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ORIGINAL ARTICLE

Exploring the Relationship Between Childhood Abuse and Analogue Generalized Anxiety Disorder: The Mediating Role of Emotion Dysregulation

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Abstract Despite emerging evidence for the central role of emotion dysregulation in generalized anxiety disorder (GAD), little is known about the factors that may increase the risk for this dysregulation. One factor that may be worth investigating is childhood abuse, previously found to be associated with both emotion dysregulation and GAD. To begin to explore the interrelationships among these phenomena, the present study examined the mediating role of emotion dysregulation in the relationship between various forms of childhood abuse (i.e., physical, sexual, and emotional abuse) and analogue GAD status in a sample of 396 undergraduates. Findings provided evidence for the mediating role of emotion dysregulation in the relationship between emotional abuse in particular and analogue GAD.

Keywords Anxiety disorders · Childhood abuse · Emotion regulation · Generalized anxiety disorder

Introduction

The central defining feature of generalized anxiety disorder (GAD) is pervasive and uncontrollable worry (American Psychiatric Association (APA) 1994; Roemer et al. 2002). Data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) indicate that the current and lifetime prevalence rates of GAD in the general population are approximately 2.1 and 4.1%, respectively (Grant et al. 2005). Further, evidence suggests that GAD is a chronic condition, with symptoms persisting intermittently for up to 20 years for many individuals (Keller 2002). Although the past two decades have seen an increase in the number of empirical investigations of this disorder, GAD continues to be one of the most poorly understood and least effectively treated anxiety disorder (Brown et al. 1994; Fisher 2006). As a result, the past several years have seen an increased interest in research that attempts to identify and clarify the mechanisms underlying the development and maintenance of GAD (Roemer et al. 2002).

One such mechanism that has received increasing empirical attention and is considered to be particularly relevant to GAD is emotion dysregulation. As defined here, emotion dysregulation refers to maladaptive ways of responding to one's emotions (regardless of the nature or quality of these emotions), including nonaccepting responses, difficulties controlling behaviors in the face of emotional distress, and deficits in the functional use of emotions as information (Gratz and Roemer 2004). As such, emotion dysregulation is distinguished from a temperamental emotional vulnerability (e.g., being emotionally intense or reactive), focusing instead on the ways in which individuals respond to their emotional experience, as opposed to the quality of the emotional experience itself (see Gratz 2007; Gratz and Roemer 2008; Linehan 1993; Mennin et al. 2005). With regard to the relationship between emotion dysregulation and GAD, Mennin et al. (2002) suggest that GAD develops as a result of a combination of an underlying emotional vulnerability (such as heightened emotional intensity) and a poor understanding of emotions, which leads to nonaccepting responses to positive and negative emotions (in the form of catastrophic

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beliefs about the consequences of experiencing emotions). Further, as a result of difficulty modulating emotions perceived as aversive, GAD-vulnerable individuals tend to rely on maladaptive strategies (in particular, worry) to avoid or escape these emotional experiences (see Borkovec et al. 2004). Although associated with reduced arousal in the short-term (and thus negatively reinforced; Borkovec and Hu 1990; Thayer et al. 1996), worry is thought to interfere with adaptive emotional processing in the long-term, resulting in greater distress and dysregulation (Borkovec et al. 1998; Borkovec and Roemer 1995; Salters-Pedneault et al. 2006, 2004).

A growing body of research supports Mennin et al.'s (2002) emotion dysregulation model of GAD. For example, in a series of studies, Mennin et al. (2005) found that both analogue and clinical GAD samples exhibited increased emotion dysregulation (including difficulties understanding emotions and an inability to self-soothe following the experience of negative emotions), compared to healthy controls. Further, these aspects of emotion dysregulation were predictive of a GAD diagnosis even after controlling for other GAD-relevant variables, such as worry, anxiety, and depressive symptom severity. Likewise, Roemer et al. (2009) reported heightened emotion dysregulation among clinical and analogue GAD samples (vs. non-GAD controls), with emotion dysregulation predicting GAD status above and beyond a number of other relevant factors, including anxiety and depressive symptom severity (see also Tull et al. 2009 for similar results). Finally, Salters-Pedneault et al. (2006) found that overall emotion dysregulation was significantly associated with the presence of an analogue GAD diagnosis (as were deficits in the specific dimensions of emotional clarity, emotional acceptance, the ability to engage in goal-directed behaviors when distressed, the ability to control impulsive behaviors when distressed, and access to emotion regulation strategies perceived as effective).

Despite growing evidence for the role of emotion dysregulation in GAD, little is known about the factors that may increase the risk for this dysregulation (and, consequently, GAD). One factor that may be important to examine is childhood abuse. Indeed, theoretical literature suggests that the experience of abuse during childhood interferes with the development of adaptive emotion regulation, exposing children to extreme emotional demands while simultaneously failing to teach them how to regulate emotional arousal, control their behaviors in the context of emotional arousal, and/or tolerate emotional distress (Cloitre 1998; Linehan 1993; Thompson and Calkins 1996). Likewise, childhood abuse has been theorized to impede the development of emotional awareness and understanding, and increase the risk for emotional nonacceptance (Linehan 1993). Consistent with this theoretical literature, research indicates a relationship between childhood abuse and emotion dysregulation, with studies finding that abused children are significantly more likely than their non-abused peers to exhibit emotion dysregulation (Shields and Cicchetti 1998; Shipman et al. 2007, 2000), and that childhood abuse is associated with lower levels of emotional understanding (Shipman et al. 2000) and greater emotional nonacceptance (Gratz et al. 2007).

Childhood abuse may be a particularly important risk factor to examine with regard to GAD. As with many forms of psychopathology, the experience of childhood abuse has been found to be associated with increased risk for GAD (Kessler et al. 1997; Safren et al. 2002; Yamamoto et al. 1999). For example, in a sample of treatment seeking adults diagnosed with GAD, Safren et al. (2002) found that 31% reported having experienced childhood sexual and/or physical abuse (a rate higher than that found for individuals with other anxiety disorders, such as social anxiety disorder). Similarly, Kessler et al. (1997) found that experiences of abuse during childhood (including repeated molestation, rape, and parental aggression) increased the risk for the later development of GAD above and beyond sociodemographic variables. Nonetheless, it is important to note that Gibb et al. (2007) did not find associations between emotional, physical, and sexual abuse and GAD among a sample of adult psychiatric outpatients.

Given some evidence for an association between childhood abuse and both emotion dysregulation and GAD, as well as increasing evidence for the role of emotion dysregulation in GAD, the current study sought to investigate the mediating role of emotion dysregulation in the relationship between childhood abuse (i.e., physical, sexual, and emotional abuse) and analogue GAD. It was hypothesized that childhood abuse and emotion dysregulation would be significantly associated with analogue GAD. Further, we hypothesized that emotion dysregulation would fully mediate the relationships between all forms of childhood abuse and analogue GAD status.

Method

Participants

Participants were 396 undergraduates at a large public university on the eastern coast of the United States. Participants were predominantly female ($n = 293$) and ranged in age from 18 to 42 (Mean age = 20.26, SD = 2.45). In regard to their self-reported racial/ethnic background, 62% were White, 12% were Black/African-American, 9% were Asian/Asian-American, 6% were multi-racial, 5% were

Latino/Latina, 4% were Asian Indian, and 3% reported being from another racial/ethnic background.

Measures

The *Generalized Anxiety Disorder Questionnaire-IV* (GADQ-IV; Newman et al. 2002) is a 9-item, self-report, diagnostic screening measure of GAD based on *Diagnostic and Statistical Manual of Mental Disorders-IV* criteria (DSM-IV; APA 1994). Items on this measure address the presence of excessive and uncontrollable worry (including worry about minor things, more days than not, over the past 6 months), as well as the number of worrisome topics, endorsement of GAD associated features, and interference and distress related to worry and worry-related symptoms. Because this measure was designed to be a diagnostic screener (Newman et al. 2002), it includes a "skip-out" feature. Specifically, if participants respond negatively to the first three items (i.e., "Do you experience excessive worry?"; "Is your worry excessive in intensity, frequency, or amount of distress it causes?"; "Do you find it difficult to control your worry (or stop worrying) once it starts?"), they are instructed to not to answer the remaining questions on the measure. As a result of this skip-out instruction, Newman et al. (2002) recommend that researchers not use this measure to examine the severity of GAD symptoms dimensionally. Total scores range from 0 to 13, with a suggested cut-off score of 5.7 to indicate probable GAD diagnostic status (i.e., analogue GAD). Providing support for the validity of this cutoff score, Newman et al. (2002) found that the use of this cut-off correctly classified 88% of participants with GAD as determined by the *Anxiety Disorders Interview Schedule for DSM-IV, Lifetime Version* (Brown et al. 1994). Further, findings indicate that the GADQ-IV has good reliability and construct validity (in the form of significant associations with established clinical interviews for GAD and self-report measures of worry; Newman et al. 2002). Internal consistency was not examined, as the skip-out option within the scale can result in inflated internal consistency estimates and, therefore, is not recommended (Newman et al. 2002).

The *Childhood Trauma Questionnaire-Short Form* (CTQ-SF; Bernstein et al. 2003) is a self-report measure containing 28 items assessing experiences of childhood maltreatment. Of particular interest to this study were the three subscales measuring emotional abuse, physical abuse, and sexual abuse. Findings among a community sample of 579 adults indicate that the CTQ has adequate internal consistency, as well as good test–retest reliability over a period of greater than 1 month ($r = .86$, $p < .01$; see Bernstein and Fink 1998). Studies have also found a significant correlation between CTQ scores and clinician ratings of trauma, supporting its construct validity (Bernstein et al. 1997, 2003). Internal consistency for the three subscales assessing emotional abuse, physical abuse, and sexual abuse within this sample was adequate to excellent ($\alpha = .83$, .73, and .93, respectively).

The *Difficulties in Emotion Regulation Scale* (DERS; Gratz and Roemer 2004) is a 36-item self-report measure that assesses individuals' typical levels of emotion dysregulation overall, and across six separate domains: non-acceptance of negative emotions, difficulties engaging in goal-directed behaviors when distressed, difficulties controlling impulsive behaviors when experiencing negative emotions, limited access to emotion regulation strategies perceived as effective, lack of emotional awareness, and lack of emotional clarity. The DERS demonstrates good test–retest reliability over a period of 4–8 weeks ($\rho_I = .88$, $p < .01$) and adequate construct and predictive validity (Gratz and Roemer 2004), and is strongly correlated with an experimental measure of emotion regulation among patients with borderline personality disorder ($r = -.63$, $p < .01$; see Gratz et al. 2006). Items were recoded so that higher scores in every case indicated greater emotion dysregulation, and a sum was calculated. Internal consistency in the current sample was excellent for the total scale ($\alpha = .94$) and all subscales ($\alpha \geq .79$).

The *Depression Anxiety Stress Scales* (DASS; Lovibond and Lovibond 1995a) is a self-report questionnaire designed to differentiate between core symptoms of depression, anxiety, and stress. The DASS has demonstrated adequate test–retest reliability (Brown et al. 1997), and there is evidence for its construct and discriminant validity (Antony et al. 1998; Brown et al. 1997; Lovibond and Lovibond 1995a, b). The 21- and 42-item versions of the DASS have been found to be consistent (Clara et al. 2001) and comparable in their ability to distinguish between different diagnostic groups (Antony et al. 1998); thus, the 21-item version was used in this study. Specifically, given evidence of a strong association between depression and GAD (e.g., Grant et al. 2005; Hettema 2008; Moffitt et al. 2007), emotion dysregulation (e.g., Mennin et al. 2007; Liverant et al. 2008), and childhood abuse (e.g., Cukor and McGinn 2006; Gibb et al. 2003, 2007; Styron and Janoff-Bulman 1997), the depression symptom severity scale was included as a potential covariate. Internal consistency of this subscale was good ($\alpha = .86$).

Procedure

All procedures were approved by the university's institutional review board. Participants were recruited through undergraduate psychology courses at a large public

university. At the time of recruitment, potential participants were informed that the purpose of the study was to examine the ways in which people cope with symptoms of anxiety. Following the provision of written informed consent, individuals who chose to participate in the study completed a questionnaire packet consisting of the measures described above. Participants received research credits (or extra credit) in exchange for their participation. Participants were then classified according to their analogue GAD status. Specifically, participants with a total score at or above the suggested cut-off criterion of the GADQ-IV (i.e., 5.7) were considered to have a probable diagnosis of GAD ($n = 140$, 35.4%).

Results

Variable Transformations

The raw scores on each of the abuse variables and depression symptom severity were positively skewed. Following logarithm transformation, scores on all four variables approximated a normal distribution.

Identification of Covariates

Analyses were conducted to explore the impact of demographic factors (including age, gender, and racial/ethnic background) and depression symptom severity on emotion dysregulation and analogue GAD status, in order to identify potential covariates for later analyses (see Tabachnick and Fidell 1996). Given the small number of participants in several of the racial/ethnic categories, racial/ethnic background was collapsed into a dichotomous variable of White versus Non-White. Analogue GAD status was not significantly associated with racial/ethnic background or age ($p > .10$); however, rates of analogue GAD were significantly higher among female (40%) versus male (21%) participants, χ^2 (1) = 11.93, $p < .001$, and participants with (vs. without) analogue GAD reported significantly greater levels of depression symptom severity, t (394) = −6.12, $p < .001$. With regard to the factors associated with emotion dysregulation, age was significantly negatively correlated with lack of emotional clarity ($r = -.15$, $p < .01$), White (vs. non-White) participants reported significantly greater difficulties engaging in goal-directed behavior when distressed, t (394) = −2.23, $p < .05$, and all aspects of emotion dysregulation were significantly correlated with depression symptom severity ($r \geq .14$, $p < .01$). Thus, racial/ethnic background (White vs. Non-White), gender, age, and depression symptom severity were entered as covariates in the primary analyses.

Primary Analyses

Means and standard deviations for primary variables of interest are presented in Table 1.[1]

According to Baron and Kenny (1986), support for the proposed mediational model will be provided if: (a) childhood abuse is significantly associated with analogue GAD status, (b) the childhood abuse variables are significantly associated with the dimensions of emotion dysregulation, (c) the dimensions of emotion dysregulation are significantly associated with analogue GAD status, and (d) the childhood abuse variables do not remain significant predictors of analogue GAD status once the emotion dysregulation dimensions are entered into the equation as independent variables.

The mediational model was first tested without the inclusion of the identified covariates (i.e., racial/ethnic background, gender, age, depression symptom severity). Including covariates only as the final step in testing our mediational model was considered the preferred approach, given concerns that covarying out variables that have a high degree of overlap with GAD (e.g., depression symptom severity) due to shared underlying processes (i.e., negative affectivity; Brown et al. 1998) may negatively affect the construct validity of the remaining variance of the dependent variable (as the variance associated with a central component of GAD would have been removed; see Miller and Chapman 2001).

To examine the first criterion for mediation, a series of point-biserial correlation analyses were conducted between GAD status (1 = analogue GAD vs. 0 = non-GAD) and the childhood abuse variables. Results demonstrated that only emotional abuse was significantly positively associated with analogue GAD status, r (396) = .18, $p < .001$ (see Table 1). Given that childhood sexual and physical abuse did not meet the first criterion for mediation, these variables were not examined in subsequent analyses. To test the second criterion, Pearson product-moment correlations were conducted to examine whether childhood emotional abuse was significantly associated with the dimensions of emotion dysregulation. In support of the

[1] The mean values for childhood physical, sexual, and emotional abuse severity on the CTQ were relatively low, as might be expected within a nonclinical sample (Bernstein and Fink 1998). Nonetheless, 8% of the participants reported a history of moderate-severe childhood physical abuse, 7% reported a history of moderate-severe childhood sexual abuse, and 12% reported a history of moderate-severe childhood emotional abuse. Analyses utilized the dimensional childhood abuse scores given well-documented limitations associated with the dichotomization of continuous measures (e.g., loss of power, loss of information about individual differences, etc.; MacCallum et al. 2002). However, it is important to note that results did not change when analyses were conducted with the dichotomous abuse history variables (i.e., none-low vs. moderate-severe).

Table 1 Descriptive data and correlations between primary variables of interest

	1	2	3	4	5	6	7	8	9	10	11	GAD (n = 140)		Non-GAD (n = 256)	
												Mean	SD	Mean	SD
1. GAD status	–	.18***	.01	.09	.47***	.30***	.41***	.42***	.47***	.06	.28***	–	–	–	–
2. Emotional abuse		–	.57***	.22***	.29***	.24***	.20***	.24***	.32***	−.01	.17**	8.66 (0.95)	4.14 (0.16)	7.32 (0.89)	3.33 (0.14)
3. Physical abuse			–	.20***	.07	.05	.01	.08	.06	.04	.05	6.17 (0.84)	2.28 (0.11)	6.17 (0.84)	2.45 (0.11)
4. Sexual abuse				–	.06	.00	.04	.08	.07	−.01	.06	6.11 (0.82)	3.79 (0.13)	5.50 (0.80)	2.03 (0.09)
5. Overall emotion dysregulation					–	.76***	.72***	.80***	.89***	.40***	.66***	92.01	20.42	71.62	17.14
6. Non-acceptance						–	.40***	.52***	.65***	.17**	.39***	13.31	5.42	10.31	4.20
7. Difficulties with goal-directed behaviors							–	.53***	.65***	.04	.36***	17.90	4.02	13.97	4.29
8. Difficulties with impulsive behaviors								–	.73***	.14**	.39	13.76	5.59	9.58	3.52
9. Limited access to effective strategies									–	.11*	.43***	20.54	7.98	13.77	5.14
10. Lack emotional awareness										–	.45***	14.67	3.86	14.14	4.49
11. Lack emotional clarity											–	11.82	3.40	9.85	3.13

Data in parentheses for emotional, physical, and sexual abuse refer to the log-transformed means and standard deviations for these variables. Correlations were conducted using log-transformed scores when appropriate

* $p < .05$; ** $p < .01$; *** $p < .001$

second criterion for mediation, analyses demonstrated that childhood emotional abuse was significantly associated with all aspects of emotion dysregulation ($r \geq .17$, $p < .01$), with the exception of lack of emotional awareness (see Table 1). Consequently, lack of emotional awareness was not examined in subsequent analyses. To test the third criterion, a series of point-biserial correlation analyses were conducted between GAD status (1 = analogue GAD vs. 0 = non-GAD) and the dimensions of emotion dysregulation (other than lack of emotional awareness). Results demonstrated that all dimensions of emotion dysregulation were significantly associated with analogue GAD status ($r \geq .28$, $p < .001$; see Table 1).

To test the last step of the proposed meditational model, a series of five hierarchical logistic regression analyses were conducted with childhood emotional abuse entered in the first step of the model and one of the five dimensions of emotion dysregulation entered in the second step of each model. Findings indicate that each of the dimensions of emotion dysregulation predicted GAD status above and beyond emotional abuse (χ^2s [1] > 26.00, $p < .001$), with nonacceptance of negative emotions ($B = .12$, Wald = 24.57, OR = 1.13, $p < .001$), difficulties engaging in goal-directed behaviors when distressed ($B = .21$, Wald = 51.37, OR = 1.23, $p < .001$), limited access to emotion regulation strategies perceived as effective ($B = .16$, Wald = 60.98, OR = 1.18, $p < .001$), difficulties controlling impulsive behaviors when distressed ($B = .19$, Wald = 48.82, OR = 1.21, $p < .001$), and lack of emotional clarity ($B = .17$, Wald = 24.29, OR = 1.19, $p < .001$) emerging as reliable predictors of GAD status in the second step of the equation. Further, providing support for the mediating role of the specific dimensions of difficulties controlling impulsive behaviors when distressed and limited access to emotion regulation strategies perceived as effective in the relationship between emotional abuse and GAD status, the inclusion of each of these emotion dysregulation dimensions in the model caused emotional abuse to lose statistical significance. On the contrary, findings that emotional abuse remained a significant predictor of GAD status when the dimensions of nonacceptance of negative emotions, difficulties engaging in goal-directed behaviors when distressed, and lack of emotional clarity were included in the model suggest that these three dimensions of emotion dysregulation do not fully mediate the relationship between emotional abuse and GAD status. To further explore the mediating role of each of these dimensions of emotion dysregulation, Goodman (I) equations were computed to examine the significance of the indirect effect of emotional abuse on analogue GAD status through its effects on each of the emotion dysregulation dimensions. Providing confirmatory evidence for the mediating roles of difficulties controlling impulsive behaviors when distressed and limited access to emotion regulation strategies perceived as effective, results indicated that the indirect effects of emotional abuse on analogue GAD through each of these emotion dysregulation dimensions were significant ($z > 3.80$; $p < .001$). Further, findings that the indirect effects of emotional abuse on GAD status through its effects on nonacceptance of negative emotions, difficulties engaging in goal-directed behaviors when distressed, and lack of emotional clarity were also significant ($z > 2.90$; $p < .01$) suggest that, when examined separately, these dimensions of emotion dysregulation partially mediate the relationship between emotional abuse and analogue GAD.

Next, to examine the dimensions of emotion dysregulation uniquely associated with GAD status, a hierarchical logistic regression analysis was conducted with childhood emotional abuse entered in the first step of the model and the five dimensions of emotion dysregulation entered in the second step of the model. Consistent with the aforementioned findings for each of the emotion dysregulation dimensions individually, the model including all of the emotion dysregulation variables was reliably different from the model with childhood emotional abuse, χ^2 (5) = 95.58, $p < .001$, accounting for an additional 29% of the variance in analogue GAD status (overall model χ^2 [6] = 108.50, $p < .001$) and correctly classifying 52% of analogue GAD and 87% of non-GAD participants (with an overall correct prediction rate of 75%). Further, the inclusion of the emotion dysregulation variables in the model caused emotional abuse to lose statistical significance (see Table 2). However, only difficulties engaging in goal-directed behaviors when distressed and limited access to emotion regulation strategies perceived as effective emerged as reliable unique predictors of GAD status (see Table 2). Providing confirmatory evidence for the unique mediating role of these two aspects of emotion dysregulation in the relationship between childhood emotional abuse and analogue GAD, results of the Goodman (I) test indicate that the indirect effects of emotional abuse on analogue GAD through each of these emotion dysregulation dimensions were significant ($z = 2.33$ and 4.48 for difficulties engaging in goal-directed behaviors when distressed and limited access to emotion regulation strategies perceived as effective, respectively; $p < .05$).

Finally, to provide a more conservative test of our mediational model, we reran the final step of the mediational model controlling for the previously identified covariates (age, gender, racial/ethnic background, and depression symptom severity). The covariates were entered in the first step of the model, childhood emotional abuse was entered in the second step of the model, and the emotion dysregulation dimensions were entered in the final step of the model. The model including childhood emotional abuse was reliably different from the model

Table 2 Hierarchical logistic regression analysis testing the proposed mediational model

Step	B	Wald test	OR	95% CI
Step 1				
Emotional abuse (log transformed)	2.49	12.69**	12.04	3.06–47.36
Step 2				
Emotional abuse (log transformed)	0.63	0.55	1.88	0.36–9.94
Non-acceptance	−0.03	0.57	0.98	0.91–1.04
Difficulties with goal-directed behaviors	0.10	7.15*	1.10	1.03–1.18
Difficulties controlling impulsive behaviors	0.07	3.41	1.07	1.00–1.15
Limited access to effective strategies	0.09	7.60*	1.09	1.03–1.17
Lack of emotional clarity	0.06	2.01	1.06	0.98–1.15

OR odds ratio, *CI* confidence interval

* $p < .01$; ** $p < .001$

including the covariates, χ^2 (1) = 3.87, $p < .05$, reliably distinguishing between analogue and non-GAD participants and accounting for 18% of the variance in probable GAD diagnostic status. In addition, the model including the emotion dysregulation variables was reliably different from the model with the covariates and emotional abuse, χ^2 (5) = 61.73, $p < .001$, accounting for an additional 18% of the variance in probable GAD diagnostic status (overall model χ^2 [10] = 118.20, $p < .001$) and correctly classifying 55% of analogue GAD and 88% of non-GAD participants (with an overall correct classification rate of 76%). Finally, consistent with the findings of analyses that did not include the covariates, both difficulties engaging in goal-directed behaviors when experiencing negative emotions (Wald = 5.93, OR = 1.09, $p < .05$) and limited access to emotion regulation strategies perceived as effective (Wald = 6.74, OR = 1.10, $p < .01$) emerged as reliable unique predictors of GAD status, and the inclusion of the emotion dysregulation variables in the final step of the model caused childhood emotional abuse to lose statistical significance (Wald = 0.70, OR = 2.10, $p > .10$).

Discussion

The present study sought to provide a preliminary investigation of the mediating role of emotion dysregulation in the relationships between childhood emotional, physical, and sexual abuse and analogue GAD. Consistent with hypotheses, childhood emotional abuse and emotion dysregulation were significantly associated with analogue GAD, distinguishing participants with analogue GAD from those without GAD pathology. These findings are consistent with past findings of a relationship between childhood abuse and GAD (see Kessler et al. 1997), as well as a growing body of empirical literature that implicates emotion regulation difficulties in anxiety disorders in general (e.g., Amstadeter 2008; Campbell-Sills et al. 2006; Tull et al. 2007; Tull 2006; Tull and Roemer 2007) and GAD in particular (e.g., Decker et al. 2008; McLaughlin et al. 2007; Mennin et al. 2005; Novick-Kline et al. 2005; Roemer et al. 2009; Salters-Pedneault et al. 2006; Tull et al. 2009, 2005).

Results provided partial support for the proposed mediating role of emotion dysregulation in the relationship between childhood abuse and analogue GAD, suggesting that emotional abuse in particular is associated with analogue GAD through its associations with multiple dimensions of emotion dysregulation. Specifically, findings provided support for the mediating role of two dimensions of emotion dysregulation (i.e., difficulties controlling impulsive behaviors when distressed and limited access to effective emotion regulation strategies) in the relationship between childhood emotional abuse and analogue GAD. Moreover, three other dimensions of emotion dysregulation (i.e., nonacceptance of negative emotions, difficulties engaging in goal-directed behaviors when distressed, and lack of emotional clarity) were found to partially mediate the relationship between emotional abuse and analogue GAD. Further, difficulties engaging in goal-directed behaviors when distressed and limited access to effective emotion regulation strategies emerged as unique mediators of this relationship (above and beyond the other dimensions of emotion dysregulation).

Findings are consistent with past research demonstrating a unique relationship between emotional abuse and emotion dysregulation in particular (Gratz et al. 2007, 2008), as well as findings that emotion dysregulation mediates the relationship between childhood emotional abuse and other forms of adult psychopathology (e.g., borderline personality disorder; Gratz et al. 2008). Given that emotional abuse may take the form of invalidation, shame, ridicule, or punishment of an individual's emotional experiences, this form of abuse may be particularly likely to increase the risk for emotion dysregulation (vs. other forms of abuse). Indeed, recent research suggests that parents who are supportive and responsive to children's emotions tend to have children who are more likely to express distress verbally (Brown et al. 2007; Eisenberg et al. 1996) and

better able to manage negative emotions using adaptive emotion regulation strategies (e.g., self-soothing, acceptance, distraction; Spinrad et al. 2004). In contrast, parents who punish or negatively respond to their children's emotional expressions tend to have children with greater difficulties managing their emotions (Eisenberg et al. 1999; Spinrad et al. 2004). As a result, emotional abuse during childhood may interfere with the development of effective emotion regulation skills and lead to an overreliance on more maladaptive emotion regulation strategies (e.g., avoidance), consistent with Mennin et al.'s (2002, 2005) model of GAD and findings from the present study.

Interestingly, despite past findings of a relationship between childhood sexual and physical abuse and GAD (Kessler et al. 1997; Safren et al. 2002; Yamamoto et al. 1999), only emotional abuse was significantly associated with GAD status in this sample. Although somewhat unexpected, findings of the primacy of emotional (vs. sexual and physical) abuse in the risk for analogue GAD are consistent with the suggestion that some of the apparent consequences of sexual and physical abuse may be accounted for by the presence of other risk factors within these families (e.g., Nash et al. 1993), as childhood sexual and physical abuse almost always occurs in the context of other forms of abuse and neglect (e.g., Dubo et al. 1997), such as emotional abuse. Further, these findings are consistent with past studies demonstrating the unique role of emotional abuse in particular in other forms of psychopathology, including borderline personality disorder (Bornovalova et al. 2006) and major depressive disorder (Gibb et al. 2003, 2007).

Although interesting, the results of this study should be considered in light of the limitations present. First, given that the data were correlational and cross-sectional, the exact nature of the relationships between the variables of interest cannot be determined, especially with regard to the relationship between GAD and emotion dysregulation. Prospective, longitudinal studies are needed to address this limitation and more fully examine the relationships between childhood emotional abuse, emotion dysregulation, and GAD. Second, the reliance on a self-report measure of childhood abuse provides no way to substantiate the actual occurrence of abuse and introduces the possibility of retrospective bias. Future studies would also benefit from the independent verification of childhood abuse (e.g., through police, hospital, court, or Child Protective Services records). A related limitation is the exclusive reliance on a self-report measure of emotion dysregulation, responses to which may be influenced by an individual's willingness and/or ability to report accurately on emotional responses. Given increasing empirical support for behavioral measures of emotion dysregulation and related constructs (see Gratz et al. 2006, 2007), future research should incorporate behavioral measures of these constructs when examining their relationship to GAD.

This study also utilized a nonclinical sample of individuals with analogue GAD; thus, results may not generalize to clinical populations of individuals with GAD. Likewise, levels of childhood abuse were relatively low within our nonclinical sample, with rates of moderate-severe physical and sexual abuse reported by less than 10% of participants. The endorsement of low levels of childhood abuse (especially with regard to physical and sexual abuse) may have limited our ability to find a strong relationship between these forms of abuse and analogue GAD status (especially given the somewhat higher levels of emotional abuse reported by this sample). Future studies should aim to replicate these findings by examining the mediating role of emotion dysregulation in the relationship between childhood emotional abuse (as well as other forms of abuse) and GAD among clinical samples.

Although rates of moderate-severe childhood abuse were low in our sample, the rate of analogue GAD was quite high (35.4%). One reason for this relatively high rate of analogue GAD may be our use of the 5.7 cutoff on the GADQ-IV, which allows participants to meet criteria for analogue GAD even if they do not endorse all of the DSM-IV diagnostic criteria for GAD (Newman et al. 2002). Despite evidence that this scoring scheme may lead to inflated rates of GAD (e.g., see Turk et al. 2005), however, it remains the preferred approach, providing the best balance between specificity and sensitivity (Newman et al. 2002). Indeed, although the use of a GADQ-IV scoring scheme that requires participants to endorse all of the DSM-IV GAD criteria was found to improve specificity of the measure, sensitivity was substantially reduced (67%), indicating that approximately one-third of participants meeting GAD criteria were not appropriately classified (Newman et al. 2002). Thus, Newman et al. continue to recommend the 5.7 cutoff used here. Another possible explanation for the high rate of analogue GAD found in this study involves a selection bias that may have been introduced into the sample during the recruitment phase of the study. Specifically, participants were informed that the purpose of this study was to examine the ways in which people cope with symptoms of anxiety. Thus, participants with anxiety symptoms (including symptoms of GAD) may have been more likely to participate in this study given its stated goal. Nonetheless, future studies would benefit from the use of a structured clinical interview of GAD diagnostic status or, conversely, a dimensional measure of GAD symptom severity (which may be more sensitive to the varying levels of GAD symptoms likely to be found in a nonclinical sample).

This study also only focused on one potential mechanism underlying the relationship between childhood abuse

and GAD (i.e., emotion dysregulation); however, other potential mechanisms warrant attention as well. In particular, future research should examine the mediating role of an intolerance of uncertainty (the unwillingness to tolerate possible [and often improbable] future negative events). To the extent that childhood abuse is perceived as unpredictable and uncontrollable, such experiences may foster an intolerance of uncertainty, contributing to the development of GAD (Dugas et al. 1997, 1998). Indeed, intolerance of uncertainty has been found to distinguish individuals with GAD from those with other forms of psychopathology (Dugas et al. 1998), as well as to predict GAD severity above and beyond other relevant cognitive factors (including cognitive avoidance, positive thoughts about worry, and negative problem orientation; Dugas et al. 2007). As such, intolerance of uncertainty may, by itself or in combination with another mechanism such as emotion dysregulation, explain why certain individuals exposed to childhood abuse go on to develop GAD versus another disorder.

Furthermore, given increasing evidence that both emotion dysregulation and childhood abuse increase the risk for multiple clinical disorders (including borderline personality disorder, posttraumatic stress disorder, depression; Chapman et al. 2004; Gratz et al. 2008; Kessler et al. 1995), future studies should examine whether emotion dysregulation and childhood abuse operate similarly in other disorders. In particular, it will be important for future studies to examine the specific deficits in emotion regulation that may underlie the development of GAD versus other disorders. For example, whereas Salters-Pedneault et al. (2006) found that all DERS subscales (with the exception of lack of emotional awareness) were significantly elevated among individuals with (vs. without) analogue GAD when controlling for negative affect, only the specific subscales of difficulties controlling impulsive behaviors when distressed, limited access to effective emotion regulation strategies, and lack of emotional clarity have been found to differentiate between trauma-exposed individuals with and without analogue posttraumatic stress disorder when controlling for negative affect (Tull et al. 2007). Likewise, in a recent study of the factor structure of emotion dysregulation across several internalizing disorders (i.e., GAD, major depression, and social anxiety disorder), Mennin et al. (2007) found differences in the specific dimensions of emotion dysregulation most relevant to each disorder. Specifically, although the latent emotion dysregulation variable was significantly associated with all three disorders, GAD was predicted specifically by high emotional intensity and the maladaptive management of emotions (consistent with the findings of the present study), whereas social anxiety disorder and major depression were predicted by poor emotional understanding and negative reactivity to emotions. As such, findings suggest that, although emotion dysregulation in general may be associated with a variety of clinical difficulties, deficits in specific dimensions of emotion regulation may distinguish between different forms of psychopathology, providing more diagnostic specificity.

Likewise, given findings that childhood emotional abuse is associated with a variety of forms of psychopathology, including depression (Gibb et al. 2003, 2007), social anxiety disorder (Gibb et al. 2007), posttraumatic stress disorder (Gibb et al. 2007; Schneider et al. 2007), and borderline personality disorder (Bierer et al. 2003; Bornovalova et al. 2006; Gratz et al. 2008), future research should examine the specific factors that influence the extent and form of psychopathology that develops following exposure to emotional abuse. In particular, the examination of gene by environment interactions may elucidate the specific genetic vulnerabilities that increase risk for the development of GAD specifically following exposure to an adverse childhood environment (Gregory et al. 2008), such as the 5-HTT (Fox et al. 2005) or monoamine oxidase A (MAO-A) gene (Tadic et al. 2003). Future studies examining the complex interrelationships of cognitive and emotional vulnerabilities, emotion dysregulation patterns, childhood abuse, and specific psychological disorders will allow for a greater understanding of the specific etiological pathways to GAD and other disorders, and promote greater diagnostic specificity of our etiological models.

Despite limitations, findings provide further support for the role of emotion dysregulation in GAD, suggesting that a lack of access to effective emotion regulation skills and difficulties engaging in goal-directed behaviors in the context of emotional distress may be particularly relevant to GAD. Further, findings suggest that these two dimensions of emotion dysregulation explain the relationship between emotional abuse and analogue GAD. Although preliminary, these results suggest that early prevention efforts focused on improving emotion regulation skills among children who have experienced emotional abuse (see Southam-Gerow and Kendall 2002; Suveg et al. 2007) may be helpful in reducing their risk for subsequently developing GAD in adulthood, and provide further support for the development of treatments for GAD aimed at increasing emotion regulation (see Mennin 2004, 2006).

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