Journal of Substance Abuse Treatment 50 (2015) 59–66

Contents lists available at ScienceDirect

Journal of Substance Abuse Treatment

Aggressive Behavior Among Military Veterans in Substance Use Disorder Treatment: The Roles of Posttraumatic Stress and Impulsivity

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ARTICLE INFO

Article history:
Received 21 February 2014
Received in revised form 16 October 2014
Accepted 27 October 2014

Keywords:
Aggression
Violence
PTSD
Impulsivity
Substance use disorder
Alcohol

ABSTRACT

This study examined posttraumatic stress disorder (PTSD) symptom severity and impulsivity as predictors of aggressive behavior among 133 male military veterans entering substance abuse treatment who endorsed difficulty controlling anger in the past year. At treatment intake, participants completed measures assessing PTSD symptom severity, impulsivity and aggressive behavior. Perpetration of aggressive behavior was reassessed 4 months later. Results from multivariate models indicated that PTSD symptom severity and impulsivity explained unique variance in aggressive behavior at intake but not follow-up. Mediation models indicated that the association between PTSD symptom severity and aggressive behavior was accounted for by impulsivity. The identification of impulsivity as a key mediator between trauma symptoms and aggressive behavior has significant clinical and research implications. Based on these findings, clinicians are encouraged to consider a standard assessment of impulsivity and the selection of interventions that target impulsivity as a trans-diagnostic process among at-risk client populations.

Published by Elsevier Inc.

1. Introduction

A wealth of epidemiological data demonstrates that aggressive behavior is dramatically more prevalent among individuals with substance use disorders (SUD) compared to those without an SUD (Arseneault, Moffitt, Caspi, Taylor, & Silva, 2000; Bell, Hanford, McCarroll, & Senier, 2004; Coid, 2006; Corrigan & Watson, 2005; Pan, Neidig, & Oleary, 1994). Estimates of past-year violence perpetration among clinical samples in SUD treatment are 2–3 times greater than those observed in community samples and have been documented as high as 75% (Brown, Werk, Caplan, Shields, & Seraganian, 1998; Chermack, Fuller, & Blow, 2000; Chermack, Walton, Fuller, & Blow, 2001; Chermack et al., 2010; O'Farrell, Fals-Stewart, Murphy, & Murphy, 2003). The personal and social costs of aggressive behavior are tremendous and include physical and emotional injuries, relationship and legal problems, lower social functioning and higher utilization of health care services (Campbell, 2002; Marshall, Panuzio, & Taft, 2005). In addition, aggressive behavior has been linked to poorer SUD treatment outcomes (e.g., higher drop-out, earlier relapse; Gossop, Trakada, Stewart, & Witton, 2005; Mignone, Klostermann, & Chen, 2009; Murphy & Ting, 2010; Ravndal & Vaglum, 1991), which suggests the need for integrated interventions (Chermack et al., 2009; Fals-Stewart & Kennedy, 2005; Klostermann, Kelley, Mignone, Pusateri, & Fals-Stewart, 2010).

Given both the negative impact of aggressive behavior on life functioning and treatment outcomes, it is critical to gain a better understanding of the psychological mechanisms that confer risk for interpersonal aggression. Previous research has established that PTSD symptoms and impulsivity operate as potent risk factors for aggressive behavior (Orth & Wieland, 2006; Taft, Watkins, Stafford, Street, & Monson, 2011; Vigil-Colet, Morales-Vives, & Tous, 2008; Wakai & Trestman, 2008), yet virtually no studies have simultaneously examined these factors in an SUD population. In addition, although PTSD symptoms are associated with heightened aggression, the mechanisms by which this occurs are not well understood (Beckham, Moore, & Reynolds, 2000). Finally, the preponderance of extant research on aggressive behavior in SUD populations has tended to focus on a specific SUD (e.g., alcohol use disorder), a single type of aggression (either physical or psychological) or within either intimate partnerships or non-partner relationships. As such, more research is needed among diverse samples of SUD patients to assess a wider range of interpersonal difficulties (i.e., psychological and physically aggressive behavior) beyond the context of partner relationships (i.e., strangers, acquaintances, other family members, friends, co-workers). The current study aims to address these knowledge gaps.

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http://dx.doi.org/10.1016/j.jsat.2014.10.014
0740-5472/Published by Elsevier Inc.

1.1. Posttraumatic stress and aggression

Trauma exposure and PTSD are over-represented among individuals with SUD, with estimates that one-third of individuals in SUD treatment also have a diagnosis of PTSD (Gielen, Havermans, Tekelenburg, & Jansen, 2012; Kessler, Berglund, Demler, Jin, & Walters, 2005; Mills, Teesson, Ross, & Peters, 2006; Ouimette & Brown, 2003). Veterans are at particularly high risk for SUD-PTSD comorbidity (e.g., Carter, Capone, & Short, 2011). For example, among a sample of nearly half a million Iraq and Afghanistan veterans, 63–76% of those with an alcohol or drug use disorder also met criteria for PTSD (Seal et al., 2011). Further, meta-analytic studies indicate that PTSD symptom severity is strongly associated with aggressive behavior and that this association is stronger among veterans as compared to civilians (Orth & Wieland, 2006; Taft et al., 2011). PTSD symptom severity has also been shown to prospectively predict aggression following treatment (Makin-Byrd, Bonn-Miller, Drescher, & Timko, 2012) and those meeting subthreshold or full criteria for PTSD report significantly more anger reactivity and interpersonally aggressive behavior than those without the diagnosis (Beckham, Feldman, Kirby, Hertzberg, & Moore, 1997; Jakupcak et al., 2007; Taft, Street, Marshall, Dowdall, & Riggs, 2007). Although PTSD is related to aggression, and is critical to assess when determining risk for aggressive behavior among individuals with SUD (Barrett, Mills & Teesson, 2011), the mechanisms by which PTSD symptom severity is linked to aggressive behavior remains poorly understood (Beckham et al., 2000).

1.2. Impulsivity

Impulsivity is a multifaceted construct (e.g., cognitive, behavioral) characterized by rash, poorly conceived and unplanned actions and a disregard for long-term consequences (De Wit, 2009; Evenden, 1999) and is a hallmark component of various psychological disorders. Higher levels of impulsivity are thought to denote poor executive control, which is seated in the prefrontal cortex and responsible for goal-directed behavior and self-regulation (Bickel, Jarmolowicz, Mueller, Gatchalian, & McClure, 2012; Crews & Boettiger, 2009; Hofmann, Schmeichel, & Baddeley, 2012). Impulsivity has been described in the self-report literature as a cluster of distinct personality traits (e.g., lack of planning, positive and negative urgency, sensation seeking, lack of premeditation, lack of perseverance) that engender impulsive behavior, with lack of premeditation and planfulness being one of the most common conceptualizations of impulsivity (Whiteside & Lynam, 2001; Whiteside, Lynam, Miller, & Reynolds, 2005).

Impulsivity is a determinant and consequence of substance use (Crews & Boettiger, 2009; De Wit, 2009), and also functions as a predisposing factor for a number of externalizing problems including aggressive behavior (Brady, Myrick, & McElroy, 1998; Edwards, Scott, Yarvis, Paizis, & Panizzon, 2003; Wakai & Trestman, 2008). Individuals with trauma exposure and higher PTSD symptom severity demonstrate elevated levels of impulsivity and risk-taking, as indexed by a variety of behavioral and self-report measures (Casada & Roache, 2005; Chamorro et al., 2012; Killgore et al., 2008; Lovallo, 2013; Strom et al., 2012; Weiss, Tull, Anestis, & Gratz, 2013). Given the associations between PTSD and impulsivity, and between impulsivity and aggressive behavior, it is plausible that impulsivity mediates the impact of PTSD symptoms on aggressive behavior among individuals with SUD. In terms of clinical utility, although impulsivity is strongly associated with aggressive behavior, it is not routinely or formally assessed in treatment settings. If assessment of impulsivity can lend additional explanatory power to predict who is most at risk for perpetrating aggressive behavior, clinicians may be able to pre-emptively employ interventions (e.g., psychopharmacology, distress tolerance training) to reduce impulsive tendencies.

1.3. The current study

This study has three objectives. First, it examines the extent to which PTSD symptom severity and impulsivity explain variance in aggressive behavior among veterans in SUD treatment, both cross-sectionally and longitudinally. After accounting for substance use severity, we expect PTSD symptom severity and impulsivity to be positively associated with aggressive behavior both at treatment intake and at follow-up. Second, given that substance use severity and PTSD symptoms are commonly assessed in clinical settings, and are well-established risk-factors for aggressive behavior, we examine the extent to which impulsivity explains additional, unique variance in aggressive behavior. Third, we assess whether impulsivity serves as a mediator of the pathway between PTSD symptom severity and aggression. Specifically, we hypothesize that after controlling for substance use severity, impulsivity will account for the association between PTSD symptom severity and aggressive behavior.

2. Method

2.1. Participants

Participants were 133 male military veterans (mean age = 52.52, SD = 8.12; 49% Caucasian; 34% African American; 11% Hispanic; 2% Asian; 4% other) entering outpatient SUD treatment at a VA Medical Center. In terms of treatment history, participants reported an average of 3.22 (SD = 6.46), 3.25 (SD = 6.20), and 1.65 (SD = 2.06) previous outpatient treatment episodes for alcohol, drug, and mental health problems, respectively. Retention at 4-month follow-up was 80%, excluding five participants who were incarcerated, had died, or were incapacitated/hospitalized (follow-up data available for 101 participants). Participants received abstinence-based outpatient SUD treatment that had a combined cognitive behavioral therapy/twelve-step facilitation orientation. Veterans in this program received at least 3 hours a week of group and individual therapy plus case management.

2.2. Measures

2.2.1. Aggressive behavior—The Revised Conflict Tactics Scale (RCTS; Straus, Hamby, Boney-McCoy, & Sugarman, 1996)

At intake and follow-up, a modified version of the RCTS was administered to assess the perpetration of 20 aggressive behaviors: 8 psychologically aggressive behaviors (e.g., insulted or swore at, destroyed something belonging to target, threatened to hit or throw something at target), and 12 physically aggressive behaviors (e.g., pushed or shoved, slapped, grabbed, punched or hit, kicked target) against another adult in the past 30 days. The RCTS is a highly reliable and well-validated measure of aggression perpetration and has been used extensively with SUD populations and military veterans (Beckham et al., 1997; Bye, 2007; O'Farrell et al., 2003). Aggression perpetrated against intimate partners and other adults was combined to capture the full range of aggression perpetrated against any adult. Thus, aggressive behavior was measured as the number of days in the past month that participants had engaged in each of the 20 aggressive behaviors. Internal consistency on the RCTS was .72 for both intake and follow-up.

2.2.2. Substance use patterns and severity—Addiction Severity Index (ASI; McLellan et al., 1992)

The ASI is a structured clinical research interview used in the current study to collect demographic information (age, race, education, employment, marital status, partner status, partner cohabitation status) and assess drug and alcohol use along with number, extent and duration of SUD symptoms. ASI drug and alcohol composite scores are derived with algorithms and indicate drug and alcohol use severity in the past 30 days. Composite scores are highly reliable and valid (McLellan et al., 1992). The drug composite includes questions assessing use of

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