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## Associations Between Specific Negative Emotions and *DSM-5* PTSD Among a National Sample of Interpersonal Trauma Survivors

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### Abstract

The diagnosis of posttraumatic stress disorder (PTSD) has undergone several significant changes corresponding with the recent implementation of the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*. Many of these changes reflect a growing recognition that PTSD is characterized by a wide range of negative affective experiences that were underrepresented in prior conceptualizations of the disorder. The present study examined the prevalence and correlates of a new Criterion D symptom (D4-Negative Affect), which is aimed at assessing subjective problems with persistent negative emotion states (e.g., fear, anger, shame, guilt, horror) among a sample of 1,522 U.S. adults with a history of interpersonal trauma recruited from a national online panel. The prevalence of D4-Negative Affect was very high among individuals with assault-related PTSD (AR-PTSD) and in particular, was significantly higher than among PTSD negative individuals. Moreover, specific problems with anger, shame, and fear were significantly and uniquely associated with AR-PTSD. Important differences also emerged as a function of gender and interpersonal trauma history. These findings provide initial empirical support for the expanded emphasis on assessing a wide range of negative affective experiences that may be associated with PTSD in *DSM-5*.

### Keywords

PTSD; mental health and violence; violence exposure

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As compared with other traumatic events, epidemiological studies suggest that interpersonal violence (i.e., sexual or physical victimization) increases risk for a range of deleterious outcomes including posttraumatic stress disorder (PTSD; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). Hallmark symptoms of PTSD include intrusive recollections of

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past traumatic events, heightened emotional or physiological arousal, and attempts to avoid both internal and external cues that serve as reminders of traumatic experiences. This disorder was first introduced within the class of Anxiety Disorders in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed.; *DSM-III*; American Psychiatric Association [APA], 1980), and it has undergone a number of definitional changes with subsequent editions of this manual.

The recently released fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-5*; APA, 2013) introduced several important changes that have been outlined in great detail elsewhere (e.g., Friedman, 2013). Briefly, these include (a) changes to the definition of traumatic events, (b) transition from three- (i.e., Re-Experiencing [Criterion B], Avoidance/ Numbing [Criterion C], Hyperarousal [Criterion D]) to four-symptom clusters (i.e., Re-Experiencing [Criterion B], Avoidance [Criterion C], Trauma-Related Negative Alterations in Cognition and Mood [Criterion D], Trauma-Related Alterations in Arousal and Reactivity [Criterion E]), and (c) minor changes to existing re-experiencing symptoms and expansion of the remaining clusters to include additional symptoms in an effort to better reflect the entire range of symptoms comprising this complex syndrome (Friedman, Resick, Bryant, & Brewin, 2011; Resick & Miller, 2009).

In addition to specific changes in diagnostic criteria, *DSM-5* places PTSD within a new class of diagnoses labeled *trauma and stressor-related disorders*. This is notable, as PTSD has been traditionally included within the anxiety disorders (APA, 1980, 2000), leading models of PTSD to focus on understanding the acquisition and maintenance of conditioned fear to further our prediction of symptom trajectories following exposure to traumatic events (Cahill & Foa, 2007; Foa & Kozak, 1986). This framework promoted decades of research outlining the neurobiological (Liberzon & Sripada, 2007), psychophysiological (Pole, 2007), and cognitive (Fedroff, Taylor, Asmundson, & Koch, 2000; Hofmann, 2008) underpinnings of conditioned fear and anxiety within the context of PTSD.

Researchers continue to debate the relative merits of implementing both specific changes to the PTSD diagnosis and altering its placement within nosologic categories (Brewin, 2013; Friedman, 2013; Kilpatrick, 2013; Zoellner, Rothbaum, & Feeny, 2011). However, it is clear that several changes outlined in *DSM-5* reflect growing recognition that a broader range of negative emotions, in addition to fear and anxiety, may play a central role in understanding PTSD (Dalgleish & Power, 2004; Resick & Miller, 2009). For example, increasing attention paid to anger in recent years (Olatunji, Ciesielski, & Tolin, 2010; Orth & Wieland, 2006) is driven in large part by evidence that persistent anger is particularly (and uniquely) prominent in PTSD as compared with other anxiety disorders (Olatunji et al., 2010), that it accounts for significant variance in other PTSD symptoms (Novaco & Chemtob, 2002). There are also some findings to suggest that anger may interfere with successful treatment of PTSD (Foa, Riggs, Massie, & Yarczower, 1995; Forbes et al., 2008), though other studies have failed to detect this effect (Cahill, Rauch, Hembree, & Foa, 2003; Stapleton, Taylor, & Asmundson, 2006).

Although the prior edition of the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; APA, 2000) included “irritability and outbursts of anger” as a

core symptom in the hyperarousal cluster of PTSD (Criterion D, Symptom D2), the *DSM-5* separates anger-related problems into two symptoms designed to capture (a) the expression of anger (Criterion E, Symptom E1 “irritable *behavior* and angry outbursts [with little or no provocation] typically expressed as verbal or physical aggression toward people or objects”, p. 272) and (b) the subjective experience of anger and other negative emotions (i.e., Criterion D, Symptom D4: “Persistent negative emotional state [e.g., fear, horror, anger, guilt, or shame]”, p. 271). The addition of D4-Negative Affect increases the emphasis given to subjective experiences of anger (Olatunji et al., 2010; Orth & Wieland, 2006) while recognizing that individuals with PTSD often report persistent, and clinically significant, alterations in a variety of other specific negative mood states (Dalgleish & Power, 2004; Hathaway, Boals, & Banks, 2010; Holmes, Grey, & Young, 2005). Although D4-Negative Affect captures mood states that have been widely researched among individuals with PTSD (e.g., fear, anger), it also offers a fecund opportunity to explore the importance of less well-understood subjective emotional experiences. In particular, preliminary evidence suggests that negative self-referential emotions such as shame, guilt, and self-focused disgust may contribute uniquely to our understanding of the development and maintenance of PTSD (Badour & Adams, 2015; Lee, Scragg, & Turner, 2001; Wilson, Droždek, & Turkovic, 2006).

Few empirical studies have addressed the potential implications of including this new symptom (D4-Negative Affect) within the diagnosis of PTSD. Preliminary descriptive research suggests that this symptom loads strongly to a factor representing the revised Criterion D symptoms and is commonly endorsed by both civilian and veteran samples with a wide range of traumatic event histories (Calhoun et al., 2012; Elhai et al., 2012; Miller et al., 2013). These early studies have primarily included samples with a mixed history of traumatic event experiences rather than focusing on the emotional reactions to specific traumatic events. Although this approach is a strength in terms of generalizability of findings, there is evidence to suggest that unique patterns of affective responding following certain traumatic experiences such as interpersonal victimization (i.e., sexual/physical assault or abuse) may predict unique variance in PTSD (Amstadter & Vernon, 2008; Badour et al., 2011).

The present study sought to expand on this nascent literature by examining the prevalence with which respondents from a large national sample of men and women with a history of traumatic interpersonal victimization report problems with specific negative emotional states, and whether these problems are associated with increased prevalence of assault-related PTSD (AR-PTSD). Specifically, the current study aimed to explore (a) whether interpersonal trauma type (i.e., sexual assault, physical assault, both physical and sexual assault) and gender were differentially associated with experiencing problems with specific negative emotional states (i.e., fear, anger, guilt, shame, horror) and AR-PTSD and (b) which negative emotion states best distinguished between individuals with and without AR-PTSD, after accounting for relevant covariates.

## Method

### Participants and Procedure

The sample was drawn from the National Stressful Events Survey (NSES; Kilpatrick et al., 2013) which assessed exposure to *DSM-IV* and *DSM-5* Criterion A events, PTSD symptoms, and distress or functional impairment associated with PTSD symptoms among a sample of 2,953 U.S. adults. For full details regarding the sampling approach and information about the sample, see Kilpatrick et al. (2013). In brief, participants were recruited from an active online panel maintained by the research sampling company Survey Sampling International (SSI). SSI maintains web panels of potential research participants matched to U.S. Census demographics from all geographic regions of the country. Potential eligible panel participants were stratified on the basis of sex and age categories within the U.S. Census breakdown of the population and were sent an e-mail invitation to complete the survey. The survey was anonymous, the Medical University of South Carolina Institutional Review Board approved all study procedures, and participants provided informed consent electronically before participating. For the overall survey, 3,756 adults accessed the website containing a description of the NSES, and 3,457 (92%) agreed to participate. Of those, 2,953 completed the survey (85.4% of those who agreed to participate).

A subsample of 1,539 cases (53.1% weighted) reported a history of interpersonal trauma meeting *DSM-5* Criterion A. Seventeen participants who selected “prefer not to answer” as their response on an initial item inquiring about any period of persistent negative affect (D4-Negative Affect) were removed from the sample. This resulted in a final unweighted sample of 1,522 cases. See Table 1 for demographic information.

### Measures

The NSES used a self-administered, highly structured survey that mirrored an interactive structured clinical interview by adopting a conditional branching format with follow-up questions contingent on prior responses. The NSES measure, as well as a modified short form, has been used to examine prevalence of *DSM-5* PTSD in multiple samples and has demonstrated strong internal consistency and concurrent validity with established PTSD symptom measures (Kilpatrick et al., 2013; LeBeau et al., 2014; Miller et al., 2013).

*DSM-5* Criterion A events involving sexual or physical assault were assessed via a series of eight closed-ended questions (e.g., “Before you were age 13, did anyone ever have sexual contact with you?”). Symptom D4-Negative Affect was assessed via the following stem question and series of follow-up questions:

D4-Negative Affect: You had a period of time lasting several days or weeks when your emotional state was really negative. That is, you were experiencing lots of fear, anger, guilt, shame, or horror but very few positive emotions.

Following an affirmative response, respondents were asked to indicate each emotion they experienced (i.e., fear, anger, guilt, shame, horror). They were then asked whether emotions began or worsened after a stressful event. Finally, they were asked to identify which specific precipitating event(s) related to onset or worsening of negative emotions. Persistent assault-

related negative affect was considered present for participants who positively endorsed symptom D4-Negative Affect that began or worsened after a sexual or physical assault. Reported onset or worsening related to physical or sexual assault was also determined for all remaining symptoms. Functional impairment was considered positive if PTSD symptoms were “quite a bit” or “extremely” distressing for them, or if they reported problems in one or more areas of functioning. To be classified as AR-PTSD positive, symptom thresholds for *DSM-5* Criteria B, C, D, and E needed to be met specifically in reference to a sexual or physical assault (e.g., based on Same Event PTSD for events involving sexual or physical assault; Kilpatrick et al., 2013) as well as functional impairment.

### Data Analytic Approach

Data were weighted by age, sex, race, and ethnicity based on the 2010 U.S. Census. Weighted data were used in all regression analyses. Descriptive analyses included unweighted *ns*, accompanied by weighted percentages. Missing data were handled via listwise deletion. Given small numbers of minority participants (both overall and among those with AR-PTSD), race was categorized as “White,” “Black or African American,” or “Other” for the purposes of descriptive analyses. As the proportion of participants meeting criteria for AR-PTSD did not differ between those classified as “Black or African American” or “Other” (see Table 1), race was recoded (*White* = 1, *non-White* = 0) for all subsequent analyses to allow for meaningful comparisons as a function of race.

Chi-square tests of independence were used to examine whether prevalence of AR-PTSD differed as a function of demographic characteristics (gender, age, education, race, ethnicity), interpersonal trauma type (i.e., sexual assault only, physical assault only, both sexual and physical assault), and the interaction of gender by interpersonal trauma type. Additional chi-square analyses examined whether participants with AR-PTSD were more likely to endorse Symptom E1-Irritable Behavior, Symptom D4-Negative Affect, and each specific negative emotion (i.e., fear, anger, shame, guilt, horror). Finally, prevalence of Symptom D4-Negative Affect and each specific negative emotion were examined as a function of gender and as a function of the interactions of gender by interpersonal trauma type and gender by AR-PTSD diagnostic status. Bonferroni alpha corrections were applied to all chi-square tests of independence while conducting planned comparisons to compare levels of categorical variables.

For the primary analyses, data were submitted to a series of exploratory hierarchical Poisson regression models with robust standard errors (Zou, 2004). Interpersonal trauma type (sexual assault only = 1 vs. both sexual and physical assault = 0, physical assault only = 1 vs. both sexual and physical assault = 0), race (*White* = 1, *non-White* = 0), age (age 18–54 = 1, more than 55 = 0), and gender (*female* = 1, *male* = 0) were included as empirically derived covariates based on significant associations with AR-PTSD diagnostic status identified in descriptive analyses. Symptom E1 was included as an additional covariate to examine associations between subjective problems with negative affect and AR-PTSD after removing variance associated with behaviorally specific anger problems. All covariates were force-entered into Step 1 of the model. Step 2 utilized forward stepwise entry to explore the relative contribution of each specific emotion in predicting AR-PTSD diagnostic status. This

model was run first among the entire sample. Two additional models were run among women and men, respectively.

## Results

### Descriptive Statistics

Chi-square tests of independence demonstrated that the prevalence of AR-PTSD was significantly higher among participants with a history of both sexual and physical assault (70.2%) as compared with participants with a history of only sexual assault (11.4%) or only physical assault (18.4%;  $\chi^2 = 48.03, p < .001$ ). Women were more likely than men to have a history of sexual assault only (22.8% vs. 8.5%) or combined sexual and physical assault (50.1% vs. 26.1%), but they were less likely than men to have a history of only physical assault (27.1% vs. 65.5%;  $\chi^2 = 226.10, p < .001$ ). Women were also significantly more likely than men to endorse Symptom D4-Negative Affect (19.0% vs. 7.3%;  $\chi^2 = 42.95, p < .001$ ) and problems with specific negative emotions of fear (11.7% vs. 5.6%;  $\chi^2 = 16.87, p < .001$ ), anger (14.8% vs. 5.5%;  $\chi^2 = 34.37, p < .001$ ), guilt (10.6% vs. 3.2%;  $\chi^2 = 29.97, p < .001$ ), shame (12.2% vs. 3.3%;  $\chi^2 = 38.82, p < .001$ ), and horror (4.7% vs. 1.6%;  $\chi^2 = 14.86, p < .001$ ).

Table 1 presents additional information about sample demographics and endorsement of Symptom E1-Irritable Behavior and D4-Negative Affect among the entire sample and among participants with AR-PTSD. Of note, lifetime prevalence of AR-PTSD was lowest among individuals of age 55 or older and was highest among White participants as compared with African Americans or those identifying their race as Other. Individuals with AR-PTSD were significantly more likely to endorse Symptom E1-Irritable Behavior, Symptom D4-Negative Affect, and problems with each specific negative emotion as compared with participants without AR-PTSD.

Table 2 presents data regarding the prevalence of AR-PTSD and endorsement of Symptom D4-Negative Affect as well as each specific negative emotion as a function of the interaction between gender and interpersonal trauma type. These data suggest the main effect of gender predicting differences in AR-PTSD, Symptom D4-Negative Affect, and each specific negative emotion was driven in large part by gender differences among participants reporting a history of both sexual and physical assault. Women with a history of only sexual assault were also significantly more likely to endorse Symptom D4-Negative Affect, but no other gender differences were found within the sexual or physical assault only groups.

Table 3 presents data regarding endorsement of Symptom D4-Negative Affect and each specific negative emotion as a function of the interaction between gender and AR-PTSD. Of note, gender differences in the entire sample appeared to be driven by participants without AR-PTSD. There were no significant gender differences in endorsement of Symptom D4-Negative Affect or any specific negative emotion among participants with AR-PTSD.

**Exploratory analyses**—Table 4 presents results of the full Poisson regression models for the entire sample and for females and males separately. Among the entire sample, female gender, younger age, White race, and endorsement of Symptom E1-Irritable Behavior were



associated with a greater likelihood of meeting criteria for AR-PTSD. After accounting for covariates, individuals endorsing problems with anger were 4.98 times more likely than those not endorsing problems with anger to meet criteria for AR-PTSD. The model was also significantly improved by the addition of subjective problems with shame, with those endorsing shame having a 2.33 times greater likelihood of meeting criteria for AR-PTSD. Finally, individuals endorsing problems with fear were an additional 1.86 times more likely to meet criteria for AR-PTSD. The model was not significantly improved by including guilt or horror as additional predictors.

Among women, younger age, White race, a history of both sexual and physical trauma (vs. physical assault only), and endorsement of Symptom E1-Irritable Behavior were all associated with a greater likelihood of meeting criteria for AR-PTSD. After accounting for covariates, problems with anger (PR = 4.95), shame (PR = 1.94), and fear (PR = 1.69) remained significant predictors of AR-PTSD among women. Among men, Symptom E1-Irritable Behavior was the only covariate significantly associated with an increased likelihood of AR-PTSD. Consistent with previous models, anger was the strongest specific negative affective predictor of AR-PTSD among men (PR = 5.61). Fear was also associated with an increased likelihood of AR-PTSD (PR = 2.40). However, shame did not contribute significantly to the model among men.

## Discussion

Consistent with findings from other early studies examining changes in the assessment of trauma-related negative affect in *DSM-5* PTSD (Calhoun et al., 2012; Elhai et al., 2012; Miller et al., 2013), a substantial portion of the present sample reported experiencing at least one period of persistent negative affect that began or worsened after a sexual or physical assault. This prevalence was particularly striking among individuals who developed PTSD following an assault. Specifically, more than 83% of those with a lifetime history of AR-PTSD endorsed at least one period of assault-related persistent negative affect as compared with only 8% of those without a history of AR-PTSD. Individuals with AR-PTSD as compared with those without AR-PTSD more frequently endorsed problems with all specific negative emotions assessed in this study (i.e., anger, shame, fear, guilt, and horror). They were also more likely to endorse problems with irritable behavior that began or worsened after their assault.

After accounting for covariates linked to differential prevalence rates of AR-PTSD in this sample (i.e., gender, race, age, interpersonal trauma type, problems with anger expression that began or worsened following a sexual or physical assault [Symptom E1-Irritable Behavior]), only the emotions of anger, shame, and fear, in descending order of importance, predicted unique variance in AR-PTSD. These findings offer preliminary support for the separation of the subjective experience of negative affect (including anger) from problems in behavioral expression of irritability or anger in the *DSM-5*. Although this was not the first study to document the importance of anger and shame reactions in understanding PTSD following interpersonal trauma (e.g., Andrews, Brewin, Rose, & Kirk, 2000), it was the first to compare the relative strength of these emotions to fear in the prediction of PTSD. The finding that subjective problems with both anger and shame emerged as more robust

predictors of AR-PTSD than persistent fear is somewhat surprising given the centrality of fear in leading conceptual models of PTSD (Cahill & Foa, 2007; Foa & Kozak, 1986) as well as definitions of PTSD in previous editions of the *DSM*. However, this finding is consistent with contemporary cognitive theories of PTSD that place increasing emphasis on a range of trauma-related appraisals that may be linked to the experience of emotions other than fear (Dalgleish & Power, 2004; Ehlers & Clark, 2000; Resick & Schnicke, 1992). Although evidence is sparse and relatively inconclusive regarding how persistent negative emotions such as anger and shame may affect PTSD treatment (Cahill et al., 2003; Foa et al., 1995; Forbes et al., 2008; Stapleton et al., 2006), it has been proposed that interventions that incorporate elements of cognitive therapy, such as cognitive processing therapy, may offer added clinical utility in reducing non-fear-based trauma-related emotions (Resick & Schnicke, 1992).

It is possible that certain interpersonal traumas, for example, those occurring early in development or those involving coercive (but not forceful) sexual victimization perpetrated by a known and/or trusted perpetrator, may be more likely to lead to strong emotions of anger and shame as compared with heightened levels of fear that would likely accompany a trauma characterized by acute physical threat. Additional research will be needed to explore these questions further and to determine whether the present results generalize to predict PTSD in a similar manner following other types of traumatic experiences. Despite this important caveat, these findings underscore the importance of the broadened approach toward assessing specific negative affective states in PTSD.

Several important gender differences in this study also warrant consideration. First, women were more likely than men to meet criteria for AR-PTSD and to have a history of sexual assault or both physical and sexual assault. These findings replicate those of other epidemiological studies demonstrating that women are more likely than men both to experience traumatic events involving sexual violence and to develop PTSD (e.g., Breslau et al., 1998; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Among the entire sample, women were also more likely than men to endorse problems with assault-related negative affect generally (Symptom D4-Negative Affect) and to endorse problems with each specific assault-related negative emotion.

Although men and women with AR-PTSD endorsed problems with each specific negative emotion at similarly high rates, exploratory analyses suggested that problems with shame were more strongly associated with AR-PTSD among women, whereas problems with fear were more strongly linked to AR-PTSD among men. This finding is consistent with prior research documenting differences between men and women in both the experience and regulation of trauma-related emotions (Gavranidou & Rosner, 2003; Lancaster, Melka, & Rodriguez, 2011; Olatunji, Babson, Smith, Feldner, & Connolly, 2009). Although the current analyses statistically controlled for differences in the types of interpersonal trauma experienced by men versus women that might otherwise account for these distinct patterns, other characteristics such as whether the trauma occurred early in development, relationship of the victim to the perpetrator, and whether the trauma involved coercion (in the case of sexual victimization) versus threat of or actual physical harm will need to be examined in future studies.



In addition to gender-specific patterns among individuals with AR-PTSD, a gender disparity in endorsing problems with specific negative emotions among those without AR-PTSD is also worth noting. Specifically, women without AR-PTSD were more likely than their male counterparts to endorse problems with all specific negative emotions. It is possible that this pattern may reflect the well-replicated finding that women are more likely than men to experience negative affect generally (Chaplin & Aldao, 2013; Lynn & Martin, 1997; Stevens & Hamann, 2012), it also appears that the higher prevalence of assault-related negative affect among women was found almost exclusively among participants with a history of both sexual and physical assault. Indeed, there were no gender differences in prevalence of any of the outcome variables among participants with a history of only physical assault (collapsed across PTSD diagnostic status). It is possible that this pattern reflects a unique vulnerability among women that emerges only in the presence of cumulative interpersonal trauma exposure (even in the absence of PTSD); however, this finding may also be confounded by the fact that women are more likely than men to experience interpersonal victimization involving sexual assault or abuse (Tolin & Foa, 2006). Indeed, despite the present study's effort to include both men and women with a history of either or both types of interpersonal trauma, there were substantially fewer men with a history of sexual assault or combined sexual and physical assault. Future studies should consider oversampling for men with a history of sexual assault or multiple interpersonal traumas to better understand the range of responses that occur in men as compared with women.

Although there were significant strengths in the approach of the NSES to comprehensively assessing exposure and responses to traumatic events, detailed information was not available regarding the specific number or severity of traumatic events involving sexual or physical assault in this sample. As such, it is possible that individuals in the combined sexual and physical assault group experienced more chronic or severe exposure to interpersonal trauma or experienced a greater number of discrete events perpetrated by different individuals across the course of their lives. Such distinctions may account for differences in prevalence of PTSD, as well as endorsement of D4-Negative Affect and problems with specific negative emotions. If the present findings are replicated in future studies, it will be important to further examine specific characteristics of traumatic experiences that might lead to problems with different negative emotion states.

Additional limitations of the present study warrant discussion. First, findings were based on data collected as part of an Internet survey; thus, it is estimated that approximately 20% of U.S. households were excluded from the sampling frame due to lack of access to the Internet. As such, this study does not reflect a true national probability sample of U.S. adults. In addition, although data were collected as part of a large national survey and were weighted to match the 2010 Census based on age, gender, race, and ethnicity, it is possible that responses from participants who are members of an Internet survey panel may differ in important ways from the population at large. Moreover, although participants in the present report indicated that specific lifetime symptoms meeting PTSD criteria were attributed to a past sexual or physical assault, the structure of the NSES neither ascertained whether each symptom was experienced in relation to the same event, nor could it determine whether all symptoms were experienced concurrently for a period greater than 1 month. Finally, stepwise regression was selected as an exploratory approach to modeling the present data

(Menard, 1995). This approach has a number of limitations including underestimation of standard errors, inflated parameter estimates, and overly narrow confidence intervals (Harrell, 2001). As such, the findings should be interpreted with caution and must be replicated in future samples.

Limitations notwithstanding, the current study significantly expands our knowledge regarding how the changes to *DSM-5* PTSD affect the assessment of negative affect within the context of responses to traumatic events. Specifically, these findings suggest that assessment of persistent problems with subjective negative emotional states that begin or worsen following sexual or physical assault may contribute significantly to the prediction of AR-PTSD, and this association may be unique in women as compared with men. Moreover, it may be important to expand our research focus beyond the long-acknowledged central role of fear in PTSD, to consider the role of other relevant negative emotions. In particular, anger and shame appear to be principal candidates within this domain.

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## Biographies

**Christal L. Badour**, PhD, is currently a National Institute of Mental Health-funded postdoctoral fellow in clinical psychology in the National Crime Victims Research and Treatment Center (NCVC) in the Department of Psychiatry and Behavioral Sciences at the Medical University of South Carolina. Her research interests center on understanding mechanisms involved in the development and maintenance of psychopathology following exposure to traumatic experiences. Her current work focuses on the roles of affective expression and regulation in posttraumatic stress disorder (PTSD) with a particular emphasis on non-fear-based emotions such as disgust, guilt, shame, and anger. She is also interested in identifying unique and shared processes underlying symptoms of PTSD and commonly comorbid concerns including obsessive-compulsive disorder (OCD), insomnia, substance use, and sexual dysfunction. Finally, she is interested in identifying specific moderators and mediators of treatment change to enhance existing interventions and to guide development of new targeted interventions aimed at improving outcomes for patients with trauma-related psychopathology. She also provides trauma-focused treatment to children, adolescents, and adults at the NCVC.

**Heidi S. Resnick**, PhD, is a professor at the NCVC in the Department of Psychiatry and Behavioral Sciences at the Medical University of South Carolina. For the past 18 years, she has been conducting research related to PTSD and other adaptations following exposure to potentially traumatic events, including crime and disaster. She has developed early intervention strategies that may prevent the development of PTSD and other psychopathology following a traumatic event. She has conducted a randomized controlled trial of a brief intervention used with adult and older adolescent rape victims in the emergency hospital setting that is designed to prepare women and girls for the procedures they will go through during the medical rape exam, and that provides instruction in adaptive coping strategies following rape. She has collaborated with colleagues at the NCVC to develop similar materials for use by younger children and their parents who are preparing for non-acute post-sexual assault medical care services. She has also collaborated with colleagues at the New York Academy of Medicine on a series of studies assessing reactions over time following the September 11 terrorist attacks in the World Trade Center. This work has involved the development and piloting of a web-based psychoeducational intervention that may be useful in the aftermath of disasters. Recent research includes a study of the prevalence and impact of forcible and drug or alcohol facilitated or incapacitated rape within samples of college women and women in the general population.

**Dean G. Kilpatrick**, PhD, is a Distinguished University Professor of clinical psychology and director of the NCVC at the Medical University of South Carolina in Charleston, South Carolina. His primary research interests include measuring the prevalence of rape, other violent crimes, and other types of potentially traumatic events as well as assessing the mental health impact of such events. He was a member of two Institute of Medicine committees: the Committee on Incorporating Research Into Psychiatry Residency Training and the Committee on Veterans Compensation for Posttraumatic Stress Disorder. He has served the International Society for Traumatic Stress Studies as a board member (1994–

1997), editor of the *Journal of Traumatic Stress* (1998–2005), and as president-elect and president. He is now a past president. He has provided invited testimony on the topics of rape, sexual harassment, and compensation for PTSD to committees of the U.S. House of Representatives and the U.S. Senate. In 2007, he was awarded the Allied Profession Award for promoting crime victims' rights, services, and needs in the mental health field by the Congressional Victim's Rights Caucus.

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**Table 1**  
Demographic Characteristics and Endorsement of Symptom E1-Irritable Behavior and D4-Negative Affect Among the Total Sample and Among Participants With AR-PTSD.

	<i>n</i> of Total Sample (%)	<i>n</i> of AR-PTSD + (%)	<i>n</i> of AR-PTSD - (%)	$\chi^2$
Gender <sup>‡</sup>				23.82***
Female	1,038 (57.5)	115 (79.1)	923 (55.7)	
Male	477 (42.5)	17 (20.9)	460 (44.3)	
Age				7.71*
18–34	455 (31.1)	43 (28.1) <sup>a,b</sup>	412 (31.4) <sup>a,b</sup>	
35–54	475 (39.2)	60 (50.9) <sup>b</sup>	415 (38.3) <sup>b</sup>	
55 or older	590 (29.7)	29 (21.1) <sup>a</sup>	561 (30.3) <sup>a</sup>	
Education				4.52 <sup>‡</sup>
8th grade or less	7 (1.2)	0 (0.0)	7 (1.3)	
Some high school	46 (3.4)	6 (3.5)	40 (3.3)	
High school graduate	358 (22.8)	29 (20.0)	329 (23.0)	
Some college	661 (44.9)	64 (49.6)	597 (44.5)	
4-year college graduate	302 (17.7)	28 (20.9)	274 (17.4)	
Graduate degree	146 (10.1)	6 (6.1)	140 (10.5)	
Race				21.05***
White	1,295 (72.9)	121 (91.2) <sup>a</sup>	1,174 (71.4) <sup>a</sup>	
Black or African American	138 (13.9)	5 (5.3) <sup>b</sup>	133 (14.6) <sup>b</sup>	
Other	78 (13.2)	5 (3.5) <sup>b</sup>	73 (13.9) <sup>b</sup>	
Ethnicity				1.57
Hispanic	90 (19.2)	8 (23.7)	82 (18.9)	
Non-Hispanic	1,422 (80.8)	123 (76.3)	1,299 (81.1)	
Symptom E1-Irritable Behavior	366 (22.1)	82 (63.2)	284 (18.9)	120.07***
Symptom D4-Negative Affect	234 (13.9)	103 (83.3)	131 (8.4)	493.75***
Fear	161 (9.2)	78 (60.9)	83 (5.0)	399.09***
Anger	183 (10.9)	90 (73.7)	93 (5.9)	498.89***

	<i>n</i> of Total Sample (%)	<i>n</i> of AR-PTSD + (%)	<i>n</i> of AR-PTSD - (%)	$\chi^2$
Guilt	143 (7.4)	71 (55.3)	72 (3.6)	409.76***
Shame	159 (8.5)	75 (61.7)	84 (4.3)	451.64***
Horror	66 (3.2)	37 (23.7)	29 (1.6)	164.74***

Note. *N* = 1,522. Unique superscripts reflect statistically significant pairwise comparisons in the proportion of participants meeting AR-PTSD across specific levels of Age after Bonferroni correction; AR-PTSD = assault-related posttraumatic stress disorder.

<sup>†</sup>The following demographic information was missing: gender (*n* = 7), age (*n* = 2), education (*n* = 2), race (*n* = 11), and ethnicity (*n* = 10).

<sup>‡</sup>Coefficient for Fisher's Exact test. All *n*s reflect unweighted data accompanied by weighted percentages.

\* *p* < .05.

\*\* *p* < .01.

\*\*\* *p* < .001.

AR-PTSD Diagnostic Status and Endorsement of Symptom D4-Negative Affect and Specific Negative Emotions as a Function of Interpersonal Trauma Type and Gender.

Table 2

	Sexual Only (n = 280)			Physical Only (n = 607)			Sexual and Physical (n = 635)		
	% of Females n = 233	% of Males n = 45	$\chi^2$	% of Females n = 285	% of Males n = 319	$\chi^2$	% of Females n = 520	% of Males n = 113	$\chi^2$
AR-PTSD	5.9	1.8	1.57 <sup>a</sup>	3.3	3.0	0.05	15.7	5.8	10.76 <sup>**</sup>
Symptom D4	12.8	1.8	5.71 <sup>*</sup>	8.7	6.9	0.69	27.4	9.9	21.47 <sup>***</sup>
Fear	4.9	1.8	1.06 <sup>a</sup>	6.6	6.0	0.09	17.5	5.8	13.70 <sup>***</sup>
Anger	9.9	1.8	3.83 <sup>a</sup>	5.8	6.0	0.01	22.0	5.8	22.78 <sup>***</sup>
Guilt	5.9	1.8	1.57 <sup>a</sup>	3.7	1.6	2.95	16.4	8.1	6.95 <sup>**</sup>
Shame	10.3	1.8	4.14 <sup>a</sup>	4.1	3.5	0.20	17.5	4.1	18.84 <sup>***</sup>
Horror	2.0	1.8	0.01 <sup>a</sup>	1.2	0.7	0.53 <sup>a</sup>	7.8	2.3	6.31 <sup>*</sup>

Note. All *rs* reflect unweighted data accompanied by weighted percentages. AR-PTSD = assault-related posttraumatic stress disorder.

<sup>a</sup>Coefficient for Fisher's Exact test.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

**Table 3**  
Endorsement of Symptom D4-Negative Affect and Specific Negative Emotions as a Function of Gender and AR-PTSD.

	Entire Sample (N = 1,522)			AR-PTSD + (n = 133)			AR-PTSD - (n = 1,389)		
	% of Females n = 1,038	% of Males n = 477	$\chi^2$	% of Females n = 115	% of Males n = 17	$\chi^2$	% of Females n = 923	% of Males n = 460	$\chi^2$
Symptom D4	19.0	7.3	42.95***	83.5	79.2	0.25 <sup>a</sup>	11.6	4.6	22.75***
Fear	11.7	5.6	16.87***	59.3	66.7	0.43	6.3	3.5	5.80*
Anger	14.8	5.5	34.37***	74.7	66.7	0.63	8.1	3.1	15.73***
Guilt	10.6	3.2	29.97***	56.7	50.0	0.34	5.4	1.6	14.41***
Shame	12.2	3.3	38.82***	61.5	62.5	0.01	6.8	1.1	27.74***
Horror	4.7	1.2	14.86***	26.4	16.7	0.97	2.3	0.8	4.83*

Note. All *ns* reflect unweighted data accompanied by weighted percentages. AR-PTSD = assault-related posttraumatic stress disorder.

<sup>a</sup> Coefficient for Fisher's Exact test.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

**Table 4**  
 Poisson Regression Models With Robust Standard Errors Predicting Lifetime AR-PTSD.

	<i>B</i>	<i>SE</i>	$\chi^2$	<i>PR</i>	95% <i>CI</i>
Entire sample ( <i>N</i> = 1,522)					
Block 1					
Gender (Female)	0.56	.25	5.29*	1.75	[1.09, 2.82]
Age (below 55)	1.03	.41	6.30*	2.79	[1.25, 6.24]
Race (White)	1.37	.43	10.23**	3.93	[1.70, 9.08]
Sexual trauma only	-0.61	.33	3.50	0.54	[0.28, 1.03]
Physical trauma only	-0.51	.30	2.81	0.60	[0.33, 1.09]
Symptom EI-Irritable Behavior	2.52	.29	77.62***	12.47	[7.11, 21.86]
Block 2					
Step 1—Anger	1.61	.39	17.07***	4.98	[2.32, 10.65]
Step 2—Shame	0.85	.28	8.93**	2.33	[1.34, 4.05]
Step 3—Fear	0.62	.22	8.04*	1.86	[1.21, 2.86]
Females ( <i>n</i> = 1,038)					
Block 1					
Age (below 55)	0.98	.45	4.77*	2.67	[1.11, 6.45]
Race (White)	1.46	.43	11.44***	4.32	[1.85, 10.07]
Sexual trauma only	-0.67	.37	3.23	0.51	[0.25, 1.06]
Physical trauma only	-0.92	.37	5.97*	0.40	[0.19, .83]
Symptom EI-Irritable Behavior	2.12	.27	59.99***	8.36	[4.89, 14.31]
Block 2					
Step 1—Anger	1.60	.38	17.81***	4.95	[2.36, 10.41]
Step 2—Shame	0.66	.26	6.30*	1.94	[1.16, 3.25]
Step 3—Fear	0.52	.24	4.70*	1.69	[1.05, 2.72]
Males ( <i>n</i> = 477)					
Block 1					
Age (below 55)	1.27	.74	2.92	3.56	[0.83, 15.28]

	<i>B</i>	<i>SE</i>	$\chi^2$	<i>PR</i>	95% <i>CI</i>
Race (White)	0.94	.83	1.27	2.55	[0.49, 13.05]
Sexual trauma only	-0.01	.88	0.00	0.99	[0.18, 5.52]
Physical trauma only	0.10	.37	0.07	1.00	[0.53, 2.25]
Symptom E1-Irritable Behavior	3.97	.53	56.57***	53.13	[18.86, 149.58]
Block 2					
Step 1—Anger	1.72	.07	6.54*	5.61	[1.50, 21.03]
Step 2—Fear	0.88	.39	4.97*	2.40	[1.11, 5.19]
Step 3—Shame	0.74	.49	2.28	2.09	[0.80, 5.45]

Note. AR-PTSD = assault-related posttraumatic stress disorder; CI = confidence interval; PR = prevalence ratio.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .