

Improving risk assessment of violence among military Veterans: An evidence-based approach for clinical decision-making

Eric B. Elbogen^{a,b,*}, Sara Fuller^{a,b}, Sally C. Johnson^a, Stephanie Brooks^c, Patricia Kinner^{a,b}, Patrick S. Calhoun^{b,d}, Jean C. Beckham^{b,d}

^a Department of Psychiatry, Forensic Psychiatry Program and Clinic, University of North Carolina-Chapel Hill School of Medicine, CB #7160, Chapel Hill, NC 27599, United States

^b VISN 6 Mental Illness Research, Education, and Clinical Center (MIRECC), Durham VA Medical Center, Durham, NC, United States

^c Law/Psychology Program, Drexel University, Philadelphia, PA, United States

^d Department of Psychiatry, Duke University Medical Center, Durham, NC, United States

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ABSTRACT

Increased media attention to post-deployment violence highlights the need to develop effective models to guide risk assessment among military Veterans. Ideally, a method would help identify which Veterans are most at risk for violence so that it can be determined what could be done to prevent violent behavior. This article suggests how empirical approaches to risk assessment used successfully in civilian populations can be applied to Veterans. A review was conducted of the scientific literature on Veteran populations regarding factors related to interpersonal violence generally and to domestic violence specifically. A checklist was then generated of empirically-supported risk factors for clinicians to consider in practice. To conceptualize how these known risk factors relate to a Veteran's violence potential, risk assessment scholarship was utilized to develop an evidence-based method to guide mental health professionals. The goals of this approach are to integrate science into practice, overcome logistical barriers, and permit more effective assessment, monitoring, and management of violence risk for clinicians working with Veterans, both in Department of Veteran Affairs settings and in the broader community. Research is needed to test the predictive validity of risk assessment models. Ultimately, the use of a systematic, empirical framework could lead to improved clinical decision-making in the area of risk assessment and potentially help prevent violence among Veterans.

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* Corresponding author. Department of Psychiatry, Forensic Psychiatry Program and Clinic, University of North Carolina-Chapel Hill School of Medicine, CB #7160, Chapel Hill, NC 27599, United States.

E-mail address: eric.elbogen@unc.edu (E.B. Elbogen).

There is broad public attention given to Veterans who commit violent acts against others. Media accounts highlight some of the challenges troops face in their transition back to civilian life, as well as individual failures in making these transitions, resulting in violent behavior. Society in its attempt to understand these violent behaviors looks to the mental health profession for explanations. Mental health providers treating Veterans have faced challenges of their own in assessing the risk of violent behavior among Veterans who may be diagnosed with a variety of mental illnesses, including PTSD, bipolar disorder, and depression (Frueh, Turner, Beidel, & Cahill, 2001). Nonetheless, such assessments are critical for identifying which Veterans are in most need of interventions including mental health and other medical services. Improving clinicians' abilities to detect which Veterans are at highest risk of violence would enable clinicians to take active steps toward engaging Veterans in treatment that may be crucial in improving their adjustment to life post-deployment.

Despite the importance of this task, to date, clinicians have had relatively little guidance in how to effectively assess Veterans' risks of engaging in dangerous behaviors. Few approaches have been developed to systematically guide risk assessment despite the pressures for providers to evaluate violence accurately and the strong need to keep Veterans, their families, and the public safe. These pressures are likely to increase as the demand for evaluations of thousands of troops returning from current combat in Iraq and Afghanistan occurs.

Initial evidence shows significant mental health problems among returning Veterans. Today's Veterans appear especially at risk of PTSD (Cigrang, Peterson, & Schobitz, 2005; Friedman, 2006; Grieger & Benedek, 2006; Hutchinson & Banks-Williams, 2006; Jakupcak et al., 2007), alcohol and drug abuse (Fiellin, Saxon, & Renner, 2006), and head injuries (Hotopf & Wessely, 2006; Taber, Warden, Hurley, & Hayman, 2006), all of which have been linked to increased risk of violence among Veterans from previous wars. Screening for mental health problems among currently returning military has found that 19.1% service members returning from Iraq reported mental health problems compared with 11.3% among those returning from Afghanistan. Significantly higher numbers (35% of Iraq war Veterans) accessed mental health services in the year after returning home. Overall, less than 10% of all service members who received mental health treatment were referred through screening (Hoge, Auchterlonie, & Milliken, 2006). Thus, not only do Veterans suffer from mental health problems, but current screening of these problems needs improvement.

To compound the issue, studies have shown that clinicians perform only modestly better than chance when assessing risk of violence, a finding that has held true for those practicing in civilian (Apperson, Mulvey, & Lidz, 1993; Lidz, Mulvey, Apperson, Evanczuk, & et al., 1992; Mossman, 1994) as well as Veteran (Werner, Rose, Yesavage, 1983; Werner, Rose, Yesavage, & Seeman, 1984; Zeiss, Tanke, Fenn, & Yesavage, 1996) populations. How clinicians cognitively frame risk assessment ultimately defines the task and influences what risk factors are used, what data are most heavily weighted in decision-making, and possibly what empirical research is perceived by the clinician to be relevant (Grisso & Tomkins, 1996; Heilbrun, 1997). Studies of clinicians' decision-making have identified a number of common errors, biases and behaviors that result in decreased decision-making accuracy (Tversky & Kahneman, 1981).

There are different types of decision-making errors clinicians may commit when assessing violence. Clinicians may inadvertently make 'illusory correlations' by which a correlation between two entities is perceived (e.g., 'a diagnosis of any mental disorder' and 'extremely high risk of violence') regardless of whether there is any known association (Chapman & Chapman, 1967). Researchers have noted that sometimes clinicians commit 'fundamental attribution errors' (Ross, 1977) by focusing on an individual's characteristics at the expense of considering environmental impact on behavior. Correspondingly, clinicians might ignore base rates of violence in certain

settings and may therefore not pay attention to how frequently people with certain characteristics are known to act violently in certain contexts (Monahan, 1981). Clinicians may also fall into the trap of the 'availability heuristic' by relying on readily accessible, highly salient cues (e.g., extremely bizarre delusions) that draw a lot of clinical attention but which may not be known to be related to violent behavior (Quinsey, 1995).

Research has examined whether clinicians are vulnerable to these kinds of pitfalls when conducting violence risk assessments (Douglas & Ogloff, 2003; Elbogen, 2002; Huss & Zeiss, 2004; Odeh, Zeiss & Huss, 2006). Clinicians report less frequent consideration of less accessible, but firmly established and validated risk factors (e.g., details about violence history) (Elbogen, Huss, Tomkins, & Scalora, 2005). Broad categories of risk factors which most readily available (e.g., clinical diagnosis) were also rated as the most relevant, whereas less available risk factors (e.g., historical background) were more likely to be overlooked by most clinicians. Clinicians themselves report utilizing salient, readily observed variables (e.g., person cursing loudly) even when they have no empirically demonstrated correlations with violence (Elbogen et al., 2005; Elbogen, Mercado, Scalora, & Tomkins, 2002). Finally, clinicians assessing violence risk were found to underrate the importance of contextual factors in comparison to individual-level factors (Elbogen et al., 2002; Odeh et al., 2006).

To reduce errors in medicine, there is a consensus that clinicians need to make their decision-making more systematic, such as using decision-aides or checklists to ensure all important information is gathered in the course of diagnosis and treatment and to reduce chances of overlooking critical data in the midst of often time-pressured clinical practice (Gawande, 2009). Likewise, in order to improve judgments in mental health practice in general and in violence risk assessment specifically, it is widely accepted that clinicians must adopt a process that is both grounded in a systematic framework and informed by empirically validated risk cues (Dawson, 2000; Grisso & Tomkins, 1996; Hammond & Stewart, 2001; Monahan & Steadman, 1994; Newton, 1965; Otto and Douglas, 2009; Petrino-vich, 1979; Smith, Gilhooly, & Walker, 2003). In civilian populations, research over the past two decades has made significant progress toward determining what variables are empirically related to violence (Douglas, Cox, & Webster, 1999; McNiel, 1998). Based on this, researchers have developed actuarial risk assessment tools to aid clinicians in evaluating risk of violent behavior in practice (Douglas, Cox et al., 1999; Gardner, Lidz, Mulvey, & Shaw, 1996a, 1996b; McNiel, 1998). Examples include the Violence Risk Appraisal Guide (VRAG) (Quinsey, Harris, Rice, & Cormier, 2006), HCR-20 (Douglas, Ogloff, Nicholls, & Grant, 1999; Douglas & Webster, 1999), and Classification of Violence Risk (COVR) (Monahan et al., 2005; Snowden, Gray, Taylor, & Fitzgerald, 2009; Steadman et al., 2000). Thus, clinicians providing mental health treatment to civilians now have at their disposal a substantial evidence-base for evaluating risk of engaging in future violence (Heilbrun, 2009; Otto, & Douglas, 2009).

With respect to military Veterans, there have been many studies examining empirical correlates of post-deployment violence. Although the above described risk assessment tools have not been validated specifically for Veterans, neither have Veterans been excluded from valid samples, suggesting these tools certainly can be used with the understanding that additional Veteran specific characteristics may need to be considered. At the very least, clinicians treating Veterans can be guided by the conceptual framework underlying effective risk assessment expounded upon in the civilian literature. As a result, even without formal risk assessment tools validated for Veterans, clinicians working with Veterans can both rely on empirically supported risk factors for decision-making and be guided by principles for assessing violence risk more accurately (Baker, McFall, & Shoham, 2008). The current paper aims to: 1) review extant scientific literature on violence risk factors among Veterans; 2) outline principles for improving violence risk assessment among

Veterans; and 3) provide steps for integrating science into clinical practice in Veterans. Consistent use of this framework could permit clinicians to more effectively assess, monitor, and manage violence risk among Veterans and provide a platform for further study of this complex problem.

1. Literature review method

Empirical research on violence risk factors among Veterans was reviewed. Medline and PsycINFO databases were used to search peer-reviewed journals for articles describing empirical relationships between risk factors and violence among Veteran populations. Search terms included combinations of the following: “violence,” “violent,” “aggression,” “aggress,” “Veteran,” “military,” “risk,” “domestic,” and “conflict.” Several review articles were also used to identify relevant literature (Beckham, Moore, & Reynolds, 2000; Benedek & Grieger, 2006; Marshall, Panuzio, & Taft, 2005). Excluded from the current review were book chapters, dissertations, case studies, papers published before 1980, qualitative or non-empirical studies, intervention studies, studies reporting a sample size less than 30, and articles not in English. Included were studies that operationalized violence and/or aggression as: actual physical harm caused by one person against another or threat of serious physical harm using a deadly weapon. This process yielded a total of 72 manuscripts that specifically described statistical relationships between violence and risk factors in Veteran populations. It should be noted that the vast majority of the research involved male subjects, and almost half focused on intimate partner violence. In order to determine whether there were commonalities or differences resulting from situation specific violence in the extant research, studies on intimate partner violence were separated from studies on general violence/aggression, creating two subcategories for review of violence among Veterans.

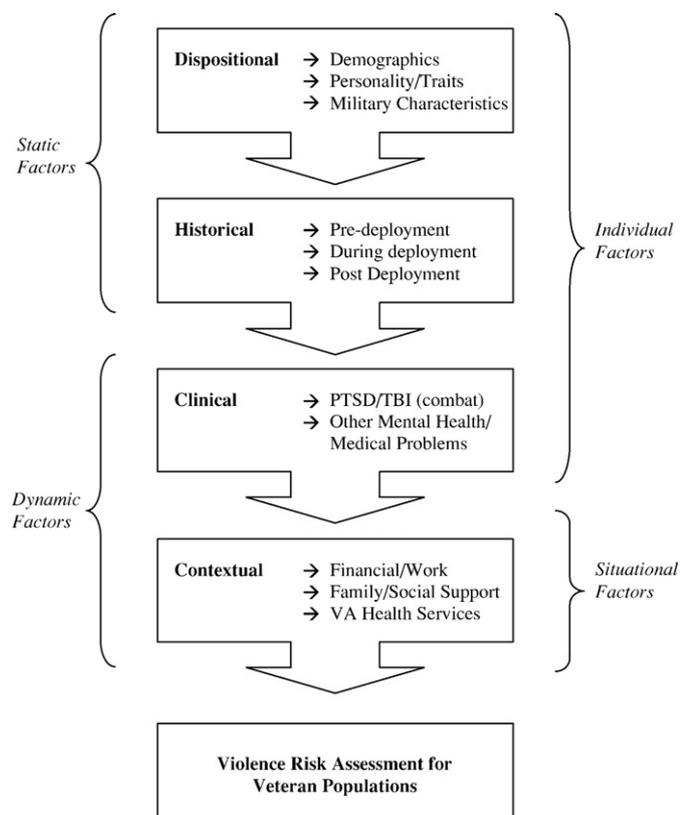


Fig. 1. Risk domains for assessment of violence risk among Veterans.

Within each subcategory, risk factors were identified and divided according to the risk domains outlined in the MacArthur Violence Risk Assessment Study (Monahan & Steadman, 1994): dispositional, historical, clinical, and contextual (see Fig. 1). Dispositional factors are basic demographics or personal attributes empirically related to risk of violence. Historical factors linked to risk of violence include social history and specific violence history information. Clinical factors include mental health diagnosis, substance abuse, and cognitive functioning. Factors in the contextual domain characterize an individual's situation and focus on factors in a person's environment (e.g., access to weapons, having a supportive family or social network, being unemployed) that either elevate or protect against violence risk. Note that within each domain, it is important to consider specific characteristics of the population studied. The review below and ongoing research suggest military specific characteristics are pertinent. Historical information has been divided into pre-deployment, during deployment, and post-deployment factors. Violence risk may, or may not, be related to Veteran or military status but the existence of this status and associated characteristics has been and should be continued to be explored.

2. Findings from review of risk factors for intimate partner/ domestic violence

2.1. Dispositional factors

In terms of demographic risk factors for intimate partner violence, younger age has been found to be a predictor of intimate partner violence in Veterans and military service members (Fonseca et al., 2006; Forgey & Badger, 2006; McCarroll et al., 1999; McCarroll et al., 2000; McCarroll et al., 2003; Petrik, Rosenberg, & Watson, 1983; Rumm, Cummings, Krauss, Bell, & Rivara, 2000). One study of $N = 101$ Veterans found that 67% of younger men (age ≤ 40 years) reported physically hurting the woman they lived with compared to 43% of older men (age > 40) $\chi^2(1, 101) = 5.68, p < .02$ (Petrik et al., 1983). With respect to personality traits, Veterans who scored higher on measures of dominance and isolation were more likely to be sexually, rather than non-sexually, aggressive (Teten, Schumacher, Bailey, & Kent, 2009). Group-level attitudes during military service may be predictors of intimate partner violence and include lower perception of support from leaders and chain of command, a culture of hypermasculinity (i.e., having degrading conversation about women with fellow troops), and lower recognition of and provision for needs of spouses (Rosen, Kaminski, Parmley, Knudson, & Fancher, 2003). Finally, trait anger has been shown also to increase risk of domestic violence among Veterans with PTSD (Taft, Street, Marshall, Dowdall, & Riggs, 2007).

2.2. Historical factors

Pre-deployment violence and criminal conduct have been associated with intimate partner violence among Veterans during and post-deployment. Having a history of arrest for criminal behavior was a robust predictor of domestic violence; specifically, Veterans previously arrested were three times as likely to have committed severe spousal assault as those who were not arrested (23% compared with 8%); ($\chi^2 = 5.25(1, 218), p = .02$) (Gondolf & Foster, 1991). Committing domestic violence pre-deployment has been shown to be a strong risk factor for future domestic violence in army (McCarroll et al., 2003) and navy (White, Merrill, & Koss, 2001) service members. Finally, a sophisticated analysis using structural equation modeling revealed childhood antisocial behavior was related to intimate partner violence when a Veteran had also experienced combat exposure or when a Veteran perceived fear of safety in the war zone and had associated PTSD symptoms (Orcutt, King, & King, 2003).

Other pre-deployment risk factors related to family have been implicated in domestic violence, as well. Having a dysfunctional family of origin has been associated with intimate partner violence among Veterans (Gondolf & Foster, 1991). Another study indicated elevated violence risk among Veterans who had both dysfunctional families of origin and severe PTSD symptoms linked to perceived threat and combat exposure during war experience (Orcutt et al., 2003). Poor maternal relationships (Orcutt et al., 2003) and witnessing parents physical fighting (Taft et al., 2005) have also been related with increased risk of domestic violence among Veterans. Being physically abused or neglected as a child (Merrill, Hervig, & Milner, 1996; Rosen et al., 2003; Wasileski, Callaghan-Chaffee, & Chaffee, 1982; Zoricic, Buljan, Thaller, & Karlovic, 2003; Zoricic, Karlovic, Buljan, & Marusic, 2003) has been linked to adult perpetration of intimate partner violence in military service members, although one study of Veterans found previous abuse to be unrelated to perpetrating partner violence (Taft et al., 2005).

Events during deployment have been shown to portend future domestic violence among Veterans. Severity of spousal aggression increased with length of deployment in one study of $N=26,835$ servicemen and women (McCarroll et al., 2000). In other research, combat experience has related to increased incidence of antisocial behavior including intimate partner violence, especially when Veterans also have PTSD (Gimbel & Booth, 1994). One study of $N=2583$ Veterans found combat exposure more than quadrupled risk of domestic violence ($OR=4.40, p=.004$) (Prigerson, Maciejewski, & Rosenheck, 2002). Some studies suggest that specific combat-related variables, such as atrocities exposure (Taft et al., 2005) and perceived threat during war service (Orcutt et al., 2003) predict violence, rather than general combat exposure itself. Two studies found no significant difference in perpetration of domestic violence between Veterans with combat experience and those without, but these studies did not examine specific combat-related variables (Bradley, 2007; Petrik et al., 1983). Among former Prisoners of War, severity of captivity trauma was significantly related to verbal and physical aggression against romantic partners (O'Donnell, Cook, Thompson, Riley, & Neria, 2006).

2.3. Clinical factors

Several studies show that Veterans with diagnoses of PTSD are at increased risk of perpetrating relationship violence (Byrne & Riggs, 1996; Sherman, Sautter, Jackson, Lyons, & Han, 2006). Using data from the National Vietnam Veterans Readjustment Study, researchers found that the mean number of acts of family violence committed in the previous year by male combat Veterans with PTSD was 4.86 compared with only 1.32 among those male combat Veterans without PTSD, $\chi^2(1, 372)=8.13, p=.004$ (Jordan, Marmar, Fairbank, Schlenger, & et al., 1992). The link between PTSD and domestic violence seems to be sustained even when accounting for pre-deployment adjustment and combat experience (Carroll, Rueger, Foy, & Donahoe, 1985). Further, more severe PTSD symptoms are related to a higher frequency of violent behavior (Orcutt et al., 2003). With regard to specific types of violence, PTSD diagnoses did not differ for sexually aggressive versus nonsexually aggressive Veterans (Teten, Schumacher, Bailey, & Kent, 2009) but were more prevalent among Veterans in mutually violent couples (Teten, Sherman, & Han, 2009).

Another risk factor is substance abuse. Alcohol problems (Fonseca et al., 2006; Hurlbert, Whittaker, & Munoz, 1991; Merrill, Crouch, Thomsen, & Guimond, 2004; Merrill et al., 1996; Rosen et al., 2003), drug abuse-dependence (Taft et al., 2005), and general substance abuse (Mollerstrom, Patchner, & Milner, 1992; Rothschild, Dimson, Storaasli, & Clapp, 1997; Teten, Schumacher, Bailey, & Kent, 2009) are also related to intimate partner violence and sexual aggression in Veterans and military service members. Higher quantity drinking behavior has been related to intimate partner violence in its own

right, but combined with the PTSD hyperarousal symptoms, frequent, low-quantity alcohol use may actually lower the Veteran's risk of violence (Savarese, Suvak, King, & King, 2001).

Other clinical characteristics may have been associated with intimate partner violence in Veterans (Rothschild et al., 1997). Symptoms of depression and major depressive episodes among Veterans (Sherman et al., 2006; Taft et al., 2005, Teten, Sherman, et al., 2009) seem to be particularly related to episodes of violence and may also exacerbate the relationship between PTSD and physical aggression (O'Donnell et al., 2006). Clinical evidence of dysphoria and difficulties regulating affect have also been found to relate to intimate partner violence (Merrill et al., 2004). Related, lower self-esteem has been linked to intimate partner violence in military service members (Neidig, Friedman, & Collins, 1986). Finally, Veterans with Narcissistic Personality Disorder (Rothschild et al., 1997) and Antisocial Personality Disorder (Taft et al., 2005) have been found to be more likely to perpetrate domestic violence.

Taken together, it is important to note that the strong link between PTSD and domestic violence among Veterans may be due to its association with factors such as depression (O'Donnell et al., 2006; Taft et al., 2005), lack of communication (Carroll et al., 1985), drug abuse-dependence, poor marital adjustment, high levels of atrocities exposure (Taft et al., 2005), and heightened anger reactivity (Taft, Street et al., 2007). For example, when measured with self-report and collateral informants, the rate of severe domestic violence was four times higher among Veterans with PTSD (45%) and among Veterans with depression (42%) compared to Veterans with neither disorder (11%) ($\chi^2(2, 120)=10.17, p<.01$) (Sherman et al., 2006). Moreover, certain PTSD symptoms have been shown to be stronger predictors of violent behavior than others; specifically, the hyperarousal symptoms of PTSD have been linked to domestic violence among Veterans especially when combined with alcohol use/abuse (Savarese et al., 2001).

2.4. Contextual factors

Although it has been shown that a male Veteran's employment generally protects against relationship violence in Veterans (McCarroll et al., 2003), there have been some nuanced findings. There appears to be increased risk for couples in which both partners are violent and the husband is unemployed (Forgey & Badger, 2006). Another study showed female service members are more likely to inflict violence on their civilian husbands if their husbands are unemployed, and the violence tends to be moderate or severe rather than mild (McCarroll et al., 2003). For these reasons, financial status might contribute in complex ways to family conflict related to domestic violence.

Marital status alone has not consistently related to domestic violence (Campbell et al., 2003; Martin et al., 2007; Wasileski et al., 1982), but poor marital adjustment (Rosen et al., 2003; Taft et al., 2005) and relationship problems (Byrne & Riggs, 1996) appear to be stronger predictors of domestic violence in Veterans and service members. In addition, intimate partner abusers have expressed less attraction to their wives, more rigid attitudes toward women (Hurlbert et al., 1991), higher levels of general stress (Fonseca et al., 2006) and family stress (Wasileski et al., 1982), and lower levels of relationship satisfaction (Fonseca et al., 2006; Hurlbert et al., 1991). Verbal (O'Donnell et al., 2006) and psychological aggression (Forgey & Badger, 2006; Pan, Neidig, & O'Leary, 1994) in the relationship also seem to play key roles in predicting domestic violence, with verbal aggression being especially predictive of couples in which both partners are violent (Teten, Sherman, et al., 2009) in studies of Veteran populations.

Newer marriages were found to be more prone to violence (Wasileski et al., 1982), especially marriages in which both partners were violent (Forgey & Badger, 2006) among military service members. Related, being a current victim of domestic violence or aggression in the home has been shown in several studies of Veterans

and military service members to predict the perpetration of violence and aggression (Forgey & Badger, 2006; Jordan et al., 1992; Merrill et al., 1996; Teten, Sherman, et al., 2009; White et al., 2001). Having a child (Campbell et al., 2003; Rumm et al., 2000) or having larger families (three or more children) (Campbell et al., 2003) seem to be especially related to intimate partner violence among service members currently in active duty. Finally, if a Veteran was recently separated from the military, current or recent living circumstances are relevant for assessing domestic violence; specifically having lived off-post during service has been linked with higher likelihood of post-deployment domestic violence in one study (McCarroll et al., 2003).

3. Findings from review of risk factors for general violence/aggression

3.1. Dispositional factors

As with domestic violence, younger age has been found to be related to higher incidence of aggression in Veterans (Beckham, Feldman, & Kirby, 1998; Ganzini, Edwards, Surkan, & Drummond, 1995; Jakupcak et al., 2007; Taft, Kaloupek et al., 2007). According to one study of $N = 1328$ Veterans, the effect of age may be explained in large part by the presence of PTSD symptoms of hyperarousal, since those symptoms were more prominent in younger Veterans (Taft, Kaloupek et al., 2007). Additionally, lower levels of education have been found to be related to aggressive behavior (Begic & Jokic-Begic, 2001). To our knowledge, there have been no studies looking specifically at personality traits and general violence/aggression among Veterans.

3.2. Historical factors

Historical variables, both before and during deployment, are important to consider for assessing risk of violence. One of the most robust is history of violence. Participating in violent behavior pre-deployment has been shown to increase the likelihood of perpetrating violence post-deployment (Begic & Jokic-Begic, 2001; Yesavage, 1984). In one study, history of past violence surpassed PTSD and other comorbid disorders as a predictor (Hartl, Rosen, Drescher, Lee, & Gusman, 2005); specifically, it was shown that 60% of Veterans with a history of violence were violent in the past 4 months (compared to 25% of Veterans without a history of violence).

Childhood maltreatment (Begic & Jokic-Begic, 2001) and physical abuse (Elbogen, Beckham, Butterfield, Swartz, & Swanson, 2008) have been found to be risk factors for aggressive behavior in Veterans. Correspondingly, premilitary exposure to severe violence (Chapin, 1999) or violent death (Pardeck & Nolden, 1983) has been related to higher incidence of violent behavior among Veterans and military service members. One study did not find this relationship (Beckham, Feldman, Kirby, Hertzberg, & Moore, 1997), but it has been suggested that childhood physical abuse may be related to presence of more psychological symptoms (Hiley-Young, Blake, Abueg, & Rozyanko, 1995). Two studies examined prior history of being the victim of abuse on violence in the warzone, with one study showing a relationship (Laufer, 2006) and the other not (Fontana & Rosenheck, 2005). One reason for this disparate findings could be that operationalization of violence differed between the two; the former study examined combatants engaging in abusive violence or atrocities whereas the latter study examined more routinely accepted violence in the warzone. Witnessing parental fighting has also been related to violence later in life among $N = 276$ Veterans with severe mental illness ($\chi^2(1, 278) = 4.65, p < .05$) (Elbogen et al., 2008).

Regarding events during deployment, combat exposure has been linked to violence among Veterans in several studies (Beckham et al., 1998; Beckham, Crawford, et al., 1997; Braxton, et al., 1997; Yesavage, 1983). It has been found in some studies that combat exposure itself

does not predict violent behavior post-deployment (Hiley-Young et al., 1995; Jakupcak et al., 2007) or that combat exposure is related to violence only in the presence of PTSD (Taft, Kaloupek et al., 2007; Taft, Vogt, Marshall, Panuzio, & Niles, 2007). In other studies, specific experiences in the theater of combat have been shown to predict post-deployment violence, which include: particular events that “left a strong impact” on the Veteran or whether the Veteran felt that he had suffered psychological distress (Yesavage, 1983), being exposed to a higher frequency of violent combat, surviving a close call, witnessing high levels of human trauma (Killgore et al., 2008), killing someone or seeing killings (Killgore et al., 2008; Yesavage, 1983), and participating in war zone violence (Hiley-Young et al., 1995). Violence has also been related to more severe perceived trauma among older Veterans (Carlson, Lauderdale, Hawkins, & Sheikh, 2008).

3.3. Clinical factors

Having a diagnosis of PTSD has been demonstrated to be significantly related to violence, violent thoughts, anger/hostility, and ownership of deadly weapons in Veterans (Beckham et al., 1998; Begic & Jokic-Begic, 2001; Calhoun et al., 2002; Carlson et al., 2008; Elbogen et al., 2008; Freeman & Roca, 2001; Hartl et al., 2005; Jakupcak et al., 2007; Kulka et al., 1990; Lasko, Gurvits, Kuhne, Orr, & et al., 1994; McFall, Fontana, Raskind, & Rosenheck, 1999; Silver & Iacono, 1984; Taft, Vogt et al., 2007; Zatzick et al., 1997). In a study of $N = 228$ Veteran inpatients, those with PTSD were significantly more likely than those without PTSD to have engaged in one or more acts of violence during the 4-month period prior to hospitalization (79% for PTSD versus 33% for controls; $OR = 7.40, p < .001$). McFall et al. (1999) specify further that Veterans with PTSD were also more likely to destroy property ($OR = 5.78, p < .001$), threaten others without a weapon ($OR = 6.45, p < .001$), become involved in physical fighting ($OR = 4.17, p < .001$), and make violent threats with a weapon ($OR = 3.22, p < .01$).

Similar patterns have been shown for community samples of Veterans; for example, in one study, Veterans with PTSD reported 13–22 acts of general violence/aggression in the preceding year in contrast to the 0–3 violent acts among those without PTSD (Beckham, Crawford, et al., 1997). Findings appear to be shown for Iraq and Afghanistan Veterans as well, with one recent study showing Veterans with PTSD (53.2%) and sub-threshold PTSD (52.4%) reported at least one act of violence in the past 4 months at a significantly higher rate than the non-PTSD group (20.3%) (Jakupcak et al., 2007). Having a diagnosis of PTSD also has been shown to be related to perpetrating more types of violence (e.g., physical fights, property damage, using weapons, and/or threats) (McFall et al., 1999), as well as higher incidence of owning more handguns and “combat” type knives, aiming guns at family members, considering suicide with firearms, loading guns with the purpose of suicide in mind, and patrolling their property with loaded weapons (Freeman & Roca, 2001).

Despite this research, the link between PTSD and violence among Veterans is complex. The association may be less pronounced among older Veterans (Ganzini et al., 1995). There is a link to aggression when PTSD is combined with dysphoric symptoms (Taft, Vogt et al., 2007). Another study found diagnosis of comorbid psychotic disorder with PTSD appears to significantly increase violent thoughts and behavior compared with having either one of the diagnoses separately (Sautter et al., 1999). Hyperarousal/physiological arousal symptoms of PTSD have specifically been related to increased aggression in several analyses (McFall et al., 1999; Taft, Kaloupek et al., 2007 6973), and that relationship appears to be exacerbated by alcohol problems (Taft, Kaloupek et al., 2007). Avoidance/numbing symptoms of PTSD have been shown to predict violence in some (McFall et al., 1999) but not all, (Taft, Kaloupek et al., 2007) studies.

Substance abuse is a strong factor in predicting violent and aggressive behavior (Elbogen et al., 2008; Ganzini et al., 1995; Jakupcak et al., 2007; Lehmann, McCormick, & Kizer, 1999; Moss, 1989; Pasternack, 1971; Windle & Windle, 1995) and elevates risk of violence considerably in Veterans with PTSD (McFall et al., 1999). Veterans with comorbid PTSD and alcohol dependence may also be more prone to aggression than Veterans with PTSD alone, hypothesized to be due to the intensifying effect alcohol has on the hyperarousal symptoms (Zoricic, Buljan et al., 2003; Zoricic, Karlovic et al., 2003). In an experiment involving military recruits, researchers found that alcohol only affected aggressive tendencies in the presence of frustrating conditions or tasks (Gustafson, 1985), thus suggesting environmental stressors might affect the relationship between substance abuse and aggression.

A host of other psychiatric symptoms and diagnoses have been associated with violence in Veterans. Depression has been found to be a predictor of aggression (Windle & Windle, 1995). In one study of $N=630$ Veterans (Hartl et al., 2005), patients scoring above 34 on the Beck Depression Inventory were significantly more likely to have committed a violent act (68%) compared to those with scores below (48%) ($\chi^2(1, 247)=9.40, p<.001$). Dysphoric (Taft, Vogt et al., 2007) and psychotic symptoms (Lehmann et al., 1999; Yesavage, 1984) have also been linked to aggression in Veterans. Aggression has also been found to be related to symptoms of Borderline Personality Disorder (Windle & Windle, 1995) as well as elevated levels of physiologic reactivity (Taft, Kaloupek et al., 2007). A relatively new finding is that, among Veterans who had been impulsively aggressive, a significant number show evidence of alexithymia, or difficulty understanding others' emotions through both language and emotions (Teten, Miller, Bailey, Dunn, & Kent, 2008). Higher levels of anger have also been related to aggressive behavior directly (Carlson et al., 2008; Jakupcak et al., 2007).

Neurological and biological factors may also be relevant for assessing risk of general violence/aggression among Veterans. Violence has been directly linked to head injury (Elbogen et al., 2008), and research has suggested that Vietnam Veterans with lesions in their frontal lobes exhibit more aggression and violence, particularly if the lesions are in the mediofrontal or orbitofrontal regions (Grafman, Schwab, Warden, & Pridgen, 1996). Exhibiting olfactory identification deficits (OID), or difficulties with detecting and identifying smells, is a predictor of aggression and impulsivity in Veterans with PTSD, even after controlling for comorbid disorders, substance use, and cognitive functioning (Dileo, Brewer, Hopwood, Anderson, & Creamer, 2008). Further, Veterans with psychosensory deficits have also shown increased aggression and PTSD symptom severity (Roca & Freeman,

2002). Higher plasma testosterone levels have been shown in one study to be related to aggression (Windle & Windle, 1995).

3.4. Contextual factors

Unlike domestic violence, relatively little research on Veterans has examined contextual or environmental correlates of general violence/aggression. Lower socioeconomic status and lower income has been linked to higher incidence of interpersonal violence (Beckham, Crawford, et al., 1997) and aggressive behavior (Begic & Jokic-Begic, 2001) in Veterans. Possession of firearms has also been shown relevant to consider in a study of patients at a Veteran Affairs (VA) Medical Center, which found that weapon possession was common among perpetrators of assault, and many of the assaults involved a weapon (Lehmann et al., 1999). Finally, among Veterans with severe mental illness, homelessness in the past 6 months was strongly predictive of recent violent acts, even after controlling for clinical, demographic, and historical factors ($OR=6.99, p<.001$) (Elbogen et al., 2008).

4. Conceptualizing risk of violence among veterans

The review finds a large overlap of factors between different types of violence in Veteran populations, although certainly some risk factors were found to be specific to domestic violence (e.g., marital discord and family structure) or to general violence/aggression (e.g., head injury, and homelessness). To depict the results of the review, and to judge the empirical merit of these risk factors, we counted the number of peer-reviewed scientific publications demonstrating a statistically significant relationship between a risk factor and violence among Veterans and summarized this information in Table 1. Table 1 presents risk factors that have shown replication across multiple studies thereby suggesting these would be promising factors to consider in practice.

Critical questions remain as to how these risk factors should be used by clinicians and how those treating Veterans can integrate existing science into practice. Underlying progress in violence risk assessment technology are a number of principles for conducting an effective risk assessment (Borum, 1996; Douglas, Cox et al., 1999; Douglas & Skeem, 2005; Heilbrun, 2009; Monahan & Steadman, 1994; Quinsey et al., 2006; Steadman et al., 1993; Swanson, Estroff, Swartz, Borum, & et al., 1997). Some fundamental concepts include:

- 1) investigation of those risk factors that have been shown to have an empirical association with violence;

Table 1

Summary of findings from review of risk factors empirically associated with violence to others in veteran populations.

Risk domain	Risk factors for intimate partner/domestic violence	Related to both types of violence	Risk factors for general violence/aggression
Dispositional	Younger age	✓	Younger age
Historical	Past violent behavior	✓	Lower education level
	Combat exposure (atrocities and perceived threat)	✓	Past violent behavior
Clinical	Chaotic family life growing up	✓	Combat exposure (killing/seeing killings)
	Maltreatment/abuse as a child	✓	Witnessed violence growing up
	Meets criteria for PTSD	✓	Abuse/maltreatment as a child
	Severe PTSD symptoms	✓	Meets criteria for PTSD
	Substance abuse	✓	Severe PTSD symptoms
	Depression	✓	Substance abuse
	Personality disorder	✓	Depression
Contextual	Financial status (unemployment)	✓	Traumatic brain injury (TBI)
	Marital/relationship problems		Higher levels of anger
	Higher levels of stress		Financial status (lower SES and income)
	Shorter/newer marriages		
	Children in the home		

Note. Each risk factor above was demonstrated in two or more studies to be statistically associated with the specific category of violence under which it is listed. Risk factors with check marks (✓) were found to be associated with violence to others committed by Veterans in four or more studies.

- 2) categorization of risk factors into clinically relevant domains.
- 3) recognition that risk domains concern individual characteristics or the person's social environment;
- 4) differentiating static (i.e., unchanging) from dynamic (i.e., modifiable) risk factors;
- 5) awareness that the more empirically supported risk factors endorsed for a person, the higher the likelihood of violence;
- 6) examination of risk factors with respect to specific types of the predicted behavior (e.g., domestic violence vs. general violence/aggression);
- 7) approaching examination of violence risk factors in a systematic and consistent way.

Scholars recommend that, lacking formal risk tools, clinicians should attempt to have their own decision-making mirror the principles underlying structured decision-making as closely as possible. At the very least, clinical decisions should be based on empirically supported risk factors and be conducted in a systematic way.

A review of the risk domains in Fig. 1 shows the possibility of diverse and complex pathways to violent behaviors among Veterans (i.e., it is overly simplistic to say that a Veteran with PTSD is at risk for violence despite PTSD being a validated risk factor). First, it is critical to make a distinction between static risk factors (i.e., those that are unchanging) and dynamic risk factors (i.e., those that can be modified) (Douglas & Skeem, 2005; Heilbrun, 1997). To illustrate, consider that as a first step in assessing Veteran risk, clinicians examine static risk factors, recognizing the strong empirical relationships of such variables with violent behavior. By reviewing a Veteran's dispositional and historical variables, clinicians ensure they do not rely on their memory or fall prey to the availability heuristic; instead, they intentionally avoid two decision-making errors.

Moreover, given that more empirically supported risk factors usually imply higher risk, this step assures that more relevant variables are included in the clinicians' judgments of Veteran risk. Despite empirical support of these factors, they are, however, unchangeable. Examining static factors in isolation is an insufficient method for assessing risk if clinical practice demands ongoing monitoring of an individual's fluctuating violence risk. To better predict outcomes and to develop a course of action for preventing violence, clinicians must also consider dynamic risk factors. These can be targeted for and potentially changed through intervention.

Another defining characteristic of this framework is that risk factors fall into individual traits or situational variables. This can help clinicians avoid committing a fundamental attribution error by perceiving the cause of some behavior stems solely from personal traits rather than situational conditions (Ross, 1977). In the area of assessing violence risk, such errors lead to neglecting critical environmental influences that could elevate a Veteran's risk of violence. One goal of the current framework is to remind clinicians that a person's risk of engaging in violence may fluctuate depending on life circumstances. Recent research has documented situational variables are just as strongly predictive of future violence as individual-level variables (Elbogen & Johnson, 2009).

Not only does this conceptualization of violence risk posit that violence results from a combination of individual and environmental attributes, but it also helps focus the clinician on particular types of violence. With respect to translating these ideas into an assessment of violence risk, Mulvey and Lidz (1995) discuss the concept of conditional prediction of violence stating, "clinicians' predictions about the occurrence of violence are based upon an assessment of what particular type of violence the patient might commit and the circumstances under which it will be done." In other words, this conceptualization discourages clinicians from perceiving the Veteran as a violent or nonviolent person. Instead, these concepts permit clinicians to more accurately understand that a Veteran may be at

higher risk for violence in some circumstances and at low to no risk for violence under other circumstances. Moreover, the clinician understands a Veteran may be at higher risk for certain kinds of violence and at low to no risk for other kinds of violence. Using the framework based on risk assessment scholarship helps mental health professionals more accurately understand a Veteran's risk of violence.

This framework can be applied directly to assessing violence risk of an individual Veteran. Following the arrows on Fig. 1 and utilizing the risk factors in Table 1, risk of violence can be conceptualized following a three-step process which a clinician can follow by thinking "Look-Adjust-Examine":

1. **Look** at static, individual-level factors shown to empirically relate to violent behavior. These factors fall under the 'Dispositional' and 'Historical' domains and help gauge a Veterans' risk of engaging in behavior based on samples of other Veterans with similar or dissimilar characteristics to the Veteran being assessed. Such static individual-level variables tend to show strong and robust empirical relationships with violent behaviors in civilian populations and can be useful to understand a Veteran's risk based on these unchanging characteristics.
2. **Adjust** this risk assessment by considering dynamic, individual-level variables in the clinical domain. To illustrate, it may be a Veteran with many historical risk factors is not abusing substances, is not experiencing symptoms of PTSD, and currently has no signs of other psychiatric symptoms. As a result, even though the Veteran's static characteristics may suggest high risk, the Veteran's current clinical status, if stable, may indicate that this risk level can be adjusted downward. Conversely, if the Veteran is currently experiencing symptoms consistent with clinical risk factors empirically related to violence, the risk judgment may need to be adjusted upward.
3. **Examine** for presence of potential protective factors or unique individualized risk factors in the Veteran's environment, including micro-environmental (e.g., supportive family and living stability) and macro-environmental (e.g., neighborhood and urban versus rural) variables (Estroff, Swanson, Lachiocotte, Swartz, & Bolduc, 1998; Estroff & Zimmer, 1994; Silver, 2000; Silver, Mulvey, & Swanson, 2002; Steadman, 1982). While both categories contain dynamic factors, arguably micro-environmental factors are more readily modified. Individual treatment planning is more likely to impact situational characteristics (e.g., use of mental health services or being employed) that are related to a Veteran's level of violence risk.

For each step, Veteran-specific risk factors should be examined in conjunction with risk and protective factors in the civilian literature that are known to relate to violence. A number of important risk factors studied in civilian populations such as psychopathy, personality disorder, past criminal conduct, age of onset of violence, and violent fantasies (Monahan & Steadman, 1994; Douglas, Cox, et al., 1999) are largely absent from the literature on Veterans. There is also little research in Veteran populations regarding protective factors such as treatment engagement, medication adherence, stability in living situations, financial stability, and availability of a supportive social network (Douglas & Skeem, 2005) that have been shown to relate to reduced risk of violence in civilian populations.

Veteran-specific and general population risk factors are listed in Table 2, organized by the 'Look-Adjust-Examine' approach. It is important to note there several issues using structured checklists in the context of violence risk assessment that need to be considered (see generally Hart, 2001), including: 1) what information to review as part of a risk assessment, 2) how to gather it, 3) how to determine when risk factors judged present are also relevant in a given case, 4) how to combine individual risk factors to reach a conceptualization about overall risk, and 5) how to develop useful treatment plans based on risk factors and overall judgments of risk. More research and

Table 2
 Prototype of checklist for assessing violence risk among Veterans.

Look at static factors empirically related to violent behavior (e.g., demographics, traits, and history)	
<i>Veteran-specific</i>	<i>General population</i>
_____ Younger Age (<40)	_____ Male
_____ Maltreatment/abuse as a child	_____ Age of onset of violence (<13)
_____ Past violence/aggression	_____ Criminal arrests for violence
_____ Exposed to combat during service	_____ Psychopathic traits
Adjust risk estimate by considering current dynamic, individual-level variables (e.g., clinical diagnosis)	
<i>Veteran-specific</i>	<i>General population</i>
_____ Meets criteria for PTSD	_____ Personality disorder
_____ High PTSD symptom severity	_____ Current violent thoughts
_____ Substance abuse	_____ Anger problems
_____ Depression	_____ Acute psychotic or manic symptoms
Examine dynamic protective or risk factors currently in the Veteran's environment e.g., life situation)	
<i>Veteran-specific</i>	<i>General population</i>
_____ Current employment	_____ Living stability
_____ Financial stability/debt	_____ Engaged in mental health treatment
	_____ Adherent to psychiatric medications
	_____ Supportive family
	_____ Strong social network

Note. Mark '↑' to indicate increased risk, '↓' to indicate decreased risk, and '→' to indicate if the factor is not applicable, endorsed, or relevant in this case. Please note there are no scoring criteria recommended. Also note that this list is subject to change as more research elucidates risk factors in veteran and general populations. The predictive validity of this checklist is unknown and needs to be researched. This list aims primarily to help structure evaluation of violence risk for Veterans and is not intended to substitute for fully-informed clinical decision-making.

scholarship in this area is needed to help develop structured guidelines for violence risk assessment in Veteran populations. Still, by using an evidence-based approach with a given Veteran, clinicians can arrive at a reasonable assessment of a Veteran's risk of violent behavior that research indicates will be more accurate than relying on clinical judgment alone. Further, by regularly reviewing a Veteran's risk status in a structured, evidence-based way, clinicians are less likely to miss pertinent information which may be predictive of violence (See generally Elbogen et al., 2005; Gawande, 2009).

While this framework does not provide cut-off scores to categorize Veterans into 'low,' 'medium,' or 'high' risk of violence (as some civilian risk assessment tools do), it can help detect those at relatively high or low risk. The simple fact remains that the more empirically supported factors a Veteran endorses, the greater the risk of violence; the fewer, the lower the risk. Additional research will be directed at further defining what constitutes 'high' versus 'low' risk of violence in this population. Until then, to further evaluate risk in an individual case, clinicians can administer other existing violence risk assessment instruments (e.g., COVR, HCR-20) with the caveat that results need to be interpreted cautiously, since to date, these instruments have not been specifically validated among Veterans. Following this approach will help clinicians arrive at a conceptualization of a Veteran's risk of violence that can be used to develop a viable risk reduction plan. Consistently reviewing known important risk factors, as encouraged by this simple "Look-Adjust-Examine" approach will help clinicians routinize the process of risk assessment in Veteran populations and avoid decision-making errors that can reduce accuracy of clinical judgment.

It is important to note that any risk estimate a clinician may derive employing this method remains just that—an estimate. It is not meant to substitute for informed clinical decision-making (Garb, 1998). As addressed in the framework above, accurate risk assessment in the individual may be influenced by any number of additional idiosyncratic factors. For example, a Veteran may have a particular risk factor (e.g., homelessness) not captured by the empirical literature of variables showing consistent relationships with violence. Conversely, a Veteran may possess characteristics that either reduce (e.g., a broken leg) or elevate (e.g., ties to violent gangs or groups) violence risk that would be most important to consider (Dawes, Faust, & Meehl, 1989). Risk prediction will never be a perfect science but following the process recommended above can improve overall accuracy in

decision-making. The hope is that this will serve as a useful tool to remind clinicians to consider risk factors that have been empirically supported, to differentiate between those risk factors that are dynamic versus static, and to examine individual-level versus environmental-level risk factors. Systematically reviewing these for a given Veteran will lead to more reliable, and therefore potentially more valid and accurate, assessment of violence risk.

5. Applying evidence-based approach to clinical treatment of Veterans

To use this conceptual framework in practice there are several barriers that need to be considered (Baker et al., 2008). First, time and resources are required to gather empirically validated information on violence. While VA Medical Centers do have a computerized patient record system which may contain important risk information, it is estimated that over one half of Veterans do not in fact go to the VA for their health care. As a result, clinicians themselves may need to do the legwork to gather the kind of information necessary to ground the violence risk assessment in empirically supported factors. For VA clinicians, even with electronic medical records, there are barriers to gathering relevant information. For example, the computer system may be down, the emergency room may be filled with other crises, a Veteran's family member or friend may not be available to provide or validate information, and previously collected risk related information may not have been documented or may be lost among notes of dozens of other VA encounters. As with all risk assessments, efforts to overcome these obstacles and actually accessing relevant data will improve ability to accurately assess violence risk.

Many clinical settings, however, simply do not allow much time to collect all potentially pertinent risk information. Clinical decisions need to be made quickly, particularly in the emergency room setting, and document review and documentation can suffer. Patients often belong to a team of care providers and are receiving multiple services during any one visit. Reviewing all the notes for each contact with the patient can be time consuming and tedious. Thus, the use of the conceptual framework described may be difficult to implement in the very clinical contexts in which it might prove most useful.

The conceptual framework presented here presumes that a Veteran is at some level connected to a health services provider who can administer clinical services and conduct a violence risk assessment.

Many of the more publicized stories about Veterans who commit violent acts in the community, however, depict Veterans who are suffering with PTSD but who are not consistently involved in treatment. Data support that a number of Veterans who have risk factors listed in Table 1 such as PTSD, head injury, and substance abuse may not be engaged in treatment (Hoge et al., 2004). There are many reasons why Veterans do not access mental health services even when needed. These include belief that they will be perceived as weak by their unit leadership, concerns that it will harm one's military career, and simply thinking that one doesn't have a mental health problem. Stigma attached to mental illness may also impede use of treatment services. As a result, some Veterans may be unwilling to put themselves in a situation in which they can be assessed, limiting the ability to use any risk assessment techniques. Others, even some with multiple risk factors, may not honestly engage in treatment and may not volunteer information about violence risk with treatment providers.

Despite these barriers, there are ways that the risk assessment framework can be used, even in the Veteran administration emergency rooms where psychiatrists and other mental health professionals may encounter Veterans voicing thoughts of or plans for violent behavior. The list of risk factors in Tables 1 and 2 can help guide the clinician's interview. At the very least, the ER physician could ask the Veteran about these factors and, at a minimum, ask whether the Veteran has a history of violence. If there is more time and clinicians can find a lengthier clinical assessment of the Veteran, then other variables could be investigated. Crucial aspects of the Veteran's history can help tip the scale in gaining a more accurate assessment risk of violence. Review of medical records can also inform the clinician as to whether the patient is currently engaged in psychiatric treatment. The proposed framework can guide ER physicians to look for and collect relevant dispositional, historical, military, and contextual information. Such data can help inform the assessment of a Veteran's likelihood of committing a violent act, important for ER clinicians to consider in addition to inquiring about current violent ideation and/or plans. The goal is for clinicians to efficiently collect the widest array of relevant risk assessment information available at that point of the evaluation process and utilize it in treatment/disposition planning.

In outpatient clinics, the risk assessment model can also be used by clinicians providing individual therapy for Veterans. Consider an individual with a history of violence, substance use disorder, and PTSD, that would render the Veteran to be at relatively high risk for violent behavior. A clinician working with the Veteran could identify dynamic variables in the Veteran's life that could increase or decrease risk of violence. The clinician could then track individual-level as well as environmental-level dynamic factors—including assessment of level of PTSD symptoms, amount of substance abuse, existence of medical conditions, employment, living stability, and availability of social support—directly as part of the treatment. When these factors begin to change (e.g. the Veteran becomes homeless or loses his or her job), the clinician would be prompted to assess for increased violence risk and, if necessary, develop a safety plan with the Veteran. Correspondingly, such dynamic factors could be the target of treatment for each subsequent session with the Veteran, and the status of each factor could be reviewed and documented. To the extent that the Veteran does not endorse dynamic risk factors, the clinician would be supported in his/her assessment that, despite having some strong risk factors for violent behavior, the Veteran is currently at reduced risk for violence. Repeated recording of dynamic factors to capture fluctuations could strongly guide clinical decision-making and allow for early detection of increased risk of violence, and appropriate adjustment of treatment planning.

The risk assessment approach can also be utilized when a Veteran is about to be discharged from an inpatient psychiatric facility. For clinicians, discharge planning typically involves ensuring that post-

discharge clinic appointments, which aim to address major clinical concerns that led to hospitalization, have been scheduled for the Veteran. Given that homelessness, a chronic problem among Veterans, may relate to violence behavior, a focus on establishing a plan for a stable living situation during discharge planning can reduce the chance that an inpatient Veteran will be violent post discharge. Likewise, since unemployment is related to violent behavior, connecting Veterans with supported employment or vocational rehabilitation is a viable strategy for reducing risk in the community. Certainly, consideration of medications is important given the role of mental illness, especially depression and PTSD, in contributing to risk of violence. Clinicians could also consider use of the COVR, a formal risk assessment tool validated for inpatient psychiatric setting in civil populations, in Veteran discharge planning. The Veteran's adherence to medication regimen, engagement in outpatient treatment, and his or her perceptions of treatment or medication should be monitored. In addition to determining which health services are needed, it is essential that the clinician also consider ways to enhance utilization of health services that could be relevant to reducing violence risk and designing appropriate intervention plans.

6. Benefits and limits of risk assessment framework

A central thesis of this article is that clinicians can optimize risk assessment by following the conceptual framework in Fig. 1 to guide in the use of empirically supported risk factors in Table 2. The evidence-based method proposed in this article is designed to ensure that clinicians review all the relevant risk domains and investigate empirically supported risk factors within those domains in each and every case. Research on clinical decision-making of violence risk reveals that clinicians often neglect to consider such information. With respect to violence risk assessment, several studies have shown that clinicians tend to overemphasize clinical variables, such as bizarre delusions or unusual hallucinations, at the expense of underemphasizing dispositional, historical, and contextual information (see generally Borum, Otto, & Golding, 1993; Elbogen et al., 2002; Quinsey, 1995). Instead, clinicians often relied on readily available information, such as clinical and behavioral data, while neglecting less available information, such as historical and contextual data. The use of an evidence-based approach ensures that clinicians consistently consider—and not overlook—key variables known to be empirically related to violence when determining a Veteran's level of violence risk.

This model may also allow earlier potentially preventative intervention because it requires clinicians to systematically monitor dynamic variables over time to detect changes in level of risk. For example, if a Veteran's PTSD symptoms have abated throughout the course of pharmacological and therapeutic interventions, this may result in the Veteran's risk of violent behavior decreasing. Conversely, if a Veteran reports increased marital problems and increased substance abuse, the clinician would have reason for concern about domestic violence. This is consistent with recommendations made by the authors of the HCR-20, a well-validated structured risk assessment measure, who explicitly recommend using static factors to provide a gauge of violence risk in conjunction with monitoring dynamic factors on an ongoing basis to capture fluctuations in a patient's violence risk (Douglas, Ogloff et al., 1999). This puts clinicians in a superior position to detect whether a patient is moving toward a potentially increased risk of violence. Clinicians working with Veterans who regularly document assessing dynamic factors will find they increase their chances of recognizing patients who are moving toward increased risk by positioning themselves to take steps to reduce that risk.

Yet another advantage of the proposed empirical approach is that it encourages clinicians to consider situational variables when developing plans to manage violence risk. As shown in Table 1, less

research has focused on the role of contextual variables than on other domains with respect to violence risk. Though clinicians often fail to focus on contextual factors when asked to assess violence risk (Elbogen et al., 2005), the proposed framework highlights the importance of considering such situational variables when assessing an individual's violence risk (Silver, 2000; Steadman, 1982; Steadman et al., 1993). In particular, this aspect of the approach draws upon research that suggests that one's risk of future violence may vary over time depending on environmental stressors the individual experiences. Further, in the civilian literature, it has been shown that among people with mental illness, higher levels of adherence to medication and treatment engagement lead to reduced levels of violence risk. The conceptual framework provides a more complete picture of how a Veteran's situation may relate to risk level.

Clinicians should recognize this review does not provide a comprehensive list of all of the variables that have been found in the general population to relate to violence. Clinicians working with Veterans are not exempt from a need to stay current in understanding ongoing research on violence risk factors and risk assessment measures as Veterans remain a subgroup of the general population. A number of important risk factors that have been identified are largely absent from the literature on Veterans, such as psychopathy and antisocial behaviors. Additional research is needed to identify specific protective factors that might counteract or mitigate risk such as treatment engagement and medication adherence. The literature review presented here is not intended to cover every possible violence risk factor for Veterans. What is presented here is an overview of existing findings. Indeed, there remains a need for more studies in this area.

Within the extant research on Veterans, several notable limitations exist. Research to date has focused on mostly male Veterans. The substantial number of military women in the current war is also at risk for development of PTSD and other risk factors (e.g., TBI) that may elevate their risk of perpetrating intimate partner violence or general violence/aggression. This observation hints at another limitation in the literature: we do not know the extent to which the risk factors found among past Veterans apply to those who have served in Iraq and Afghanistan. Most empirical research to date has involved Vietnam or Gulf War Veterans. Some studies have begun to examine this among new Veterans (Jakupcak et al., 2007; Killgore et al., 2008), and initial results are showing similar factors related to post-deployment violence (e.g., PTSD); however, much more work is needed.

Another limitation concerns the criterion measures used in previous studies. Virtually all research on risk factors among Veterans is retrospective, correlating past violent behavior with demographic, clinical, and military service variables. We are aware of no studies of Veterans that predict these behaviors prospectively using a longitudinal design. The majority of published studies on Veterans and violence rely solely on self-reported violence. Moreover, only a few studies measure violence from two sources, specifically the Veteran and a family member (Beckham, Braxton, et al., 1997; Calhoun et al., 2002; Glenn et al., 2002; Panuzio et al., 2006), and no study examined has used violence measures from three or more sources. Data from multiple sources is important for conducting research of dependent variables that tend to be under-reported (Beckham et al., 2000; Calhoun et al., 2002; Gerlock, 2004; Mulvey & Lidz, 1993).

In sum, while more studies are needed to more fully uncover empirically validated violence risk factors and to ultimately develop formal risk assessment instruments for use in Veterans populations, or determine if existing tools are valid for Veterans, adopting the recommended empirical approach above could improve clinical decision-making and ensure that risk assessments are systematic, consistent, and grounded in current research. Clinicians should first establish a Veteran's level of risk based on static, individual-level factors. Then, clinicians should adjust the risk level depending on the

extent of dynamic, individual-level factors at play, especially with respect to the Veteran's current clinical status. Finally, further evaluation of risk level can occur after review of the Veteran's social environment and engagement in health services.

The risk assessment method proposed in this paper can provide clinicians with a decision aid to systematically inform them about specific concerns as well as possible interventions regarding management of a Veteran's potential for violent behavior. At best, applying this empirical approach will reduce decision-making errors and at the same time help to minimize the chances the Veteran will engage in violent behavior in the future. At the minimum, it will encourage clinicians to more systematically collect and document data needed to enhance our understanding of a Veteran's risk of violence. It is likely that mental health professionals will continue to play a crucial role in evaluating, managing, and preventing risk of harm among those who have served our country in the military. It remains our responsibility to strive to improve the services provided in that role.

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