Construct validity of a short, self report instrument assessing emotional dysregulation ☆

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ABSTRACT

There is a need for a brief measure of emotion dysregulation that can be used in large-scale studies. This study evaluated the construct validity of a short, self-report instrument of emotion dysregulation. Subjects ($N = 2197$) were recruited from primary care clinics of an urban public hospital as part of a study of trauma-related risk and resilience. Emotion dysregulation was measured using the Emotion Dysregulation Scale, short version (EDS-short), a 12-item self-report measure assessing emotional experiencing, cognition, and behavior. EDS-short was first compared with the Difficulties in Emotion Regulation Scale (DERS). Then, the construct validity of the EDS-short in predicting depression, posttraumatic stress, substance abuse, borderline pathology, suicide attempts, psychiatric hospitalizations, positive affect, and resiliency was assessed. We found a significant positive correlation between EDS-short and DERS. The EDS-short was significantly predictive of higher reported depressive, posttraumatic stress, substance abuse, and borderline symptoms, and lower reported positive affect and resiliency, over and above demographic characteristics and negative affect. Our results demonstrate that the EDS-short is a useful instrument for measuring emotion dysregulation in traumatized populations. A brief measure of emotion dysregulation is critical as the field moves forward in studying the wide ranging negative effects of emotion dysregulation across psychiatric disorders and outcomes.

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1. Introduction

Emotion dysregulation reflects deficits in awareness and acceptance of emotions as well as in regulation strategies to manage intense negative emotional states (Gross and Thompson, 2007). In some disorders, such as borderline personality disorder (BPD), emotion dysregulation is a hallmark symptom that may lead to the development of other symptoms as well as functional problems (Bornovalova et al., 2008; Linehan, 1993; Tragesser et al., 2007). However, with increasing research now points to the importance of emotion dysregulation in understanding both current psychological functioning and risk for psychopathology, even in psychiatric disorders where emotion dysregulation is not a diagnostic criterion (Charney, 2004; Green et al., 2007; Lei et al., 2014; McLaughlin et al., 2009; Svaldi et al., 2012). For example, although emotion dysregulation is not explicitly a symptom of

posttraumatic stress disorder (PTSD), a number of the symptoms of PTSD also represent failures to effectively regulate the experience and expression of emotions (e.g., anger/irritability) and others reflect efforts to regulate emotions that impair adaptive functioning (e.g., avoidance behaviors). It can also be seen as a risk factor that may lead to PTSD. Emotion dysregulation is now understood as a transdiagnostic process that impacts many psychological disorders, spanning mood, anxiety, substance use, and personality disorders (Berenbaum et al., 2003; Bradley et al., 2011b; Brockmeyer et al., 2012; Hopper et al., 2007; Kring, 2008).

Difficulties with emotion regulation are often found in individuals exposed to traumatic events, particularly in early life (Kim and Cicchetti, 2010; Maughan and Cicchetti, 2002; Shields and Cicchetti, 1998). Developmental research suggests that a combination of inherent temperamental or biological factors and adverse childhood experiences (e.g., childhood abuse) may increase risk for adult emotion regulation deficits. The deficits are a risk factor for adult psychopathology, including substance abuse, depression, and PTSD (Burns et al., 2010; Romens and Pollak, 2012). Therefore, emotion dysregulation appears to be an important potential mechanism by which early life adversity confers lifetime risk for psychological disorders.

In the past, emotion dysregulation and negative affect were often conceptualized as two components of a common construct, with

emotion dysregulation thought to fall into the broader category of negative affect. There is already a well-established body of literature demonstrating the importance of negative affect in many psychological disorders, with research showing that negative affect is a higher order construct fundamental to various psychiatric conditions, including personality pathology, depression, PTSD, and more (Krueger, 1999; Watson and Clark, 1992). While emotion dysregulation is clearly related to negative affect, recent evidence suggests it is a distinct construct (Gyurak et al., 2011; John and Gross, 2004). Broadly speaking, negative affect reflects types of emotions people have (e.g., anger, sadness), while emotion regulation reflects the ability to adaptively manage emotions (including negative ones) as they arise. The distinct importance of emotion dysregulation in psychological health is supported by the increasing number of interventions that now incorporate components focused on decreasing emotional dysregulation in individuals with varying types of psychopathology (Fehlinger et al., 2013; McMain et al., 2001; Mennin, 2006). This is done through a variety of techniques including psychoeduation regarding emotional experience, building emotional understanding and acceptance, and teaching patients strategies for how to manage intense, negative emotions as they arise.

While emotional dysregulation is likely to be most accurately and thoroughly assessed through a multi-method approach using structured clinical interview, behavioral tasks, and/or functional magnetic resonance imaging (fMRI) strategies, many large-scale studies that focus on risk and resilience to psychiatric disease do not have the capacity to do such lengthy or time-consuming assessments. Several self-report instruments of emotion dysregulation have been created to assess this construct and have been validated and shown to relate to psychopathology and general functioning in various populations (Bradley et al., 2011a, 2011b; Catanzaro and Mearns, 1990; Ehring and Quack, 2010; Gratz and Roemer, 2004; Smith et al., in press; Tull et al., 2007). However, longer self-report measures such as the 36-item Difficulties in Emotion Regulation Scale (DERS, Gratz and Roemer, 2004), one of the most widely used measures of emotion dysregulation, may still take more time to complete than is feasible to large scale genetic or epidemiological studies. The development of a very brief scale indexing individual differences in emotion dysregulation could allow for greater usability in such studies and for enhanced knowledge about the presence and impact of emotion dysregulation across varied populations. A short self-report emotion dysregulation measure could also be beneficial in clinical practice to provide clinicians with a quick evaluation of whether emotion regulation difficulties are present for a given client.

We developed a 12-item self-report instrument of emotion dysregulation, the Emotion Dysregulation Scale, short version (EDS-short) which is based on previous research using the clinician-rated Affect Regulation and Experience Q-sort Questionnaire (Westen et al., 1997; Zittel and Westen, 2005). The EDS-short is a time-efficient questionnaire that captures multiple aspects of emotion dysregulation including emotional experiencing, cognition, and behavior. This manuscript is an initial effort to validate this short measure in a highly traumatized, urban population and demonstrate the construct validity of the instrument through 1) comparison with another already validated measure of emotion dysregulation and 2) the evaluation of the association between EDS-short and various important outcome measures. More specifically, the associations between EDS-short scale and depressive symptoms, PTSD symptoms, substance abuse symptoms, BPD symptoms, number of suicide attempts and psychiatric hospitalizations, positive affect, and resilient coping was assessed. For this study, we focused on outcome variables that have been previously linked with emotion dysregulation, including those that represent common psychiatric problems in this population (i.e., suicidality, depression, PTSD, substance use disorders, and personality disorders), as well as problematic outcomes (i.e., psychiatric hospitalizations) and potential resiliency factors (i.e., positive affect, coping; El-Bassel et al.,

2003; Gillespie et al., 2009; Gratz et al., 2008; Meadows et al., 2005). Because emotion dysregulation has been associated with varying types of psychopathology, we did not expect to find divergence across psychiatric symptoms and instead predicted that emotion dysregulation would show positive association with mood, substance, anxiety, and personality disorder symptoms, while showing negative associations with resiliency factors.

2. Method

2.1. Procedure

Participants were drawn from an NIMH-funded study of risk factors for the development of PTSD in a low socioeconomic, primarily African American urban population. Participants were recruited from waiting rooms in the gynecology and primary care medical (non-psychiatric) clinics at Grady Memorial Hospital, a publicly funded hospital in Atlanta, Georgia. Interviewers approached participants waiting for appointments. To be eligible for participation, subjects had to be at least 18 years old and able to give informed consent. The investigation was carried out in accordance with the latest version of the Declaration of Helsinki and informed consent of the participants was obtained after the nature of the procedures had been fully explained. After signing the informed consent approved by the Emory Institutional Review Board, an initial interview was administered with questionnaires regarding trauma history and psychological variables. Trained research assistants administered this interview by reading each question aloud to participants; interviews took 45–75 min to complete (duration largely dependent on the participant's trauma history and symptoms). More detailed and comprehensive assessments of psychological functioning including personality assessments were conducted in several associated studies which generally include fewer participants. Participants for these studies were drawn from the pool of participants who completed this initial assessment. The associated studies occurred approximately two weeks after the initial interview (see Gillespie et al., 2009 for full details regarding study procedures).

2.2. Participants

As described above, a more comprehensive assessment of self-reported emotion regulation variables was obtained in the first study (Study 1; $N=128$). Sample two includes participants that completed all the measures in the initial assessment (Study 2; $N=2197$). Personality variables were obtained during an additional separate, but associated study (Study 3; $N=446$). Demographic details across the three samples are provided in Table 1. As indicated in Table 1, greater than 90% of participants reported witnessing or experiencing a traumatic event that would meet the DSM-IV-TR criteria for PTSD criterion A (American Psychiatric Association, 2000).

2.3. Measures

2.3.1. Emotion Dysregulation Scale, short version (EDS-short)

The EDS-short is a 12-item self-report scale of emotion dysregulation. The original EDS 24-item measure was adapted from the clinician-rated Affect Regulation and Experience Q-sort Questionnaire, a Likert-based measure of affective experience which has shown high inter rater reliability and validity (for more details regarding this measure see Conklin et al., 2006; Westen et al., 1997; Zittel and Westen, 2005). On the EDS-short, items are scored on a 7-point Likert scale ranging from 1 ("Not true") to 7 ("Very true"). Items assess domains of emotional experiencing (e.g., "Emotions overwhelm me"), cognition (e.g., "When I'm upset,

Table 1
Variables of interest and demographic information by study sample.

	Sample 1 N=128		Sample 2 N=2197		Sample 3 N=446	
Demographics						
Age (mean(SD))	42.6 (12.3)		39.2 (13.5)		42.9 (13.1)	
Female (%)	74.2		70.0		61.0	
African American (%)	94.5		93.0		93.3	
High school education or less (%)	55.5		60.4		61.0	
Unemployment (%)	75.6		70.4		75.7	
At least 1 lifetime trauma event (%)	95.3		93.6		92.2	
Variables of Interest	**mean(S.D.)**	**Range**	**mean(S.D.)**	**Range**	**mean(S.D.)**	**Range**
Emotion dysregulation (EDS-short)	33.3 (18.2)	12–84	38.9 (21.7)	12–84	38.1 (21.7)	12–84
Emotion dysregulation (DERS)	68.2 (20.0)	36–129				
Depression symptoms (BDI)			14.7 (12.1)	0–58		
PTSD symptoms (MPSS)			13.2 (12.5)	0–51		
Lifetime alcohol abuse (AUDIT)			8.8 (10.2)	0–40		
Lifetime drug abuse (DAST)			2.6 (2.8)	0–10		
Positive affect (PANAS)			39.6 (8.4)	10–50		
Resilient coping (CD-RISC)			31.9 (7.3)	0–40		
Suicide attempts			0.3 (0.7)	0–1		
Psychiatric hospitalizations			0.3 (0.6)	0–2		
Borderline pathology (SNAP)					9.5 (5.8)	0–27

Note: For each sample, different variables were collected, meaning that other than the EDS-short the mean and S.D. for the variables of interested are only available for one of the three samples.

everything feels like a disaster or crisis"), and behavior (e.g., "When my emotions are strong, I often make bad decisions"). The internal consistency of the EDS-short scale was high ($\alpha=0.93$ in sample 1; $\alpha=0.94$ in sample 2; $\alpha=0.95$ in sample 3).

The EDS-short was created based on an exploratory factor analysis of the original EDS 24-item scale ($N=2717$). Principal components analysis yielded one factor (eigenvalue$=13.04$, 54.4% of variance explained), with the next factor accounting for $<5\%$ of total variance (eigenvalue <1). The 12 variables with the highest loadings were then chosen for the EDS-short. The bivariate correlation between the 24-item and 12-item EDS scales was extremely high ($r=0.98$, $p<0.001$).

2.3.2. Difficulties in Emotion Regulation Scale (DERS)

The DERS is a 36-item (Gratz and Roemer, 2004) self-report measure of emotion regulation difficulties. It measures several aspects of emotion regulation, including 1) awareness and understanding of one's emotions, 2) acceptance of negative emotions, 3) the ability to successfully engage in goal-directed behavior and control impulsive behavior when experiencing negative emotions, and 4) the ability to use situationally appropriate emotion regulation strategies. Research has shown good test-retest reliability and adequate construct and predictive validity for the DERS (Gratz and Roemer, 2004). For the present study the overall scale, as well as the four subscales of emotion regulation were examined. The internal consistency of the DERS total scale in this sample was high ($\alpha=0.92$).

2.3.3. Modified Posttraumatic Stress Disorder Symptom Scale (MPSS)

The MPSS (Coffey et al., 1998) is an 18-item self-report measure assessing PTSD symptoms and overall duration of symptoms. This measure has shown good reliability and validity (Coffey et al., 1998); internal consistency in this sample was high ($\alpha=0.92$).

2.3.4. Beck Depression Inventory-II (BDI-II)

The BDI-II (Beck et al., 1996a, 1996b) is a widely used, 21-item self-report measurement of depressive symptoms. Multiple studies have shown good reliability and validity for the BDI-II (Beck et al., 1996a, 1996b; Dozois et al., 1998). In the present study, the

internal consistency of the BDI scale was high ($\alpha=0.93$). In addition to the BDI, participants were also asked to self-report any history of suicide attempts and psychiatric hospitalizations.

2.3.5. Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT (Saunders et al., 1993) is an interview-based assessment measuring frequency of both alcohol use and related behavioral problems. There is strong evidence to support the psychometric validity of the AUDIT in the measurement of alcohol-related problems across various populations (Reinert and Allen, 2002). The internal consistency of the AUDIT scale within our study was high ($\alpha=0.91$).

2.3.6. Short Drug Abuse Screening Test (DAST)

The DAST (Skinner, 1982) is a 10-item self-report measurement of non-alcohol substance use and related problems. Multiple studies support the psychometric validity of the DAST in the assessment of drug abuse and dependence in a variety of settings and populations (Cocco and Carey, 1998; Maisto et al., 2000). The internal consistency of the DAST scale was adequate ($\alpha=0.83$).

2.3.7. Positive and Negative Affect Schedule (PANAS)

The PANAS (Watson et al., 1988) is a well-validated self-report measure of general mood state. Participants were asked to rate on a 5-point Likert scale their general experiences with 20 emotional adjectives, 10 describing positive emotional states (e.g., excited, proud) and 10 describing negative emotional states (e.g., distressed, irritable). The internal consistency of the PANAS negative affect scale used in this study was high ($\alpha=0.89$).

2.3.8. Connor–Davidson Resilience Scale (CD-RISC)

The CD-RISC (Campbell-Sills and Stein, 2007) is a 10-item, self-rated scale of resilient coping (e.g., I am able to adapt when changes occur; under pressure, I stay focused and goal-directed) that has shown very good test-retest reliability and validity (Campbell-Sills and Stein, 2007). Higher score reflecting greater resilient coping. The internal consistency of the CD-RISC was high ($\alpha=0.93$).

2.3.9. Schedule for Nonadaptive and Adaptive Personality (SNAP)

The SNAP (Clark, 1993) is a factor-analytically derived self-report questionnaire with 375 true–false items. Scores can be obtained on 34 Scales: 12 Trait Scales, 3 Temperament Scales, 6 Validity Scales, and 13 Personality Disorder Diagnostic Scales. We used a continuous measure of borderline personality pathology for this study. This diagnostic scale is based on 27 items from the SNAP, with higher scores indicating higher levels of borderline symptoms ($\alpha = 0.86$). Adequate reliability and validity have been shown for this diagnostic scale (e.g., Melley et al., 2002; Reynolds and Clark, 2001).

Descriptive details of our variables of interest are provided in Table 1.

2.3.9.1. Data analysis. The overall analytic strategy was to examine the construct validity of the EDS-short in these samples. First, to determine the extent of associations between the EDS-short and DERS in sample 1, we calculated Pearson correlation coefficients. We then conducted a series of hierarchical linear regressions to examine the associations of the EDS-short scale with variation in our selected criterion measurements of depression, posttraumatic stress, substance abuse problems, suicidality, psychiatric hospitalizations, positive affect, and resilient coping (Sample 2). We also ran a hierarchical linear regression to examine the predictive validity of the EDS-short scale in explaining variation in BPD symptoms based on the SNAP instrument (Sample 3). Although the selected predictor variables were significantly correlated, relationships were not large enough to create concerns about multi-collinearity or variance inflation within a regression model (VIF values ranged from 1.00–1.63; O'Brien, 2007). In each regression, age, gender, and negative affect were entered in the first step of the model; this was done to control for demographic variations and overlap between negative affect and emotion dysregulation.

3. Results

3.1. Cross-validation with DERS

In order to examine the construct validity of the EDS-short in measuring emotion dysregulation, we first examined the relationship between the EDS-short scale and another well-validated measure of emotion dysregulation, the DERS (Sample 1). There was a large, significant positive association between EDS-short and DERS total. Correlations of the EDS-short with the subscales of the DERS varied, but remained significant at $p < 0.01$ (see Table 2). The associations with *impulse control* and *lack of strategies for emotion regulation* were particularly strong.

3.2. Construct validity: links with risk and resilience for psychopathology

Next, we ran a series of hierarchical linear regression models. Table 3 presents results from the second-step overall model of each hierarchical linear regression in Sample 2 ($N = 2197$) and for BPD symptoms in Sample 3 ($N = 446$).

3.2.1. Depression

As seen in Table 3, an overall model including age, gender, negative affect, and emotion dysregulation was significant ($p < 0.001$), accounting for 53% of the variance in depressive symptoms. The EDS-short accounted for a statistically significant incremental 12% of the overall variance ($p < 0.001$). Greater negative affect and increasing age were also associated with higher depressive symptoms (Table 3).

Table 2
Bivariate Correlations for DERS with Emotion Dysregulation (EDS-short).

	Emotion dysregulation
DERS total	0.60***
DERS nonacceptance	0.34***
DERS goals	0.46***
DERS impulse control	0.57***
DERS awareness	0.31***
DERS strategies	0.65***
DERS clarity	0.32***

$N = 128$; *$p < 0.05$; **$p < 0.01$.
    *** $p < 0.001$.

3.2.2. Posttraumatic stress

The overall model for PTSD symptoms was also significant ($p < 0.001$), accounting for 38% of the variance in PSS total. The EDS-short accounted for a statistically significant incremental 10% of the overall variance ($p < 0.001$). Negative affect also remained significantly associated with posttraumatic stress scores.

3.2.3. Substance abuse

For alcohol use and related behavioral problems, the overall regression model was statistically significant ($p < 0.001$), accounting for 24% of the variance in alcohol abuse. The EDS-short accounted for a statistically significant incremental 4% of the overall variance ($p < 0.001$). Age and gender were significantly related to reported alcohol abuse (Table 3), with older participants and male participants more likely to indicate problems stemming from alcohol abuse. Negative affect was also significantly associated with reported alcohol abuse.

The overall regression model for nonalcoholic substance use and related behavioral problems was also significant ($p < 0.001$), accounting for 19% of the variance in substance abuse. The EDS-short accounted for a statistically significant incremental 3% of the overall variance ($p < 0.001$). Age and gender were significantly related to reported substance abuse (Table 3), with older participants and male participants more likely to indicate substance abuse problems.

3.2.4. Borderline personality pathology

As seen in Table 3 with sample 3 ($N = 446$), the overall model for borderline pathology including age, gender, negative affect, and emotion dysregulation was significant ($p < 0.001$), accounting for 31% of the variance in borderline personality disorder symptoms. The EDS-short accounted for a statistically significant incremental 13% of the overall variance ($p < 0.001$). Age and gender were significantly related to borderline pathology (Table 3), with younger participants and female participants more likely to indicate higher levels of borderline personality pathology. Negative affect also remained significantly associated with borderline personality pathology.

3.2.5. Suicidality and psychiatric hospitalization

The overall regression model for number of reported suicide attempts was statistically significant ($p < 0.001$), accounting for 9% of the variance. The EDS-short accounted for a statistically significant incremental 4% of the overall variance ($p < 0.001$). As seen in Table 3, age and gender were significantly related to number of lifetime suicide attempts, with older participants and female participants more likely to report a higher number of suicide attempts at the time of assessment. Negative affect was also significantly associated with a higher number of suicide attempts.

The overall regression model for number of reported psychiatric hospitalizations was also statistically significant ($p < 0.001$), accounting for 8% of the variance. The EDS-short accounted for a

Table 3
Hierarchical linear regression predicting variables of interest from emotion dysregulation.

	b	SE b	β	F	R^2
Depression				**618.46*****	**0.53**
Age	0.06	0.01	0.07***		
Gender	−0.03	0.40	−0.01		
Negative affect	0.50	0.03	0.37***		
Emotion dysregulation	0.25	0.01	0.44***		
Posttraumatic stress disorder				**333.23*****	**0.38**
Age	0.02	0.02	0.02		
Gender	−0.59	0.47	−0.02		
Negative affect	0.38	0.03	0.28***		
Emotion dysregulation	0.23	0.01	0.41***		
Lifetime alcohol abuse				**177.01*****	**0.24**
Age	0.16	0.01	0.21***		
Gender	−6.98	0.42	−0.31***		
Negative affect	0.09	0.03	0.08**		
Emotion dysregulation	0.11	0.01	0.24***		
Lifetime substance abuse				**125.96*****	**0.19**
Age	0.04	0.01	0.19***		
Gender	−1.70	0.12	−0.28***		
Negative affect	0.01	0.01	0.01		
Emotion dysregulation	0.03	0.01	0.23***		
Borderline pathology[a]				**48.55*****	**0.31**
Age	−0.04	0.02	−0.10*		
Gender	−1.39	0.46	−0.12**		
Negative affect	0.08	0.03	0.12*		
Emotion dysregulation	0.12	0.01	0.46***		
Number of suicide attempts				**53.97*****	**0.09**
Age	0.003	0.01	0.11***		
Gender	0.06	0.02	0.07**		
Negative affect	0.002	0.01	0.06*		
Emotion dysregulation	0.004	0.01	0.23***		
Number of psychiatric hospitalizations				**50.24*****	**0.08**
Age	0.005	0.01	0.12***		
Gender	0.02	0.03	0.02		
Negative affect	0.003	0.01	0.04		
Emotion dysregulation	0.01	0.01	0.25***		
Positive affect				**110.30*****	**0.17**
Age	−0.05	0.01	−0.09***		
Gender	−0.07	0.37	−0.01		
Negative affect	−0.15	0.02	−0.16***		
Emotion dysregulation	−0.11	0.01	−0.29***		
Resilient coping				**198.66*****	**0.27**
Age	−0.01	0.01	−0.01		
Gender	−0.86	0.30	−0.05**		
Negative affect	−0.20	0.02	−0.25***		
Emotion dysregulation	−0.11	0.01	−0.31***		

$N = 2197$;

Note: Depression was measured using the BDI, PTSD was measured using the PSS, alcohol abuse was measured using the AUDIT, substance abuse was measured using the DAST, borderline pathology was measured using the SNAP, positive affect was measured using the PANAS, and resilient coping was measured using the CD-RISC.

[a] $N = 446$;
* $p < 0.05$;
** $p < 0.01$;
*** $p \leq 0.001$.

statistically significant incremental 4% of the overall variance ($p < 0.001$). Age was also significantly related to number of reported psychiatric hospitalizations (Table 3), with older participants more likely to report a higher number of psychiatric hospitalizations at the time of assessment.

3.2.6. Positive affect

For current reported positive affect, the overall regression model was statistically significant ($p < 0.001$), accounting for 17% of the variance in positive affect. The EDS-short accounted for a statistically significant incremental 5% of the overall variance ($p < 0.001$), showing a negative association with positive affect.

3.2.7. Resilient coping

The overall regression model for our measure of resilience was also significant ($p < 0.001$), accounting for 27% of the variance in

resilient coping. The EDS-short accounted for a statistically significant incremental 6% of the overall variance ($p < 0.001$), showing a negative association with resilient coping.

4. Discussion

Our findings indicate that this brief, self-report measure of emotion dysregulation shows good construct validity, relating to other measures of emotion dysregulation as well as a range of criterion variables relating to both risk and resiliency for psychopathology. More specifically, the EDS-short was highly correlated with the DERS, an already well-validated longer self-report measure of emotion dysregulation (e.g., Ehring and Quack, 2010; Gratz and Roemer, 2004; Tull et al., 2007). The EDS-short scale also added significant incremental validity in predicting posttraumatic stress

symptoms, depressive symptoms, substance abuse symptoms, borderline pathology, number of reported suicide attempts, and number of reported psychiatric hospitalizations. Additionally, emotion dysregulation was associated with lower reported positive affect and less resilient coping. These relationships were significant above and beyond current state negative affect, further demonstrating that the construct of emotion dysregulation is meaningfully distinct from negative affect.

These results and the inability to find clear divergence across the psychiatric symptoms were not surprising given the growing evidence that emotion dysregulation is a transdiagnostic process that crosscuts many psychiatric disorders. The associations were particularly strong for depression, PTSD, and borderline pathology, with each showing small but likely clinically significant effect sizes. Our findings support previous research that has shown associations of emotion dysregulation and mood, anxiety, substance use, and personality disorders (e.g., Berenbaum et al., 2003; Hopper et al., 2007; Kring, 2008). The negative relationship between emotion dysregulation and resilient coping also lends support to suggest that emotion dysregulation can impact factors related to functioning not necessarily reflected in psychiatric symptoms alone. Based on the present findings, it is difficult to know the clinical significance of emotion dysregulation in relation to the variables studied and continued research in this area is needed.

In comparing this short scale to the various dimensions of emotion regulation captured by the DERS, our results suggest that this short scale may capture multiple components of emotion dysregulation. Based on the analyses with the DERS, the EDS-short components appear to assay aspects of behaviors that emerge when distressing emotions occur (e.g., impulsive behaviors) and the presence of emotion regulation strategies particularly well. Our scale does not appear to capture non-judgmental awareness components of emotion regulation (i.e., nonacceptance of emotions, emotional awareness, and emotional clarity). However, some of the questions on the EDS-short (i.e. "When I am upset, I have trouble remembering that people care about me", "When I'm upset, I have trouble seeing or remembering anything good about myself") may be tapping into the attachment model of emotional dysregulation (Calkins and Hill, 2007) by measuring aspects of an internal working model of oneself and close others.

The results did show some differences in terms of demographic characteristics (see Table 3). Younger age was related to higher reported borderline pathology, which is consistent with research showing that severity of borderline symptoms often decreases with age (e.g., Blum et al., 2008). Of note, despite the higher percentage of women in the study, our findings regarding emotion dysregulation did not differ based on gender; data followed the same pattern as described in the results when a gender split was used.

4.1. Limitations

Several study limitations are worth noting. First, given the cross-sectional nature of this study and the use of retrospective reports, we are unable to determine the degree to which emotion dysregulation is a risk factor for development of adult psychopathology, or a central component of various forms of psychopathology for which it is not a diagnostic criterion. For example, although emotion dysregulation is not a specific symptom of PTSD, the combination of intrusive experiences, avoidance, numbing, and hyperarousal associated with PTSD could in fact lead to emotion dysregulation. However, the majority of research suggests a childhood etiology for difficulties in emotion regulation, often involving childhood trauma and abuse (Alink et al., 2009; Cicchetti et al., 1995; Romens and Pollak, 2012). Furthermore, longitudinal research has shown that early difficulty with emotion regulation predicts risk for adult psychopathology (Burns et al., 2010; McLaughlin et al., 2009). Prospective, longitudinal

studies are required to examine the temporal onset of emotion dysregulation and its association with psychopathology and functional outcomes; these studies are particularly useful to understand the interaction of emotion dysregulation with early life trauma and trauma load across the lifespan.

We also ran a number of statistical tests which can increase the possibility of inflating type I error. While we understand this is a serious concern, if we were to take the most conservative approach and use a Bonferroni correction to ensure that we were not including spurious results ($p < 0.05$, 9 tests $= 0.05/9 = p < 0.005$), all the results discussed regarding emotion dysregulation would remain significant. Another limitation is that our sample was largely female, low income, and African American, and we do not yet have the data to demonstrate if these findings would be present in other populations. However, this weakness is counterbalanced by the public health importance of studying these variables in an often under-researched and under-served population with disproportionally high rates of trauma exposure as well as mental and physical health problems.

Finally, the measure of emotion dysregulation used in the present study was self-report. Although the primary goal of our research was to evaluate the construct validity of this brief instrument, it is important to note the limitations of self-report instruments and the benefit of taking a multi-method approach to evaluating such a complex construct. There are efforts within our lab and elsewhere to find additional, more objective ways to measure emotion dysregulation, such as using behavioral tasks to measure implicit emotion dysregulation (e.g., emotional stroop task, Etkin et al., 2010). However, the goal of the present study was to establish the validity of this brief, self-report measure of emotion dysregulation. It would be useful in the future for our group or others to determine how the EDS-short also relates to more objective measures of emotion dysregulation. Additionally, this short self-report measure was created by selecting the highest loading items in a factor analysis; this method may have contributed to an overly narrow construct of emotion dysregulation. In the future, it may be helpful to examine alternative short forms to measure emotion dysregulation. Also, continued research to examine what components of emotion dysregulation are captured by this current measure, and what components are not represented, will be important.

4.2. Conclusion

Our brief, self-report measure of emotion dysregulation shows good construct validity and provides important predictive utility in relation to psychopathology and resiliency factors in a low-income, urban population. Growing evidence shows the presence of emotion dysregulation in a wide range of psychiatric conditions (e.g., Charney, 2004; McLaughlin et al., 2009) and many psychological interventions have incorporated aspects of emotion regulation training into their protocols (McMain et al., 2001; Mennin, 2006). However, there remains a great deal to learn about emotion dysregulation and how it relates to the development and maintenance of psychopathology across the lifespan. This brief instrument (which takes approximately five minutes or less to administer) could enable greater usability for investigators to measure emotion dysregulation in large scale studies or for use as a clinical screener to flag individuals that may need a more intensive diagnostic evaluation. This is particularly important for studies such as large scale genetic or biomarker studies that require a large number of participants to conduct data analyses. This measure is not intended to replace clinical interviews or more thorough self-report instruments, such as the DERS, that are already well-established. Instead, we hope that this brief scale will provide an efficient assessment of emotion dysregulation which will contribute to a better understanding of the role of emotional dysregulation in risk for and recovery from psychopathology.

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