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Affective Depression Mediates PTSD to Suicide in a Sample of Treatment-Seeking First Responders

James Whitworth, PhD, Jeanine Galusha, PhD, Jose Carbajal, PhD, Warren N. Ponder, PhD, and Donna L. Schuman, PhD

Objective: The aim of this study was to examine the associations of comorbid posttraumatic stress disorder (PTSD), affective or somatic depression, and suicide among first responders (FRs). **Method:** We used baseline data from FRs ($N = 232$) who sought services at a nonprofit mental health agency specializing in treating trauma exposed FRs. We conducted two PROCESS simple mediation models with PTSD as the predictor, affective depression and somatic depression as the mediators, and suicidality as the dependent variable. **Results:** Affective depression significantly mediated the relationship between PTSD and suicidality, whereas somatic depression did not. The direct effect of PTSD on suicidality was not significant. **Limitations:** These data are cross-sectional and should be followed up with longitudinal analyses across the course of treatment. **Conclusions:** To reduce suicide risk, it is recommended that clinicians target affective depression instead of PTSD symptoms.

Keywords: first responder, depression, generalized anxiety, PTSD, suicide, mediation, affect

Depression is a common mental health condition among first responder (FR) populations (ie, law enforcement officers [LEOs], firefighters [FFs], and emergency medical services [EMS]) and is highly comorbid with other constructs affecting FRs, such as posttraumatic stress disorder (PTSD), substance use disorder, and suicidality.^{1,2} Rising rates of depression, PTSD, and suicidality among FRs are concerning. In a systematic review, Petrie et al¹ reported the prevalence rates of common mental health disorders in ambulance personnel—PTSD (11%), depression (15%), generalized anxiety (15%), and general psychological distress (27%). Researchers examined suicide risk for EMS professionals in a Southwestern State and found that they had a significantly higher mortality odds ratio compared with non-EMTs.² In an examination of the prevalence and correlates of psychiatric symptoms among FRs, Jones et al³ found that 14% experienced moderate to severe depressive symptoms, 28% moderate to severe anxiety, 26% PTSD, 31% harmful/hazardous alcohol use, 93% sleep disturbances, and 34% at high risk for suicide.

According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria, the presence of depressed mood or anhedonia in conjunction with four secondary symptoms, present for at least 2 weeks, is necessary to diagnose a major depressive episode.⁴ Some have argued that depression is a heterogeneous syndrome with discrete subtypes.⁵ Rather than framing depression as a unidimensional construct, Elhai et al⁶ maintained that depression was best diagnostically conceptualized as a two-factor model subdivided into somatic (ie, sleep problems, appetite and weight changes, concentration difficulties, fatigue, psychomotor disturbances) and affective (ie, anhedonia, low mood, worthlessness/excessive guilt,

and suicidality) factors. Informed by Elhai et al⁶ two-factor conceptualization of depression, we conducted a simple mediation analysis study to better understand whether the concentration of depressive symptoms along cognitive-affective or somatic factors may differentially influence whether an FR with PTSD symptoms will go on to experience suicidal ideation and behavior. In this section, we will discuss the literature on conditions that predispose FRs to depression, PTSD, and suicidality; explore the resilience-promoting factors that buffer against the development of psychopathology; and conclude with an examination of the current state of research on prevention and intervention.

Risk Factors for Depression, PTSD, and Suicidality Among First Responders

Even though there are significant differences in the daily duties and regular experiences of LEOs, FFs, and EMS/paramedics (PMs), there are also many common experiences among these FRs involving high levels of stress, multiple challenges, and exposure to traumatic experiences.⁷ Risk factors or correlates for depression, PTSD, and suicidality among these professions can be structured into three classifications: historical (pre-event), peritraumatic (during-event), and posttraumatic (post-event).⁸ These factors may increase the likelihood of FRs experiencing mental or emotional difficulties associated with their work roles. In addition, poverty and employment,⁹ longer work hours over 55 hours a week,¹⁰ sexual minorities,¹¹ autism,¹² and family members of completed suicide¹³ have been linked to an increased risk for suicide.

Historical or Event Factors

Individuals who experienced life events such as personal trauma(s) or loss(es) before beginning work as FRs may have a higher risk of experiencing mental health issues over the course of their FR career.^{14,15} Having a history of prior mental health issues or previous psychological treatment is also associated with dealing with one or more of these mental health conditions within this trauma-exposed population.^{15,16} Other historical factors correlated with deteriorations in mental health include the age at which the FR began serving in their profession (ie, those who are younger), insufficient training in their role, unfit physical condition, and unrealistic work performance expectations from leadership.^{16,17}

Peritraumatic or During-Event Factors

Peritraumatic risk factors for FRs (ie, those occurring during or concurrent with the event) include exposure to victims with serious injuries or dead bodies.^{8,14} The worker's proximity to the epicenter of the event, such as a disaster, is associated with higher levels of mental health issues.¹⁴ FRs' risks for mental distress increase if they arrive earlier to the disaster site (ie, being one of the first on the scene of the event) and spend greater amounts of time at the site (ie, not taking scheduled breaks or days off).^{8,14} FRs who are themselves victims, or have family members who are, may experience heightened stress due to greater degrees of emotional involvement and overidentification with victims.⁸ For PTSD, peritraumatic risk factors consist of physical injuries or assaults, the severity of the traumatic event(s), level of experiencing dissociation during the event, and perceptions of the

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trauma as life-threatening.⁷ Low perceived safety and poor leadership by superiors during the event are also correlated with later mental health difficulties.¹⁴

Posttraumatic and Post-Event Factors

Posttraumatic or post-event factors associated with mental health issues in this population include the absence of personal social support, limited use of coping skills, and impaired access to behavioral and mental health resources.⁷ FRs who describe having inadequate social support at the workplace or who have experienced multiple work-related traumatic events, and those who report dealing with sex or ethnic discrimination or stigmatization when asking for help, seem to be more at risk for PTSD.^{7,18} Workers who go through a divorce or end a partner relationship after experiencing a traumatic event are often at higher risk of experiencing PTSD or depression.¹⁴ FRs who do not receive acknowledgment or thanks after responding to major disasters may also experience more severe mental health problems.⁸ Specific factors associated with increased risk for suicide include being an FR with lower rank and fewer years working in the field.¹⁸ Higher levels of hazards and exposures in the FR role, access to firearms, sleep and family life disruptions precipitated by erratic shift schedules, and stigma associated with seeking help are additional risk factors for suicide in this population.¹⁹

Buffers/Resiliency Factors for Depression, PTSD, and Suicidality Among FRs

Interpersonal factors such as self-compassion (ie, treating oneself with understanding or care as opposed to harsh self-judgment) buffer against the development of mental health disorders and suicidality. In addition, seeing one's distress or failures as part of the larger human experience rather than feeling separated from others may also act as a potent protective factor.²⁰ Generativity, conceptualized as concern for people besides oneself and family, along with a sense of meaning in life, has also been associated with increased resilience among FRs.^{9,15,19,21} United Kingdom health care workers and FRs had lower levels of psychological distress during the first COVID-19 lockdown period compared with the general population, suggesting that filling a critical role during a crisis and helping others in need may bolster resilience by contributing to generativity and a sense of meaning for FRs.²²

Group factors, such as camaraderie, connection to others, and social support, have been repeatedly associated with better outcomes and resilience among FRs.^{15,19,21} In contrast, low levels of social support have predicted higher levels of psychological distress.^{23,24} Organizational factors that may protect against mental health difficulties include pre-enlistment screening and providing resiliency-based LEO training before a critical incident.²⁵ Other factors that can act as buffers to reduce mental health issues in FRs include having a longer duration of employment, an elevated level of professional mastery, and receiving specialized training.^{14,26} Risk and resiliency factors may also differ by FR service roles: LEO, FF, or EMS with some using physical activity as a way to manage psychological distress.²⁷

Prevention and Intervention

Prevention efforts to increase FRs' distress tolerance such as exercising, practicing sleep hygiene, spending time with coworkers, and engaging in recreation may buffer their work stress and mitigate mental health symptoms.^{24,28} Observing the surge in pre-incident training programs designed to increase resilience in FRs, Wild et al²⁹ systematically evaluated the peer reviewed scholarship on the effectiveness of interventions targeted toward improving FRs' wellbeing and resilience. This review uncovered minimal evidence for pre-employment screening and standalone psychoeducation. In addition, they found little evidence for stress management and well-being interventions.²⁹ Of the reviewed interventions, operational and line manager training seemed the most

promising, but high-quality trials with follow-up data points are still needed to confirm those results. In a literature review of strategies to develop resilience in FRs, Crane et al³⁰ stressed involving supervisors and leaders as critical to the success of resilience interventions, as well as encouraging reflective practices to reveal gaps in coping ability, highlighting the role of stressors in supporting the development of resilient capacities, and offering immediate opportunities for skills practice.

In a recent network analysis of treatment-seeking FRs,³¹ researchers found the strongest edges were between affective and somatic depression. They found the PTSD symptom cluster of negative alternations in cognitions and mood, affective depression had the highest strength. The node strength did not significantly differ between somatic depression and affective depression. Lastly, in the directed acyclic graphs, negative alterations in cognitions and mood directly predicted downstream constructs of PTSD intrusions cluster, avoidance cluster, hyperarousal cluster, resilience and affective depression. Only affective depression and resilience had direct effects on suicidality. Both somatic depression and suicidality were the endogenous end points in the directed acyclic graphs.³¹

Researchers have consistently found that a two-factor model of the Patient Health Questionnaire-9 (PHQ-9) had a better model fit over the unidimensional model.^{32,33} The "cognitive-emotional" (affective) factor significantly predicted whether or not participants would seek mental health treatment. In all statistical models, the "cognitive-emotional" dimension predicted treatment-seeking, whereas the somatic factor did not.³³ In comparing treatment-seeking and non-treatment-seeking samples of EMS professionals, self-reported suicidality did not significantly differ. However, the treatment-seeking sample had higher suicidality scores as measured by item 9 on the PHQ-9. Nineteen percent of the non-treatment-seeking sample screened positive, and 26% of the treatment-seeking sample screened positive for suicidality.³⁴ In comparing non-treatment-seeking and treatment-seeking samples of LEOs, 3% of the non-treatment seeking sample screened positive, whereas in the treatment-seeking sample, almost 12% screened positive for suicidality.³⁵ Furthermore, they found that the odds of experiencing suicidality were 1.76 times the odds of the treatment-seeking sample.³⁵ Lastly, in bivariate exact logistic regression, researchers found that the only statistically significant predictor in both samples of LEOs of suicide was depression.³⁵ However, both studies comparing LEOs and EMS professionals used the brief screener, PHQ-2, which cannot be separated into somatic and affective factors, unlike the longer PHQ-9.

In this simple mediation study conducted at a nonprofit agency in the Southwestern United States, we addressed this gap in the literature by testing whether affective depression and somatic depression mediated PTSD to suicide in a treatment-seeking sample of FRs. Based on a prior network analysis study,³¹ we hypothesized that affective depression would mediate PTSD to suicide, whereas somatic depression would not.

METHOD

Participants

There were 232 participants in the FR sample. The average FR age was 36.78 years old (SD = 9.99), were mostly White (78.8%), male (72.0%), and had an average of 11.56 years (SD = 9.11) in service as a FR. One hundred and eight (46.5%) were LEOs, 64 (27.6%) were EMTs, and 60 (25.9%) were FFs. Forty participants (17.2%) of the current FRs had previous military service; none were forwardly deployed to a combat zone. See Table 1 for sample demographics.

Procedure

The data for this manuscript were collected between 2015 and 2021 at a nonprofit organization that serves military service members, FRs, frontline health care workers, and their families. This nonprofit in

TABLE 1. Sample Demographics

	First Responders (N = 232)
Age (years)	
Mean	36.78
Median	34.00
SD	9.99
Range	45
Time in service (years)	
Mean	11.56
Median	9.50
SD	9.11
Range	40
First responder type	
EMT	64 (27.6%)
Fire	60 (25.9%)
LEO	108 (46.5%)
Military branch, n (%)	
Air Force	11 (27.5%)
Army	11 (27.5%)
Navy	10 (25.0%)
Marine Corps	6 (15.0%)
Multiple branches	2 (5.0%)
Sex, n (%)	
Women	65 (28.0%)
Men	167 (72.0%)
Ethnicity, n (%)	
African American/Black	9 (3.9%)
Asian American	5 (2.2%)
Latino(a)/Hispanic	30 (12.9%)
Multiple ethnicities	2 (0.9%)
Native American	3 (1.3%)
White	183 (78.8%)

EMT, emergency medical technicians; Fire, firefighter; LEO, law enforcement officer.

located in the Southwestern United States. These data were collected at the clients' first appointment with the intake manager before being assigned their therapist. Clients completed demographic documentation along with four standardized assessments: Suicidal Behaviors Questionnaire-Revised (SBQ-R), Generalized Anxiety Disorder-7 (GAD-7), PTSD Checklist-5 (PCL-5), and the Patient Health Questionnaire-8 (PHQ-8). Sample inclusion criteria were no missing values and age 18 years or older. This study was approved by the University of Texas Health Science Center Institutional Review Board (HSC-SPH-20-1264).

Measures

Suicidal Behaviors Questionnaire-Revised

Researchers developed and validated the SBQ-R to screen for suicide.³⁶ The SBQ-R is a four-item assessment that produces aggregated scores that range from 3 to 18, with higher scores indicating a greater risk of suicide. In the current study, the Cronbach α of the SBQ-R was $\alpha = 0.83$.

Generalized Anxiety Disorder-7

The GAD-7 was developed and validated to assess for generalized anxiety disorder.³⁷ Aggregated scores on the GAD-7 can range from 0 to 21, with item-level responses ranging from 0 (not at all) to 3 (nearly every day). The higher the score, the more severe the generalized anxiety symptoms. In the current study, the Cronbach α of the GAD-7 was $\alpha = 0.92$.

PTSD Checklist-5

The PCL-5 was developed and validated to screen for the presence of PTSD.³⁸ The PCL-5 has 20 questions on a Likert scale ranging

from 0 (not at all) to 4 (extremely). The summed scores range from 0 to 80, with higher scores indicating more severe PTSD symptoms. In the current study, the Cronbach α of the PCL-5 was $\alpha = 0.94$.

Patient Health Questionnaire-8

The PHQ-8 was developed to assess for the presence of depression.³⁹ The PHQ-8 item-level responses range from 0 (not at all) to 3 (nearly every day). The summed score ranges from 0 to 24; the higher the aggregated score, the greater severity of depression. Questions 1, 2, and 6 load onto the latent affective factor, whereas questions 3, 4, 5, 7, and 8 load onto the somatic factor. In the current study, the affective factor Cronbach α of the PHQ-8 was $\alpha = 0.79$, and the somatic factor Cronbach α of the PHQ-8 was $\alpha = 0.85$.

Data Analytic Plan

Statistical analyses were conducted using the Statistical Package for the Social Sciences version 26.0. There were no missing values in this study. The data met the assumptions of normality.⁴⁰ In the FR sample, race, age, sex, relationship status, length of relationship, prior military service, service status, years served in the military, years as FR, and the length of time in current assignment were not statistically significant with suicide (SBQ-R) at the 0.05 level of significance.

The affective depression factor on the PHQ-8 was questions 1, 2, and 6, whereas the somatic depression factor was PHQ-8 questions 3, 4, 5, 7, and 8.³⁹ First, we established the bivariate relationship between the standardized assessment instruments: SBQ-R, GAD-7, PCL-5, PHQ-8 affective factor, and the PHQ-8 somatic factor. Next, we tested for mediation using PROCESS macro version 3.5.⁴¹ There were two simple mediation models, and in the first model, PTSD was the predictor variable, affective depression was the mediator, and the suicidality was the dependent variable. In the second simple mediation model, PTSD was the predictor variable, somatic depression was the mediator, and the dependent variable was suicidality. In both models, generalized anxiety was controlled for as a covariate. Generalized anxiety was controlled for because it frequently co-occurs with depression and PTSD.^{31,42-46} Path coefficients for direct and total effects for the relationship between the independent variable (PTSD), mediators (affective depression or somatic depression), and dependent variable (suicidality) were estimated by the macro command as suggested by Hayes.⁴¹ This macro uses the bootstrap test, which is used to evaluate indirect effects (5000 samples) with a confidence interval (CI) set at 95%. All coefficients for the mediation models are standardized.

RESULTS

Descriptive Statistics

The mean suicidality score was 5.00 (SD = 3.07) and 19.4% ($n = 45$) scored 8 or greater on the SBQ-R, which is the recommended cut score for a clinical population. The mean generalized anxiety score was 11.68 (SD = 6.14). Accordingly, 17.2% ($n = 40$) had minimal, 19.4% ($n = 45$) mild, 28.0% ($n = 65$) moderate, and 35.3% ($n = 82$) had severe generalized anxiety. The mean PTSD score was 32.68 (SD = 18.50). Applying the cut score of 41 as recommended⁴⁷ in this sample, 36.6% ($n = 85$) would have probable PTSD. Furthermore, 60.3% ($n = 140$) scored a 10 or greater on the PHQ-8, which suggests major depressive or other depressive disorder. Of the FRs in this sample, 18.5% ($n = 43$) had minimal, 21.1% ($n = 49$) mild, 23.7% ($n = 55$) moderate, 20.7% ($n = 48$) moderately severe, and 15.9% ($n = 37$) had severe depression. The mean affective depression factor score was 4.33 (SD = 2.68), and the mean somatic depression factor score was 7.30 (SD = 4.42).

Correlations

Suicidality was significantly correlated with generalized anxiety $r(232) = 0.17$, $P < 0.01$; PTSD $r(232) = 0.25$, $P < 0.001$;

TABLE 2. First Responders Mental Health Assessment Correlations

	SBQ-R	GAD-7	PCL-5	Affective	Somatic
SBQ-R	1	0.17**	0.25***	0.27***	0.24***
GAD-7		1	0.73***	0.70***	0.74***
PCL-5			1	0.67***	0.72***
Affective				1	0.78***
Somatic					1

SBQ-R, Suicidal Behaviors Questionnaire–Revised; GAD-7, Generalized Anxiety Disorder-7; PCL-5, PTSD Checklist-5; Affective, affective depression (PHQ-8 questions 1 [anhedonia], 2 [depressed mood], 6 [feelings of worthlessness]); Somatic, somatic depression (PHQ-8 questions 3 [sleep difficulties], 4 [fatigue], 5 [appetite changes], 7 [concentration difficulties], 8 [psychomotor agitation]).

*** $P < 0.001$; ** $P < 0.01$; * $P < 0.05$ (2 tailed).

affective depression $r(232) = 0.27, P < 0.001$; and somatic depression $r(232) = 0.24, P < 0.001$. See Table 2 for the correlation matrix.

Simple Mediation Models

To determine if affective depression or somatic depression mediated the relationship between PTSD and suicidality, a simple mediation analysis was performed using PROCESS. In the first simple mediation, the standardized indirect effect of PTSD through affective depression to suicide was statistically significant ($B = 0.08 [0.04]$; 95% CI, 0.01–0.17). However, the standardized indirect effect of PTSD through somatic depression to suicide was not statistically sig-

nificant ($B = 0.06 [0.04]$; 95% CI, -0.01, 0.15). See Figure 1 for simple mediation models.

DISCUSSION

In the present study, we investigated if affective depression or somatic depression mediated the relationship between PTSD and suicidality in a treatment-seeking sample of FRs. We hypothesized that affective depression would mediate PTSD to suicide, whereas somatic depression would not. Our hypothesis was confirmed that affective depression did mediate the relationship between PTSD and suicidality, whereas somatic depression did not.

Although Carr et al⁴⁸ used different scales and populations in their research, our results align with theirs. In an African American women sample, they found that affective depression mediated PTSD to suicidality but not somatic depression. The role of affective depression is crucial because it influences PTSD and suicidality symptoms.⁴⁹ Furthermore, somatic depression is an associated factor with the other variables, suggesting that affective depressive symptoms are too high to differentiate the impact or mediation of somatic depression.^{48,50} Research shows that affective and somatic depression increase PTSD severity, but affective depression symptoms might account for somatic symptoms.^{51,52}

In a non-treatment-seeking sample of women FFs, researchers found that anxiety sensitivity mediated PTSD to suicide risk.⁵³ Specifically, they found that the cognitive anxiety symptoms factor significantly mediated PCL-5 scores on all four DSM-5 symptom clusters in each model when controlling, and not controlling, for depressive symptoms.⁵³ In a military sample, Allan et al⁵⁴ found that cognitive-affective depression mediated insomnia to suicidal ideation, whereas somatic depression

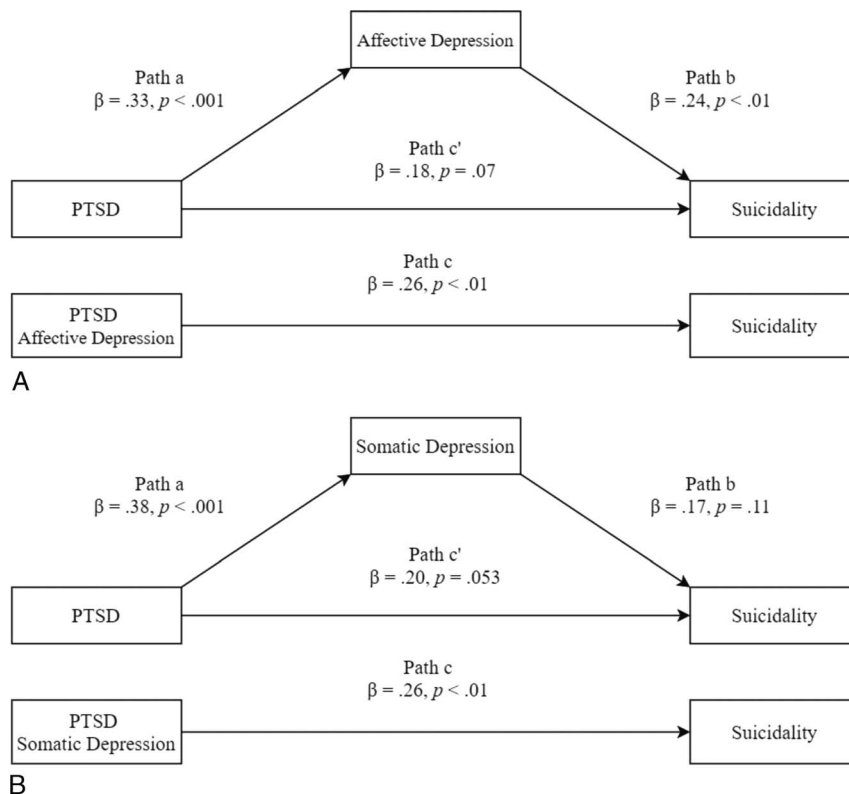


FIGURE 1. First responder simple mediation models. Note: PTSD (PCL-5) = the independent variable (X); Suicidality (SBQ-R) = the dependent variable (Y); Affective Depression (PHQ-8 questions 1 [anhedonia], 2 [depressed mood], 6 [feelings of worthlessness]) = the mediator (M) on panel (A); Somatic Depression (PHQ-8 questions 3 [sleep difficulties], 4 [fatigue], 5 [appetite changes], 7 [concentration difficulties], 8 [psychomotor agitation]) = the mediator (M) on panel (B); Path c = the total effect of X on Y; path c' = the direct effect of X on Y; path a + path b = the indirect effect of X on Y through M; β = standardized coefficients.

did not; however, that was not the case for suicidal behavior. In outpatient and inpatient veteran samples,⁵⁵ researchers found that depression mediated insomnia to suicide risk.

Treating comorbid PTSD and depression can be challenging,^{56–58} and it might be better conceptualized dimensionally.⁵⁹ A growing body of literature suggests that when treating comorbid constructs such as PTSD and depression, a transdiagnostic approach might be beneficial.⁶⁰ In a sample of active-duty service members comparing prolonged exposure and person-centered therapy with mediation analyses to suicidal ideation, researchers found that depression significantly mediated time over the course of treatment, whereas PTSD and social support did not.⁵⁶ They found that prolonged exposure and person-centered therapy did not moderate the relationship between time and suicidal ideation, suggesting that a transdiagnostic approach to treatment might be beneficial⁵⁶ and their findings on suicidality corroborate ours. The direct path from PTSD to suicide in our simple mediation was not significant, indicating that PTSD is not the construct directly influencing suicidality.

Therefore, suicide prevention could be based on screening for affective symptoms to decrease suicide rates for FRs. The intervention starts with reducing those affective symptoms. Consequently, affective depression mediating PTSD to suicidality has clinical implications. Based on our findings, practitioners might want to first target affective depressive symptoms in FRs with PTSD, which are often interrelated, each affecting the other.⁴⁵ So, the starting point to reducing PTSD symptoms and increasing functionality may begin with evidence-based approaches that reduce affective symptoms.

Lastly, other findings in this study are related to positively associated factors, not the simple mediation previously discussed. The correlation strength between affective and somatic depression was high, 0.78. This finding might indicate that treating affective depression could relieve somatic depression, effectively improving daily function. Often, individuals report somatic symptoms but not cognitive symptoms; this is more the case for FRs, especially LEOs,⁶¹ and somatic symptoms and suicide risk have been found to have a significant positive relationship.⁶² In that case, it should be an alert to practitioners that individuals reporting somatic symptoms might have affective depression. As previously discussed, these are the symptoms to target initially to reduce PTSD and suicidality.^{63,64}

Generalized anxiety is an area to consider because it was positively significantly related to all the factors. Researchers found that anxiety contributed to suicide risk among FFs.⁶⁵ Therefore, helping FRs manage their generalized anxiety might reduce their PTSD symptoms and suicidality, thereby increasing their functionality. Scholars found anxiety and depression accounted for PTSD and somatic symptoms in veterans.⁵¹ Other researchers found that the community structure “suggested that PTSD was heterogeneous in that negative affect and externalizing symptoms were more related to depression and GAD [generalized anxiety disorder] than fear-based symptoms.”^{66(p55)} This finding is important because mindfulness has proven to be an efficacious intervention for FRs.^{67,68}

Limitations

This study is not without limitations that should be considered when interpreting these findings. These data are cross-sectional, so assumptions on causality cannot be established. Future research should evaluate if the relationship between PTSD is mediated through affective or somatic depression over the course of treatment. In addition, future research needs to test the mediation on each subgroup of FRs (LEO, FF, EMT). This sample was treatment seeking, and the statistical methodology used in this study should be replicated in non-treatment seeking FRs. Also, the sample was mostly White, and it is unknown if these findings would look similar for different ethnorracial groups.

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REFERENCES

- Petrie K, Milligan-Saville J, Gayed A, et al. Prevalence of PTSD and common mental disorders amongst ambulance personnel: a systematic review and meta-analysis. *Soc Psychiatry Psychiatr Epidemiol*. 2018;53:897–909.
- Vigil NH, Grant AR, Perez O, et al. Death by suicide—the EMS profession compared to the general public. *Prehosp Emerg Care*. 2019;23:340–345.
- Jones S, Nagel C, McSweeney J, Curran G. Prevalence and correlates of psychiatric symptoms among first responders in a Southern State. *Arch Psychiatr Nurs*. 2018;32:828–835.
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders: DSM-5* (Vol. 5). Washington: American Psychiatric Association.
- Haslam N, Beck AT. Subtyping major depression: a taxometric analysis. *J Abnorm Psychol*. 1994;103:686–692.
- Elhai JD, Contractor AA, Tamburrino M, et al. The factor structure of major depression symptoms: a test of four competing models using the Patient Health Questionnaire-9. *Psychiatry Res*. 2012;199:169–173.
- Lewis-Schroeder NF, Kieran K, Murphy BL, Wolff JD, Robinson MA, Kaufman ML. Conceptualization, assessment, and treatment of traumatic stress in first responders: a review of critical issues. *Harv Rev Psychiatry*. 2018;26:216–227.
- Substance Abuse and Mental Health Services Administration. First Responders: Behavioral Health Concerns, Emergency Response, and Trauma. 2018. Disaster Technical Assistance Center Supplemental Research Bulletin. Available at: <https://www.samhsa.gov/sites/default/files/dtac/supplementalresearchbulletin-firstresponders-may2018.pdf>.
- Kerr WC, Kaplan MS, Huguet N, Caetano R, Giesbrecht N, McFarland BH. Economic recession, alcohol, and suicide rates: comparative effects of poverty, foreclosure, and job loss. *Am J Prev Med*. 2017;52:469–475.
- Wong K, Chan AHS, Ngan SC. The effect of long working hours and overtime on occupational health: a meta-analysis of evidence from 1998 to 2018. *Int J Environ Res Public Health*. 2019;16:2102.
- Björkenstam C, Andersson G, Dalman C, Cochran S, Kosidou K. Suicide in married couples in Sweden: is the risk greater in same-sex couples? *Eur J Epidemiol*. 2016;31:685–690.
- Hirvikoski T, Boman M, Chen Q, et al. Individual risk and familial liability for suicide attempt and suicide in autism: a population-based study. *Psychol Med*. 2020;50:1463–1474.
- Wilcox HC, Arria AM, Caldeira KM, Vincent KB, Pinchevsky GM, O’Grady KE. Prevalence and predictors of persistent suicide ideation, plans, and attempts during college. *J Affect Disord*. 2010;127:287–294.
- Brooks SK, Dunn R, Amlôt R, Greenberg N, Rubin GJ. Social and occupational factors associated with psychological distress and disorder among disaster responders: a systematic review. *BMC Psychology*. 2016;4:18.
- Kyron MJ, Rees CS, Lawrence D, Nicholas Carleton R, McEvoy PM. Prospective risk and protective factors for psychopathology and wellbeing in civilian emergency services personnel: a systematic review. *J Affect Disord*. 2021;281:517–532.
- Jones S. Describing the mental health profile of first responders: a systematic review. *J Am Psychiatr Nurses Assoc*. 2017;23:200–214.
- Mitchell JT. Collateral damage in disaster workers. *Int J Emerg Ment Health*. 2011;13:121–125.
- Carpenter GS, Carpenter TP, Kimbrel NA, et al. Social support, stress, and suicidal ideation in professional firefighters. *Am J Health Behav*. 2015;39:191–196.
- Stanley IH, Hom MA, Joiner TE. A systematic review of suicidal thoughts and behaviors among police officers, firefighters, EMTs, and paramedics. *Clin Psychol Rev*. 2016;44:25–44.
- Kaurin A, Schönfelder S, Wessa M. Self-compassion buffers the link between self-criticism and depression in trauma-exposed firefighters. *J Couns Psychol*. 2018;65:453–462.
- Schwarzer R, Bowler RM, Cone JE. Social integration buffers stress in New York police after the 9/11 terrorist attack. *Anxiety Stress Coping*. 2014;27:18–26.
- Pink J, Gray NS, O’Connor C, Knowles JR, Simkiss NJ, Snowden RJ. Psychological distress and resilience in first responders and health care workers during the COVID-19 pandemic. *J Occup Organ Psychol*. 2021;94:789–807.
- Crowe A, Glass JS, Lancaster MF, Raines JM, Waggy MR. A content analysis of psychological resilience among first responders and the general population. *SAGE Open*. 2017;7:215824401769853.
- Feldman TR, Carlson CL, Rice LK, et al. Factors predicting the development of psychopathology among first responders: a prospective, longitudinal study. *Psychol Trauma*. 2021;13:75–83.
- Stogner J, Miller BL, McLean K. Police stress, mental health, and resiliency during the COVID-19 pandemic. *Am J Crim Justice*. 2020;45:718–730.
- Brooks SK, Dunn R, Sage CA, Amlôt R, Greenberg N, Rubin GJ. Risk and resilience factors affecting the psychological wellbeing of individuals deployed in humanitarian relief roles after a disaster. *J Ment Health*. 2015;24:385–413.

27. Meckes SJ, McDonald MA, Lancaster CL. Association between physical activity and mental health among first responders with different service roles. *Psychol Trauma*. 2021;13:66–74.
28. Stanley IH, Hom MA, Hagan CR, Joiner TE. Career prevalence and correlates of suicidal thoughts and behaviors among firefighters. *J Affect Disord*. 2015;187:163–171.
29. Wild J, El-Salahi S, Degli Esposti M. The effectiveness of interventions aimed at improving wellbeing and resilience to stress in first responders. *Eur Psychol*. 2020;25:252–271.
30. Crane MF, Falon SL, Kho M, Moss A, Adler AB. Developing resilience in first responders: strategies for enhancing psychoeducational service delivery. *Psychol Serv*. 2021;19:17–27.
31. Ponder WN, Walters K, Simons J, Simons R, Jetelina KK, Carbajal J. Network analysis of distress, suicidality, and resilience in a treatment seeking sample of first responders. *J Affect Disord*. 2022;S0165-0327(22)01103-X.
32. Beard C, Hsu KJ, Rifkin LS, Busch AB, Björgvinsson T. Validation of the PHQ-9 in a psychiatric sample. *J Affect Disord*. 2016;183:267–273.
33. Prisciandaro JJ, Roberts JE. A comparison of the predictive abilities of dimensional and categorical models of unipolar depression in the national comorbidity survey. *Psychol Med*. 2009;39:1087–1096.
34. Carbajal J, Ponder WN, Malthaner L, et al. Differences in attachment, resilience, and negative affect in non-treatment seeking and treatment-seeking EMS professionals. *J Soc Behav Health Sci*. 2022;16:103–116.
35. Ponder WN, Beauchamp A, Schuman DL, Carbajal J, Jetelina KK, Galusha J. Differences in suicidality in non-treatment seeking and treatment-seeking law enforcement officers: a cross-sectional study. *J Occup Environ Med*. 2022;64:797–801.
36. Osman A, Bagge CL, Gutierrez PM, Konick LC, Kopper BA, Barrios FX. The Suicidal Behaviors Questionnaire-Revised (SBQ-R): validation with clinical and nonclinical samples. *Assessment*. 2001;8:443–454.
37. Spitzer RL, Kroenke K, Williams JBW, Lowe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med*. 2006;166:1092–1097.
38. Blevins CA, Weathers FW, Davis MT, Witte TK, Domino JL. The posttraumatic stress disorder checklist for DSM-5 (PCL-5): development and initial psychometric evaluation. *J Trauma Stress*. 2015;28:489–498.
39. Kroenke K, Strine TW, Spitzer RL, Williams JBW, Berry JT, Mokdad AH. The PHQ-8 as a measure of current depression in the general population. *J Affect Disord*. 2009;114:163–173.
40. Hair J, Black WC, Babin BJ, Anderson RE. *Multivariate Data Analysis*. 7th ed. London: Pearson Education International; 2010.
41. Hayes AF. *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. 2nd ed. New York: Guilford Press; 2018.
42. Byllesby BM, Charak R, Durham TA, Wang X, Elhai JD. The underlying role of negative affect in the association between PTSD, major depressive disorder, and generalized anxiety disorder. *J Psychopathol Behav Assess*. 2016;38:655–665.
43. Dornbach-Bender A, Ruggero CJ, Schulder K, et al. Positive and negative affect in the daily life of world trade center responders with PTSD: an ecological momentary assessment study. *Psychol Trauma Theory Res Pract Policy*. 2020;12:75–83.
44. Greene T, Gelkopf M, Fried EI, Robinaugh DJ, Pickman LL. Dynamic network analysis of negative emotions and DSM-5 posttraumatic stress disorder symptom clusters during conflict. *J Trauma Stress*. 2020;33:72–83.
45. Price M, van Stolk-Cooke K. Examination of the interrelations between the factors of PTSD, major depression, and generalized anxiety disorder in a heterogeneous trauma-exposed sample using DSM 5 criteria. *J Affect Disord*. 2015;186:149–155.
46. Seligowski AV, Rogers AP, Orcutt HK. Relations among emotion regulation and DSM-5 symptom clusters of PTSD. *Pers Individual Differences*. 2016;92:104–108.
47. Morrison K, Su S, Keck M, Beidel DC. Psychometric properties of the PCL-5 in a sample of first responders. *J Anxiety Disord*. 2021;77:102339.
48. Carr ER, Woods AM, Vahabzadeh A, Sutton C, Wittenauer J, Kaslow NJ. PTSD, depressive symptoms, and suicidal ideation in African American women: a mediated model. *J Clin Psychol Med Settings*. 2013;20:37–45.
49. Nesterko Y, Haase E, Schönfelder A, Glaesmer H. Suicidal ideation among recently arrived refugees in Germany. *BMC Psychiatry*. 2022;22:183.
50. Borho A, Morawa E, Schmitt GM, Erim Y. Somatic distress among Syrian refugees with residence permission in Germany: analysis of a cross-sectional register-based study. *BMC Public Health*. 2021;21:896.
51. Jakupcak M, Osborne T, Michael S, Cook J, Albrizio P, McFall M. Anxiety sensitivity and depression: mechanisms for understanding somatic complaints in veterans with posttraumatic stress disorder. *J Trauma Stress*. 2006;19:471–479.
52. Hurlocker MC, Vidaurre DN, Cuccurullo LAJ, Maieritsch K, Franklin CL. Examining the latent structure mechanisms for comorbid posttraumatic stress disorder and major depressive disorder. *J Affect Disord*. 2018;229:477–482.
53. Stanley IH, Hom MA, Spencer-Thomas S, Joiner TE. Examining anxiety sensitivity as a mediator of the association between PTSD symptoms and suicide risk among women firefighters. *J Anxiety Disord*. 2017;50:94–102.
54. Allan NP, Conner KR, Pigeon WR, Gros DF, Salami TK, Stecker T. Insomnia and suicidal ideation and behaviors in former and current U.S. service members: does depression mediate the relations? *Psychiatry Res*. 2017;252:296–302.
55. Bryan CJ, Gonzales J, Rugg MD, et al. Depression mediated the relation of insomnia severity with suicide risk in three clinical samples of USS military personnel. *Depress Anxiety*. 2015;32:647–655.
56. Brown LA, Zang Y, Benhamou K, et al. Mediation of suicide ideation in prolonged exposure therapy for posttraumatic stress disorder. *Behav Res Ther*. 2019;119:103409.
57. Flory JD, Yehuda R. Comorbidity between post-traumatic stress disorder and major depressive disorder: alternative explanations and treatment considerations. *Dialogues Clin Neurosci*. 2015;14:141–150.
58. Nixon RDV, Neary DM. Treatment of comorbid posttraumatic stress disorder and major depressive disorder: a pilot study. *J Trauma Stress*. 2011;24:451–455.
59. Kotov R, Krueger RF, Watson D, et al. The hierarchical taxonomy of psychopathology (HiTOP): a dimensional alternative to traditional nosologies. *J Abnorm Psychol*. 2017;126:454–477.
60. O'Donnell ML, Lau W, Chisolm K, et al. A pilot study of the efficacy of the unified protocol for transdiagnostic treatment of emotional disorder in treating posttraumatic psychopathology: a randomized controlled trial. *J Trauma Stress*. 2021;34:563–574.
61. Rice SM, Kealy D, Oliffe JL, Seidler ZE, Ogrodniczuk JS. Affective-somatic symptoms of depression, suicide risk and exposure to childhood maltreatment: data from emerging adults to older-age males. *Int J Ment Health Addict*. 2019;17:1301–1311.
62. Barr N, Kintzle S, Alday E, Castro C. How does discharge status impact suicide risk in military veterans? *Soc Work Ment Health*. 2019;17:48–58.
63. Sikharulidze G, van Geloven N, Lelashvili E, Kalandarishvili G, Gugushvili N, Vermetten E. Posttraumatic stress disorder and somatic complaints in a deployed cohort of Georgian military personnel: mediating effect of depression and anxiety. *J Trauma Stress*. 2017;30:626–634.
64. Nichter B, Norman S, Haller M, Pietrzak RH. Psychological burden of PTSD, depression, and their comorbidity in the U.S. veteran population: suicidality, functioning, and service utilization. *J Affect Disord*. 2019;256:633–640.
65. Boffa JW, Stanley IH, Smith LJ, et al. PTSD symptoms and suicide risk in male firefighters: the mediating role of anxiety sensitivity. *J Nerv Ment Dis*. 2018;206:179–186.
66. Price M, Legrand AC, Brier ZMF, Hebert-Dufresne L. The symptoms at the center: examining the comorbidity of posttraumatic stress disorder, generalized anxiety disorder, and depression with network analysis. *J Psychiatr Res*. 2019;109:52–58.
67. Grupe DW, McGehee C, Smith C, Francis AD, Mumford JA, Davidson RJ. Mindfulness training reduces PTSD symptoms and improves stress-related health outcomes in police officers. *J Police Crim Psychol*. 2019;36:72–85.
68. Krick A, Felfe J. Who benefits from mindfulness? The moderating role of personality and social norms for the effectiveness on psychological and physiological outcomes among police officers. *J Occup Health Psychol*. 2019;25:99–112.