




## Differences in Attachment, Resilience, and Negative Affect in Non-Treatment-Seeking and Treatment-Seeking EMS Professionals

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### Abstract

Emergency medical service (EMS) professionals have a stressful vocation, inarguably worsened by the COVID-19 pandemic, which affects their mental health and makes them a vulnerable population warranting further study. However, to date, no published research has compared non-treatment and treatment-seeking EMS professionals in the same greater metropolitan area. In this study, we examined differences and similarities among the non-treatment-seeking EMS professionals ( $n = 57$ ) from a local EMS agency and treatment-seeking EMS personnel ( $n = 53$ ) from a non-profit community treatment center on six assessment instruments that measure attachment avoidance, attachment anxiety, resilience, depression, generalized anxiety, posttraumatic stress disorder (PTSD), and suicidality. The Mann-Whitney U test revealed attachment avoidance, attachment anxiety, depression, generalized anxiety, and posttraumatic stress disorder (PTSD) were significantly higher in the treatment-seeking sample compared to the non-treatment-seeking group.

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**Note:** We would like to sincerely thank the emergency medical service professionals who participated in this study and trusted our team to use their sensitive data in a meaningful way.

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Resilience and suicide did not significantly differ. Correlational analyses revealed that the most consistent findings for both samples were PTSD, depression, and generalized anxiety. Findings suggest that negative affect may underlie these three constructs, regardless of whether the individual is treatment-seeking or not. These findings are conceptualized through three different theoretical frameworks: attachment, resilience, and negative affect. We also make recommendations for EMS agencies and suggest future scholarship based on these preliminary findings.

**Keywords:** emergency medical service, resilience, attachment, COVID-19, mental health

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## Introduction

Emergency Medical Service (EMS) professionals, including Emergency Medical Technicians (EMTs) and Paramedics (PMs), frequently respond to traumatic incidents as an essential function of their job (Donnelly & Bennett, 2014). As a result of regular exposure to traumatic incidents, EMTs have high rates of sleep disturbances, generalized anxiety, depression, harmful or hazardous alcohol use or dependence, posttraumatic stress disorder (PTSD), and elevated rates of suicide (Jones et al., 2018; Vigil et al., 2019). The far-reaching adverse effects of the COVID-19 pandemic have further amplified these negative outcomes (Carbajal et al., 2021; Pappa et al., 2020). Currently, it is unclear if there are significant differences between non-treatment seeking (NTS) EMS personnel compared to treatment-seeking (TS) EMS professionals. This study aims to fill that gap in the literature.

## Literature Review

In a sample of firefighters and EMT/PMs from a Southern state, 14.2% had likely moderate to severe depression, 28.0% had moderate-severe to severe anxiety, 25.6% had significant symptoms of PTSD, 20.2% had harmful or hazardous alcohol use, 93.0% had significant sleep disturbance, and 34.4% were at high risk for suicide (Jones et al., 2018). In a statewide comparison of causes of death, researchers found suicide was the cause of death in 2.2% of non-EMTs, compared to 5.2% for all other adult adults (Vigil et al., 2019). The researchers asserted that high operational stress, suicide ideation, and alcohol misuse/use in EMTs accounted for their higher suicide rates, suggesting EMTs should be evaluated for these conditions.

In a systematic review and meta-analysis, Pappa and colleagues (2020) sought to identify the prevalence of healthcare worker depression, anxiety, and insomnia, specifically during the COVID-19 pandemic. They found that the pooled prevalence of anxiety (12 studies) was 23.21%, the pooled prevalence of depression (10 studies) was 22.8%, and the pooled prevalence of insomnia was 38.9% (5 studies; Pappa et al., 2020). In comparison, Carbajal et al. (2021) found no significant differences in measures of attachment, resilience, depression, generalized anxiety, PTSD, or suicide in treatment-seeking first responders before and after the onset of the pandemic. Despite not finding significant differences, the researchers did find that the magnitude of the relationship between resilience, depression, generalized anxiety, and PTSD was notably increased from before to after the onset of the pandemic. Pre-COVID, first responders' resilience was significantly negatively correlated with depression, PTSD, and suicide. In contrast, during COVID, resilience remained significantly negatively correlated with depression and PTSD but was also negatively correlated with generalized anxiety (Carbajal et al., 2021). Interestingly, resilience no longer showed a relationship with suicide.

## Purpose of the Study

Resilience and attachment are two theoretical frameworks used to conceptualize and inform intervention plans with EMS professionals (Halpern et al., 2012a, Halpern et al., 2012b; Wild et al., 2020). Previous research has shown that vicarious trauma affects EMT attachment styles, which are predictors of PTSD (Rose-Freeman, 2016; Tae-Un & Kyung, 2017). Aside from those two theoretical frameworks, the role of negative affect undergirding PTSD, depression, and generalized anxiety is gaining traction (Byllesby et al., 2016; Dornbach-Bender et al., 2020; Greene et al., 2020; Ponder et al., 2022; Price & van Stolk-Cooke, 2015; Seligowski et al., 2016). It is of crucial importance that we examine any differences and similarities between non-treatment-seeking and treatment-seeking EMS professionals. This information can then inform researchers, guide additional scholarship, and encourage the implementation of any interventions targeting EMS professionals. Accordingly, the goal of this study was to evaluate for significant differences among the NTS and TS samples of EMS personnel on six assessment instruments of attachment avoidance, attachment anxiety, resilience, depression, generalized anxiety, PTSD, and suicidality.

## Methods

### Participants

In the NTS sample, the average age was 31.67 ( $SD = 8.73$ ) and was comprised of mostly White (73.7%;  $n = 42$ ) males (61.4%;  $n = 35$ ). Also, the NTS sample was comprised of mostly paramedics (64.9%;  $n = 37$ ) with an average of 6.71 ( $SD = 5.10$ ) years as a first responder. Fourteen percent ( $n = 8$ ) of the NTS sample had prior military service. In the TS sample, the average age was 33.04 ( $SD = 8.71$ ), and similarly, participants were mostly White (83.0%;  $n = 44$ ) males (52.8%;  $n = 28$ ), with an average length of time as a first responder of 8.06 ( $SD = 7.90$ ) years. Twenty percent ( $n = 11$ ) of the TS sample had prior military service. EMTs and paramedics are combined into one EMS group in this study. See Table 1.

**Table 1.** *Demographics of Sample*

Characteristic	Non-Treatment Seeking ( <i>n</i> = 57)	Treatment Seeking ( <i>n</i> = 53)
Age (Years)		
Mean	31.67	33.04
Median	30.00	31.00
<i>SD</i>	8.73	8.71
Range	35	36
Time in Service (Years)		
Mean	6.71	8.06
Median	6.00	5.00
<i>SD</i>	5.10	7.90
Range	29	36
First Responder Type <i>n</i> (%)		
Emergency Medical	20(35.1%)	53(100.0%)
Paramedic	37(64.9%)	--
Gender <i>n</i> (%)		
Women	21(36.8%)	25(47.2%)
Men	35(61.4%)	28(52.8%)
Missing	1(1.8%)	
Ethnicity <i>n</i> (%)		
African American/Black	1(1.8%)	--
Asian American	3(5.3%)	--
Latino(a)/Hispanic	11(19.3%)	7(13.2%)
Multiple Ethnicities	--	1(1.9%)
Native American	--	1(1.9%)
White	42(73.7%)	44(83.0%)

## Context

This study involved a collaboration between two agencies in the same greater metropolitan area. The NTS sample was obtained from a local EMS agency, and the TS sample was collected from a non-profit agency that serves veterans, first responders, medical frontline workers, and their families through traditional and non-traditional therapies. In the NTS sample, respondents who provided their contact information and completed the 30-minute survey were entered into a drawing for a 40-dollar gift basket (1 in 50 chances of winning), whereas in the TS sample there was no drawing or compensation. The TS sample was not given an option to receive compensation or the chance in the drawing because that is for ongoing secondary data analysis for program development which has Institutional Review Board approval. These studies were approved by the University of Texas Health Science Center Institutional Review Board (HSC-SPH-20-1264; HSC-SPH-20-1080).

## Instrumentation

### Experiences in Close Relationships (ECR)

The Experiences in Close Relationships (ECR) scale, developed by Brennan and colleagues (1998), assesses adult attachment. The ECR includes 36 questions on a 7-point Likert scale with responses ranging from 1 (disagree

strongly) to 7 (agree strongly) on two factors, attachment avoidance and attachment anxiety. In the NTS sample, the Cronbach's alpha of the scale was  $\alpha = .951$  and in the TS sample, the Cronbach's alpha was  $\alpha = .916$ .

### **Response to Stressful Experiences Scale-22 (RSES-22)**

The Response to Stressful Experiences Scale (RSES-22) was developed to assess resilience in veterans (Johnson et al., 2011) and has been validated on first responders (Ponder et al., 2021). The RSES-22 are summed with a range of 0 to 88, with higher scores indicating higher levels of resilience. In the NTS sample, the Cronbach's alpha of the scale was  $\alpha = .909$ , and in the TS sample, the Cronbach's alpha was  $\alpha = .903$ .

### **Generalized Anxiety Disorder-2 (GAD-2)**

The Generalized Anxiety Disorder-2 (GAD-2) is a brief two-item screener for the presence of generalized anxiety (Kroenke et al., 2007). The GAD-2 item-level responses range from 0 (not at all) to 3 (nearly every day), and scores can be summed from 0 to 6. The higher the total score, the greater the severity of generalized anxiety. In the NTS sample, the Cronbach's alpha of the scale was  $\alpha = .881$ , and in the TS sample the Cronbach's alpha was  $\alpha = .758$ .

### **Patient Health Questionnaire-2 (PHQ-2)**

The Patient Health Questionnaire-2 PHQ-2 was developed to assess for the presence of depression (Kroenke et al., 2003). The PHQ-2 item-level responses range from 0 (not at all) to 3 (nearly every day). Aggregated scores range from 0 to 6, with a higher score indicating greater severity of depression. In the NTS sample, the Cronbach's alpha of the scale was  $\alpha = .852$ , and in the TS sample, the Cronbach's alpha was  $\alpha = .726$ .

### **Patient Health Questionnaire–Suicidal Ideation (PHQ–SI)**

Na et al. (2018) used PHQ-9 Item 9 to assess suicide risk, which states: *Thoughts that you would be better off dead, or of hurting yourself*. Responses range from 0 (not at all) to 3 (nearly every day). In their validation study, they used the Columbia Suicide Severity Rating Scale (C-SSRS) as a comparison point. They determined that a positive screen was any non-zero answer on Item 9. The PHQ-9 Item 9 will be referred to as Patient Health Questionnaire-Suicidal Ideation (PHQ-SI) for this manuscript.

### **PC-PTSD-5**

The Primary Care PTSD Screen for DSM-5 (PC-PTSD-5) was used to assess for the presence of PTSD (Prins et al., 2016). The PC-PTSD-5 has five yes/no questions that are summed to obtain the overall score. Aggregated scores can range from 0 to 5, with higher scores indicating the greater severity of PTSD symptoms. In the NTS sample, the Cronbach's alpha of the scale was  $\alpha = .732$ , and in the TS sample, the Cronbach's alpha was  $\alpha = .867$ .

### **Mental Health Assessment Cut Scores**

Additionally, the GAD-2, PHQ-2, and the PC-PTSD-5 have cut scores of three or more (Kroenke et al., 2003; Kroenke et al., 2007; Prins et al., 2016). If a respondent has a score of three or greater, they can be placed into a nominal category of Positive, whereas a Negative score would be 2 or less. Lastly, regarding the PHQ–SI, any response of one or greater is indicative of being classified as Positive for suicidal ideation, and a score of zero would be considered Negative (Na et al., 2018).

### **Data Analytic Plan**

Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 27.0. The standardized assessment instruments did not meet the assumptions of normality, and consequently, non-

parametric statistical tests were conducted. The sole aim was to evaluate the differences between the NTS and TS samples. We used the Mann-Whitney test to establish if there were statistically significant differences because the data were not normally distributed and calculated the effect size  $r = Z/\sqrt{N}$  (Cohen, 1988). Effect size ranges are 0.1 (small), 0.3 (medium), and 0.5 (large). Next, we chose correlations because the sample size was too small to run any logistic regressions. Consequently, we only conducted two Spearman correlations, one for the NTS and one for the TS samples. We only ran two correlation matrices so there should not have been an issue with error.

First, Mann-Whitney tests were conducted between the NTS and TS samples on all six mental health measures (ECR, RSES-22, GAD-2, PHQ-2, PC-PTSD-5, and PHQ-SI). There were no missing values for both samples. Next, we separately evaluated the bivariate relationship between the assessments (ECR, RSES-22, GAD-2, PHQ-2, PHQ-SI, and PC-PTSD-5) for the samples via Spearman correlations because the data were not normally distributed. Conceptually, these constructs were all dependent variables.

## Results

### Descriptive Statistics

Attachment avoidance scores were significantly lower in the NTS group ( $Md = 48.36, n = 57$ ) compared to the TS group ( $Md = 63.18, n = 53$ )  $U = 1103.50, z = -2.44, p = .02$ , with a small effect size ( $r = .23$ ). Attachment anxiety scores were significantly lower in the NTS ( $Md = 46.40, n = 57$ ) compared to the TS group ( $Md = 65.28, n = 53$ )  $U = 992.00, z = -3.10, p < .01$ , with a medium effect size ( $r = .30$ ). Resilience scores were higher in the NTS group ( $Md = 60.31, n = 57$ ) compared to the TS group ( $Md = 50.33, n = 53$ )  $U = 1236.50, z = -1.64, p = .10$  but not statistically significant, ( $r = .16$ ). Depression scores were significantly lower in the NTS group ( $Md = 45.53, n = 57$ ) compared to the TS group ( $Md = 66.23, n = 53$ )  $U = 942.00, z = -3.45, p < .001$ , with a medium effect size ( $r = .33$ ). Generalized anxiety scores were significantly lower in the NTS group ( $Md = 42.61, n = 57$ ) compared to the TS group ( $Md = 69.37, n = 53$ )  $U = 775.50, z = -4.46, p < .001$ , with a medium effect size ( $r = .43$ ). PTSD scores were significantly lower in the NTS group ( $Md = 47.98, n = 57$ ) compared to the TS group ( $Md = 63.58, n = 53$ )  $U = 1082.00, z = -2.61, p < .01$ , with a small effect size ( $r = .25$ ). Suicide scores were lower in the NTS group ( $Md = 53.62, n = 57$ ) compared to the TS group ( $Md = 57.52, n = 53$ )  $U = 1403.50, z = -0.87, p = .38$  but not statistically significant, ( $r = .08$ ). In the NTS sample, 40.4% screened positive for PTSD, 31.6% for depression, 40.4% for generalized anxiety, and 19.3% for suicide. In the TS sample, 64.2% screened positive for PTSD, 64.2% for depression, 81.1% for generalized anxiety, and 26.4% for suicide. See Table 2 for descriptive statistics for the mental health measures.

**Table 2.** *Mental Health Assessment Descriptive Statistics*

	Non-Treatment Seeking ( <i>n</i> = 57)			Treatment Seeking ( <i>n</i> = 53)			<i>Z</i>
	<i>M</i> ( <i>SD</i> )	Median (IQR)	<i>N</i> (%)	<i>M</i> ( <i>SD</i> )	Median (IQR)	<i>N</i> (%)	
ECR-AVOID	2.89 (1.29)	2.89 (1.83, 4.00)		3.49 (1.26)	3.78 (2.47, 4.25)		-2.44*
ECR-ANX	3.43 (1.49)	3.61 (2.12, 4.61)		4.27 (1.17)	4.33 (3.36, 5.14)		-3.10**
RSES-22	63.63 (12.81)	63.00 (56.50, 75.50)		59.45 (11.94)	63.00 (49.50, 68.00)		-1.64
PC-PTSD-5	2.21 (1.69)	2 (1, 4)		3.11 (1.96)	4 (1, 5)		-2.61**
PHQ-2	1.77 (1.82)	1 (0, 3)		3.04 (1.91)	3 (1, 5)		-3.45***
GAD-2	2.26 (2.15)	2 (0, 4)		4.13 (1.71)	4 (3, 6)		-4.46***
PHQ-SI	0.33 (0.79)	0 (0, 0)		0.43 (0.80)	0 (0, 1)		-0.87
PC-PTSD-5							
Positive			23 (40.4)			34 (64.2)	
Negative			34 (59.6)			19 (35.8)	
PHQ-2							
Positive			18 (31.6)			34 (64.2)	
Negative			39 (68.4)			19 (35.8)	
GAD-2							
Positive			23 (40.4)			43 (81.1)	
Negative			34 (59.6)			10 (18.9)	
PHQ-SI							
Positive			11 (19.3)			14 (26.4)	
Negative			46 (80.7)			39 (73.6)	

Note: ECR-AVOID = Experiences in Close Relationships avoidant secondary strategy, ECR-ANX = Experiences in Close Relationships anxiety secondary strategy, RSES-22 = Response to Stressful Experiences Scale, PHQ-2 = Patient Health Questionnaire-2, GAD-2 = Generalized Anxiety Disorder-2, PC-PTSD-5 = PTSD primary care screen, PHQ-SI = Patient Health Questionnaire-Item 9 (suicidality), *M* = mean, *SD* = standard deviation, Median IQR = median quartile range, *z* = *z* statistic, Any participant who scored three or greater on the PC-PTSD-5, PHQ-2, and GAD-2 are categorized as Positive. Any participant who scored one or greater on the PHQ-SI is categorized as Positive. \**p* < .05, \*\**p* < .01, \*\*\**p* < .001

**Table 3.** Non-Treatment Seeking (n = 57) Mental Health Assessment Correlations

	ECR-AVOID	ECR-ANX	RSES-22	PHQ-2	GAD-2	PC-PTSD-5	PHQ-SI
ECR-AVOID	1	.42***	-.53***	.53***	.38**	.57***	.21
ECR-ANX		1	-.42***	.49***	.41**	.22	.38**
RSES-22			1	-.44***	-.40**	-.32*	-.29*
PHQ-2				1	.71***	.65***	.46***
GAD-2					1	.64***	.41**
PC-PTSD-5						1	.30*
PHQ-SI							1

**Note:** (n = 57); Spearman correlations. ECR-AVOID= Experiences in Close Relationships avoidant secondary strategy; ECR-ANX= Experiences in Close Relationships anxiety secondary strategy; RSES-22 = Response to Stressful Experiences Scale; PHQ-2 = Patient Health Questionnaire-2; GAD-2 = Generalized Anxiety Disorder-2; PC-PTSD-5 = PTSD primary care screen; PHQ-SI = Patient Health Questionnaire-Item 9 (suicidality). \* < .05, \*\* < .01, \*\*\* < .001

**Table 4.** Treatment Seeking Sample (n = 53) Mental Health Assessment Correlations

	ECR-AVOID	ECR-ANX	RSES-22	PHQ-2	GAD-2	PC-PTSD-5	PHQ-SI
ECR-AVOID	1	.13	-.26	.16	.20	.28*	.01
ECR-ANX		1	-.28*	.26	.10	.13	.10
RSES-22			1	-.24	-.15	-.16	-.07
PHQ-2				1	.60***	.27*	.35*
GAD-2					1	.43***	.17
PC-PTSD-5						1	.20
PHQ-SI							1

**Note:** (n = 53); Spearman correlations. ECR-AVOID= Experiences in Close Relationships avoidant secondary strategy, ECR-ANX= Experiences in Close Relationships anxiety secondary strategy, RSES-22 = Response to Stressful Experiences Scale, PHQ-2 = Patient Health Questionnaire-2, GAD-2 = Generalized Anxiety Disorder-2, PC-PTSD-5 = PTSD primary care screen, PHQ-SI = Patient Health Questionnaire-Item 9 (suicidality). \* ≤ .05, \*\* < .01, \*\*\* < .001



## Correlations

### NTS Sample

Attachment avoidance was significantly negatively correlated with resilience  $rs(57) = -.53, p < .001$ . Attachment avoidance was significantly positively correlated with depression  $rs(57) = .53, p < .001$ , generalized anxiety  $rs(57) = .38, p < .01$ , and PTSD  $rs(57) = .57, p < .001$ . Attachment anxiety was significantly negatively correlated with resilience  $rs(57) = -.42, p < .001$ . Attachment anxiety was significantly positively correlated with depression  $rs(57) = .49, p < .001$ , generalized anxiety  $rs(57) = .41, p < .01$ , and suicide  $rs(57) = .38, p < .01$ . Resilience was significantly negatively correlated with depression  $rs(57) = -.44, p < .001$ , generalized anxiety  $rs(57) = -.40, p < .01$ , PTSD  $rs(57) = -.32, p < .05$ , and suicide  $rs(57) = -.29, p < .05$ . See Table 3.

### TS Sample

Attachment avoidance was significantly positively correlated with PTSD  $rs(53) = .28, p < .05$ . Attachment anxiety was significantly negatively correlated with resilience  $rs(53) = -.28, p < .05$ . Depression was positively correlated with generalized anxiety  $rs(53) = .60, p < .001$ ; PTSD  $rs(53) = .27, p < .05$ ; and suicide  $rs(53) = .35, p < .05$ . Lastly, PTSD was significantly positively correlated with generalized anxiety  $rs(53) = .43, p < .001$ . See Table 4.

## Discussion

This study, to the best of our knowledge, is the first to compare NTS and TS samples of EMS professionals. Furthermore, the two agencies that collaborated on this project were in the same greater metropolitan area in the Southwestern United States, increasing the external validity and generalizability of these findings (Khorsan & Crawford, 2014). The aim of this study was to determine if there were any significant differences between the two samples of EMS personnel on six assessment instruments measuring attachment avoidance, attachment anxiety, resilience, depression, generalized anxiety, PTSD, and suicidality. We interpret the aforementioned findings through the theoretical frameworks of attachment, resilience, and negative affect.

### Attachment

In comparing the two samples, both dimensions of attachment were significantly higher in the TS sample. In the NTS sample, attachment avoidance was significantly correlated with depression, generalized anxiety, and PTSD, whereas attachment anxiety was significantly correlated with depression, generalized anxiety, and suicide. However, in the TS sample, attachment avoidance was only significantly correlated with PTSD. Our study shows the TS sample had higher scores, which might be why they were seeking treatment, and this study would be in line with previous findings that both attachment dimensions predict PTSD (Markert-Green, 2021). Consequently, our findings align with studies by Rose-Freeman (2016) and Tae-Un and Kyung (2017), supporting the role of vicarious trauma on EMT attachment styles as predictors of PTSD.

Halpern and colleagues (2012b) found that experiencing alexithymia (describing the inability to identify and describe one's emotions) after a critical incident was challenging for EMTs. They concluded that EMTs with difficulties identifying feelings had a prolonged recovery with physical arousal (Halpern et al., 2012b). EMTs' attachment style might have influenced their ability to identify and describe what they experienced until their symptoms were so distressing that they could no longer ignore them (Halpern et al., 2012a). This finding is important because the PTSD symptom cluster of alterations in arousal and reactivity predicts the chaining of symptoms at later time points (Doron-LaMarca et al., 2015). Thus, this might explain why the treatment

group scores are higher compared to the non-treatment-seeking sample; the treatment group might be experiencing the chaining of symptoms.

## Resilience

The resilience scores did not significantly differ between both samples. In the NTS sample, attachment avoidance and attachment anxiety were significantly negatively correlated with resilience, whereas, in the TS sample, attachment anxiety was negatively correlated with resilience. Resilience can determine coping strategies and mitigate the impact of traumatic symptoms, for example, attachment anxiety (Austin et al., 2018; Markert-Green, 2021). Resilience was inversely related to the NTS sample with every mental health outcome, consistent with previous findings (Austin et al., 2018; Fonseca et al., 2021).

## Negative Affect

The most common undercurrent between the NTS and TS samples was the relationship between depression, generalized anxiety, and PTSD. Recently, scholars have been focusing more on what might be underlying the rate at which these three constructs co-occur and suggest it might be driven by negative affect (Byllesby et al., 2016; Dornbach-Bender et al., 2020; Greene et al., 2020; Ponder et al., 2022; Price & van Stolk-Cooke, 2015; Seligowski et al., 2016). At the neurobiological level, much remains unknown about how negative affect is related to co-occurring depression, anxiety, and PTSD. A recent meta-analysis using functional magnetic resonance showed that, “at the level of regional brain activity, there is no single region or even voxel that uniquely represents positivity or negativity” (Lindquist et al., 2016, p. 1918).

Furthermore, a recent network analysis on TS first responders found that affective depression and the PTSD symptom cluster of negative alterations in cognitions and mood were most central to the network, suggesting those are salient areas for targeted interventions (Ponder et al., 2022). In a dynamic network analysis of negative emotions and PTSD symptom clusters, researchers found that sadness had the highest bridge strength, meaning that it was most predictive of negative emotions. In contrast, negative alterations in cognitions and mood had the highest bridge strength for a PTSD symptom cluster (Greene et al., 2020). When using a sample of 32,841 veterans investigating PTSD and depressive networks, researchers found that the largest expected influence (EI) on the item level PHQ-9 was *feeling down, depressed, or hopeless* (Duek et al., 2020). This consideration is important because that question is on the brief PHQ-2 screener used in this study and is under the affective depression factor.

Dornbach-Bender et al. (2020) used ecological momentary assessment (EMA) over a 24-hour period in a sample of World Trade Center responders (62.9% law enforcement officers [LEO]) to investigate positive and negative affect in relation to PTSD. Positive affect was not significantly related to a PTSD diagnosis, PTSD symptom severity, and PTSD/depression comorbidity, whereas negative affect was a significant predictor of all three conditions (Dornbach-Bender et al., 2020). In a prospective design over 48 months, researchers found that among LEOs, when first assessed in the police academy, lower levels of negative and higher levels of positive emotion longitudinally predicted resilience, not resilience being the construct that drives emotional change (Galatzer-Levy et al., 2013).

## Implications

This study was able to identify similarities and differences in EMS professionals who are presenting for therapy at their baseline appointment against those not seeking treatment. Additionally, the only statistically significant variable associated with suicide in both samples was depression. Consequently, we recommend agencies explore and select initiatives that target negative affect, but specifically depression. Previous research suggests mindfulness may be a useful intervention to reduce negative affect in EMS professionals with the ultimate goal of reducing other mental health symptoms (Grupe et al., 2019; Lomas et al., 2019; Pizutti et al.,

2019). If an agency is attempting to design an intervention, possibly mindfulness, it should be aimed at the co-occurrence of PTSD, depression, and generalized anxiety symptomology.

## Limitation and Future Research Recommendations

Several limitations are noteworthy. The sample sizes were too small to run any inferential regressions to explore the relationships between variables. Also, the abbreviated scales for PTSD, generalized anxiety, and depression were used, precluding any further comparisons, such as an examination of PTSD symptom clusters or somatic and affective depression. Moreover, the reliability coefficients were fairly low, just above the acceptable range. Ultimately, if existing frameworks were broadened to conceptualize these three constructs as driven by negative affect, potentially the optimal delivery format, platform, and length of therapeutic interventions could be narrowed down, resulting in more effective treatment.

## Conclusion

Our study adds to the literature important findings regarding EMS professionals. For example, although the assessment scores overall were lower in the NTS group compared to the TS group, their positive screen for PTSD (40.4%), depression, (31.6%), generalized anxiety (40.4%), and suicide (19.3%) suggests they might benefit from clinical services. This finding also indicates that EMS personnel might be at a higher risk of leaving their jobs due to burnout or dissatisfaction with their work, and ultimately this may be related to their symptoms (Blau & Chapman, 2016; Tae-Un & Kyung, 2017). Moreover, negative affect has been shown as a significant positive mediator for the relationship between alexithymia and illness anxiety (Saeed et al., 2019).

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