



Motor impulsivity differentiates between psychiatric inpatients with multiple versus single lifetime suicide attempts

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ABSTRACT

A history of multiple suicide attempts conveys greater risk for suicide than a single attempt. Impulsivity may partially explain the association between multiple attempts and increased risk. We examined trait impulsivity, ability to engage in goal-directed behaviors, and impulse control among psychiatrically hospitalized United States military personnel and their dependents. Individuals with a history of multiple versus single attempts had significantly higher motor impulsivity, indicating spur of the moment action. Providers are encouraged to directly assess and treat motor impulsivity among suicidal individuals. Further research should explore whether motor impulsivity is a mechanism of change in psychosocial suicide prevention interventions.

1. Introduction

In the United States (U.S.), suicide is the second leading cause of death among persons aged 10–34 years (CDC, 2013), and the leading cause of death among service members (AFHSC, 2014). While epidemiological research has identified attempted suicide as one of the strongest predictors of eventual suicide death (Brown et al., 2000), risk profiles for individuals with multiple versus single suicide attempts require further examination. Comparatively, individuals with multiple suicide attempts are at an elevated risk for suicide, partially due to more severe psychopathology (Forman et al., 2004); however, impulsivity has been postulated as a transdiagnostic risk indicator for suicide above and beyond psychopathology (Mann et al., 1999).

Impulsivity is defined as “a predisposition toward rapid unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions” (Moeller et al., 2001, p. 1784) and may indirectly contribute to suicide risk via association with multiple psychiatric diagnoses including borderline personality (American Psychiatric Association, 2013), bipolar (Chen and Dilsaver, 1996), and substance-related (Miranda et al., 2008) disorders. A notable body of research has found evidence of a direct impulsivity-suicide attempt link (e.g., Brodsky et al., 2001; Doihara et al., 2012), while other studies have found no such evidence (e.g., Carli et al., 2010;

Grunebaum et al., 2005; Oquendo et al., 2000). Most recently, a meta-analysis (Anestis et al., 2014) comparing individuals with and without histories of suicide attempts indicated that the relationship between impulsivity and suicide attempt history was small (Hedges $g = .34$). Findings on impulsivity among individuals with multiple versus single attempts is also mixed with some evidence for higher impulsivity among those with multiple attempts (e.g., Bulik et al., 2008; Dougherty et al., 2004a; Maloney et al., 2009), and other research finding no impulsivity differences between these groups (e.g., Brodsky et al., 2001; Iancu et al., 2010). Given that impulsivity is an important construct and a modifiable risk indicator in many evidence-based suicide prevention treatments, additional research is needed to determine how multiple dimensions of impulsivity may be associated with suicidal behaviors.

Few researchers have investigated the impulsivity-suicide attempt link among military personnel. Results of one study indicated that basic training recruits with a history of suicide ideation or attempts scored higher on impulsivity than those without such a history, although impulsivity did not differentiate those with ideation versus attempts (Klonsky and May, 2010). Additional studies have not measured impulsivity directly, but classified service members as low-, moderate-, or high-risk takers. High-risk takers were approximately twice as likely as low- and moderate-risk takers to report seriously

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considering suicide in the prior year (Barlas et al., 2013; Bray et al., 2009). Finally, two published studies examined differences between service members with multiple versus single attempts, but neither explored the link between impulsivity and attempt status (Kochanski-Ruscio et al., 2014; Rudd et al., 1996).

The present study examined the association between multiple dimensions of impulsivity and suicide attempts among a sample of service members and beneficiaries receiving inpatient psychiatric care at a military treatment facility. Individuals with multiple lifetime suicide attempts were expected to report consistently higher levels of impulsivity.

2. Methods

2.1. Participants

The sample consisted of 152 military service members and adult dependents enrolled in a randomized controlled trial testing the efficacy of Post Admission Cognitive Therapy (PACT; Ghahramanlou-Holloway et al., 2012), a treatment program for psychiatrically hospitalized suicidal individuals. Data for the current study were collected during baseline assessments, generally conducted within the first 72 h of psychiatric admission.

2.2. Measures

2.2.1. Impulsivity

Impulsivity was measured using the 30-item Barratt Impulsiveness Scale (BIS-11; Patton et al., 1995). For the BIS-11, individuals report how often they experience impulsivity along three subscales: *attentional impulsiveness* – inability to concentrate, *non-planning impulsiveness* – lack of forethought, and *motor impulsiveness* – tendency to act on the spur of the moment. Chronbach's alphas for the subscales are as follows: attentional $\alpha=.74$, non-planning $\alpha=.76$, and motor $\alpha=.64$. Impulsivity was also measured using the 36-item Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer, 2004). For the DERS, individuals indicate how often statements related to emotional dysregulation apply to themselves. Subscales used in the present study included: *impulse* – inability to control behavioral impulses, and *goals* – inability to engage in goal-directed behaviors. Chronbach's alphas was .89 for both the impulse and goals subscales.

2.2.2. Suicide attempts

The Columbia Suicide Severity Rating Scale (CSSRS; Posner et al., 2011) measures the frequency and severity of suicidal ideation and behavior. For this study, the frequencies of lifetime actual (i.e., a potentially self-injurious behavior with at least some wish to die), interrupted (i.e., the person makes steps toward attempting suicide but is stopped by another person or outside circumstances before he or she can engage in the potentially self-injurious behavior), and aborted (i.e., the person makes steps towards attempting suicide but stops short of engaging in the potentially self-injurious behavior), suicide attempts were used to categorize the single attempt and multiple attempt groups (Posner et al., 2011).

2.3. Statistical analyses

The single and multiple attempt groups were compared on demographic characteristics and impulsivity measures using *t*-tests and Pearson's χ^2 tests. Multivariate logistic regression analyses were conducted to explore significant group differences.

Table 1

Demographics and descriptive statistics for impulsivity scales by single versus multiple suicide attempt status.

	Single attempts (N =45) No. (%) ^a	Multiple attempts (N =107) No. (%) ^a	<i>p</i> ^b
Demographic characteristics			
Age, mean (SD)	31.71 (9.60)	28.39 (8.10)	.031
Gender			
Female	17 (37.8)	35 (32.7)	.548
Male	28 (62.2)	72 (67.3)	
Race/ethnicity			
Black or African-American	13 (28.9)	18 (16.8)	.232
White or Caucasian	27 (60.0)	77 (72.0)	
Other	5 (11.1)	12 (11.2)	
Marital status			
Never married	9 (20.0)	46 (43.0)	.013
Married	28 (62.2)	41 (38.3)	
Separated/divorced/widowed	8 (17.8)	20 (18.7)	
Education			
High school diploma or equivalent	12 (26.7)	27 (25.2)	.897
Some college, no degree	19 (42.2)	50 (46.7)	
Associate's degree	3 (6.7)	8 (7.5)	
Bachelor's degree	6 (13.3)	15 (14.0)	
Graduate or professional degree	5 (11.1)	7 (6.5)	
Military characteristics^c			
Branch			
Army	20 (44.4)	36 (39.6)	.529
Air force	4 (8.9)	6 (6.6)	
Navy	10 (25.0)	26 (28.6)	
Marine corps	5 (12.5)	21 (23.1)	
Coast guard	1 (2.5)	2 (2.2)	
Rank			
Junior enlisted	13 (32.5)	43 (76.8)	.132
Senior enlisted	22 (55.0)	32 (59.3)	
Officer	5 (12.5)	12 (13.2)	
Midshipmen/cadet	0 (.0)	4 (4.4)	
Impulsivity, mean (SD)			
BIS-11 Attentional	18.76 (5.03)	19.50 (4.51)	.374
BIS-11 Nonplanning	25.31 (5.81)	26.60 (6.18)	.235
BIS-11 Motor	22.44 (4.85)	24.24 (4.87)	.039
DERS ^d Impulse	15.45 (5.18)	16.69 (5.46)	.210
DERS ^d Goals	15.36 (6.15)	16.64 (5.90)	.241
Lifetime suicide attempts, mean (SD)	1.00 (.00)	6.48 (14.36)	

Note: BIS-11= Barratt Impulsivity Scale, DERS = Difficulties in Emotion Regulation Scale.

^a Percentages may not sum to 100 due to unreported data

^b *P*-values are the result of *t*-tests for continuous variables and χ^2 for categorical variables. Fisher's exact test was used in cases where cell counts were less than or equal to 5.

^c Limited to Active Duty service members (n =131), excludes military dependents (n =10), veterans (n =10) and one participant for whom branch and rank were unknown

^d Sample sizes for the DERS were 42 in the Single Attempt group and 104 in the Multiple Attempt group.

3. Results

3.1. Demographic characteristics

The average lifetime number of suicide attempts overall was 4.86 (SD =12.29). The majority of participants reported a history of multiple suicide attempts (70%). Participants were largely Caucasian (68%), male (66%), with at least some college (74%). Nearly half were married (45%). The majority of participants were active duty military (87%).

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