Curr Treat Options Psych (2016) 3:48–59
DOI 10.1007/s40501-016-0069-6

Post-Traumatic Stress Disorders (K Chard and T Geracioti, Section Editors)

Posttraumatic Stress Disorder, Aggressive Behavior, and Anger: Recent Findings and Treatment Recommendations

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Published online: 10 February 2016

This article is part of the Topical Collection on *Post-Traumatic Stress Disorders*

Keywords Posttraumatic stress disorder · Aggressive behavior · Anger · Treatment · Cognitive-behavioral therapy

Opinion statement

While cognitive-behavioral treatment has been shown to be effective in treating anger in the general population, there is little empirical evidence to support the utility of these interventions in reducing anger, hostility, and aggression among patients with posttraumatic stress disorder (PTSD). Furthermore, many existing interventions for anger do not directly target hostile cognitive scripts or discuss processes of risk for aggressive behavior, two notable anger-related constructs that are reported at higher rates for patients with PTSD compared to those without PTSD. Thus, the authors reviewed the theoretical foundation for a newly developed cognitive-behavioral intervention for the treatment of anger, hostility, and aggression for patients with PTSD. Furthermore, the authors recommended several screening and assessment measures to aid in referral for anger-specific interventions for patients with PTSD and provided empirically based support for the use of motivational interviewing techniques in responding to patients who exhibit intense anger within treatment settings.

Introduction

The externalizing symptoms of posttraumatic stress disorder (PTSD), such as aggression and anger-related behaviors, are associated with substantial relational, legal/financial, health, and intrapersonal consequences.

Aggressive behavior and difficulty managing angry arousal often interferes with treatment compliance, therapeutic alliance, and complicates the process of reintegration following combat deployment. Prevalence data suggest that providers who treat patients with PTSD, especially those who work with combat veterans, will likely encounter a significant proportion of patients with comorbid high trait (i.e., dispositional) anger and a history of aggressive behavior. More than 65 % of veterans who served in the recent Iraq and Afghanistan conflicts reported engaging in verbal or physical aggression in the past month [1]. Among veterans with probable PTSD, 25 % reported perpetration of at least one severe act of aggression (e.g., threatening with a weapon, choking) within the past year, in comparison to only 6 % of those without PTSD symptoms [2]. The present review article has the following aims: (1) to highlight existing research linking PTSD to aggression including factors that may partially account for this association; (2) to provide an overview of relevant diagnostic changes to PTSD; (3) to review existing treatments for anger and aggression among patients with PTSD; (4) to provide an overview of a newly developed cognitive-behavioral intervention for anger, hostility, and aggression; and (5) to provide recommendations for both screening measures to inform referrals to anger-specific interventions and clinician techniques in responding to patients who display intense anger within treatment settings.

The Veteran's Affairs/Department of Defense (VA/DoD) Clinical Practice Guideline for the Management of Post-traumatic Stress [3] has been developed to provide empirically supported and evidence-based recommendations for the treatment of PTSD. However, to the authors' knowledge, there are no pharmacological interventions that have demonstrated specific efficacy for addressing aggression and angry behaviors. Therefore, we focus the current review on psychotherapeutic approaches to addressing anger and aggression.

What accounts for the association between PTSD and aggressive behavior?

Studies suggest that there are multiple factors that place individuals at risk for exhibiting problematic anger and aggression behaviors. Veterans, compared to civilian populations, are at considerably greater risk for general aggression and self-directed, impulsive aggression (e.g., suicide) [4, 5]. In addition, combat veterans are at elevated risk for aggressive responding in comparison to non-combat veterans with PTSD [6]. There has been little research to date on the mechanisms by which combat exposure confers additional risk; however, results from empirical studies have indicated that type of index trauma (i.e., combat versus civilian) [7, 8, 9•, 10] may likely account for increased rates of aggression via more routine engagement in threat appraisals while in combat theater [10]. These hypothesized mechanisms of risk for aggressive behavior require further empirical evaluation.

Anger, hostility, and PTSD

In comparison to those without PTSD, patients with PTSD are prone to experience more intense anger and hostility [11–13]. Of note, meta-analytic findings indicated a stronger association between PTSD and anger for patients with military traumas, as compared to other types of trauma [10]; however, the authors of this review suggested that it is possible that traits related to self-selection into military service might have accounted for some of the difference across trauma type. Evidence suggests that anger arousal and the activation of hostile cognitive scripts significantly increases the risk

for aggressive responding among patients with PTSD via (1) higher levels of trait anger than those without PTSD, (2) greater likelihood to perceive threat in the environment, and (3) heightened physiological arousal associated with perceived threat [14]. In a recent study of 2420 US army soldiers [9•], higher trait anger and PTSD was associated with a higher likelihood of aggression. In addition, soldiers with high trait anger who had seen combat were at greatest risk for developing PTSD and reporting aggression (compared to those with low levels of trait anger).

Although anger and hostility are related constructs, past research has done a relatively poor job in distinguishing between these two importantly distinct constructs [15•, 16]. Anger is a multidimensional concept comprised of physiological (arousal of the sympathetic nervous system), cognitive (irrational beliefs; appraisals about the situation, event, and/or person involved), phenomenological (labeling of feelings of anger, self-awareness), and behavioral variables (verbal and behavioral strategies for anger expression) [17–19]. Hostility has been primarily conceptualized as an attitudinal disposition and is defined as a set of cognitive scripts that illustrate a tendency to perceive others, across many situations, with mistrust, cynicism, and denigration [20]. In considering treatment options for aggressive behavior, we argue that both anger and hostility are necessary concepts to define and address, particularly among patients with PTSD.

PTSD and intimate partner violence

Intimate partner violence (IPV) is a specific form of aggressive behavior and is defined as an occurrence of physical, psychological, or sexual harm perpetrated within current or former romantic dyads [21]. Individuals with PTSD are at particularly increased risk for intimate partner violence [22] and this link is shown to be, in part, explained by anger [23]. Robust associations have been observed between anger, hostility, and IPV perpetration across sex and type of population (i.e., civilian, military) [15•]. Associations between anger, hostility, and IPV are strongest among individuals who exhibit severe forms of IPV [15•].

Recent revision to PTSD diagnostic criteria and proposed PTSD phenotypes

PTSD has become an even more heterogeneous construct following the addition of criteria in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition [24]. One major modification involves the separation of the emotional and phenomenological state of anger from aggressive behaviors that are in response to anger. The emotional experience of anger is now captured under the PTSD symptom "persistent negative emotional state" and is considered to be part of the PTSD diagnostic symptom cluster involving negative alterations in cognition and mood that are in response to the trauma. Aggressive behavior committed while irritated or angry is considered in the DSM-5 criteria to be a separate symptom from persistent anger emotions, and these anger-related aggressive behaviors are now captured under the PTSD diagnostic symptom

cluster involving alterations in arousal and reactivity associated with the trauma.

Revisions to PTSD diagnostic criteria and factor structure in DSM-5 call for a closer examination of individuals with an externalizing phenotype, which is characterized by more severe levels of anger and aggressive behavior [25••] and high levels of negative emotionality [26••]. Recent evidence in support of an externalizing PTSD subtype highlights the importance of developing interventions that target externalizing mechanisms more directly with the goal of potentially optimizing PTSD treatment for certain individuals [26••]. The effect of an externalizing phenotype on empirically supported PTSD treatment drop-out and efficacy has yet to be explored; however, there is evidence that indicates that high levels of dispositional anger moderates treatment outcome among veterans with PTSD, in that those who have high disposition anger have worse outcomes in PTSD-focused treatment [27, 28]. Veterans with an externalizing subtype of PTSD, and not those determined to have an internalizing subtype, were more likely to report violent acts of aggression (beyond what was accounted for by PTSD symptom severity and demographic factors such as minority status) [29]. Thus, Van Voorhees and colleagues [29] recommended the use of validated assessment to determine whether additional anger and aggression-focused interventions would be an appropriate addition to standard PTSD treatment.

Lack of empirical evaluation of treatments for aggression and anger among patients with PTSD

To date, there is a lack of research on the efficacy of anger interventions in producing improvements in externalizing symptoms and related behaviors among patients with PTSD [9•]. However, results of several meta-analytic reviews indicate that psychological treatments for anger problems have had significant effects on the reduction of anger-related clinical symptoms on populations in which externalizing behavior problems are the main or exclusive psychiatric condition [30, 31]. Unfortunately, high levels of anger are shown to moderate the effectiveness of empirically supported treatments for PTSD. Studies of cognitive processing therapy (CPT) and prolonged exposure (PE), two empirically-supported cognitive-behavioral treatments for PTSD, show that patients with PTSD who exhibit high trait anger are less likely to exhibit a reduction of PTSD symptoms during these PTSD-focused treatments [27, 28, 32]. Although both treatments are shown to produce large overall reductions in PTSD symptoms, PE and CPT have not been shown to be efficacious for specifically reducing externalizing symptoms of PTSD, such as angry arousal or aggressive behavior [33, 34].

In addition to individuals with high trait anger showing less improvements in PTSD-focused psychotherapies, evidence indicates that anger-related difficulties may precipitate early drop-out from PTSD treatment [35]. There exist only two published studies on the use of cognitive-behavioral protocols to treat anger and related behaviors using a target sample of patients with PTSD, and findings from these studies are limited due to underpowered statistics [36], a lack of control comparison group [37], and limitation of the study populations to male, Vietnam veterans (majority were combat veterans). This important preliminary, albeit

limited, work suggests that interventions targeting anger are important for improving outcomes among patients seeking PTSD-focused treatment and in reducing likelihood of engaging in aggressive behavior.

Notably, current treatments for anger management often fall short of addressing the combination of risk processes that promote and inhibit aggression and hostility. There exists a crucial need to further develop and empirically evaluate anger, hostility, and aggression therapeutic interventions with a strong theoretical foundation and attention to individualized processes of risk. Furthermore, existing cognitive-behavioral psychotherapies for anger and aggression could be strengthened by placing emphasis on challenging cognitive biases that specifically promote aggressive responding and likely maintain high levels of hyperarousal (i.e., hostility, anger rumination), and addressing the overwhelming negative effects of suppression as a strategy for emotion regulation [38]. Finally, existing PTSD treatments may be enhanced by more targeted interventions to address high levels of anger, hostility, and aggression.

Cognitive-behavioral therapy for anger, hostility, and aggression among veterans with PTSD

The authors have developed a cognitive-behavioral psychotherapy intervention for anger, hostility, and aggression. This psychotherapy is grounded in current evidence-based theory and research on PTSD, anger, and aggression. In addition, this anger intervention was developed in accordance with the VA/DoD Clinical Practice Guideline for Management of Post-traumatic Stress [3], which recommends anger-specific interventions to target angry arousal in patients with PTSD. This intervention was also informed by Taft and colleagues [35] review of the assessment and treatment of posttraumatic anger and aggression and was designed with a patient-centered, individualized care approach in mind. This novel intervention has been piloted across three residential PTSD treatment programs (i.e., men's, women's, men's/traumatic brain injury (TBI)) at a midwestern Veterans Affairs Medical Center. The intervention is currently undergoing pilot testing in a ten session, weekly outpatient group for veterans with PTSD in order to examine more clearly whether the intervention is associated with clinically reliable reductions in anger, hostility, and aggressive behavior. A central component of this novel cognitive-behavioral psychotherapy for anger, hostility, and aggression is the use of an evidence-based theoretical framework, I^3 theory (pronounced "I-cubed theory") [39], to incorporate the individualized reflection of situational and dispositional risk processes that both promote, and inhibit, hostile attributions, angry arousal, and aggressive responding. Of note, this intervention has patient's identify their own personal high-risk situations for aggression ahead of time (e.g., they are provoked by a partner calling them lazy, they are feeling agitated or in pain, and they are intoxicated) in order to engage in effective planning (e.g., addressing their agitation or pain through regular practice of effective coping strategies) for managing arousal in those situations in the future to increase likelihood that they will *inhibit* an urge to act aggressively. We posit that the promotion of cognitive and behavioral strategies for the inhibition of aggressive responding may be just as effective in reducing violent behavior as efforts to increase use of adaptive emotion regulation strategies

and routine practice of cognitive restructuring. Furthermore, the discussion of disinhibiting processes, such as acute alcohol intoxication and the narrowed focus of attention on threat-related and aggression-promoting cues (i.e., attention allocation model) [40], is an important and novel inclusion in this anger intervention.

We hypothesize that hostility contributes to aggressive responding and is, therefore, an important target of this treatment. Hostility is defined as a set of biased, cynical cognitive scripts and PTSD-related threat appraisals. To address hostility directly, the treatment incorporates weekly homework assignments of completing thought records to directly promote cognitive flexibility. This component of the intervention is novel, since most other anger management protocols do not include routinely assign or practice cognitive restructuring. Furthermore, recent empirical evidence has illustrated the importance of emotion regulation strategies in the management of angry arousal and aggressive responding [38, 41, 42]. Emotion regulation is distinct from anger and hostility as it is defined as a series of processes in which affective states are evaluated and responses are generated that often results in the modification of affective experiences and/or expression [42, 43]. Use of certain regulation strategies, such as distraction and cognitive reappraisal, has been linked to notable decreases in risk for aggressive responding [44]. Cognitive reappraisal occurs when the initial appraisal of a person or situation (i.e., they bumped into me on purpose to upset me) is re-evaluated and alternative, less-negative thoughts about the situation or person are considered (i.e., it was an accident). Patients with PTSD are more likely to perceive hostile threat (i.e., have fear-based cognitive appraisals) in their day-to-day environment, even when no real danger exists [36]. Notably, many patients with PTSD report engaging in suppression in response to anger or other types of arousal, and this strategy appears to be reinforced, in part, during military training as a survival mechanism for suppressing emotional responses in combat or other urgent situations. Suppression is an emotion regulation strategy characterized by the inhibition (i.e., holding in) of emotional expression and is posited to prime aggressive responding via increased physiological arousal in response to stimuli that contains negative affect [45, 46]. Furthermore, engagement in a pattern of suppression as an inhibitory emotion regulation response increases reliance on maladaptive conflict resolution strategies such as verbal and physical aggression [47, 48]. Thus, the newly developed protocol incorporates a novel treatment component of personal evaluation of commonly used emotion regulation strategies, promotes cognitive reappraisal through CBT practice and homework, and serves to aid patient efforts to reduce the use of suppression.

Recommended assessment to determine suitability for anger, aggression, and hostility intervention among those with PTSD

In determining whether a patient might benefit from an anger-specific intervention, a clinician should assess for these factors during a semi-structured clinical interview: (1) frequency *and severity* of intense

experiences of anger alongside acts of verbal and physical aggression (e.g., insulting others, making threats of violence, punching/hitting objects or others) and (2) to what degree their experiences of anger and aggression within the past month have impacted their relational, occupational, financial, health-related, or other functioning (e.g., routine tension headaches not otherwise explained, fear expressed by family members toward patient behavior, loss of employment due to anger outbursts).

The State-Trait Anger Expression Inventory 2nd Edition (STAXI-2) [49] is a 57-item assessment designed to measure anger from a state-trait personality perspective. The STAXI-2 is comprised of six scales and five subscales and each item is rated on a 4-point scale of anger intensity or frequency ranging from 1 (*not at all or almost never*) to 4 (*very much so or almost always*). The STAXI-2 has demonstrated good internal reliability and validity [49]. The Trait Anger scale of the STAXI-2 assesses dispositional differences in the way anger is experienced across multiple situations. Broadly, trait anger refers to the tendency to respond to a variety of situations with elevated levels and anger [50], and trait anger among all other constructs measured by the STAXI-2 has been shown to be particularly relevant in identifying patients with PTSD with heightened levels of anger who show decreased responses to empirically supported treatments for PTSD [35]. Use of the STAXI-2, and the Trait Anger scale specifically, is the most widely recommended assessment of anger for patients with PTSD [51]. Of note, this measure is copyrighted, and it is recommended that the validity and utility of this assessment in informing anger-specific treatment referrals be taken into serious consideration when considering other screening alternatives. When possible, it is also recommended that providers review the symptom severity of the item response for aggressive behavior (while irritable or angry) on the gold standard Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) [52], as an indicator for possible referral for an anger and aggression intervention among patients with PTSD if the patient response to this item is at a moderate level of severity or above.

Well-validated measures of psychopathology, such as the Minnesota Multiphasic Personality Inventory-2 Restructured Form (MMPI-2-RF) [53] and the Personality Assessment Inventory (PAI) [54], have been used empirically to determine whether externalizing psychopathology is present among those who also meet diagnostic criteria for PTSD [26••, 29]. It is recommended that when feasible, these measures be used as part of a comprehensive battery in order to inform appropriate referral to anger and aggression-focused interventions.

Recommendations for responding to patients with PTSD who are displaying intense anger or anger-related behaviors

Patient-centered care approaches appear to be particularly beneficial in promoting behavioral change, and motivational interviewing [55] techniques in particular have shown some promise in promoting change among those with high levels of anger [56]. Motivational interviewing (MI) skills are designed to facilitate patient engagement; cultivate an empathic, collaborative, and supportive provider-patient relationship; and facilitate mutual respect, particularly when discussing behavioral change in which some level of ambivalence is

present. We recommend that providers use motivational interviewing techniques when interacting with patients with PTSD displaying elevated anger. First, use simple reflections to determine the root cause of the patient's anger; for example, if a patient says "I'm so mad that I had to wait 20 minutes past the appointment time to be seen! I rushed to get over here and you're not going to give me a refill anyway." You might choose to respond in an empathetic tone with "You're upset that you may not get your medication." This helps narrow the focus of the conversation for both you and the patient. Next, the patient might respond with "I'm furious that I ran out of pills early and I know you wouldn't refill them. I want to get better for my kids and I have so many pills to take and I got confused!" Instead of engaging in a righting reflex to educate the patient about why it is important for them to take the prescribed medication dose, which may cause the patient to become defensive, you might focus on reflecting their argument for change by stating "you know it's important to take your medication." You could also use the MI skill of supportive affirmation to say to the patient "I can clearly see that you are motivated to get better and your family is very important to you." By gentling and sincerely steering the conversation toward your common goal with the patient, and approaching them in a collaborative and caring manner, you are likely to more quickly identify the source of their anger and unite with the patient in addressing their concern as appropriate. Invite the patient when appropriate to consider several options for ongoing symptom management; for example, you might say "It seems you reviewed clinic policy on refilling that medication before you came in. Let's discuss ways in which we could continue to target your symptoms of PTSD while you are waiting to receive your next refill. Do you have any ideas of what has been helpful in the past? How has your sleep been lately?"

Of note, as a provider, it is important to engage in several behaviors to help calm potential personal arousal in the context of a patient displaying intense anger. Diaphragmatic breathing, lowering of tone voice and rate of speech, maintaining a relaxed/calm facial expression, and maintaining a neutral posture are all behaviors that will appropriately counter any natural arousal response in the provider. Engaging in these behaviors as the provider will also model appropriate coping strategies for the patient (and at minimum are unlikely to contribute to patient escalation). Please review our proposed guide for skills to use when responding to patients displaying heightened anger arousal and/or aggressive behavior (see Fig. 1), as this guide incorporates the MI-based skills we have discussed and is likely a useful tool to share among staff.

Conclusions and future directions

Recent findings indicate that individuals who present with higher anger-related symptoms appear to have a poorer prognosis in PTSD-focused treatments. This suggests a need for interventions that target a reduction of anger-related problems in order to improve outcomes for individuals with PTSD who show high degrees of anger-related traits, a pattern of hostility, and a history of aggressive behavior. By helping to reduce anger, hostility, and aggression, adjunctive interventions that focus on addressing anger may increase the effectiveness of existing evidence-based treatments for PTSD. Rigorous empirical evaluation of anger interventions tailored for patients with externalizing PTSD symptoms is a

Recommended Provider Approach to Responding to Patient Angry Arousal and/or Aggressive Behavior

Awareness of self - take several deep breaths

Label patient and personal emotions

Listen actively to patient's concerns

Empathic approach and tone of voice

Validate patient's emotions

Identify and clarify patient concerns

Assertively set boundaries regarding patient behavior

Tell patient immediately if and when their behavior is inappropriate

Emphasize your desire to help the patient and ask for their assistance in addressing the issue

Fig. 1. ALLEVIATE skills to use when responding to patients displaying heightened anger arousal and/or aggressive behavior.

necessary future step in informing the utility of this type of treatment in reducing risk for aggressive behavior. Clinicians should use recommended screening tools and validated assessment information whenever possible to inform referral decisions for cognitive-behavioral treatment for anger-related behaviors among patients with PTSD. Furthermore, the use of motivational interviewing skills in treatment settings with patients with PTSD who display elevated levels of anger will likely reduce risk for aggressive responding, support a collaborative working alliance between provider and patient, and promote patient-centered identification of targets for anger-related behavior change.

Acknowledgments

This material is based upon work supported by the Department of Veterans Affairs, Veterans Health Administration, Office of Research and Development, specifically, by a VISN 10 Research Initiative Program grant at the Cincinnati VA Medical Center. The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government.

Compliance with Ethical Standards

Conflict of Interest
Erica Birkley declares that she has no conflict of interest.
Jeremiah Schumm declares that he has no conflict of interest.

Human and Animal Rights and Informed Consent
This article does not contain any studies with human or animal subjects performed by any of the authors.

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- •• Of major importance

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Not only is this a comprehensive overview of DSM-5 changes to PTSD diagnostic criteria, but it is a manifesto of sorts for the future direction of PTSD research and treatment from an expert in the field. Notably, Friedman highlights the importance of further investigation of PTSD phenotypes, specifically positing that biological differences in PTSD symptomology likely inform differential response to treatment.

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