic worry and GAD symptoms above and beyond their relationship with general negative affectivity.

Method

Participants

Participants were recruited through campus recruitment tables or the psychology subject pool at the University of Massachusetts Boston—a large urban university. Three hundred and twenty nine participants were administered a series of questionnaires including the measures described below and other measures not used in the current study. Four participants were missing data on one or more of the key study variables and were excluded from the analyses. The final sample consisted of 325 participants (190 female, 6 participants did not report gender), with a mean age of 23.8 years (ranging from 18 to 62). The self-identified ethnic make-up of the sample was: 50.8% White, 21.5% Black/African-American, 8.6% Asian/Pacific Islander, 6.5% Hispanic/Latino, 5.2% multiracial, and 3.1% other (7 participants did not identify ethnicity).

Measures

Penn state worry questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990)

The PSWQ is a widely used 16-item self-report measure assessing intensity and excessiveness of worry. Scores range from 16 to 80, with scores above 62 suggesting clinical levels of worry (Behar, Alcaine, Zuellig, & Borkovec, 2003; Fresco, Mennin, Heimberg, & Turk, 2003). This measure has excellent psychometric properties in both non-clinical and clinical populations (Molina & Borkovec, 1994), and discriminates worry within anxiety-disordered samples (Brown, Antony, & Barlow, 1992). In the current sample, the PSWQ demonstrated excellent internal consistency (Cronbach's $\alpha = .96$).

Generalized anxiety disorders questionnaire-IV (GAD-Q-IV; Newman, Zuellig, & Kachin, 2002)

The GAD-Q-IV assesses DSM-IV criteria for GAD in a self-report format. Questions address the presence of excessive and uncontrollable worry, including worry about minor things, more days than not over the past 6 months. Questions also address the number of worrisome topics, endorsement of GAD associated features, and interference and distress related to worry and worry-related symptoms. The authors provide a formula to obtain a total score by combining responses on all items. Total scores range from 0 to 13, with a cut-off score of 5.7 suggesting probable GAD diagnostic status. Using this cut-off score, 26.8% ($N = 87$) of the current sample met criteria for GAD. Preliminary analyses demonstrate good reliability and validity for the GADQ-IV when used as a diagnostic screener (Newman et al., 2002). For the current project, a total score above the suggested cut-off criteria was used as indicator of analogue GAD diagnostic status.

Positive and negative affect scale (PANAS; Watson, Clark, & Tellegen, 1988)

The PANAS is a 20-item self-report measure designed to assess the distinct dimensions of positive (PA) and negative affect (NA). In the current project, participants were asked to report their affect over the last month to capture general long-term affectivity, and only data from the NA scale was used. The correlation between the NA and PA scales is low (ranging from $-.12$ to $-.23$ [Watson et al., 1988]) indicating that the two scales measure independent constructs and can therefore be used separately. Internal consistency estimates for the scales using short or long-term (e.g., 1 month) time instructions are good to excellent (α s from $.84$ to $.87$). The NA scale demonstrated excellent internal consistency in this sample (Cronbach's $\alpha = .91$).

Difficulties in emotion regulation scale (DERS; Gratz & Roemer, 2004)

The DERS is a 36-item measure of difficulties with various dimensions of emotion regulation. The scale provides a total score as well as six subscale scores measuring difficulties in aspects of emotion regulation, including: acceptance of emotions (NON-ACCEPT, e.g., “When I’m upset, I become embarrassed for feeling that way”), ability to engage in goal-directed behavior when distressed (GOALS, e.g., “When I’m upset, I have difficulty getting things done”), impulse control (IMPULSE, e.g., “When I’m upset, I feel out of control”), awareness of emotions (AWARENESS, e.g., “I pay attention to how I feel”), access to strategies for regulation (STRATEGIES, e.g., “When I’m upset, I believe that there is nothing I can do to make myself feel better”), and clarity of emotions (CLARITY, e.g., “I am confused about how I feel”). Participants indicate how often each item applies to themselves on a 5-point likert-type scale, with 1 as *almost never* (0–10%) and 5 as *almost always* (91–100%). Scores are coded such that higher scores indicate greater difficulties in emotion regulation. In a sample of undergraduate students, this scale demonstrated high internal consistency for the total score (Cronbach's $\alpha = .93$), adequate internal consistency for all of the subscales (Cronbach's $\alpha > .80$) and good test-retest reliability over a period of 4–8 weeks ($\rho_1 = .88$, $P < .01$ total score, $\rho_{15} > .57$, P s $< .01$ subscales, Gratz & Roemer, 2004). The measure also had adequate convergent validity with established measures of emotion dysregulation, emotional avoidance, and emotional expressivity, and adequate predictive validity of behavioral outcomes associated with emotion dysregulation (i.e., self-harming behaviors and intimate partner abuse; Gratz & Roemer, 2004). In the current sample, this measure demonstrated excellent to adequate internal consistency for both the total score (Cronbach's $\alpha = .93$) and subscale scores (Cronbach's α s $> .76$).

Results

Means for key study variables in the full sample and by group are presented in Table 1. The PANAS-NA score variable violated assumptions of normality (kurtosis = 28.40); a log transformation reduced the kurtosis and this transformed variable was used in all subsequent analyses (although results are comparable to those using the untransformed variable). For clarity, the means and standard deviations of the untransformed variable are reported in Table 1.

Exploration of demographic variables in the full sample and by group revealed that age was not significantly related to any key study variables in the full sample

Table 1 Means and standard deviations of key study variables by full sample and by group, and results of *t*-tests by group

Measure	Full study sample		Analogue GAD sample		Analogue non-GAD sample		<i>t</i>	<i>d</i>
	<i>M</i> (<i>n</i> = 325)	<i>SD</i>	<i>M</i> (<i>n</i> = 87)	<i>SD</i>	<i>M</i> (<i>n</i> = 238)	<i>SD</i>		
PSWQ	45.64	12.64	57.34	10.46	41.36	10.49	12.17***	1.35
GAD-Q-IV	3.87	3.72	9.32	1.80	1.88	1.69		
PANAS-NA	2.62	0.85	3.00	1.10	2.48	0.69	5.68***	0.63
DERs	82.66	23.41	94.81	22.96	78.22	22.00	5.95***	0.66
Non-accept	2.06	0.96	2.45	1.01	1.92	0.90	4.62***	0.51
Goals	2.75	0.94	3.19	0.85	2.59	0.92	5.27***	0.59
Impulse	2.14	0.87	2.54	0.95	1.99	0.79	5.32***	0.59
Awareness	2.55	0.82	2.56	0.82	2.54	0.82	.21	0.02
Strategies	2.15	0.93	2.64	0.93	1.98	0.87	5.94***	0.66
Clarity ^a	2.25	0.77	2.48	0.84	2.16	0.73	3.40**	0.38

Note: *d* = Cohen's *d* estimate of effect size. PSWQ = Penn State Worry Questionnaire, GAD-Q-IV = Generalized Anxiety Disorder Questionnaire, PANAS-NA = Positive and Negative Affect Scale- Negative Affect, DERs = Difficulties in Emotion Regulation Scale

^aNon-GAD sample, *n* = 237

****P* < .001, ***P* < .01

(all *r*s < .10, *P*s > .10). Gender was related to a number of key study variables, with women reporting greater negative affect (*t* = 2.48, *P* < .05), chronic worry (*t* = 2.26, *P* < .05), and general difficulties with emotion regulation (*t* = 1.71, *P* < .10), and less impulse control (*t* = 2.48, *P* < .05), access to regulation strategies (*t* = 1.77, *P* < .10), and ability to engage in goal directed behavior when upset (*t* = 1.81, *P* < .10), than men. Analogue groups differed by gender (GAD = 26 male, 2 missing, non-GAD = 103 male, 4 missing; $\chi^2 = 4.67$, *P* < .05), with more women in the GAD group. Analogue groups also differed marginally by age, the GAD group (*M* = 25.06, *SD* = 8.17) was older than the non-GAD group (*M* = 23.37, *SD* = 6.92; *t* = 1.71, *P* < .10). However, controlling for gender and age did not alter any of the results reported below.

Zero-order correlations of PSWQ scores and dependent variables are reported in Table 2, left side. As predicted, chronic worry was associated with deficits in emotion

Table 2 Zero-order and partial correlations (controlling for general negative affect [PANAS-NA]) between PSWQ scores and dependent variables

	Zero order (<i>r</i>)	Partial (<i>r</i>)
DERs	.51***	.48***
Non-accept	.42***	.38***
Goals	.41***	.40***
Impulse	.41***	.39***
Awareness	.09	.07
Strategies	.50***	.48***
Clarity ^a	.32***	.29***

Note: *n* = 325. PSWQ = Penn State Worry Questionnaire, PANAS-NA = Positive and Negative Affect Scale- Negative Affect, DERs = Difficulties in Emotion Regulation Scale

^a*n* = 324

****P* < .001

regulation across multiple domains. Scores on the PSWQ were significantly correlated with greater difficulties in emotion regulation in general (DERS total) as well as specific deficits in subscale areas of emotional acceptance, ability to engage in goal directed behavior, impulse control, clarity of emotional experiences, and access to emotion regulation strategies. The PSWQ was not significantly associated with the lack of awareness of emotional experience subscale of the DERS. Next, we were interested in exploring whether the relationships between chronic worry and emotion regulation deficits reported above exist beyond variance contributed by the negative affectivity associated with worry. Thus, partial correlations were calculated controlling for variance accounted for by general negative affect (PANAS-NA) and are reported in Table 2, right side. PSWQ scores had a unique significant relationship with the total DERS score and with all of the DERS subscales except for the awareness subscale. In order to compare correlations, r to z score transformations were calculated (Cohen & Cohen, 1975) for the partial correlations, revealing that the awareness subscale was significantly less associated with self-reported worry than were any of the other subscales (all z s > 1.96 , P s $< .05$), whereas the strategies subscale was significantly more associated with worry than any of the other subscales (all z s > 1.99 , P s $< .05$). Further, the clarity subscale was marginally significantly less associated with worry than were the goals ($z = 1.81$, $P < .10$), and impulse control ($z = 1.70$, $P < .10$) subscales.

To determine whether emotion regulation deficits distinguish between individuals who meet GAD-Q-IV criteria for GAD diagnosis and those who do not, t -tests were conducted (See Table 1). Those with analogue GAD reported significantly more difficulties with emotion regulation in general and across specific domains (except for the awareness domain) than non-GAD participants. To explore whether this relationship was unique beyond variance contributed by negative affect, ANCOVAs comparing mean total DERS and DERS subscale scores were conducted, controlling for variance contributed by negative affect (see Table 3). The relationships observed were robust even when variance contributed by negative affect was removed.

Because we were interested in the differential relationship of specific domains of emotion regulation with GAD diagnostic status, point-biserial correlations (McNemar,

Table 3 Results of ANCOVAs controlling for general negative affect (PANAS-NA) in individuals with and without analogue GAD

	Analogue sample		F	η_p^2
	GAD ($n = 87$)	Non-GAD ($n = 238$)		
Measure	M	M		
DERS	93.68	78.64	26.61***	.08 ^a
Non-accept	2.38	1.94	13.03***	.04 ^a
Goals	3.19	2.59	24.96***	.07 ^a
Impulse	2.52	2.00	22.53***	.07 ^a
Awareness	2.54	2.55	.01	$< .01$
Strategies	2.61	1.99	28.28***	.08 ^a
Clarity ^b	2.45	2.17	7.84**	.02

Note: M = Adjusted mean. DERS = Difficulties in Emotion Regulation Scale, PANAS-NA = Positive and Negative Affect Scale- Negative Affect

^aMedium to large effect

^bNon-GAD sample, $n = 237$

*** $P < .001$, ** $P < .01$

Table 4 Point-biserial correlations between analogue GAD diagnostic status and dependent variables controlling for general negative affect (PANAS-NA)

DERS Subscale	<i>r</i>
Non-accept	.20***
Goals	.27***
Impulse	.26***
Awareness	< -.01
Strategies	.28***
Clarity ^a	.15**

Note: *n* = 325. PANAS-NA = Positive and Negative Affect Scale-Negative Affect, DERS = Difficulties in Emotion Regulation Scale

^a*n* = 324

****P* < .001, ***P* < .01

1969) were calculated for each of the subscales of the DERS and analogue GAD diagnostic status controlling for negative affect (reported in Table 4). *R* to *z*-score transformations were then calculated to determine which subscales were most closely associated with analogue GAD (Cohen & Cohen, 1975). This analysis revealed that the awareness subscale was marginally significantly or significantly less associated with analogue GAD than any other subscale (*z*s > 1.85, *P*s < .06). The strategies (*z* = 2.15, *P* < .05) and goals (*z* = 1.85, *P* < .10) subscales were more associated with analogue GAD than the clarity subscale. Also, the strategies (*z* = 2.03, *P* < .05) subscale was more associated with analogue GAD status than the non-acceptance subscale. There were no other significantly different correlations between subscales and analogue GAD.

Discussion

The current study examined the relationship between emotion regulation deficits and GAD-related outcomes in a non-clinical sample. Consistent with predictions, reports of difficulties in emotion regulation in general, and with specific emotion regulation deficits across a number of domains (as measured by the DERS), were associated with reports of chronic worry. These relationships remained significant with variance accounted for by the association between worry and general affective distress removed. Only the subscale of the DERS measuring difficulties with emotional awareness was not associated with chronic worry. Also, individuals with analogue GAD had significantly more difficulties with a range of emotion regulation competencies (except for emotional awareness) than those without analogue GAD. Again, the relationship between difficulties with emotional regulation and analogue GAD status existed above and beyond variance contributed by negative affectivity. Comparisons of the partial correlations between the subscales of the DERS and self-reported worry and analogue GAD status suggested that lack of awareness of emotional experiences was less associated with GAD-related outcomes than other specific emotion regulation deficits, whereas lack of access to emotion regulation strategies perceived as effective was more associated with self reported worry than other specific deficits.

Together, these findings provide additional preliminary evidence of emotion regulation deficits in GAD, and are consistent with Mennin and colleagues' emotion dysregulation and disruption model of GAD (Mennin et al., 2002; 2004). General emotion dysregulation and specific regulation deficits, including deficits in emotional clarity,

acceptance of emotions, ability to engage in goal directed behaviors when distressed, impulse control, and access to effective regulation strategies, were associated with reports of both chronic worry and GAD symptoms. These findings are consistent with Mennin and colleagues' (2002) hypothesis that GAD may be related to (1) the experience of emotions as aversive and confusing, (2) the inaccessibility of regulation strategies perceived as effective, and (3) the perceived inability to control behavior in the face of distress.

One surprising finding was that worry and analogue GAD diagnostic status were not associated with difficulties in self-reported emotional awareness. While this was inconsistent with predictions, other investigators have recently found that individuals with anxiety symptoms report greater *awareness* of emotion while experiencing less *clarity* of emotional experience (e.g., Baker et al., 2004; Novick-Kline, Turk, Mennin, Hoyt, & Gallagher, 2003). It may be that, due to the frequency and intensity of emotional experiences associated with anxiety, individuals with anxiety disorders can be very aware that they are having an emotion, but experience the emotion as diffuse and confusing. Further, Lischetzke and Eid (2003) have recently noted that attention to feelings can be either beneficial or harmful, depending on the nature of the attention (ruminative v. problem-solving through flexible attentional deployment). It may be that the DERS awareness subscale does not distinguish between beneficial and maladaptive types of internal attention, resulting in its lack of correlation with psychological outcomes.

A number of limitations of the current study must be considered when interpreting the findings. While this project provides support for the presence of emotion regulation deficits in chronic worry and analogue GAD, Mennin and colleagues' (Mennin et al., 2002; 2004) hypothesis that emotion regulation deficits precede and contribute to the development worry and GAD was not directly tested in this project. Thus, an alternative interpretation of the findings is that the presence of chronic worry and/or GAD symptomatology may lead individuals to develop regulation difficulties. In an attempt to address this limitation of the research design, ANCOVAs were completed in which variance in GAD contributed by negative affect was covaried out, to explore whether it is possible that deficits in regulation may exist separately from the increased distress associated with GAD. Miller and Chapman (2001) question the use of the ANCOVA when group differences exist on the covariate in question, suggesting that it may be invalid to assume that a theoretical entity (such as "GAD") exists in a meaningful way beyond its association with a co-varying entity (such as "negative affect"). While these analyses are included as the most conservative test of the relationships available given the limitations of the research design, the only true test of the direction and temporal specificity of these relationships must utilize prospective or experimental design. Similar to designs employed by Gross and Levenson (1993), Harris (2001), and others (for a review see Salters-Pedneault, Tull, & Roemer, 2004), future experimental studies may manipulate emotion regulation strategies to explore outcomes on worry-related variables. For example, individuals with and without GAD could be exposed to emotionally evocative stimuli and be instructed to employ different regulatory strategies (or to not regulate emotions), and effects on worry frequency and intensity, psychophysiology, perceived regulatory ability, and subjective emotional experience could be measured.

In studies of emotion and emotion regulation, it is always necessary to recognize the limitations of the self-report format. There is a great deal of evidence that we are unreliable reporters of our internal processes (e.g., Nisbett & Wilson, 1977), and reports of emotional experiences may be particularly subject to biases and to the effects of

social desirability. Further, individuals with chronic worry and GAD may have notable difficulties accessing and reporting on their emotional and cognitive experiences (Mennin et al., 2004). Also, while the measures of worry and GAD used here are fairly well established, the measure of emotion dysregulation used (the DERS) is relatively new and will need to be used across populations before its psychometric properties can be confirmed. Given the limitations of self-report assessment, future work examining emotion regulatory processes using physiological, behavioral, or cognitive/attentive measures will be necessary.

A further limitation of the self-report format is the possibility that individuals' report about their experience of regulation may reflect confidence in their ability to regulate rather than actual regulation skills. This is particularly relevant in worry and GAD, which have been associated with a negative problem orientation, or a lack of confidence in one's ability to solve problems (e.g., Robichaud & Dugas, 2005). It may be that individuals with chronic worry or in the analogue GAD group reported greater difficulties in emotion regulation not because they actually experience these difficulties but because they perceive emotional states as more of a problem (which is consistent with Roemer et al.'s [2005] finding that worry and GAD are associated with the perception of emotions as threatening), and have less confidence that they can regulate these experiences. This possibility warrants future research.

Finally, given the newness of this area of research, we chose to examine the variables of interest in an analogue sample prior to explorations in a clinical sample (following Kazdin's [2003] recommendations). While it is possible that a number of these participants have clinical levels of worry (as evidenced by a large percentage scoring above the clinical cut-off score on the GAD-Q-IV), future studies must examine these processes in samples diagnosed using a reliable diagnostic interview. Additionally, studies examining emotion regulation deficits in individuals with GAD compared to nonanxious controls and to individuals with other anxiety disorders (see Turk et al. [2005] as an example) will be necessary to understand the unique contribution of emotion dysregulation to GAD symptomatology.

While further work is needed to establish the direction of the relationship between emotion dysregulation and GAD, the specific affective states associated with dysregulation, the clinical relevance of the processes, and the mechanisms that may lead to these relationships, the current study provides preliminary support for Mennin and colleagues' hypothesis that GAD is associated with deficits in multiple domains of emotion regulation (Mennin et al., 2002; 2004). Continued exploration of the nature of the disruptions in emotion regulation associated with GAD will help improve our understanding of this disorder. The demonstrated relationship between emotion regulation deficits and worry and GAD suggests that interventions targeting emotion regulation (e.g., Mennin, 2004) and acceptance of emotional responses, as well as engagement in desired behavior while in an emotional state (e.g., Roemer & Orsillo, 2002) may be efficacious in treating this chronic disorder.

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