4-2023

Predictors of suicide and differences in attachment styles and resilience among treatment-seeking first responder subtypes

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Predictors of Suicide and Differences in Attachment Styles and Resilience Among Treatment-Seeking First-Responder Subtypes

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Objective: To identify the predictors of suicide for firefighters (FFs), emergency medical technicians (EMTs), and law enforcement officers (LEOs). **Methods:** We used baseline data from FFs/EMTs (n = 69) and LEOs (n = 81) to investigate the unique predictors for both first-responder subtypes. We conducted confirmatory factor analysis on validated assessments of posttraumatic stress disorder (PTSD) and depression. Measures of attachment, resilience, PTSD, depression, generalized anxiety, trauma history, and substance use were the independent variables in two backward stepwise regressions predicting suicide. **Results:** Substance use and somatic depression were significant predictors for LEOs, whereas affective depression, anhedonia, externalizing behaviors, trauma history, and generalized anxiety were significant predictors for FFs/EMTs. **Limitations:** These data are cross-sectional and should be modeled longitudinally over the course of treatment. **Conclusion:** Separate constructs influence suicide for LEOs and FFs/EMTs.

Keywords: attachment, first responder, PTSD, resilience, suicide

Firefighters (FFs), emergency medical technicians (EMTs), and law enforcement officers (LEOs) are regularly exposed to traumatic (eg, witnessing death, serious injuries, vehicle crashes) and life-threatening (eg, being seriously beaten, shot at, exposed to disease) situations that put them at risk of experiencing posttraumatic stress disorder (PTSD), suicide, suicidal ideation, relationship problems, depression, and anxiety.[1,2] The importance of understanding the rates of mental health conditions and relationship issues among LEOs and FFs/EMTs has increased during the severe acute respiratory syndrome coronavirus 2 (COVID-19 [novel coronavirus disease 2019]) pandemic. The pandemic has brought on increased illness, death, economic difficulties, and civil/social unrest, along with greater questioning of public health recommendations and those who are charged with enforcing mandates, thereby making first responders' jobs more difficult,[3] and placing them at even higher risk of developing stress-related mental health problems than before the pandemic.[4,5] As a result, these critical workers are applying for early disability and retirement pensions at an increased rate.[6] Along with the rising administrative costs associated with recruitment and retention, staffing shortages have increased the strain on the remaining first responder workforce.[6]

Prevalence of Mental Health Problems

Despite persistent underreporting, prevalence rates for mental health conditions and relationship issues are higher among these professions compared with the general US population.[7–9] Rates of PTSD in the US adult population are 6.1%,[10] compared with up to 22% in

LEARNING OUTCOMES

Readers should be able to:

- Identify the different predictors of suicide between first responder subtypes (LEO vs. FF/EMT).
- Case conceptualization through the framework of attachment theory.
- Conceptualize resilience as *applied* or *activated*.

EMTs/paramedics, and as high as 32% for LEOs and FFs.[11] Subdiagnostic levels of posttrauma symptoms contribute to illness and reduced life expectancy in many others.[12]

Rates of related mental health conditions are also high among these workers. One study found that at least 14% deal with depression, 28% experience ongoing anxiety, 31% have substance issues, and 93% experience sleep disturbance.[13] An increasing body of literature shows LEOs, FFs, and EMTs experience higher rates of suicide than the general adult population and are more likely to die by suicide than in the line of duty.[14,9] Over their careers, prevalence rates of suicidal ideation range from as high as 34% to 48.6% among some of these workers.[15,13,16] Overall, FFs and EMTs have higher rates of suicidal ideation and suicide attempts than LEOs.[17,9] However, LEOs are more cautious about seeking help because they fear losing access to a service weapon or being moved to nonoperational duties.[18] Thus, they may forgo needed mental health services.

Risk Factors

Multiple risk factors converge to increase suicide risk in first responders. Co-occurring mental health conditions, such as substance misuse (notably alcohol), depression, sleep disruption, and PTSD, intersect to increase the risk of suicide.[19–23] A systematic review of 63 studies addressing these issues[9] identified the following risk correlates for suicide: (1) occupational hazards and exposures; (2) access to firearms and other lethal methods (eg, service revolver); (3) capability for suicide (eg, elevated physical pain tolerance); (4) erratic shift schedules (eg, sleep disturbances, disrupted family lives); (5) stigma preventing utilization of services; (6) a focus on helping others at the expense of focusing on personal needs; (7) multiple high-risk roles (eg, a police officer who is also an EMT); (8) role transitions (eg, younger, fewer years of service); (9) smaller departments (eg, due to fewer mental health resources); and (10) concurrent or past military service experience (eg, combat exposure).[9(p39)]

Stigma for acknowledging difficulties and seeking help,[20] the predominant use of firearms to enact suicide,[22] and the workplace culture to which first responders belong[13] merit additional attention due to their association with adverse outcomes. The stigma associated with seeking help prevents many from doing so and leads to increased chronicity of mental health problems, which is associated with increased risk of suicide.[20]

In addition, LEOs receive firearm training on the job, and many first responders have a history of firearm training during military service.[24] All first-responder groups are more likely to have served in the military compared with the general population.[25] Like veterans, LEOs, FFs, and EMTs are more likely to use a firearm in a suicide attempt, which is a method associated with increased lethality.[22] Finally, first responders are members of a culture that emphasizes and prides itself on reduced emotional responsiveness, increased resilience, and strength, attributes that, although beneficial on the job, impede help-seeking.[13]

Protective Factors

Among this population, important protective and resiliency factors including social support, a feeling of belonging, a sense of purpose, training in extreme situations, and camaraderie with co-workers can help mitigate the aforementioned risk factors.[26,9,23] Some of these professionals, particularly those who serve in full-time positions as opposed to volunteer roles, have shown a greater ability to tolerate chronic stress and navigate challenges that may result in fewer behavioral health disorders.[26] From a posttraumatic growth perspective, after dealing with an extreme life-threatening situation, some of these workers experience increased awareness of their life priorities and greater self-efficacy as they learn new coping skills.[26] Adaptive coping or an extroverted personality has also been found to be helpful resiliency factors.[27]

Theoretical Framework

Use of attachment as a theory is gaining traction in first-responder scholarship[28–31] and as a possible theoretical framework for clinical intervention with veterans and first responders.[32] A latent profile analysis of attachment in a traumatized Danish sample (from the Danish Society for Polio, Traffic, and Accident Victims) revealed a three-class solution: secure, preoccupied, and fearful.[33] Using measures of PTSD, depression, and generalized anxiety, on each assessment and latent factor of PTSD, researchers showed the securely attached group had the lowest scores, followed by the preoccupied group, whereas the fearfully attached group had the highest scores on the psychopathology measures. In addition, there was a large effect size for aggregated PTSD scores and depression, whereas generalized anxiety had a medium effect size. Of the PTSD latent factors, avoidance had a large effect size, hyperarousal had a medium effect size, and re-experiencing had a small effect size.[33]

Attachment theory provides a useful framework for understanding the impact of critical incidents in EMTs,[31] job-related stress in LEOs,[34] and coping and well-being in FFs.[29] In the face of stress, the autonomic nervous system is triggered.[35] Next, the attachment behavioral system gets activated where the individual attempts proximity seeking to an attachment figure so the individual can self-regulate.[36] If the attempt at proximity seeking is unsuccessful, the individual cannot self-regulate, then the secondary strategies of deactivation (attachment avoidance) or hyperactivation (attachment anxiety) are used. Both of these secondary strategies are maladaptive, although they can provide some short-term relief.

Adult attachment can be measured in different ways. One approach is by the secondary strategies, and another way is to place the individual into one of four nominal categories (secure, preoccupied, dismissive, and fearful). A recent meta-analysis concluded that secure attachment is a hallmark of resilience.[37] They included 10 studies with 2305 cases and found that correlations ranged from 0.20 to 0.57 between resilience and attachment.

To the best of our knowledge, the present study is the first to use both attachment and resilience in examining the impact of trauma among LEOs, FFs, and EMTs. This study therefore examines the following research questions: (1) What are the differences between LEOs and FFs/EMTs in their attachment styles and resilience? (2) What constructs predict suicidality at baseline in a treatment-seeking sample?

METHODS

Participants

The sample comprised two groups: LEOs and FFs/EMTs. The LEOs were mostly White (72.8%) and males (75.3%), with a mean age of 37.99 (SD, 9.50) years. Twenty-nine percent reported previous military service. Similarly, the FF/EMT sample was predominantly White (84.1%) and male (75.4%), with a mean age of 35.32 (SD, 9.41) years. Seventeen percent reported previous military service. Among the FF/EMT sample, there were 35 FFs (51%) and 34 EMTs (49%) (Table 1).

Procedure

Data were collected at intake from first responders who sought counseling services between 2019 and 2021 at a nonprofit agency that serves veterans, first responders, frontline health care workers, and their families. With informed consent, clinical assessment data are collected routinely from clients at the agency for program evaluation purposes. This secondary analysis of program data was approved by the University of Texas Health Science Center Institutional Review Board (HSC-SPH-20-1264). The inclusion criteria for this study were employment as an FF, LEO, or EMT; being older than 18 years; completion of all standardized assessments involved in this study; and having no missing values at baseline.

On the intake packet, there is no place to state how you were referred to treatment, whether it was mandatory or voluntary, and these data were collected from in-person intake appointments. We assessed if the pandemic has impacted any of the mental health constructs in this study. We chose the cutoff date as March 13, 2020, because it was the date when the president issued the Proclamation on Declaring a National Emergency Concerning the COVID-19 outbreak. Independent-samples *t* tests indicated that there were no statistically significant differences prepandemic compared with after its onset.

TABLE 1. Demographics of the Sample

Characteristics	LEO (n = 81)	FF/EMT (n = 69)
Age, y		
Mean	37.99	35.32
Median	36.00	33.00
SD	9.50	9.41
Range	42	39
Time in service, y		
Mean	12.19	10.59
Median	12.00	8.00
SD	8.57	9.00
Range	35	39
Sex, %		
Female	20 (24.7)	17 (24.6)
Male	61 (75.3)	52 (75.4)
Ethnicity, %		
African American/Black	5 (6.2)	—
Asian American	3 (3.7)	2 (2.9)
Latino(a)/Hispanic	13 (16.1)	7 (10.2)
Multiple ethnicities	1 (1.2)	1 (1.4)
Native American	—	1 (1.4)
White	59 (72.8)	58 (84.1)

EMT, emergency medical technician; FF, firefighter; LEO, law enforcement officer.

Measures

This study used the following mental health standardized assessments: Experiences in Close Relationships (ECR), Response to Stressful Experiences Scale (RSES-22), Patient Health Questionnaire 9 (PHQ-9), Generalized Anxiety Disorder 7 (GAD-7), PTSD Checklist 5 (PCL-5), CAGE Adapted to Include Drugs (CAGE-AID), and the Suicide Behaviors Questionnaire—Revised (SBQ-R).

Trauma History

Trauma history was assessed at intake on 12 yes or no questions that were constructed by the nonprofit agency. Respondents at their intake appointment were instructed to "Please select the experience you may have had": childhood trauma, military combat trauma, military sexual trauma, military occupational trauma, military sexual trauma, military occupational trauma, first-responder occupational trauma, first-responder sexual trauma, first-responder sexual harassment, personal trauma, personal occupational trauma, and personal sexual harassment. Total scores range from 0 to 11, in which higher scores represent greater trauma history.

Experiences in Close Relationships (ECR)

The ECR was developed to assess adult attachment on two factors: anxiety and avoidance.[38] The ECR includes 36 questions on a 7-point Likert scale with responses ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). The ECR produces two means, one for each factor, attachment avoidance and attachment anxiety, with mean scores ranging from 1 to 7, respectively. Higher scores on each factor indicate a greater presence of each construct. In the current study, the Cronbach α of the scale was $\alpha = 0.92$.

Response to Stressful Experiences Scale (RSES-22)

The RSES-22 is a 22-item measure assessing resilience[39] that has been validated on first responders.[40] Participants respond to the prompt "during and after life's most stressful events, I tend to" on a 5-point Likert scale from 0 (*not at all like me*) to 4 (*exactly like me*). Total scores range from 0 to 88, in which higher scores represent greater resilience. In the current study, Cronbach α of the scale was $\alpha = 0.92$.

Patient Health Questionnaire-9 (PHQ-9)

The PHQ-9 was developed to assess for the presence of depression.[41] The PHQ-9 responses range from 0 (*not at all*) to 3 (*nearly every day*), and scores are aggregated with ranges from 0 to 27. The higher the summed score, the greater the severity of depression. In the current study, the Cronbach α of the scale was $\alpha = 0.89$.

Generalized Anxiety Disorder 7-item (GAD-7)

The GAD-7 was developed to screen for generalized anxiety disorder.[42] The GAD-7 responses range from 0 (*not at all*) to 3 (*nearly every day*), and summed scores range from 0 to 21. Higher scores indicate the presence of more severe generalized anxiety. In the current study, the Cronbach α of the scale was $\alpha = 0.90$.

PTSD Checklist-5 (PCL-5)

The PCL-5 was developed to assess for the presence of PTSD symptoms which aligns with the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (*DSM-5*).[43] The PCL-5 is comprised of 20-questions that are on a Likert scale from 0 (*not at all*) to 4 (*extremely*), which are aggregated with scores ranging from 0 to 80. Higher scores indicate more severe PTSD symptoms. In the current study, the Cronbach α of the scale was $\alpha = 0.94$.

CAGE Adapted to Include Drugs (CAGE-AID)

The CAGE-AID is a 4-item primary care screen for drug and alcohol problems.[44] Each question has a categorical answer of yes or no. Scores are aggregated producing a sum ranging from 0 to 4, with higher scores indicating more severe drug and alcohol problems. In this sample, Cronbach α of the scale was $\alpha = 0.84$.

Suicide Behaviors Questionnaire-Revised (SBQ-R)

The SBQ-R was developed to assess for suicidality.[45] Scores are summed ranging from 3 to 18, with higher scores indicating a greater risk of suicide. In this sample, Cronbach α of the scale was $\alpha = 0.83$.

Data Analytic Plan

Statistical analyses was performed using the SPSS (Statistical Package for the Social Sciences) version 27.0 and SPSS Analysis of Moment Structures version 27.0 (IBM Corp, Armonk, NY). There were no missing values in the LEO and FF/EMT subtypes. All mental health assessments were assessed and verified to be normally distributed. First, we conducted seven different confirmatory factor analysis (CFA) models of the PCL-5 (see Krüger-Gottschalk et al[46] for item mapping), which have recently been published on a sample of first responders.[47] The different PCL-5 configurations are the *DSM-5* model, dysphoria model, dysphoric arousal model, anhedonia model, externalizing behavior model, 7-factor hybrid model, and the three-factor model. The seven candidate models were tested with the entire sample of first responders ($N = 150$). Next, we conducted two CFAs on the PHQ-9 as there have been two recent studies that use a two-factor structure as opposed to leaving the measure unidimensional.[48,49] We used several indices to identify the best CFA model: comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), standardized root mean residual (SRMR), Bayesian information criterion (BIC), the minimum discrepancy per degree of freedom (CMIN/DF), and *P* values. CFI and TLI 0.90 or greater and an RMSEA less than 0.08 are indicative of a strong model fit.[50]

Assumptions for independent-samples *t* tests were met and showed no statistically significant differences between FF and EMT groups on any mental health measure; thus, these groups were collapsed into one subtype. Because many FFs are also EMTs, these populations are often combined in research studies.[9] They are exposed to similar crisis incidents and their training overlaps—FFs are often certified as EMTs, and many small towns operate their EMT services through their fire departments.[13] From the independent-samples *t* tests, we calculated the effect size, as recommended small ($d = 0.2$), medium ($d = 0.5$), and large ($d = 0.8$).[51] As attachment anxiety had the largest effect size, we used Fisher's exact to test if there is a statistically significant difference between LEO and FF/EMT nominal attachment categories, and this approach was chosen given the small sample sizes.[52,53] Afterward, we obtained the odds ratio (OR) from the Mantel-Haenszel common OR comparing each nominal attachment category (secure, dismissive, preoccupied, fearful) between the LEO and FF/EMT subsamples. Next, we established the bivariate relationship between the mental health measures for the FF/EMT and LEO groups. Lastly, we conducted two backward stepwise linear regressions (one for LEOs and one for FFs/EMTs) predicting suicidality (SBQ-R) while controlling for the following demographic variables: age, sex, prior military service, years as a first responder, and trauma history. We chose a backward stepwise regression because it reduces the likelihood of multicollinearity, which was assessed and fell within the acceptable ranges for tolerances and variance inflation factors.[54]

RESULTS

Confirmatory Factor Analysis on the PCL-5

First, we compared the different PTSD factor candidates: *DSM-5* model, dysphoria model, dysphoric arousal model, anhedonia model, externalizing behavior model, 7-factor hybrid model, and

three-factor model on the entire sample (N = 150). The hybrid ($\chi^2_{149} = 262.379$, $P < 0.001$, CFI = 0.935, TLI = 0.917, RMSEA = 0.071, SRMR = 0.0524, BIC = 568.028, CMIN/DF = 1.761) and anhedonia ($\chi^2_{155} = 280.998$, $P < 0.001$, CFI = 0.927, TLI = 0.911, RMSEA = 0.074, SRMR = 0.0555, BIC = 556.583, CMIN/DF = 1.813) were the best fitting models. Comparing the nested models, the hybrid configuration had a better fit than the anhedonia model $\Delta\chi^2_6 = 18.619$, $P < 0.01$. Consequently, in this article, we utilized the hybrid configuration of the PCL-5 that has seven factors: re-experiencing, avoidance, negative affect, anhedonia, externalizing behaviors, anxious arousal, and dysphoric arousal.

Confirmatory Factor Analysis on the PHQ-9

The one-factor fit indices were $\chi^2_{27} = 122.179$, $P < 0.001$, CFI = 0.938, TLI = 0.917, RMSEA = 0.095, SRMR = 0.044, BIC = 229.570, and CMIN/DF = 4.525. The two-factor fit indices were $\chi^2_{26} = 99.281$, $P < 0.001$, CFI = 0.952, TLI = 0.934, RMSEA = 0.085, SRMR = 0.0399, BIC = 212.638, and CMIN/DF = 3.819. Comparing the nested PHQ-9 models, the two-factor model had superior fit over the one-factor model $\Delta\chi^2_1 = 22.898$, $P < 0.001$. Consequently, we used the two-factor configuration in which questions 1 (anhedonia), 2 (depressed mood), 6 (feelings of worthlessness), 9 (self-harm/ideation) loaded onto the affective factor, whereas questions 3 (sleep difficulties), 4 (fatigue), 5 (appetite changes), 7 (concentration difficulties), and 8 (psychmotor agitation) loaded onto the somatic factor.

Descriptive Statistics

The FF/EMT sample scored significantly higher on each mental health measure and each factor of each assessment, except attachment avoidance and two factors on the PCL-5 (anxious arousal and dysphoric arousal). We kept attachment avoidance for theoretical reasons as it approached statistical significance. Lastly, the FF/EMT sample reported significantly higher aggregated scores on the trauma history questionnaire than LEO participants. The only large effect size was attachment anxiety ($d = 0.96$; 95% CI, 0.62 to 1.30). The medium to large effect sizes were resilience ($d = -0.65$; 95% CI, −0.98 to −0.32), depression ($d = 0.62$; 95% CI, 0.29 to 0.95), generalized anxiety ($d = 0.50$; 95% CI, 0.18 to 0.83), PTSD ($d = 0.56$; 95% CI, 0.24 to 0.89), substance misuse ($d = 0.52$; 95% CI, 0.20 to 0.85), and suicidality ($d = 0.51$; 95% CI, 0.18 to 0.83). Trauma history had a small to medium effect size ($d = 0.37$; 95% CI, 0.05 to 0.70; Table 2).

Of the LEOs in this sample, 25% had minimal; 30%, mild; 26%, moderate; 12%, moderately severe; and 7%, severe depression. In addition, among LEOs, 24% had minimal; 22%, mild; 28%, moderate; and 26%, severe generalized anxiety. In the LEO sample, most participants reported secure attachment (33.3% [n = 27]), followed by dismissive (25.9% [n = 21]), fearful (21.0% [n = 17]), and preoccupied (19.8% [n = 16]]) attachment styles. Also, 14% of LEOs scored 8 or higher on the SBQ-R, which is indicative of suicidality in a clinical population. Similarly, 35% of LEOs screened positive for alcohol or drug problems. Lastly, using the cutoff score of 41 on the PCL-5, 22% of LEOs screened positive for PTSD.

Of the FFs/EMTs in this sample, 13% had minimal; 22%, mild; 17%, moderate; 25%, moderately severe; and 23%, severe depression. In addition, among FFs/EMTs, 7% had minimal; 19%, mild; 35%, moderate; and 39%, severe generalized anxiety. In the FF/EMT sample, most participants were classified as preoccupied (39.1% [n = 27]), followed by fearful (33.3% [n = 23]), dismissive (14.6% [n = 10]), and secure (13.0% [n = 9]). Also, 30% of FFs/EMTs score 8 or higher on the SBQ-R, which is indicative of suicidality in a clinical population. Similarly, 59% of FFs/EMTs screened positive for alcohol or drug problems. Lastly, using the cutoff score of 41 on the PCL-5, 51% of FFs/EMTs screened positive for PTSD.

Fisher's exact test was used to determine if there was a significant association between LEOs and FFs/EMTs categorical attachment classifications (secure, dismissive, preoccupied, fearful). There was a statistically significant difference between LEO and FF/EMT secure attachment scores (two-tailed $P = 0.004$), and the Mantel-Haenszel common OR estimate was 3.33 (95% CI, 1.44 to 7.72). There was not a statistically significant difference between LEO and FF/EMT dismissive attachment scores (two-tailed $P = 0.11$). The Mantel-Haenszel common OR estimate was 2.07 (95% CI, 0.90 to 4.76). There was a statistically significant difference between LEO and FF/EMT preoccupied

TABLE 2. Descriptive Statistics of Mental Health Measures

Characteristics	LEO Mean (SD)	FF/EMT Mean (SD)	*t*	*P*	Cohen *d*	95% CI
ECR-AVOID	2.96 (1.12)	3.33 (1.25)	1.91	0.059	0.31	−0.01 to 0.64
ECR-ANX	3.15 (1.28)	4.32 (1.15)	5.85	<0.001	0.96	0.62 to 1.30
RSES-22	65.79 (10.57)	58.48 (11.91)	−3.98	<0.001	−0.65	−0.98 to −0.32
PHQ-9	9.48 (5.69)	13.43 (7.06)	3.73	<0.001	0.62	0.29 to 0.95
Affective	3.56 (2.36)	5.30 (3.10)	3.83	<0.001	0.64	0.31 to 0.97
Somatic	5.93 (3.72)	8.13 (4.47)	3.25	0.001	0.54	0.21 to 0.87
GAD-7	10.33 (5.16)	13.19 (5.16)	3.11	0.002	0.50	0.18 to 0.83
PCL-5	27.49 (16.36)	37.29 (18.45)	3.45	<0.001	0.56	0.24 to 0.89
R	7.21 (5.00)	9.25 (5.28)	2.42	0.017	0.40	0.07 to 0.72
A	2.74 (2.24)	3.83 (2.59)	2.75	0.007	0.45	0.13 to 0.78
NA	4.77 (4.03)	7.51 (4.28)	4.04	<0.001	0.66	0.33 to 0.99
An	4.62 (3.11)	6.26 (3.73)	2.90	0.004	0.48	0.16 to 0.81
EB	1.52 (1.66)	2.68 (2.19)	3.62	<0.001	0.61	0.28 to 0.93
AA	2.74 (2.49)	3.22 (2.67)	1.13	0.260	0.19	−0.14 to 0.51
DA	3.90 (2.32)	4.55 (2.46)	1.66	0.099	0.27	−0.05 to 0.59
CAGE-AID	0.81 (1.30)	1.57 (1.58)	3.15	0.002	0.52	0.20 to 0.85
SBQ-R	4.72 (2.54)	6.16 (3.19)	3.03	0.003	0.51	0.18 to 0.83
Trauma History	1.60 (1.02)	2.01 (1.18)	2.28	0.024	0.37	0.05 to 0.70

A, avoidance; AA, anxious arousal; Affective, affective depression as measured by the Patient Health Questionnaire 9; An, anhedonia; CAGE-AID, CAGE Adapted to Include Drugs; CI, confidence interval; Cohen *d*, effect size; DA, dysphoric arousal; EB, externalizing behaviors; ECR-ANX, Experiences in Close Relationships Anxiety Secondary Strategy; ECR-AVOID, Experiences in Close Relationships Avoidant Secondary Strategy; EMT, emergency medical technician; FF, firefighter; GAD-7, Generalized Anxiety Disorder 7; LEO, law enforcement officer; M, mean; NA, negative affect; R, re-experiencing; RSES-22, Response to Stressful Events Scale 22 (Resilience); SBQ-R, Suicide Behaviors Questionnaire—Revised; Somatic, somatic depression as measured by the Patient Health Questionnaire 9.

TABLE 3. LEO Mental Health Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. ECR-AVOID	1	0.10	−0.40***	0.13	−0.08	0.05	0.08	0.22	0.20	0.08	0.12	0.11	0.04	0.20	0.24*
2. ECR-ANX		1	−0.37***	0.49***	0.22*	0.28**	0.46***	0.42***	0.19	0.20	0.30**	0.39***	0.44***	−0.01	0.20
3. RSES-22			1	−0.32**	−0.14	−0.31**	−0.46***	−0.48***	−0.44***	−0.10	−0.26*	−0.38***	−0.34**	−0.09	−0.27*
4. GAD-7				1	0.54***	0.45***	0.58***	0.58***	0.37***	0.48***	0.60***	0.71***	0.70***	0.15	0.31**
5. R					1	62***	0.66***	0.47***	0.34**	0.53***	0.63***	0.46***	0.60***	−0.02	0.20
6. A						1	0.65***	0.49***	0.37***	0.36***	0.50***	0.40***	0.44***	0.01	0.23*
7. NA							1	0.64***	0.58***	0.40***	0.53***	0.55***	0.55***	0.01	0.21
8. An								1	0.69***	0.47***	0.59***	0.69***	0.66***	0.20	0.39***
9. EB									1	0.49***	0.42***	0.47***	0.49***	0.19	0.26*
10. AA										1	0.59***	0.34**	0.56***	0.22	0.18
11. DA											1	0.57***	0.77***	0.08	0.28*
12. Affective												1	0.74***	0.16	0.35***
13. Somatic													1	0.03	0.33**
14. CAGE-AID														1	0.33**
15. SBQ-R															1

A, avoidance; AA, anxious arousal; Affective, affective depression as measured by the Patient Health Questionnaire 9; An, anhedonia; CAGE-AID, CAGE Adapted to Include Drugs; DA, dysphoric arousal; EB, externalizing behaviors; ECR-ANX, Experiences in Close Relationships Anxiety Secondary Strategy; ECR-AVOID, Experiences in Close Relationships Avoidant Secondary Strategy; GAD-7, Generalized Anxiety Disorder 7; LEO, law enforcement officer; NA, negative affect; R, re-experiencing; RSES-22, Response to Stressful Events Scale 22 (Resilience); SBQ-R, Suicide Behaviors Questionnaire—Revised; Somatic, somatic depression as measured by the Patient Health Questionnaire 9.

*$P \leq 0.05$ (two-tailed).

**$P \leq 0.01$ (two-tailed).

***$P \leq 0.001$ (two-tailed).

attachment scores (two-tailed $P = 0.011$), and the Mantel-Haenszel common OR estimate was 0.38 (95% CI, 0.19 to 0.80). There was not a statistically significant difference between LEO and FF/EMT fearful attachment scores (two-tailed $P = 0.10$), and the Mantel-Haenszel common OR estimate was 0.53 (95% CI, 0.26 to 1.11).

Correlational Analyses

Among LEOs, length of time as a first responder was correlated with their trauma history ($r_{81} = 0.33$, $P < 0.01$). Trauma history was significantly correlated with three factors of the hybrid PCL-5 factor configuration, re-experiencing factor ($r_{81} = 0.24$, $P < 0.05$), negative

affect factor ($r_{81} = 0.24$, $P < 0.05$), and the anxious arousal factor ($r_{81} = 0.25$, $P < 0.05$). In addition, among LEOs, suicidality was significantly positively correlated with attachment avoidance, generalized anxiety, avoidance, anhedonia, externalizing behaviors, dysphoric arousal, affective depression, somatic depression, and the CAGE-AID. Lastly, resilience was significantly negatively correlated with suicidality (Table 3).

Among the FF/EMT sample, the only demographic variables that were statistically significant were length of time as a first responder and suicidality ($r_{69} = −0.25$, $P < 0.05$). Lastly, FFs/EMTs, attachment anxiety, externalizing behaviors, affective depression, and somatic depression were significantly positively correlated with suicidality (Table 4).

TABLE 4. Combined FF and EMT Mental Health Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. ECR-AVOID	1	−0.11	−0.10	0.32**	0.22	0.10	0.20	0.28*	0.17	0.33**	0.32**	0.19	0.35**	0.20	0.13
2. ECR-ANX		1	−0.25*	0.31**	0.26*	0.24*	0.37**	0.21	0.36**	0.23	0.25*	0.37**	0.25*	−0.17	0.28*
3. RSES-22			1	−0.27*	−0.24*	−0.11	−0.28*	−0.29*	−0.13	−0.14	−0.21	−0.28*	−0.28*	−0.08	−0.18
4. GAD-7				1	0.64***	0.54***	0.62***	0.66***	0.51***	0.61***	0.63***	0.62***	0.64***	0.03	0.04
5. R					1	0.78***	0.71***	0.63***	0.42***	0.53***	0.61***	0.56***	0.50***	−0.06	0.23
6. A						1	0.62***	0.60***	0.34**	0.42***	0.62***	0.53***	0.49***	0.02	0.19
7. NA							1	0.72***	0.42***	0.38***	0.49***	0.73***	0.51***	0.11	0.22
8. An								1	0.43***	0.41***	0.64***	0.82***	0.61***	0.12	0.19
9. EB									1	0.48***	0.41***	0.40***	0.47***	−0.002	0.32**
10. AA										1	0.53***	0.36**	0.49***	0.06	0.13
11. DA											1	0.59***	0.77***	0.10	0.21
12. Affective												1	0.73***	0.09	0.37**
13. Somatic													1	0.19	0.34**
14. CAGE-AID														1	0.01
15. SBQ-R															1

A, avoidance; AA, anxious arousal; Affective, affective depression as measured by the Patient Health Questionnaire 9; An, anhedonia; CAGE-AID, CAGE Adapted to Include Drugs; DA, dysphoric arousal; EB, externalizing behaviors; ECR-ANX, Experiences in Close Relationships Anxiety Secondary Strategy; ECR-AVOID, Experiences in Close Relationships Avoidant Secondary Strategy; EMT, emergency medical technician; FF, firefighter; GAD-7, Generalized Anxiety Disorder 7; GAD-7, Generalized Anxiety Disorder 7; NA, negative affect; R, re-experiencing; RSES-22, Response to Stressful Events Scale 22 (Resilience); SBQ-R, Suicide Behaviors Questionnaire—Revised; Somatic, somatic depression as measured by the Patient Health Questionnaire 9.

*$P \leq 0.05$ (two-tailed).

**$P \leq 0.01$ (two-tailed).

***$P \leq 0.001$ (two-tailed).

TABLE 5. Backward Stepwise Linear Regression Model Among LEOs

Predictor	*B* (SE)	*β*	*t*	*P*	95% CI	Tolerance	VIF
Constant	5.58 (1.55)		3.60	<0.001	2.49 to 8.67		
Age	−0.11 (0.05)	−0.40	−2.00	0.050	−0.21 to 0.000	0.25	4.02
Years as first responder	0.12 (0.06)	0.39	1.94	0.057	−0.003 to 0.23	0.25	4.04
CAGE-AID	0.61 (0.20)	0.31	3.13	0.002	0.22 to 1.00	0.99	1.01
Somatic depression	0.22 (0.07)	0.32	3.15	0.002	0.08 to 0.35	0.98	1.02

CAGE-AID, CAGE Adapted to Include Drugs; CI, confidence interval; LEO, law enforcement officer; VIF, variance inflation factor.

Backward Stepwise Regressions

Demographic variables of age, sex, years of service as a first responder, trauma history, and prior military service were included in the backward stepwise regression. In addition, attachment avoidance, attachment anxiety, resilience, generalized anxiety, CAGE-AID, somatic depression, affective depression, and each factor of the PCL-5 (re-experiencing, avoidance, negative affect, anhedonia, externalizing behaviors, anxious arousal, and dysphoric arousal) were entered as independent variables predicting the dependent variable of suicidality (SBQ-R). The LEO backward stepwise regression was significant after 16 iterations ($F_{4,76} = 6.40$, $P < 0.001$) and accounted for 21.3% of the variability in suicide. The only significant independent variable predicting a decrease in suicide was age ($\beta = -0.40$, $P = 0.05$). However, CAGE-AID ($\beta = 0.31$, $P < 0.01$) and somatic depression ($\beta = 0.32$, $P < 0.01$) were the statistically significant independent variables predicting an increase in suicide (Table 5).

The FF/EMT backward stepwise regression was significant after 13 iterations ($F_{7,61} = 7.13$, $P < 0.001$) and accounted for 38.7% of the variability in suicide. Age ($\beta = -0.35$, $P < 0.001$), generalized anxiety ($\beta = -0.41$, $P < 0.01$), and anhedonia ($\beta = -0.39$, $P < 0.05$) were statistically significant predictors of a decrease in suicide among FFs/EMTs. However, trauma history ($\beta = 0.21$, $P < 0.05$), affective depression ($\beta = 0.73$, $P < 0.001$), and externalizing behaviors ($\beta = 0.41$, $P < 0.001$) were statistically significant predictors of increases in suicide among FFs/EMTs. Resilience was marginally significant ($\beta = -0.20$, $P = 0.052$) (Table 6).

DISCUSSION

The present study investigated differences between LEOs and FFs/EMTs attachment styles, resilience, and baseline suicide predictors before clinical intervention with a mental health professional. FF/EMT scores were significantly higher on every maladaptive construct and lower on resilience compared with LEOs. One of the more alarming findings was the differences in those who screened positive for suicide, substance misuse, and PTSD. Fourteen percent of the LEOs screened positive for suicide compared with 30% of FFs/EMTs. Thirty-five percent of the LEOs screened positive for substance misuse compared with 59% of FFs/EMTs. Finally, 51% of FFs/EMTs screened positive for PTSD, which was more than twice the percentage of LEOs who did (22%).

The differences among LEOs and FFs/EMTs suggest that a different treatment approach for each subtype may be needed to target areas for clinical intervention. That is, LEOs' and FFs'/EMTs' attachment styles might reflect their roles. The finding that LEOs had fewer constructs associated with attachment avoidance may be an indication that they use detachment to better cope with witnessing trauma,[55] and this detachment may explain the difference in symptom severity compared with FFs/EMTs.

Interesting findings emerged for the mental health constructs that were not significantly different. Attachment avoidance did not significantly differ, although it approached statistical significance. This might suggest that both LEOs and FFs/EMTs rely on deactivation, which is similar to combat veterans.[56–58] Another noteworthy finding is that anxious arousal did not significantly differ, which suggests that this construct might perform the same function. A recent network analysis study using community detection to examine the interrelatedness of PTSD, depression, and generalized anxiety in trauma-exposed individuals found that anxious arousal was the second community, "[that] is conceptualized as a state of generalized reactivity to threat instead of reactivity specifically to trauma cues."[59(p56)] Threat reactivity might be an adaptive coping skill that is used regardless of first-responder subtype.

PTSD Differences

Our findings of elevated comorbid rates of depression, generalized anxiety, and PTSD among LEOs are similar to Bowler and colleagues'[60] study of LEOs who responded to 9/11 at the World Trade towers. They found 47.7% of LEOs had comorbid depression, generalized anxiety, and PTSD.[60] Our findings of PTSD are slightly higher than the prevalence rate of LEOs, which is 7% to 19% and more than double the 17% to 22% rate found in FFs.[12] After a terrorist attack in Paris during 2015, the prevalence of PTSD among FFs was low, 3.4% compared with 9.5% of LEOs.[61] In contrast, for partial PTSD (meeting at least two of the four symptom clusters according to the *DSM-5*),

TABLE 6. Backward Stepwise Linear Regression Model Among FFs and EMTs

Predictor	*B* (SE)	*β*	*t*	*P*	95% CI	Tolerance	VIF
Constant	12.12 (2.47)		4.91	<0.001	7.18 to 17.07		
Age	−0.12 (0.03)	−0.35	−3.46	<0.001	−0.19 to −0.05	0.90	1.12
Affective depression	0.75 (0.18)	0.73	4.26	<0.001	0.40 to 1.10	0.31	3.21
Anhedonia	−0.33 (0.15)	−0.39	−2.16	0.035	−0.64 to −0.02	0.28	3.61
Externalizing behaviors	0.60 (0.17)	0.41	3.57	<0.001	0.26 to 0.94	0.68	1.47
Trauma history	0.58 (0.26)	0.21	2.20	0.032	0.05 to 1.10	0.96	1.04
RSES-22	−0.05 (0.03)	−0.20	−1.98	0.052	−0.11 to 0.001	0.87	1.15
GAD-7	−0.25 (0.08)	−0.41	−2.97	0.004	−0.42 to −0.08	0.49	2.06

CI, confidence interval; EMT, emergency medical technicians; FF, firefighter; GAD-7, Generalized Anxiety Disorder 7; RSES-22, Response to Stressful Events Scale 22; VIF, variance inflation factor.

FF rate was 15.7%, whereas the rate for LEOs was 23.2%.[61] As other studies have indicated, resiliency training is crucial to FFs'/EMTs' and LEOs' response to trauma and to reducing PTSD propensity.[62,63]

Depression Differences

The relationship resilience has with other constructs, such as generalized anxiety, PTSD, depression (affective and somatic), and suicide, exemplifies one of the major differences between FFs/EMTs and LEOs. In LEOs, resilience was inversely related with more mental health constructs than FFs/EMTs at baseline, which suggests that LEOs *apply* or *activate* more resilience.[28,48,64] This type of construction is consistent with scholarship, suggesting that resilience is better thought of as an outcome variable after a stressful life event.[65] In a sample of LEOs, using the PCL-S (based on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* criteria), correlation analyses showed that depression was inversely correlated with all three PTSD factors.[66] Researchers comparing first responders before and after the onset of the pandemic also showed that resilience was inversely correlated with depression.[28] Our resilience findings concur with those of Arnetz et al[67] and Burke and Shakespeare-Finch,[68] who found LEOs adaptively responded to challenging situations best after resilience training (also see Andersen et al,[69] Janssens et al,[70] McCraty and Atkinson,[71] and Peres et al[72]). However, depression was more frequently found statistically significant than any other variable for both groups in the backward stepwise regressions. This shows screening for depression is crucial to help first responders receive prompt and immediate treatment, especially given the relationship between depression and suicidality.

In a sample of first responders,[73] predicting depression, gender (0 = male, 1 = female), and mindful awareness had a significant inverse relationship, whereas distress intolerance significantly increased depression. Researchers used a civilian population exposed to rocket attacks over a 6-day period in January 2009, indexed by time (15 seconds to seek shelter, 30 to 45 seconds, 60 seconds, and outside of rocket range) to study PTSD, depression, and anxiety.[74] They found those closest to the rocket attack reported the highest levels of symptoms on all three measures and posited that "data indicate a stepwise decline in PTSD and depression symptoms as a function of decreasing threat imminence, roughly indexed by the amount of time available to seek shelter during a rocket attack."[74(p697)] Given the findings of our study showing FFs/EMTs had the lowest resilience of the two groups and highest self-reported levels on every other mental health variable, it might suggest that greater exposure to trauma is associated with significantly lower resilience relative to LEOs. Future studies need to explore the relationship between lower resilience and exposure to trauma.

Suicidality Differences

Age, substance use, and somatic depression accounted for 21% of suicide variability for LEOs. Scholars found that PTSD symptoms and alcohol use significantly increased suicide ideation for LEOs.[75] Our findings are consistent with the current research related to LEOs' disordered use of substances, as they maladaptively use them to cope with their symptoms. Age should be noted as a significant finding, as older LEOs are less likely to attempt or complete suicide. In other words, suicide prevention should target those who have been on the force or possibly in the academy the shortest amount of time. Among LEOs, increased age has been related to increase substance misuse, a known predictor of suicide.[76–78]

In reference to our findings that age, affective depression, generalized anxiety, anhedonia, externalizing behavior, and trauma history accounted for 39% of the variability in suicide for FFs/EMTs, the significant suicide differences may be related to LEOs' training and capacity to cope. FFs'/EMTs' and LEOs' coping styles are different based on their attachment styles. For example, FFs/EMTs had more independent variables significantly related to suicide in the final backward stepwise

regression than LEOs. This finding suggests FFs/EMTs are at higher risk of suicide compared with LEOs. Vigil and colleagues[79] found EMTs had a significantly higher mortality OR to suicide compared with non-EMTs. Furthermore, researchers also found FFs/EMTs had higher suicidal ideation and attempts compared with the general and military population.[80] Our findings add to the body of research supporting FFs'/EMTs' suicidality risk is higher than LEOs', and the general population's (also see Vigil et al[79]). To address FFs'/EMTs' higher risk, researchers recommended that EMTs would benefit from skills training to improve their coping capacity.[80] Skills training for FFs/EMTs can focus on addressing disengagement, self-blame, substance use, and denial as maladaptive coping strategies.[81] Among LEOs, greater psychological flexibility moderates the relationship between posttraumatic stress symptoms to well-being and psychiatric symptoms.[82]

Attachment Theory

The largest effect size was between LEOs' and FFs'/EMTs' attachment anxiety. One of the most surprising findings was the OR between nominal attachment categories between LEOs and FFs/EMTs. Groups with dismissive and fearful attachment styles did not significantly differ, whereas the secure and preoccupied groups did. LEOs were 233% times more likely to have secure attachment as compared with FFs/EMTs. Also, LEOs were 62% more likely not to have a preoccupied attachment style compared with FFs/EMTs. Guided by attachment theory, researchers used an inventive methodology to study onset or offset of emotional expression (ie, when one interprets a neutral experience as mildly positive or better) to rate emotions during a movie without verbal cues.[83] Those with high attachment anxiety were more likely to perceive onset and offset and identify facial emotions earlier than those without elevated attachment anxiety. Curiously, those experiencing high attachment anxiety arrived at their conclusions quicker than the other participants and had a lower accuracy rate than other participants. In other work, EMTs were found to have trouble identifying and expressing emotion after critical incidents, which can slow their recovery after experiencing trauma.[30] The findings of the present study seem to corroborate the emotional toll that FFs/EMTs experience and should be explored during treatment.

Part of the reason why the attachment anxiety dimension is so much higher may be explained by the differences between the subtypes, nominally classified as preoccupied or fearful. Also, 41.7% of LEOs were categorized as preoccupied or fearful, whereas 72.5% of FFs/EMTs were coded as such. This is problematic because in a prospective study, those with secure attachment had the lowest self-reported depression, whereas fearful had the most severe depressive symptoms.[84] In participants' retrospective self-reports of depressive symptoms, the group with fearful attachment had statistically significantly higher self-reported scores compared with the securely attached group.[84] Affective depression mediated PTSD to suicide in a treatment-seeking sample of first responders,[49] and the affective depression and negative alterations in cognitions and mood PTSD symptom cluster had the highest centrality strength.[48] These findings suggest the value of using attachment theory as a guiding framework for treatment and clinical intervention.[28–31] In a sample of FFs, attachment avoidance and attachment anxiety had direct effects on the outcome variable of psychological well-being.[29] In addition, coping partially mediated that relationship for attachment avoidance, whereas coping did not mediate attachment anxiety to well-being.[29] Consequently, we recommend that providers carefully evaluate and monitor attachment anxiety early in treatment.

Limitations and Future Research

This study had several limitations primarily related to the sample. First, these data were collected in person, it is unknown if there would be any differences if these data were collected virtually at the intake appointment. Although we were above the minimum values for

predictors in a regression, future studies should aim for a larger sample size. In addition, a follow-up study should examine a treatment-seeking sample longitudinally to assess if baseline attachment and resilience scores are predictors of clinical outcomes. Although we were able to statistically show there were no differences at baseline, it is unknown if FFs and EMTs diverge later in treatment. It is also unknown if a non–treatment-seeking sample would have different or similar scores on attachment, resilience, generalized anxiety, suicide, depression, and PTSD. We recommend further inquiry to investigate a non–treatment-seeking sample. It is unclear whether differences between LEOs and FFs/EMTs in terms of requirements for treatment or benefits derived were present or to what extent they may have had on findings. Lastly, we recommend collapsing the full version of the GAD-7 and PHQ-9 among FFs and EMTs. Future scholarship needs to investigate whether any significant differences exist in the shorter abbreviated versions of the scales.

CONCLUSION

Similar to the Bowler and colleagues'[60] study of LEOs' comorbid PTSD, anxiety, and depression, we found mental health comorbidities in our sample. However, our study compared LEOs and FFs/EMTs, whose care may require attention to different symptoms. For example, FFs/EMTs are impacted by attachment avoidance and their attachment that could be furthering symptom pathology and placing them at higher risk of PTSD and suicide. Because fewer factors were associated with resilience for FFs/EMTs, internal resource development seems necessary for tailoring treatment approaches for FFs/EMTs. In contrast, LEOs have resilience built into their training.[85] However, for both FFs/EMTs and LEOs, depression symptoms impacted suicidality. This might suggest that addressing depression in these first-responder groups is crucial to their safety and recovery and that suicide prevention might start with screening for depression based on age.

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