Posttraumatic stress disorder symptoms and mindfulness facets in relation to suicide risk among firefighters

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Abstract

Objective: Posttraumatic stress disorder (PTSD) symptoms are associated with increased suicide risk among firefighters. Few studies have examined modifiable factors, such as mindfulness facets, that might attenuate this association. This study examined the interactive effects of PTSD symptoms and mindfulness facets in relation to suicide risk among firefighters.

Method: Overall, 831 career firefighters were assessed for PTSD symptoms, mindfulness facets, and suicide risk via the PTSD Checklist for DSM-5, Five Facet Mindfulness Questionnaire, and Suicidal Behaviors Questionnaire—Revised, respectively.

Results: Greater PTSD symptoms were associated with more severe suicide risk; however, higher levels of two specific mindfulness facets, acting with awareness and nonjudging of inner experience, attenuated this association. By contrast, higher levels of the observing facet of mindfulness potentiated the association between PTSD symptoms and suicide risk.

Conclusions: Suicide prevention initiatives among firefighters, particularly those experiencing trauma-related sequelae, might benefit from the inclusion of mindfulness-based practices alongside frontline empirically-supported approaches.

Keywords

firefighter; first responder; mindfulness; posttraumatic stress disorder; suicide

Firefighters are at increased risk for suicidal thoughts and behaviors (Stanley, Hom, & Joiner, 2016). Stanley, Hom, Hagan, and Joiner (2015) surveyed 1,027 U.S. firefighters and found that 46.8% reported serious suicidal ideation and 15.5% reported having made a suicide attempt throughout their firefighter tenures. Further, Carleton et al. (2018) surveyed 5,148 Canadian Public Safety Personnel; a total of 25.2% of firefighters in this sample reported lifetime experiences with suicidal ideation and 3.3% reported a lifetime suicide attempt. Finally, the Centers for Disease Control and Prevention (CDC) estimates that

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protective service workers, a group inclusive of firefighters, die by suicide at a higher rate compared to other occupations (McIntosh et al., 2016). Together, there is evidence that suicide risk might be elevated among firefighters and, as such, increased efforts are needed to identify mitigating factors.

Firefighters are routinely exposed to traumatic events that pose a substantial risk for serious injury or death (Kimbrel et al., 2011). Most firefighters are resilient to the effects of these traumatic exposures (Meyer et al., 2012); however, a nontrivial proportion of firefighters develop symptoms consistent with posttraumatic stress disorder (PTSD; Berger et al., 2012). PTSD symptoms might explain, in part, the increased suicide risk observed among firefighters. Indeed, PTSD has been implicated in suicide risk across multiple samples (Panagioti, Gooding, & Tarrier, 2012; Panagioti, Gooding, & Tarrier, 2009). PTSD is also one of the few psychiatric disorders that predicts the transition from thinking about suicide to engaging in suicidal behavior (Nock et al., 2009). Thus, PTSD is a relevant construct, on which, to intervene to decrease suicide risk (Bryan, 2016).

PTSD symptoms have also been identified as a correlate of suicide risk within samples of firefighters, specifically (Bartlett et al., 2018; Boffa et al., 2017, 2018; Martin, Tran, & Buser, 2016; Stanley, Hom, Spencer-Thomas, & Joiner, 2017). For example, among 893 current U.S. firefighters, Boffa et al. (2017) found that more severe PTSD symptoms were associated with an increased risk of reporting lifetime suicidal thoughts and prior suicide attempts. Among 765 U.S. firefighters, Bartlett et al. (2018) found that high levels of distress tolerance attenuated the effects of PTSD symptoms on suicide risk. This finding positioned distress tolerance, which is amenable to therapeutic intervention (Linehan, 2015; Zvolensky, Bernstein, & Vujanovic, 2011), as a promising intervention target to reduce suicide risk among firefighters experiencing elevated PTSD symptoms.

Suicide risk reduction efforts among trauma-exposed firefighters would be enhanced by the elucidation of other modifiable intervention targets that are related to distress tolerance, such as mindfulness facets. Mindfulness—"a form of nonjudgmental and nonreactive attention to experiences occurring in the present moment, including bodily sensations, cognitions, emotions, and urges, as well as environmental stimuli such as sights, sounds, and scents" (Baer, 2014, p. 3)—is a multidimensional construct composed of the following facets (Baer et al., 2008; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006): *acting with awareness* (i.e., attending to activities in the moment), *describing* (i.e., labeling internal experiences), *nonjudging of inner experience* (i.e., remaining nonevaluative about internal experiences), *nonreactivity to inner experience* (i.e., allowing thoughts and feelings to "come and go"), and *observing* (i.e., noticing/attending to internal and external experiences, such as thoughts, emotions, and feelings).

Higher levels of mindfulness are associated with lower levels of PTSD symptoms (Thompson, Arnkoff, & Glass, 2011), including among firefighters (Smith et al., 2011). Interestingly, mindfulness facets are differentially associated with PTSD symptoms. More specifically, higher levels of the *nonjudging* (Chopko & Schwartz, 2013; Martin, Bartlett, Reddy, Gonzalez, & Vujanovic, 2018; Thompson & Waltz, 2010; Wahbeh, Lu, & Oken, 2011) and *acting with awareness* (Boden et al., 2012; Martin et al., 2018; Vujanovic,

Youngwirth, Johnson, & Zvolensky, 2009) facets appear to be uniquely associated with lower PTSD symptom severity. Likewise, higher levels of the *nonjudging* facet appear to be uniquely associated with lower levels of depression symptoms (Boden et al., 2012). Fewer data exist, however, examining mindfulness in relation to suicide-related outcomes (Barnes, Smith, Monteith, Gerber, & Bahraini, 2017). Lamis and Dvorak (2014) found that higher levels of mindfulness are associated with lower levels of suicide rumination among undergraduates. Moreover, among psychiatric inpatients, Cheng, Banks, Bartlett, Miguel, and Vujanovic (2017) found significant inverse bivariate correlations between two specific mindfulness facets, *nonjudging* and *acting with awareness*, and suicidal ideation severity ($rs = -0.33$, $ps < 0.001$).

Given this pattern of findings, research has sought to examine if higher levels of mindfulness attenuate the association between PTSD symptoms and suicidal thoughts and behaviors. The *nonjudging* and *acting with awareness* facets appear to buffer the effects of PTSD symptoms on suicidal ideation (Cheng et al., 2017)—that is, when one takes a noncritical stance toward PTSD-related physiological (e.g., hyperarousal) and psychological (e.g., shame) symptoms, one's suicide risk appears to be attenuated through, in part, reductions in evaluations of threat. The research in this area is limited and, to our knowledge, no study has examined this topic among firefighters.

1 | THE PRESENT STUDY

This study examined whether facets of mindfulness modulate the association of PTSD symptoms and suicide risk within a large sample of career firefighters. Consistent with Cheng et al. (2017), we hypothesized that (a) more severe PTSD symptoms would be associated with more severe suicide risk; and (b) the effects of PTSD symptoms on suicide risk would be mitigated at higher levels of (a) *acting with awareness* and (b) *nonjudging of inner experience.*

2 | MATERIALS AND METHODS

2.1 | Participants and procedures

Participants were 831 firefighters serving a large metropolitan area in the southern U.S. Firefighters were mostly male (94.5%; $n = 785$), white (75.2%; $n = 625$), and ranged in age from 20 to 63 years ($M[SD] = 38.37$ [8.53] years; Table 1). Approximately 4,035 firefighters are used by this department, and all firefighters also perform emergency medical service duties. Firefighters were invited to participate via a department-wide email; three monthly email reminders were sent. Firefighters accessed study information through the fire department's electronic continuing education (CE) portal. Interested individuals were then directed to a separate Qualtrics survey where they provided electronic informed consent and completed the survey battery (45–60 min). Firefighters were offered one CE credit and a chance to win a raffle prize (e.g., restaurant/movie theater gift cards); participation was voluntary. This study represents a secondary data analysis of participants who provided data on the variables of interest. Data collection was approved by all relevant institutional review boards.

2.2 | Measures

2.2.1 | Life Events Checklist-5—The Life Events Checklist-5 (LEC-5; Weathers et al., 2013a) is a 17-item self-report measure of lifetime exposure to traumatic events (e.g., combat, physical assault). Previous versions of the LEC-5 have demonstrated good test-retest reliability and convergent validity (Gray, Litz, Hsu, & Lombardo, 2004). The LEC-5 was administered before the PCL-5 (Weathers et al., 2013b). Participants were queried to identify their "worst event" they selected on the LEC-5 and to briefly describe that event. They were instructed to respond to the PCL-5 with this "worst event" in mind.

2.2.2 | PTSD Checklist for DSM-5—The PTSD Checklist for DSM-5 (PCL-5; Weathers, et al., 2013b) is a 20-item self-report scale of PTSD symptoms. Participants rate on a 5-point scale ranging from 0 (*Not at all*) to 4 (*Extremely*) how much they were bothered by various symptoms over the previous month (e.g., "Repeated, disturbing, and unwanted memories of the stressful experience?"). Total summed scores range from 0 to 80; higher scores indicate more severe PTSD symptoms. A cutoff score 33 signals a probable PTSD diagnosis (Weathers et al., 2013b). The PCL-5 has strong psychometric properties (Blevins, Weathers, Davis, Witte, & Domino, 2015; Bovin et al., 2016; Wortmann et al., 2016). Within the current study, the PCL-5 demonstrated excellent internal consistency ($a = 0.97$).

2.2.3 | Five Facet Mindfulness Questionnaire—The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006, 2008) is a 39-item self-report measure of mindfulness facets: *acting with awareness* ("When I do things, my mind wanders off and I am easily distracted" [reverse]), *describing* ("I'm good at finding words to describe my feelings"), *nonjudging of inner experience* ("I tell myself I should not be feeling the way I am feeling" [reverse]), *nonreactivity to inner experience* ("I watch my feelings without getting lost in them"), and *observing* ("I pay attention to sensations, such as the wind in my hair or sun on my face"). Participants respond to items on a 5-point scale ranging from 1 (*Never or very rarely true*) to 5 (*Very often or always true*). Scores were reverse coded where appropriate (Baer et al., 2006) and summed to generate a total score that ranges from 39 to 195; higher scores indicate greater levels of mindfulness. Subscale scores were also derived. The FFMQ has good construct validity (Baer et al., 2008). Within the current study, the FFMQ demonstrated good-to-excellent internal consistency for the total score ($a = 0.84$) and each facet (as = 0.81–0.92).

2.2.4 | Suicidal Behaviors Questionnaire—Revised—The Suicidal Behaviors Questionnaire—Revised (SBQ-R; Osman et al., 2001) is a 4-item self-report index of overall current suicide risk severity. The SBQ-R assesses both chronic (i.e., lifetime suicide ideation and/or attempts, the frequency of past-year suicidal ideation, lifetime communication of suicide threats) and acute (i.e., current suicidal intent) suicidal symptoms. Total summed scores range from 3 to 18; higher scores indicate greater suicide risk. Scores 7 in general population samples indicate clinical significance (Osman et al., 2001). The SBQ-R has demonstrated good validity and reliability (Batterham et al., 2015; Osman et al., 2001). Within the current study, the SBQ-R demonstrated acceptable internal consistency ($a = 0.77$).

2.3 | Data analytic approach

First, variables were screened for violations of normality (i.e., skewness and kurtosis). Within our data, the SBQ-R demonstrated some skew (3.015) and significant kurtosis (11.175). We applied a log transformation to the SBQ-R to reduce skew and kurtosis to acceptable levels (1.918 and 3.179, respectively). To facilitate interpretability, we present the analyses utilizing the nontransformed SBQ-R variable within the text and we note in footnotes the consistency of our findings when also utilizing the transformed SBQ-R variable. For primary moderation analyses, we utilized the PROCESS macros for SPSS (Hayes, 2013). We utilized linear regression to examine the association of PCL-5 PTSD symptoms and SBQ-R suicide risk, as well as the moderating effects of FFMQ mindfulness facets. We centered predictor variables around the mean and probed significant interactions at low (−1 *SD*) and high (+ 1 *SD*) FFMQ mindfulness facet levels. We included the following sociodemographic characteristics as controls, because of their significant associations with suicide risk among firefighters (e.g., Stanley et al., 2015): age, race (White = 1, non-White = 0), and sex (Male = 1, non-Male = 0). Missing data were minimal (<2% for cases included as part of this ongoing study) and addressed utilizing listwise deletion.

3 | RESULTS

Study variable means, standard deviations, and intercorrelations are presented in Table 2. Briefly, the mean PCL-5 PTSD symptoms score was 9.71 (*SD* = 14.40); overall, 9.6% (*n* = 80) of the sample exceeded the PCL-5 cutoff score of 33. The mean SBQ-R suicide risk score was 3.85 (*SD* = 1.79); overall, 30.6% (*n* = 254) of the sample reported nonzero levels of SBQ-R suicide risk, and 8.2% (*n* = 68) exceeded the SBQ-R cutoff score of 7 for nonclinical samples.

Full results of our linear regression moderation models, including the conditional effects, are presented in Table 3. The interactions between PCL-5 PTSD symptoms and FFMQ *acting with awareness* (B = −0.002, SE = 0.001, $p < 0.001$; model: R^2 = 21.9%, f^2 = 0.280) and FFMQ *nonjudging of inner experience* (B = −0.003, SE = 0.001, $p < 0.001$; model: R^2 = 23.4%, f^2 = 0.305) were each statistically significant. The form of these interactions indicated that greater levels of FFMQ *acting with awareness* and FFMQ *nonjudging of inner experience* each attenuated the association between PCL-5 PTSD symptoms and SBQ-R suicide risk. By contrast, the interaction between PCL-5 PTSD symptoms and FFMQ *observing* was statistically significant (B = 0.001, SE = 0.001, $p < 0.001$; model: R^2 = 20.4%, f^2 = 0.256); however, the form of the interaction indicated that greater levels of FFMQ *observing* strengthened the association of PCL-5 PTSD symptoms and SBQ-R suicide risk. There were no statistically significant interactions of PCL-5 PTSD symptoms and either FFMQ *describing* or FFMQ *nonreactivity to inner experience*.[1]

3.1 | Exploratory analyses

As noted, the SBQ-R is a heterogeneous index of both chronic and acute suicidal symptoms. Consistent with past research (Hom, Stanley, Gutierrez, & Joiner, 2017; Stanley, Joiner, &

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[1]This pattern of findings remained unchanged when utilizing the transformed SBQ-R variable.

Bryan, 2017), we conducted exploratory analyses with SBQ-R Item 4 (i.e., current levels of suicidal intent) as the criterion variable. In this regard, the outcome variable represents an index of suicide risk that is contemporaneous to the assessment of PTSD symptoms and mindfulness facets. Results were generally consistent with the primary analyses: greater PCL-5 PTSD symptoms were associated with higher levels of SBQ-R current suicidal intent, and higher levels of FFMQ *acting with awareness* ($B = -0.0004$, $SE = 0.0002$, p = .049; model: $R^2 = 13.9\%$, $f^2 = 0.161$) and FFMQ *nonjudging of inner experience* ($B = -0.001$, $SE = 0.0002$, $p = 0.002$; model: $R^2 = 14.3\%$, $f^2 = 0.167$), each attenuated this association. Furthermore, here also, there were no significant moderating effects of either FFMQ *describing* or FFMQ *nonreactivity to inner experience* ($ps > 0.05$). By contrast, when utilizing current suicidal intent as the outcome variable, there was also no significant moderating effect of FFMQ *observing* ($p > 0.05$).

4 | DISCUSSION

This study examined the interactive effects of PTSD symptoms and mindfulness facets in the cross-sectional prediction of suicide risk among firefighters. Higher levels of *acting with awareness* and *nonjudging of inner experience* attenuated the association between PTSD symptoms and suicide risk among firefighters. These findings have potential implications for suicide risk reduction efforts among firefighters.

First, it is intriguing to consider that these findings are a replication of findings by Cheng et al. (2017) in a sample of 119 adult psychiatric inpatients. Cheng et al. (2017) examined suicidal ideation as the criterion variable in analyses; by contrast, the suicide risk variable used in the present study assesses for suicidal ideation history and frequency, as well as past suicide attempts, suicide threats, and suicidal intent. Thus, the effects of higher levels of *acting with awareness* and *nonjudging of inner experience* might inoculate against even more severe presentations of suicide risk.

Why might higher levels of acting with *awareness* and *nonjudging of inner experie*nce attenuate the association between PTSD symptoms and suicide risk among firefighters? Individuals high on indices of acting with awareness tend to stay focused and their mind does not wander (Baer et al., 2008). These individuals may display greater cognitive defusion (i.e., a greater ability to recognize that a *thought is a just a thought*; Hayes, Strosahl, & Wilson, 2012), which is, in turn, associated with reduced suicide risk (Roush, Brown, Mitchell, & Cukrowicz, 2017). Further, individuals high on indices of *nonjudging of inner experience* tend to notice, for instance, feelings that they are having, including negative feelings, such as shame and guilt; however, they tend not to judge themselves for having those feelings and instead might view the shame and guilt as an understandable response to their circumstances. Emotions such as shame and guilt are implicated in PTSD (American Psychiatric Association, 2013) and suicide risk (Bryan, Morrow, Etienne, & Ray-Sannerud, 2013). Conceptually, it is unsurprising that higher levels on both of these mindfulness facets attenuate the association between PTSD symptoms and suicide risk among firefighters.

As noted, and consistent with past research (Cheng et al., 2017), a contrasting pattern emerged for the *observing* facet of mindfulness, such that higher levels of *observing*

strengthened the relationship between PTSD symptoms and suicide risk. As Cheng et al. (2017) astutely observe, *observing* might serve as a proxy for greater hypervigilance in the context of PTSD symptoms. Indeed, hypervigilance to threat is a core symptom of PTSD (American Psychiatric Association, 2013; Ehlers & Clark, 2000), and is proposed to be a necessary component of suicidal behavior (Joiner & Stanley, 2016). Within a sample of high-risk military service members, PTSD hyperarousal symptoms uniquely predicted suicide attempts at 3-month follow-up, even after controlling for relevant sociodemographic characteristics, baseline suicide risk severity, and the other PTSD symptom clusters (Stanley, Rogers, Hanson, Gutierrez, & Joiner, 2019). Relatedly, body vigilance—attending to internal cues—is exaggerated in individuals with anxiety-related pathology (Schmidt, Lerew, & Trakowski, 1997), converging with our findings. Moreover, anxiety sensitivity, the fear of anxiety-related sensations (Taylor et al., 2007), is implicated in suicide risk (see I. Stanley et al., 2018b for review) and has been found to statistically explain the link between PTSD symptoms and suicide risk within samples of firefighters (Boffa et al., 2018; Stanley et al., 2017). Thus, there is conceptual coherence to our empirical finding that merely observing internal sensations related to PTSD might potentiate suicide risk. We caution against overinterpretation of this finding, however, as our exploratory analyses did not reveal a potentiating effect of *observing* when examining suicidal intent as the outcome.

These findings add to a growing evidentiary base regarding the relationship between mindfulness and psychopathology among firefighters (Smith et al., 2011). The present study extends the literature by parsing apart the multidimensional construct of mindfulness to determine which facets might be most protective against the association between PTSD symptoms and suicide risk among firefighters.

4.1 | Clinical implications

While the above-mentioned findings provide conceptual, and, with due caution, some empirical support for provisioning mindfulness-based treatments for the reduction of suicide risk among trauma-exposed firefighters, we offer an important caveat: The existing evidence is heretofore insufficient to recommend mindfulness-based interventions as a frontline, standalone treatment of PTSD (Charney, Hellberg, Bui, & Simon, 2018; Lang, 2017) or suicide risk (Barnes et al., 2017). Despite this caveat, interventions that include mindfulness skills, such as Acceptance and Commitment Therapy (Hayes et al., 2012), Dialectical Behavior Therapy (DBT; Linehan, 2015), and Mindfulness-Based Cognitive Therapy (Segal, Williams, & Teasdale, 2002), do show promise for the reduction of PTSD (Orsillo & Batten, 2005; Vujanovic, Niles, Pietrefesa, Schmertz, & Potter, 2011) and suicide risk (Chesin et al., 2016). A recent clinical trial among women with comorbid borderline personality disorder, PTSD, and intentional self-injury found that an integration of DBT and prolonged exposure (PE) principles demonstrated significant reductions in suicide attempts as compared to DBT alone (Harned, Korslund, & Linehan, 2014), suggesting that PTSD-specific treatments that integrate mindfulness might yield measurable reductions in suicide risk.

Regarding the treatment of PTSD, mindfulness-based interventions can be utilized as an adjunct to frontline, standalone treatments, such as cognitive processing therapy (CPT) or PE (Becker & Zayfert, 2001; Wagner & Linehan, 2006). Of note, the treatment of PTSD via

modalities such as CPT and PE also demonstrably reduce suicidal ideation (Cox et al., 2016; Gradus, Suvak, Wisco, Marx, & Resick, 2013). Findings from this study suggest that the efficacy of CPT and/or PE in also reducing suicide risk might be enhanced by the inclusion of mindfulness-based skills (cf. Vujanovic et al., 2011), although this remains an empirical question. Indeed, for some individuals, mindfulness-based interventions may be more palatable and effective than trauma-focused approaches such as CPT or PE (Vujanovic et al., 2011).

Regarding the reduction of suicide risk, Chesin et al. (2015) demonstrated that mindfulness-based interventions can be utilized as an adjunct to safety planning interventions (Stanley & Brown, 2012). Importantly, safety planning should be a core component of any clinical effort that seeks to manage and reduce suicide risk (B. Stanley et al., 2018a; B. Stanley & Brown, 2012). It is intriguing that mindfulness-based practices may enhance the potency of a safety planning intervention (Chesin et al., 2015). For both PTSD and suicide risk, there is a pressing need for interventions to be tested among firefighters (Haugen, Evces, & Weiss, 2012).

4.2 | Limitations and future directions

This study has several limitations. First, the cross-sectional data preclude inferences regarding causality and directionality. For instance, it is possible that PTSD symptoms and/or mindfulness facets co-occur with suicidal symptoms but nonetheless have no significant influence on each other. Future research utilizing a longitudinal design is needed to parse apart these relationships. Second, and relatedly, the present study assessed current levels of mindfulness facets but a confluence of chronic and acute levels of suicide risk (i.e., the SBQ-R represents an amalgamation of chronic [e.g., lifetime suicide attempts] and acute [i.e., current suicidal intent] suicidal symptoms). Thus, one's suicide risk severity might not be contemporaneous with one's levels of mindfulness facets. Nevertheless, the examination of acute and chronic suicidal symptoms is useful in conceptualizing one's current suicide risk (Wortzel, Homaifar, Matarazzo, & Brenner, 2014). Third, in terms of mean levels of PTSD symptoms and suicide risk, this sample was relatively low in clinical severity. This may be a result of the single fire department composed of full-time firefighters utilized for recruitment efforts; indeed, by contrast, research has demonstrated that volunteer firefighters experience elevated PTSD symptoms and suicide risk (Stanley, Boffa, Hom, Kimbrel, & Joiner, 2017). This might also be an artifact of the industrious suicide prevention initiatives already underway in the department from which these data were obtained (Finney, Buser, Schwartz, Archibald, & Swanson, 2015). Nevertheless, study aims deserve examination in samples of more clinically severe firefighters with respect to both PTSD symptoms and suicide risk. Fourth, while the PCL-5 responses were anchored in a Criterion A event, PTSD was not clinician-assessed. Fifth, the measure of suicide risk, while comprehensive in nature, does not allow for an ample differentiation of suicidal thoughts versus behaviors (Klonsky & May, 2014), and its reliance on self-reported suicide attempt history might lead to issues such as misclassification (Hom, Joiner, & Bernert, 2016). Future research might benefit from a multimodal assessment of PTSD and suicide risk. Sixth, although firefighter-specific occupational stress has been shown to be associated with increased suicide risk among firefighters (Stanley et al., 2018c), we did not collect nuanced data regarding the nature and

scope of firefighters' responses to emergencies as well as noncareer factors that might contribute to both PTSD symptoms and suicide risk, collecting these data will be important for future studies assessing PTSD symptoms among firefighters. Finally, this study did not assess constructs related to mindfulness (e.g., experiential avoidance, thought suppression), which might serve to maintain PTSD symptoms (Tull, Gratz, Salters, & Roemer, 2004) and/or suicidal thoughts (Pettit et al., 2009; Roush et al., 2017).

5 | CONCLUSIONS

Among a large sample of firefighters, higher levels of two specific facets of mindfulness, *acting with awareness* and *non-judging of inner experience*, weakened the association between PTSD symptoms and suicide risk. Findings suggest that clinical efforts to reduce suicide risk among trauma-exposed firefighters might seek to increase firefighters' *acting with awareness* and *nonjudging inner experience*. Importantly, pending future research, these efforts might be an important adjunct to established frontline empirically-supported treatments for PTSD (e.g., CPT or PE) and suicide risk (e.g., safety planning).

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TABLE 1

Participant sociodemographic characteristics ($n = 831$)

Characteristic	Value
Age, mean (*SD*; range: 20–63 y)	38.37 y (8.53 y)
Sex	
Male	785 (94.5%)
Female	40 (4.8%)
Transgender	6 (0.7%)
Race, no. (valid %)	
White/Caucasian	625 (75.2%)
Black/African American	106 (12.8%)
Native American or Alaska Native	13 (1.6%)
Asian/Pacific Islander	12 (1.4%)
Native Hawaiian or Other Pacific Islander	1 (0.1%)
Other	74 (8.9%)
Ethnicity, no. (valid %)	
Hispanic or Latino/a	216 (26.0%)
Not Hispanic or Latino/a	615 (74.0%)
Education, no. (valid %)	
Did not complete high school	11 (1.3%)
High school graduate/GED	67 (8.1%)
Some college	387 (46.6%)
College graduate	366 (44.0%)
Total years as a firefighter, mean (*SD*; range: 0–42y)	13.02 y (8.71 y)
Military status, no. (valid %)	
Active duty in the past (not now)	188 (22.6%)
Active duty (now)	4 (0.5%)
Participated in initial/basic training only	20 (2.4%)
No military experience	691 (74.5%)

Note. GED: General Educational Development.

TABLE 2

Study variable means, standard deviations, and intercorrelations ($n = 831$)

Variable	1	2	3	4	5	6	7	8	α	M	SD	Range
1. PCL-5 PTSD symptoms	-								0.97	9.71	14.40	0–80
2. FFMQ total score	−0.297 **	-							0.84	130.31	17.27	65–181
3. FFMQ acting with awareness	−0.430 **	0.334 **	-						0.92	31.74	6.86	8–40
4. FFMQ describing	−0.190 **	0.834 **	0.112 **	-					0.81	26.90	6.30	9–40
5. FFMQ non-judging of inner experience	−0.391 **	0.245 **	0.669 **	0.071 *	-				0.91	32.40	6.65	8–40
6. FFMQ nonreactivity to inner experience	0.046	0.627 **	−0.367 **	0.544 **	−0.425 **	-			0.89	19.90	7.30	7–35
7. FFMQ observing	0.172 **	0.469 **	−0.477 **	0.384 **	−0.580 **	0.727 **	-		0.88	19.37	7.50	8–40
8. SBQ-R suicide risk (total score)	0.427 **	−0.143 **	−0.281 **	−0.064	−0.286 **	0.079 *	0.160 **	-	0.77	3.85	1.79	3–16

Note. FFMQ: Five Facet Mindfulness Questionnaire; PCL-5: PTSD Checklist for DSM-5; SBQ-R: Suicidal Behaviors Questionnaire—Revised.

*
$p < 0.05$.

**
$p < 0.01$.

TABLE 3

Results from linear regression moderation analyses examining PTSD symptoms and mindfulness facets in the prediction of SBQ-R Suicide Risk ($n = 831$)

Outcome: SBQ-R suicide risk	B	SE	p
FFMQ acting with awareness: $F(6,824) = 38.517$, $p < 0.001$; $R^2 = 21.9\%$; $f^2 = 0.280$			
Age	0.007	0.007	0.313
Race (white)	0.211	0.129	0.102
Sex (male)	−0.463	0.241	0.055
PCL-5 PTSD symptoms	0.038	0.005	<0.001
FFMQ acting with awareness	−0.024	0.009	0.010
PCL-5 PTSD symptoms × FFMQ acting with awareness	−0.002	0.001	<0.001
R^2 increase due to the interaction: 1.8%, $p < 0.001$			
Interaction: −1 SD of FFMQ acting with awareness	0.053	0.005	<0.001
Interaction: +1 SD of FFMQ acting with awareness	0.024	0.007	<0.001
FFMQ describing: $F(6,824) = 32.876$, $p < 0.001$; $R^2 = 19.3\%$; $f^2 = 0.239$			
Age	0.005	0.007	0.472
Race (white)	.274	0.129	0.034
Sex (male)	−0.526	0.245	.032
PCL-5 PTSD symptoms	0.052	0.004	<0.001
FFMQ describing	0.004	0.009	0.667
PCL-5 PTSD symptoms × FFMQ describing	−0.001	0.001	0.362
FFMQ nonjudging of inner experience: $F(6,824) = 41.832$, $p < 0.001$; $R^2 = 23.4\%$; $f^2 = 0.305$			
Age	0.006	0.006	0.344
Race (white)	0.232	0.126	0.066
Sex (male)	−0.485	0.238	0.042
PCL-5 PTSD symptoms	0.036	0.005	<0.001
FFMQ nonjudging	−0.036	0.009	<0.001
PCL-5 PTSD Symptoms × FFMQ nonjudging	−0.003	0.001	<0.001
R^2 increase due to the interaction: 2.6%, $p < 0.001$			
Interaction: −1 SD of FFMQ nonjudging	0.056	0.005	<0.001
Interaction: + 1 SD of FFMQ nonjudging	0.016	0.007	0.028
FFMQ nonreactivity to inner experience: $F(6,824) = 33.185$, $p < 0.001$; $R^2 = 19.5\%$; $f^2 = 0.242$			
Age	0.003	0.007	0.611
Race (white)	0.252	0.130	0.053
Sex (male)	−0.518	0.245	0.035
PCL-5 PTSD symptoms	0.053	0.004	<0.001
FFMQ nonreactivity	0.013	0.008	0.109
PCL-5 PTSD symptoms × FFMQ nonreactivity	< 0.001	0.001	0.576
FFMQ observing: $F(6,824) = 35.199$, $p < 0.001$; $R^2 = 20.4\%$; $f^2 = 0.256$			
Age	0.004	0.007	0.554
Race (white)	0.263	0.129	0.041
Sex (male)	−0.483	0.244	0.048

Outcome: SBQ-R suicide risk	*B*	*SE*	*p*
PCL-5 PTSD symptoms	0.049	0.004	<0.001
FFMQ observing	0.022	0.008	0.005
PCL-5 PTSD symptoms × FFMQ observing	0.001	0.001	0.015
R^2 increase due to the interaction: 0.6%, $p = 0.015$			
Interaction: −1 SD of FFMQ observing	0.039	0.006	<0.001
Interaction: +1 SD of FFMQ observing	0.059	0.005	<0.001

Note. FFMQ: Five Facet Mindfulness Questionnaire; PCL-5: PTSD Checklist for DSM-5; SBQ-R: Suicidal Behaviors Questionnaire—Revised.

Only statistically significant interactions probed.