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Extending Findings of a Relation between Posttraumatic Stress Disorder and Emotion Dysregulation among African American Individuals: A Preliminary Examination of the Moderating Role of Gender

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Abstract

Although previous literature highlights the robust relationship between posttraumatic stress disorder (PTSD) and emotion dysregulation across diverse racial/ethnic populations, few studies have examined factors that may influence levels of emotion dysregulation among African American individuals with PTSD. The goal of the current study was to extend previous findings by examining the moderating role of gender in the relationship between PTSD and emotion dysregulation in an African American sample. Participants were 107 African American undergraduates enrolled in a historically black college in the southern United States who reported exposure to a Criterion A traumatic event. Participants with probable PTSD (vs. no PTSD) reported significantly greater emotion dysregulation, both overall and across many of the specific dimensions. Although the main effect of gender on emotion dysregulation was not statistically significant, results revealed a significant interaction between gender and probable PTSD status for overall emotion dysregulation and the specific dimensions of difficulties controlling impulsive behaviors when distressed, limited access to emotion regulation strategies perceived as effective, and lack of emotional clarity. Specifically, post-hoc analyses revealed a significant association between probable PTSD and heightened emotion dysregulation among African American women but not African American men, with African American women with probable PTSD reporting significantly higher levels of these dimensions of emotion dysregulation than all other groups. Findings highlight the relevance of emotion dysregulation to PTSD among African American women in particular, suggesting the importance of assessing and treating emotion dysregulation within this population.

Keywords

Posttraumatic stress disorder; Trauma; Emotion dysregulation; Gender; African American

Introduction

Posttraumatic stress disorder (PTSD) is an anxiety disorder characterized by re-experiencing (e.g., intrusive thoughts and memories, nightmares, and flashbacks), avoidance (e.g., avoidance of trauma-related cues), hyperarousal (e.g., hypervigilance and exaggerated startle response), and cognitive/affective (e.g., self-blame, restricted range of affect, and negative trauma-related emotions) symptoms following direct or indirect exposure to a traumatic event [1]. Although the lifetime prevalence of PTSD in the general population is 6.8% [2], certain populations seem to be at higher risk for developing PTSD. In particular, literature suggests that African American individuals (compared to White individuals) are at heightened risk for both Criterion A traumatic exposure (i.e., an event involving actual or threatened death or injury or a threat to physical integrity, during which the individual experiences intense fear, helplessness, or horror) [1] and PTSD [3,4]. Given the wide range of negative outcomes associated with PTSD, including suicide [5], co-occurring psychiatric disorders (e.g., substance use disorders, mood disorders, and other anxiety disorders) [2,6], health problems (e.g., general medical conditions, such as eczema, musculoskeletal disorders, and hypertension) [7], and functional impairment (e.g., unemployment and marital instability) [5], research elucidating the factors associated with the development, maintenance, and/or exacerbation of PTSD is warranted, particularly within populations identified to be at higher risk for PTSD, such as African Americans.

One factor that has been shown to be associated with PTSD across ethnically diverse samples is emotion dysregulation. As defined here, emotion dysregulation is a multi-faceted construct involving: (a) a lack of awareness, understanding, and acceptance of emotions; (b) the inability to control behaviors when experiencing emotional distress; (c) lack of access to adaptive strategies for modulating the duration and/or intensity of aversive emotional experiences; and (d) an unwillingness to experience emotional distress as part of pursuing meaningful activities in life [8]. Greater overall emotion dysregulation and most dimensions of emotion dysregulation have been found to be associated with PTSD across both clinical [9–11] and nonclinical [12,13] samples. Further, emotion dysregulation has been shown to account for unique variance in PTSD above and beyond other PTSD-relevant factors (e.g., impulsivity) [10] and co-occurring mood and anxiety symptoms [9,10]. Notably, and of particular relevance to the present study, the robust relationship between PTSD and emotion dysregulation has been found to extend across racial/ethnic groups. For example, trauma-exposed African American individuals with probable PTSD (vs. African American individuals without Criterion A traumatic exposure and African American individuals with Criterion A traumatic exposure but no PTSD) reported significantly higher levels of overall emotion dysregulation and the specific dimensions of lack of emotional acceptance, difficulties engaging in goal-directed behavior when upset, difficulties controlling impulsive behaviors when distressed, and limited access to effective emotion regulation strategies [11].

Despite findings of a robust relation between emotion dysregulation and PTSD, few studies have examined factors that may moderate this relation. Such research has the potential to elucidate the subset of individuals for whom the relation between PTSD and emotion dysregulation is the strongest, thereby identifying those individuals who would benefit the most from PTSD treatments that target difficulties in emotion regulation. One factor worth

investigating in this regard is gender. First, significant gender differences in the presentation of PTSD have been found. Specifically, studies have provided evidence of higher lifetime rates of PTSD (10.4% women vs. 5% of men) [2], greater PTSD symptom severity, and a more severe symptom course [4] among women (vs. men) with PTSD. Second, past research provides support for gender differences in emotion dysregulation, with women (vs. men) reporting: (a) greater difficulties in many dimensions of emotion dysregulation (including difficulties engaging in goal-directed behaviors when distressed, limited access to emotion regulation strategies perceived as effective, and lack of emotional clarity) [14], and (b) greater use of putatively adaptive and maladaptive emotion regulation strategies in response to distress¹ [15,16]. Thus, research examining the extent to which gender influences the strength and direction of the relation between PTSD and emotion dysregulation is warranted. Examination of these relations within a sample of African American individuals is particularly important, as past research suggests that emotion dysregulation differs as a function of racial/ethnic background, with greater levels of emotion dysregulation observed among African American (vs. White) individuals [17].

Therefore, the goal of this preliminary study was to examine the moderating role of gender in the relation between probable PTSD and emotion dysregulation among African American adults. First, we sought to replicate and extend past findings of relations between emotion dysregulation and both probable PTSD status [11,13] and gender [8,14]. Consistent with past literature, we hypothesized that levels of emotion dysregulation would be significantly higher among African American individuals with (vs. without) probable PTSD and African American women (vs. men). Second, we examined the moderating role of gender in the relation between emotion dysregulation and probable PTSD status. Given evidence of both higher rates of lifetime PTSD [2] and greater emotion dysregulation [14] among women versus men, we hypothesized significant interactions between probable PTSD status and gender on levels of emotion dysregulation, such that the association between probable PTSD and emotion dysregulation would be stronger among African American women (vs. men).

Method

Participants

Participants were 107 (81 women, 26 men) African American undergraduates at a historically black university in the southern United States exposed to a Criterion A traumatic event. Participants ranged in age from 18 to 42, with an average age of 23.01 (SD=5.46).

¹Of note, an increasing number of theorists have emphasized the importance of considering contextual factors associated with the process of emotion regulation [8,68], as opposed to simply classifying specific emotion regulation strategies as adaptive or maladaptive. Theorists have additionally noted that the *rigid* and *inflexible* use of emotion regulation strategies is the strongest predictor of psychopathology [69,70]. In this regard, putatively maladaptive strategies for modulating emotional experiences may be adaptive when used in a situationally-appropriate, flexible manner. Indeed, consistent with this theoretical literature, within particular contexts, putatively adaptive strategies have been shown to confer more deleterious outcomes [71], whereas putatively maladaptive strategies have been found to be associated with positive psychological outcomes. For example, college students assigned to an emotional reappraisal condition accepted more unfair offers in a social interactive decision-making task than those in the suppression or no-regulation condition [71]. Likewise, college students with (vs. without) borderline personality disorder reported lower urges to engage in impulsive behaviors on days when they were asked to utilize emotional suppression compared with days they were asked to observe emotions or given no instructions [72]. Likewise, among college students, perceived controllability was shown to predict outcomes associated with use of avoidance versus approach strategies, with avoidance strategies predicting better psychological outcomes when events were perceived as uncontrollable [73].

Measures

The *Life Events Checklist* (LEC) [18] is a 17-item self-report measure designed to screen for potentially traumatic events (PTEs) in a respondent's lifetime. The LEC assesses exposure to 16 PTEs and includes one item assessing any other extraordinarily stressful event not captured in the first 16 items. For each item, the respondent is asked to indicate if: (a) the event happened to them personally, (b) they witnessed the event, or (c) they learned about the event. To determine whether or not participants met Criterion A traumatic exposure for PTSD [1], and consistent with past research [13,19], respondents who reported direct (i.e., the event happened to them personally) or indirect (i.e., they witnessed or learned of the event) exposure to at least one PTE were also asked to indicate which of the events was most traumatic and whether or not they experienced fear, helplessness, and/or horror as a result. The LEC has demonstrated convergent validity with measures assessing varying levels of exposure to PTEs and psychopathology known to relate to traumatic exposure [20].

The *PTSD Checklist – Civilian Version* (PCL-C) [21] is a 17-item self-report measure of the severity of intrusive, avoidance, and hyperarousal symptoms experienced in response to a stressful life event among civilians, as outlined by DSM-IV [1] criteria for PTSD. Using a 5-point Likert-type scale (1=*not at all*, 5=*extremely*), participants rate the extent to which each symptom has bothered them in the past month. The PCL-C has been found to have excellent internal consistency and test-retest reliability in college students [22]. According to Blanchard et al. [23], a score of 44 or above on the PCL-C is indicative of a PTSD diagnosis (see Ruggerio et al. [22] for evidence supporting the use of this cut-off score in college student samples). Internal consistency of the overall score in this sample was good ($\alpha=.95$).

The *Difficulties in Emotion Regulation Scale* (DERS) [8] is a 36-item self-report measure that assesses individuals' typical levels of emotion dysregulation across six domains: nonacceptance of negative emotions, difficulties engaging in goal-directed behaviors when distressed, difficulties controlling impulsive behaviors when distressed, limited access to emotion regulation strategies perceived as effective, lack of emotional awareness, and lack of emotional clarity. Participants rate each item using a 5-point Likert-type scale (1=*almost never*, 5=*almost always*). The DERS has been found to demonstrate good test-retest reliability and adequate construct and predictive validity [8,24]. Further, the DERS and its subscales have been found to predict performance on objective measures of emotion regulation and the willingness to experience emotional distress [24]. Items were recoded so that higher scores indicate greater emotion dysregulation, and a sum was calculated. Internal consistency in the current sample was good ($\alpha=.93$).

The *Depression Anxiety Stress Scales-21* (DASS-21) [25,26] is a 21-item self-report questionnaire designed to differentiate between core symptoms of depression, anxiety, and stress. Participants rate each item using a 4-point Likert-type scale (0=*not at all*, 3=*very much, or most of the time*). The present study utilized the stress subscale as a proxy for negative affect in order to ensure that any demonstrated relations between emotion dysregulation and probable PTSD could not be attributed simply to elevated levels of negative affect among participants with a history of probable PTSD. Consistent with the construct of negative affect, the stress subscale captures the extent to which individuals

experience tension, irritability, and a tendency toward becoming upset or frustrated [27]. This subscale demonstrates stronger associations with negative affect ($r=.72$) than the depression ($r=.57$) and anxiety ($r=.63$) subscales, and has been found to have good test-retest reliability over a 2-week period ($r=.81$) [27]. Internal consistency for the stress subscale was good within the present sample ($\alpha=.83$).

Demographic information—All participants completed a demographics form assessing gender, age, and income in the past year. These characteristics were examined as potential covariates.

Procedure

All procedures were reviewed and approved by the university's Institutional Review Board. Participants were recruited through the psychology department and completed measures in a small group setting (consisting of 10 to 25 individuals). In completing the PCL-C, and consistent with past research [11,13], participants were asked to refer to the event that they identified as being most traumatic on the LEC. Given the potentially stressful nature of this study, several procedures were implemented to minimize distress. First, as part of the informed consent process, participants were informed in writing that they would be asked questions about their history of traumatic exposure and could stop participating at any point without penalty. Further, if they became distressed, participants had the option of speaking one-on-one with a research associate who was trained to provide brief relaxation training. Finally, all participants were provided with contact information for the university psychological services center (in the event that they experienced persistent distress following completion of the study). As compensation, participants received extra credit.

Data analysis

All statistical procedures were performed using the SPSS 19.0 software package. Data were double entered by two research associates and duplicate records were compared for consistency. As recommended by Tabachnick and Fidell (2007), all study variables were assessed for assumptions of normality [28]. Skewness and kurtosis for all variables were within the normal range (skewness ranging from 0.97 to 1.54, kurtosis ranging from -0.08 to 1.73). Outlier analyses were conducted on demographic and clinical variables using the extreme studentized deviate [29,30]. One outlier was detected and removed from subsequent analyses (age=46; $z=3.88$, $p<.05$).

For preliminary and primary analyses, statistical significance was determined using 2-tailed tests. To determine potential covariates, a series of one-way analyses of variance (ANOVAs), Pearson product-moment correlations, and chi-square analyses were conducted to examine the relationships between demographic and clinical characteristics (i.e., age, income, and DASS-Stress) and the independent and dependent variables. Given the limited range of annual income in this sample, reported income was collapsed into a dichotomous variable of over (48%) versus under (52%) \$30,000 per year. To test the main and interactive effects of gender and PTSD status on overall emotion dysregulation and the specific dimensions of emotion dysregulation, a series of 2 (probable PTSD vs. no-PTSD) $\times$ 2 (male vs. female) ANOVAs were conducted. Given the multiple analyses conducted, the

main and interactive effects were examined using a modified Bonferroni adjustment to minimize both Type I and Type II error [31]. Specifically, for each model, the p values for these effects were rank ordered by size, with the lowest p value required to exceed the traditional Bonferroni level ($.05/K$ number of analyses) and each subsequent p value required to exceed a level based upon one fewer comparisons than the previous (e.g., $.05/(K-1+1)$, $.05/(K-2+1)$). This method preserves an overall Type I error rate of .05 without increasing the risk for Type II error and unnecessarily reducing statistical power. Post-hoc pairwise comparisons were conducted when a significant interaction was found. Lastly, to ensure that findings could not simply be accounted for by heightened negative affect among participants with probable PTSD, we reran all analyses controlling for stress symptom severity on the DASS-21. Again, we utilized a modified Bonferroni adjustment to examine the main and interactive effects within these analyses.

Results

See Table 1 for data pertaining to the number and types of potentially traumatic events experienced by participants. Reported index events (i.e., the event participants referenced in completing the PCL-C) included: sudden, unexpected death of someone close (25.5%, $n=27$), physical assault (17.9%, $n=19$), transportation accident (14.2%, $n=15$), rape (10.4%, $n=11$), natural disaster (8.5%, $n=9$), uncomfortable or unwanted sexual experience other than rape (3.8%, $n=4$), fire or explosion (2.8%, $n=3$), assault with a weapon (2.8%, $n=3$), witnessing a sudden violent death (2.8%, $n=3$), combat or exposure to war-zone (1.9%, $n=2$), life-threatening illness or injury (1.9%, $n=2$), severe human suffering (0.9%, $n=1$), and causing injury, harm, or death to someone else (0.9%, $n=1$). According to the PCL-C, 27.1% of participants ($n=29$; 21 women, 8 men) met criteria for probable PTSD. Rates of probable PTSD did not differ as a function of gender (25.9% in women vs. 30.8% in men; $\chi^2=0.24$, $p=.63$). Between-group (probable PTSD vs. no-PTSD and male vs. female) differences in demographic and clinical characteristics, as well as descriptive data, are presented in Table 2.

Preliminary analyses were conducted to identify potential covariates (Table 2). Findings revealed no significant difference in overall emotion dysregulation as a function of income, $F(1, 104)=0.003$, $p=.96$, as well as no significant association between overall emotion dysregulation and age, $r=-.04$, $p=.66$. Further, probable PTSD status was not found to be significantly related to age, $F(1, 106)=0.53$, $p=.47$, or income, $\chi^2=0.16$, $p=.69$. The DASS-21 stress symptom severity score was significantly positively associated with overall emotion dysregulation, $r=.46$, $p<.001$. However, given that: (a) the DASS-21 stress symptom severity score was found to differ significantly as a function of probable PTSD status, $F(1, 106)=18.28$, $p<.001$ (with participants with [vs. without] probable PTSD reporting significantly greater stress symptom severity), and (b) stress symptom severity (or negative affect) is a central part of the probable PTSD construct [32], analyses were first run without stress symptom severity included as a covariate.

With regard to the primary analyses, results revealed a significant main effect of probable PTSD status on overall emotion dysregulation, with participants with (vs. without) probable PTSD reporting significantly greater overall emotional dysregulation (Table 2). Although

the main effect of gender on overall emotion dysregulation was not significant, results revealed a significant interaction between gender and probable PTSD (Figure 1, Panel A). Post-hoc pairwise comparisons revealed that women with probable PTSD reported significantly greater levels of overall emotion dysregulation than all other groups, including women without probable PTSD, $t(79)=6.19, p < .001$, men without probable PTSD, $t(37)=3.47, p=.001$, and men with probable PTSD, $t(27)=2.65, p=.01$. All other post-hoc comparisons were non-significant, including analyses comparing men with and without probable PTSD, $t(24)=0.10, p=.93$.

Next, we examined the main and interactive effects of probable PTSD and gender on the six specific dimensions of emotion dysregulation (Table 2). Results revealed a significant main effect of probable PTSD status on difficulties engaging in goal-directed behavior when distressed ($p<.017$), difficulties controlling impulsive behavior when distressed ($p<.025$), and limited access to emotion regulation strategies perceived as effective ($p<.017$), with participants with (vs. without) probable PTSD reporting significantly greater difficulties across these dimensions of emotion dysregulation. Furthermore, although gender was not found to have a significant main effect on any dimension of emotion dysregulation², the interaction between probable PTSD and gender was found to be significant for three dimensions of emotion dysregulation: (a) difficulties controlling impulsive behavior when distressed ($p<.017$); (b) limited access to emotion regulation strategies perceived as effective ($p<.025$); and (c) lack of emotional clarity ($p<.017$). Post-hoc pairwise comparisons revealed that women with probable PTSD reported significantly greater difficulties controlling impulsive behaviors when distressed and accessing emotion regulation strategies perceived as effective than all other groups of individuals, $t_s(27-79)>2.22, p_s<.05$ (Figure 1, Panels B and C). Further, women with probable PTSD reported significantly lower levels of emotional clarity than women without probable PTSD, $t(79)=4.54, p < .001$ (Figure 1, Panel D). All other post-hoc analyses were non-significant.

Finally, we reran all analyses controlling for stress symptom severity. In general, the pattern of the findings did not change when controlling for stress symptom severity. Specifically, the interaction between probable PTSD and gender was found to be significant for overall emotion dysregulation ($F(4, 106)=11.27, p<.017$) and the specific dimensions of difficulties controlling impulsive behavior when distressed ($F(4, 106)=8.94, p<.017$), lack of access to emotion regulation strategies perceived as effective ($F(4, 106)=6.26, p<.017$), and lack of emotional clarity ($F(4, 106)=6.40, p<.017$). Women with probable PTSD reported lower levels of emotional clarity than women without probable PTSD ($F(2, 80)=11.75, p=.001$) and greater levels of overall emotion dysregulation and the specific dimension of difficulties controlling impulsive behaviors when distressed ($F_s(2, 28-80)>4.69, p_s<.04$) than all other groups. However, when controlling for stress symptom severity, the difference in difficulties

²Given gender differences in the composition of our sample, Levene's test was conducted to examine homoscedasticity across male and female participants with and without PTSD for overall emotion dysregulation and the specific dimensions of emotion dysregulation. Levene's test was significant for the emotion dysregulation dimensions of emotional nonacceptance, difficulties controlling impulsive behavior when distressed, and lack of access to emotion regulation strategies perceived as effective ($F_s>3.00, p_s<.05$). Thus, Mann-Whitney U tests – a non-parametric strategy free from homoscedasticity assumptions – were conducted to examine the relation of PTSD to the aforementioned dimensions of emotion dysregulation across male and female participants. The pattern of findings from the non-parametric tests mirrored those from the parametric tests. As such, findings from ANOVAs are presented in-text for ease of interpretation and comparison.

accessing effective emotion regulation strategies between women with and men with probable PTSD only approached significance ($F(2, 28)=3.24, p=.08$).

Discussion

The current study sought to extend extant research by examining the moderating role of gender in the relation between probable PTSD status and emotion dysregulation within a sample of African American individuals. Consistent with past research [11], African American individuals with (vs. without) probable PTSD reported greater levels of emotion dysregulation, both overall and across many of the specific dimensions of emotion dysregulation. Moreover, although the main effect of gender on emotion dysregulation was not significant, results revealed a significant interaction between probable PTSD status and gender, such that the probable PTSD was associated with heightened emotion dysregulation (overall and across the specific dimensions of difficulties controlling impulsive behavior when distressed, lack of access to emotion regulation strategies perceived as effective, and lack of emotional clarity) among African American women but not African American men (in general and when controlling for stress symptom severity). Specifically, African American women with probable PTSD reported significantly higher levels of overall emotion dysregulation and the specific aforementioned dimensions than all other groups. These findings provide preliminary support for the moderating role of gender in the relation between PTSD and emotion dysregulation, highlighting one factor that may influence levels of emotion dysregulation among individuals with PTSD.

A large body of literature indicates that women generally report greater negative affect than men (which may be more difficult to regulate) [33,34]. Thus, African American women with PTSD (which has been found to exacerbate negative affect) [35] may be motivated to engage in impulsive behaviors (e.g., drug use and deliberate self-harm) to immediately reduce or distract attention away from negative affect [36], reducing experiences in which the adaptive modulation of emotions is reinforced (because maladaptive behaviors are reinforcing) [37] and potentially exacerbating difficulties in emotion regulation and PTSD symptom severity. Consequently, women with PTSD (vs. both women without PTSD and men with and without PTSD) may experience greater difficulties controlling impulsive behaviors when distressed. Further, because impulsive behaviors often result in paradoxical outcomes (e.g., greater distress) [38], women with PTSD may perceive themselves as having less access to effective emotion regulation strategies. Likewise, women and men report using different strategies to cope with stressful events (e.g., positive self-talk, support seeking, and rumination strategies) [15], with women reporting a wider range of putatively adaptive and maladaptive strategies than men [15,16,39]. Importantly, whereas women's use of a greater number of emotion regulation strategies in response to distress may be indicative of greater emotional awareness or willingness [40,41], it is the greater use of putatively maladaptive strategies that has been shown to place women at particular risk for heightened distress [16,42] and that may explain why women with PTSD in the present sample perceived their emotion regulation strategies to be less effective (compared to their male counterparts).

Finally, it is important to note that findings that women with PTSD (vs. women without PTSD and men with and without PTSD) reported greater difficulties with emotional clarity are inconsistent with investigations of gender differences in emotional clarity among non-PTSD samples (where men generally report greater difficulties with emotional clarity than women) [8,43]. It is possible that the greater difficulties with emotional clarity observed among women (vs. men) with PTSD in this sample are an artifact of other confounding variables, such as traumatic exposure (e.g., type of traumatic exposure, age at earliest trauma, number of lifetime traumatic events). For example, Ehring and Quack (2010) found that lack of emotional clarity was one of two dimensions of emotion dysregulation to demonstrate a significant relation with early-onset chronic interpersonal trauma (vs. single-event or late-onset traumas) when controlling for PTSD symptom severity [12]. Likewise, extant research suggests that difficulties with emotional clarity are particularly pronounced among individuals with early traumatic exposure, which may result in deficits in brain laterality and the subsequent evaluation, identification, and communication of emotions [44]. Given the aforementioned findings, further examination of the relation of PTSD to emotional clarity among diverse PTSD populations is warranted.

Although a dearth of literature has examined these relations within African American populations, there is some preliminary evidence to suggest that African American women (vs. men) are also more likely to use putatively maladaptive coping strategies, and that greater use of these strategies accounts for heightened psychopathology among African American women (vs. men) [45]. Given evidence that African American (vs. White) individuals are at greater risk for PTSD [3,4], and that the risk for PTSD is significantly greater among African American women (vs. men) [3], it is possible that African American women represent one population at particular risk for PTSD. In fact, there is evidence to suggest that gender and racism-related stressors among African American women may increase vulnerability to other stressors, including traumatic events [46].

Notably, in addition to revealing greater overall emotion dysregulation among African American women with probable PTSD (vs. African American women without probable PTSD and African American men with and without probable PTSD), findings of the present study revealed differences in three specific dimensions of emotion dysregulation as a function of the gender by probable PTSD status interaction (in general and when controlling for stress symptom severity). Specifically, African American women with probable PTSD reported significantly greater difficulties controlling impulsive behavior when distressed and accessing effective emotion regulation strategies than all other groups, as well as significantly lower levels of emotional clarity than African American women without probable PTSD. These findings suggest that African American women with probable PTSD would benefit from therapies that directly target these dimensions of emotion dysregulation. For example, learning distress tolerance skills (most notably found in Dialectical Behavioral Therapy) [47] may facilitate behavioral control in the context of emotional distress by reducing the urgency associated with emotions. Likewise, the process of mindfully observing emotions as they occur in the moment may promote emotional clarity. Similarly, learning emotional approach and distraction strategies (to replace emotional avoidance strategies) may help African American women with PTSD effectively modulate the intensity and/or duration of their emotions [48].

Importantly, African American men with probable PTSD did not exhibit greater emotion dysregulation (overall or across any specific dimension of emotion dysregulation assessed here) than African American men without PTSD. Although these findings are contrary to past findings of an association between emotion dysregulation and PTSD symptoms in diverse mixed-gender samples [10,11], prior investigations did not examine the impact of gender on levels of emotion dysregulation in general [10–12] or among individuals with and without PTSD in particular [9,13,49]. Moreover, these findings are not without support in the literature. For example, Hill et al. [50] found gender differences in the relation between emotion regulation and externalizing behaviors in youth, with emotion regulation emerging as a significant predictor of externalizing behaviors among girls but not boys (and failing to distinguish between boys with and without clinically significant externalizing behaviors). As such, there is some evidence to suggest that the relation between emotion dysregulation and psychopathology – a consistent finding in female and mixed-gender samples – may be less robust among males.

These findings suggest that other individual difference factors may be more relevant to the development and/or maintenance of PTSD among African American men (particularly given findings of comparable levels of PTSD symptoms among African American women and men in this sample). Impulsivity may be an important factor to consider in this regard. Empirical evidence suggests that emotion dysregulation and impulsivity are distinct but overlapping constructs [51]. For example, whereas recent literature suggests that impulsivity is best defined as a multi-faceted construct consisting of five dimensions (i.e., negative urgency, positive urgency, lack of premeditation, lack of perseverance, and sensation seeking) [52,53], only two of the aforementioned dimensions of impulsivity (negative and positive urgency) demonstrate conceptual overlap with our definition of emotion dysregulation [8,54]. Thus, investigations of the role of sensation seeking, lack of perseverance, and lack of premeditation in the development and/or maintenance of PTSD among African American men are warranted. In fact, heightened levels of sensation seeking and lack of premeditation among men versus women [55,56] may increase the risk for traumatic exposure and, subsequently, PTSD [57,58]. Sensation seeking and lack of premeditation may also contribute to the maintenance of PTSD symptoms among men, increasing engagement in specific avoidance behaviors (e.g., substance use, aggressive behavior, risky sexual behavior) that prevent exposure to corrective information and increase risk for further traumatic exposure (thereby maintaining or exacerbating PTSD symptoms) [59–61]. Future research is needed to examine the relevance of impulsivity to PTSD among African American men.

Although findings of the present study add to the growing body of research on the relation between PTSD and emotion dysregulation and extend this literature to African American individuals, several limitations must be addressed. First, the cross-sectional and correlational nature of the data precludes determination of the precise nature and direction of the relationships of interest. Future studies should address this concern through prospective, longitudinal investigations. Furthermore, the conclusions that can be drawn are limited by the fact that the present study utilized a nonclinical sample of African American undergraduates. Whereas rates of probable PTSD (26.9%) within this sample are consistent with other investigations of African American individuals with traumatic exposure (where

rates of PTSD range from 14–51%) [3,4,11], results of this study should be replicated in clinical samples of African Americans with PTSD. Moreover, future studies would benefit from the inclusion of standardized clinical interviews (e.g., Clinician Administered PTSD Scale) [18] to establish PTSD diagnoses. Given recent changes made to the diagnostic criteria for PTSD in the DSM-5, investigations utilizing self-report or interview-based assessments of DSM-5 PTSD symptoms are also needed. Additionally, although results of the present study extend past literature examining the association between emotion dysregulation and PTSD within African Americans, they do not speak to the extent to which findings are unique to African Americans in general or African American women in particular. Future studies are needed to examine the extent to which the interrelations of emotion dysregulation, PTSD, and gender differ as a function of racial/ethnic background. Similarly, given the preliminary nature of this study, future research would benefit from replication of these findings within larger, more diverse, mixed-gender samples (e.g., African-, Asian-, and Latino/a American).

Furthermore, although the measure of emotion dysregulation utilized in this study has been found to be significantly associated with objective measures of emotion regulation [24,62], it is possible that participants may have been unwilling and/or unable to report accurately on their emotional states. Therefore, future studies would benefit from the multimodal assessment of emotion dysregulation across self-report, behavioral, and psychophysiological domains. Likewise, because questionnaires were completed in a group setting, participants may have been less willing to endorse exposure to particular traumatic events. Future research would benefit from utilizing alternative methods, such as having participants complete self-report measures in a private room. Lastly, several findings with *p* values below the .05 level were not considered significant when using the modified Bonferroni adjustment, suggesting the need for future research further exploring these relations within larger samples.

Despite these limitations, findings of the present study extend previous investigations of the relation between PTSD and emotion dysregulation, examining the moderating role of gender in this relation among African American individuals. Our findings provide preliminary support for the relevance of emotion dysregulation to probable PTSD among African American women but not African American men. Given evidence that emotion dysregulation may interfere with the ability to tolerate exposure-based PTSD treatments (e.g., Prolonged Exposure) [63], thereby negatively influencing treatment outcome and retention [64,65], assessment of emotion dysregulation at the start of PTSD treatment may be beneficial, particularly when working with African American women. Importantly, findings of the present study highlight the potential utility of treatments that include emotion regulation skills training in treating African American women with PTSD, such as Cloitre et al.'s [66] Skills Training in Affect and Interpersonal Regulation/Prolonged Exposure. Future research is needed to evaluate the efficacy of these treatments (and other evidence-based treatments for PTSD, such as Prolonged Exposure [63] and Cognitive Processing Therapy [68]), in improving emotion dysregulation and PTSD symptoms within populations of African American women.

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Figure 1.
Probable PTSD status by gender interaction for DERS.

Table 1

Lifetime exposure to potentially traumatic events (PTEs).

PTE	%
Exposure to a natural disaster	61.4
Experiencing a fire or explosion	9.4
Experiencing a serious transportation accident	65.7
Experiencing a serious accident at work, home, or during recreational activity	11.3
Exposure to a toxic substance	2.8
Exposure to physical assault	43.4
Exposure to assault with a weapon	23.6
Experiencing rape	13.2
Experiencing uncomfortable or unwanted sexual experiences other than rape	20.0
Experiencing combat or exposure to a war-zone	1.9
Experiencing captivity	1.9
Experiencing a life-threatening illness or injury	9.4
Experiencing severe human suffering	1.9
Witnessing sudden, violent death	15.1
Experiencing the sudden, unexpected death of someone close	60.4
Causing serious injury, harm, or death to someone else	2.8
Exposure to an event that they felt unable or unwilling to discuss	8.6

Table 2

Between group (probable PTSD vs. no-PTSD and male vs. female) differences in demographical and clinical characteristics

	Probable PTSD			Gender		PTSD X Gender
	PTSD (n=29)	No-PTSD (n=78)	Test Statistic	Female (n=81)	Male (n=26)	
Demographic Data						
Age	M=22.38 SD=5.48	M=23.24 SD=5.48	F=0.53	M=22.46 SD=4.85	M=24.73 SD=6.87	F=3.49
Income			$\chi^2=0.16$			$\chi^2=0.08$
< 30,000 per year	n=14	n=40		n=40	n=14	
> 30,000 per year	n=15	n=36		n=39	n=12	
Clinical Characteristics	M (SD)	M (SD)		M (SD)	M (SD)	
DASS-Stress	19.31 (9.00)	10.62 (9.48)	F=18.28*	13.58 (10.14)	11.08 (9.85)	F=1.22
Overall DERS	85.72 (24.32)	64.14 (16.89)	F=10.24 ^b	70.44 (22.91)	68.58 (15.92)	F=4.06
DERS ACCEPT	12.97 (5.67)	9.28 (4.16)	F=5.42	10.30 (5.11)	10.23 (4.12)	F=1.06
DERS GOALS	15.38 (4.91)	11.06 (4.47)	F=8.67 ^a	12.56 (5.29)	11.23 (3.68)	F=5.05
DERS IMPULSE	13.62 (5.25)	9.78 (3.81)	F=5.65 ^b	10.94 (4.86)	10.46 (3.52)	F=3.61
DERS STRATEGY	18.86 (7.39)	13.10 (4.97)	F=9.26 ^a	14.96 (6.76)	13.73 (4.23)	F=4.51
DERS AWARE	13.93 (4.50)	12.54 (4.63)	F=0.13	12.58 (4.44)	13.96 (5.07)	F=0.21
DERS CLARITY	10.97 (4.42)	8.37 (2.88)	F=3.93	9.11 (3.60)	8.96 (3.42)	F=1.95
						F=6.65 ^a

DERS=Difficulties in Emotion Regulation Scale; DERS ACCEPT=DERS Lack of Emotion Acceptance Subscale; DERS GOALS=DERS Inability to Engage in Goal-Directed Behavior When Distressed Subscale; DERS IMPULSE=DERS Impulse Control Difficulties Subscale; DERS STRATEGY=DERS Lack of Effective Emotion Regulation Strategies Subscale; DERS AWARE=DERS Lack of Emotional Awareness Subscale; DERS CLARITY=DERS Lack of Emotional Clarity Subscale.

* $p<.001$.

^a $p<.017$.

^b $p<.025$.