4-2022

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https://doi.org/10.37576/abuse.2022.028

Resilience Measured as an Outcome Variable in a Sample of Emergency Medical Service (EMS) Professionals

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Abstract

The construct of resilience is usually entered into statistical models as an independent variable even though scholars assert it should be conceptualised similarly to other post-trauma mental health outcomes (Kalisch *et al*., 2017). To the best of our knowledge, there are no other published papers using a dependent variable from a standardised resilience assessment and individual trauma exposure item-level responses as predictor variables. 93 Emergency Medical Service (EMS) professionals completed the Life Events Checklist (LEC) and the Brief Resilience Scale (BRS). Each response to all LEC questions was entered into a backwards stepwise regression predicting resilience. The backwards stepwise regression was significant $F(7, 85) = 9.14$, $p < .001$ and accounted for 38.3% of the variability in resilience. Gender and LEC items 3, 10, 12, and 13 negatively predicted resilience, whereas prior military service and LEC item 14 (*sudden violent death*) increased resilience. Even 20 months into the COVID-19 pandemic, EMS professionals continued to serve their communities. Surprisingly, *sudden violent death* significantly increased resilience ($\beta = .43$, $p < .001$). We concur with scholarship on EMS professionals (before and during the pandemic) that resilience should be thought of as *applied when needed* (Carbajal *et al*., 2021; Ponder *et al*., 2022).

Keywords: Emergency Medical Technician (EMT), paramedic (PM), Emergency Medical Service (EMS), resilience, trauma exposure, COVID-19 pandemic

Introduction

Emergency medical service (EMS) professionals, including emergency medical technicians (EMTs) and paramedics (PM), are routinely exposed to traumatic events. As members of a profession that involves repeated exposure to trauma, EMS professionals may develop generalised anxiety, depression, posttraumatic stress disorder (PTSD), and suicidal behavior (Austin *et al*., 2018; Bonanno *et al*., 2007; Carbajal *et al*., 2021, Joyce *et al*., 2019). Resilience has been shown to be a protective factor for EMS professionals routinely exposed to cumulative trauma (Austin *et al*., 2018; Carbajal *et al*., 2021; Joyce *et al*., 2019). Unfortunately, resilience is usually conceptualised as an independent variable in statistical models, with some other mental health construct typically included as the dependent variable. Recently, scholars have asserted that resilience would be best conceptualised as a response to

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 Received 2nd December 2021; Revised 17th February 2022; Accepted 18th Febuary 2022.

https://doi.org/10.37576/abuse.2022.028

an adverse event—in essence, as a dependent variable (Bonanno, 2021; Kalisch *et al*., 2017). Early in the pandemic, PeConga *et al*. (2020) provided a list of four myths about resilience, the second of which was resilient people do not have bad days or weeks. PeConga *et al*. asserted:

Engaging in adaptive behaviors while struggling and while experiencing intense fear, anxiety, or grief, is resilience. Indeed, the most resilient among us will have bad days; it is not the absence of negative emotions but our response to them that matters (pg. S47).

Therefore, in this study, we measured resilience as an outcome variable and used items from the Life Events Checklist (LEC) as predictors.

Resiliences modeled longitudinally in a first responder sample has shown that high levels of resilience act as a buffer against depression and PTSD (Joyce *et al*., 2019). In a sample of EMTs, Joyce *et al*. (2019) demonstrated that resilience was inversely correlated with secondary stress and negative outlook. In a recent network analysis study of first responders, the directed acyclic graphs (DAG) illustrated resilience was upstream from suicidality (Ponder *et al.*, 2022). This finding was in line with previous research suggesting that resilience is a modifiable risk factor; in other words, resilience is an internal resource that can be accessed when needed to buffer against negative outcomes such as PTSD or suicidality (Joyce *et al*., 2019).

More recently, in a treatment-seeking sample of first responders before and after the onset of the COVID-19 pandemic, the construct *applied* resilience correlated with other trauma-related constructs, such as depression, generalised anxiety, PTSD, and suicidality (Carbajal *et al*., 2021). *Applied* resilience can be conceptualised as when necessary to buffer against a maladaptive outcome such as PTSD or suicide in an individual. Pre-COVID-19 resilience was significantly negatively correlated with depression, PTSD, and suicidality. During COVID-19, resilience was significantly negatively correlated with depression, generalized anxiety, and PTSD. In that sample, the resilience means decreased. In addition, independent samples *t*-test showed there were no statistically significant differences (Carbajal *et al*., 2021). This finding suggests that resilience was *applied* when needed.

Kalisch *et al*. (2017) asserted resilience should be regarded as a mental health consequence that follows a stressful event. In a large sample of greater New York City residents following the September 11 attacks, respondents who reported trauma had the lowest odds ratio predicting resilience or not (Bonanno *et al*., 2007). They operationalised resilience categorically (i.e., PTSD symptoms present or not present). Having two to three traumas had an odds ratio of 0.58 (95% CI: 0.40, 0.85), and four or more prior traumas had the lowest odds ratio 0.42 (95% CI: 0.26, 0.68). These findings suggest that repeated exposure to trauma reduces the odds of a resilience outcome (such as not having PTSD; Bonanno *et al*., 2007). This study was limited in that Bonanno and colleagues did not use a standardised assessment to measure the construct of resilience. Kalisch *et al*. (2017) reviewed 13 studies that used baseline predictor variables with the outcome or dependent variable (resilience) after exposure to a stressor, though most were on samples of combat veterans.

To the best of our knowledge, no published studies have used the LEC as predictors and resilience as the outcome variable. However, resilience has been modeled longitudinally in undergraduate students in China, where researchers found profound childhood emotional

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neglect and extraversion predicted later time points of social support and depression (Shen *et al*., 2021). Türk-Kurtça *et al*. (2020) in a cross-sectional convenience sample, found that childhood trauma and emotional neglect predicted the dependent variable of resilience in separate models. Additionally, emotional self-efficacy and its factors significantly predicted resilience. Lastly, they found that as the internal locus of control increases, so does psychological resilience (Türk-Kurtça *et al*., 2020). Furthermore, in an examination of 17 years of panel data in Australia, Etilé *et al*. (2021) uncovered that an internal locus of control was the strongest predictor of resilience.

In a recent theoretical article examining the resilience paradox, Bonanno (2021) asserted that, "*not only is resilience to PTEs common, it is consistently the majority outcome*" (pg. 2). He argued that there is no resilient type, while highlighting the perils of machine learning and that *types* of situations vary, so small effects might be overappreciated. Consequently, Bonano (2021) maintained resilience should be considered as a flexible sequence of *context sensitivity*, *repertoire*, and *feedback monitoring*. The author asserted that this flexibility sequence, when coupled with a flexibility mindset, increased the likelihood of a resilient outcome.

Though there has been scholarship measuring resilience as a dependent variable (Etilé *et al*. 2021; Shen *et al*., 2021; Türk-Kurtça *et al*. 2020), none used the LEC, which is a validated measure of potentially traumatic events (PTEs). To the best of our knowledge, there has not been a study using the LEC to predict resilience among a sample of EMS professionals. This study aims to fill gaps in the literature by examining resilience in a sample of non-treatment- seeking EMS professionals using LEC items as predictor variables. Thus, given the gap in the literature, we questioned whether trauma exposure, as measured by the LEC, would decrease resilience.

Methods

Participants

The sample has 54 (58.1%) males and 39 (41.9%) females. The average age was 32.44 years old (*SD* = 8.84). The average age of the male participants was 33.94 (*SD* = 9.47), and the average age of the female participants was 30.36 (*SD* = 7.51). Seventy-one participants were White (76.3%), 14 Hispanic (15.1%), 3 Asian (3.2%), and 5 Other (5.4%). 59 identified as paramedics (63.4%) and 34 as EMTs (36.6%). Seventeen participants had prior military service (18.3%). The average length of service as an EMS professional was 7.37 years (*SD* = 6.26), with a range of 1 to 30 years of service.

Procedure

The ambulance company has a multi-year relationship with the non-profit agency co-leading this study. The ambulance company is located in the same metropolitan area in the Southwestern United States of America. The survey was administered digitally, and the researchers forwarded the link to the point of contact within the ambulance agency, who then sent it out internally to their employees. The agency has approximately 300 EMS professionals, and 93 completed the assessments, yielding a response rate of approximately 31%. Respondents who provided their contact information and completed the 15–20-minute survey were entered into a prize drawing (40-dollar gift basket; 1 in 50 chances of winning).

https://doi.org/10.37576/abuse.2022.028

This study was reviewed and approved by the Committee for the Protection of Human Subjects (HSC-SPH-20-1080) at the University of Texas Health Sciences Center at Houston.

Measures

Brief Resilience Scale (BRS)

Smith *et al*. (2008) developed the Brief Resilience Scale (BRS) to assess the ability to bounce back or recover from stress. It is comprised of six questions with ranges from 1 (*strongly disagree*) to 5 (*strongly agree*) which are summed then divided by six to produce a mean. Average scores range from 1 to 5. Scores 1.00 to 2.99 indicate low resilience, 3.00 to 4.30 indicate normal resilience, and averages from 3.31 to 5 indicate high resilience. In this sample, Cronbach's alpha was $\alpha = .882$.

Life Events Checklist (LEC)

Gray *et al*. (2004) developed the Life Events Checklist (LEC) to measure exposure to potentially traumatic events (PTEs). The LEC contains 17 different PTEs that the respondent can select from the following categories: *Happened to me*, *first to arrive* (at work), *response team* (at work), *witnessed in real-time* (at work), and *learned about it through conversation* (at work). A recent manuscript has detailed how the LEC can be scored (Weis *et al*., 2021). The three options are: (1) sum all the questions that would produce an aggregate score from 0 to 51; (2) total items endorsed only for the *happened to me* column; or (3) obtain a weighted total that would produce an overall LEC score that could range from 0 to 112 (Weis *et al*., 2021). Because we were interested in determining how each event type impacted the outcome variable of resilience, we used the scoring method of the *happened to me* column, which was endorsed in the original development and validation paper of the LEC (Gray *et al*., 2004).

Data Analytic Plan

Statistical analyses in this manuscript were performed using the Statistical Package for the Social Sciences (SPSS) version 27.0. Originally, we sought to conduct two regression equations. The BRS was the dependent variable and met the assumptions of normality. However, the aggregated summed score for the happened-to-me column of the LEC did not meet assumptions of normal distribution, as such we did not run that model. The second regression included age; gender, years of service as an EMS professional, and prior military service as covariates. Next, 16 questions of the LEC *happened to me* column were added to the regression. Every participant in this sample selected "no" on question 11 of the LEC (captivity), so this item was not entered into the model. Following this, we conducted a backward stepwise regression, repeating fourteen steps until a final model was reached. This approach reduced the likelihood of multicollinearity.

Results

Descriptive Statistics

The mean BRS for paramedics was 3.42 ($SD = 0.81$) and the mean BRS for EMTs was 3.23 ($SD = 0.94$); there were no statistically significant differences between both samples $t(91) = 1.05$, $p = .30$. The mean BRS for male participants was 3.50 ($SD = 0.85$) and the mean BRS for female participants was 3.15 ($SD = 0.84$); there were no statistically significant differences between both samples $t(91) = 1.97$, $p = .052$. Since there were no significant differences, all further statistical analyses included both sub-groups for a total of $n = 93$. The

https://doi.org/10.37576/abuse.2022.028

combined EMS professional average score on the BRS was 3.35 (*SD* = 0.86) with a range of 1 to 5 and normally distributed. The LEC aggregated score for the *happened to me* column was 2.70 (*SD* = 2.49), with a range from 0 to 11. See Table 1 for BRS and individual LEC descriptive statistics, which include LEC item-level questions.

Table 1

Descriptive Statistics for Assessments

LEC Items	M (SD)	range	No = n(%)	Yes = 1 n(%)
LEC 1	.26 (.44)	0-1	69(74.2%)	24(25.8%)
LEC 2	.08 (.27)	0-1	86(92.5%)	7(7.5%)
LEC 3	.28 (.45)	0-1	67(72.0%)	26(28.0%)
LEC 4	.20 (.41)	0-1	74(79.6%)	19(20.4%)
LEC 5	.09 (.28)	0-1	85(91.4%)	8(8.6%)
LEC 6	.43 (.50)	0-1	53(57.0%)	40(43.0%)
LEC 7	.15 (.36)	0-1	79(84.9%)	14(15.1%)
LEC 8	.13 (.34)	0-1	81(87.1%)	12(12.9%)
LEC 9	.27 (.45)	0-1	68(73.1%)	25(26.9%)
LEC 10	.05 (.28)	0-1	88(94.6%)	5(5.4%)
LEC 11	--	--	--	--
LEC 12	.06 (.25)	0-1	87(93.5%)	6(6.5%)
LEC 13	.05 (.23)	0-1	88(94.6%)	5(5.4%)
LEC 14	.04 (.20)	0-1	89(95.7%)	4(4.3%)
LEC 15	.05 (.23)	0-1	88(94.6%)	5(5.4%)
LEC 16	.06 (.25)	0-1	87(93.5%)	6(6.5%)
LEC 17	.48 (.50)	0-1	48(51.6%)	45(48.4%)
BRS	3.35 (.86)	1-5		
LEC Aggregate	2.70 (2.49)	0-11		

Note. BRS = Brief Resilience Scale, LEC = Life Events Checklist.

Regression

Covariates of age, gender, years of service as an EMS professional, and prior military service, along with each LEC question (excluding number 11), were entered into the model predicting the BRS. The backwards stepwise regression was significant $F(7, 85) = 9.14$, $p < .001$ and accounted for 38.3% of the variability in resilience. Model summary statistics are reported in Table 2. Given that so few respondents selected yes to some of the LEC questions, we assessed the normality of the standardised residuals. The Shapiro-Wilk test indicated that the standardised residuals were normally distributed $W(93) = .98$, $p = .33$.

https://doi.org/10.37576/abuse.2022.028

Table 2

Backwards Stepwise Linear Regression Model

Predictor	B (*SE*)	β	*t*-value	*p*-value	95% CI	Tolerance	VIF
Constant	3.69 (.11)		32.53	<.001	[3.47, 3.92]		
Gender	-.50 (.15)	-.29	-3.35	.001	[-0.80, -0.20]	.91	1.10
Prior service	.79 (.22)	.36	3.67	<.001	[0.36, 1.22]	.71	1.41
LEC 3	-.53 (.16)	-.28	-3.28	.002	[-0.85, -0.21]	.92	1.08
LEC 10	-.81 (.36)	-.21	-2.23	.028	[-1.53, -0.09]	.73	1.37
LEC 12	-.94 (.31)	-.27	-3.02	.003	[-1.55, -0.32]	.85	1.18
LEC 13	-1.87(.36)	-.50	-5.27	<.001	[-2.58, -1.17]	.76	1.31
LEC 14	1.82 (.42)	.43	4.34	<.001	[0.99, 2.65]	.68	1.47

Note. Gender (0 = male, 1 = female), Prior service (0 = no, 1 = yes), LEC 3 = Transportation accident (for example, car accident, boat accident, train wreck, plane crash), LEC 10 = Combat or exposure to a war-zone (in the military or as a civilian), LEC 12 = Life-threatening illness or injury, LEC 13 = severe human suffering, LEC 14 = Sudden violent death (for example, homicide or suicide), VIF = Variance inflation factor.

https://doi.org/10.37576/abuse.2022.028

Discussion

Clinical Implications and Recommendations

We examined the impact of trauma exposure on resilience in a non-treatment-seeking sample of EMS professionals. Findings revealed that gender, LEC questions 3 (transportation accident), 10 (combat exposure to a war zone), 12 (life-threatening illness or injury), and 13 (severe human suffering) decreased resilience, whereas prior service in the military and LEC question 14 (sudden violent death) increased resilience. Question 14 of the LEC *sudden violent death* (for example, homicide, suicide) is a novel finding that is non-existent in the first responder resilience literature. However, Kristensen *et al*. (2012) examined bereavement and mental health after sudden and violent loss. They found that after a trauma, resilience is a protective factor against maladaptive mental health outcomes such as the development of PTSD, depression, alcohol/drug use, and suicidal ideation. However, they did not conceptualise resilience as a mental health outcome as previously suggested (Kalisch *et al*., 2017).

In a pre-pandemic sample, Austin *et al*. (2018) found that the BRS mean was 3.81 (*SD* = 0.66). In contrast, the BRS mean in the present study was lower, 3.35 (*SD* = 0.86), possibly indicating the effect of the pandemic. In other words, when conceptualising resilience as a mental health outcome and employing the logic of *applied* resilience (Carbajal *et al*., Ponder *et al*., 2021), it is understandable why resilience scores were reduced by 12.07% in the present study, in comparison to mean scores found by Austin and colleagures (2018). Hence, with the high demand placed on EMS professionals twenty months into the COVID-19 pandemic, it is remarkable that resilience scores only decreased by a minimal amount. For example, the increased demand for EMS services during the pandemic slowed their response time, and morbidity and mortality cases rose (Al Amiry & Maguire, 2021). In addition, EMS workers' risk level of exposure to COVID-19 increased, threatening their safety (Murphy *et al*., 2020). In a preliminary data analysis, Maguire *et al*. (2020) found EMS clinicians were affected more than their firefighter, police officer, nurse, and physician counterparts. Therefore, one could argue that EMS resilience mean scores demonstrated just how robust their levels of resilience were, since comparatively, the change in scores was 12%.

Future Research Directions

The major strength of this study is that it is the first to explore resilience as an outcome in a sample of EMS professionals. However, given the smaller sample size, the results of this study should be considered preliminary. Also, results might be different in samples of firefighters and police. Resilience is a known protective factor for first responders. Future research should investigate resilience as an outcome using larger samples and different first responder types. In most studies on traumatic stress in first responder populations, the construct of resilience has been investigated as a predictor variable. Scholars have been encouraged to consider the concept as the outcome of traumatic exposures (Kalisch *et al*., 2017). Despite the considerable stressors of the COVID-19 pandemic on EMS professionals, this group continues to display high levels of resilience with only slight declines, further building on the premise that resilience can be thought of as *applied* when needed. Further research focusing on resilience as an outcome variable could

aid in the development of programs to bolster resilience in future EMS professionals, thereby reducing adverse outcomes associated with trauma exposure.

References

Al Amiry, A., & Maguire, B. J. (2021). Emergency medical services (EMS) calls during COVID-19: Early lessons learned for systems planning (a narrative review). *Open Access Emergency Medicine (OAEM), 13*, 407–414. https://doi.org/10.2147/OAEM.S324568

Austin, C. L., Pathak, M., & Thompson, S. (2018). Secondary traumatic stress and resilience among EMS. *Journal of Paramedic Practice, 10*(6), 240-247. https://doi.org/10.12968/jpar.2018.10.6.240

Bonanno, G. A. (2021). The resilience paradox. *European Journal of Psychotraumatology, 12*(1), 1942642. https://doi.org/10.1080/20008198.2021.1942642

Bonanno, G. A., Galea, S., Bucciarelli, A., & Vlahov, D. (2007) What predicts psychological resilience after disaster? The role of demographics, resources, and life stress. *Journal of Consulting and Clinical Psychology, 75*(5), 671-682. https://doi.org/10.1037/0022-006X.75.5.671

Carbajal, J. I., Ponder, W. N., Whitworth, J., Schuman, D., & Galusha, J. M. (2021) The impact of COVID-19 on first responders' resilience and attachment. *Journal of Human Behavior in the Social Environment*. https://doi.org/10.1080/10911359.2021.1962777

Etilé, F., Frijters, P., Johnston, D. W., & Shield, M. A. (2021). Measuring resilience to major life events. *Journal of Economic Behavior and Organization, 191*(C), 598-619. https://doi.org/10.1016/j.jebo.2021.09.004

Gray, M. J., Litz, B. T., Hsu, J. L., & Lombardo, T. W. (2004). Psychometric properties of the Life Events Checklist. *Assessment, 11*(4), 330-341. https://doi.org/10.1177/1073191104269954

Joyce, S., Tan, L., Shand, F., Bryant, R. A., & Harvey, S. B. (2019). Can resilience be measured and used to predict mental health symptomology among first responders exposed to repeated trauma? *Journal of Occupational and Environmental Medicine, 61*(4), 285–292. https://doi.org/10.1097/JOM.0000000000001526

Kalisch, R., Baker, D. G., Basten, U., Boks, M. P., Bonanno, G. A., Brummelman, E., Chmitorz, A., Fernàndez, G., Fiebach, C. J., Galatzer-Levy, I., Geuze, E., Groppa, S., Helmreich, I., Hendler, T., Hermans, E. J., Jovanovic, T., Kubiak, T., Lieb, K., Lutz, B., . . . Kleim, B. (2017) The resilience framework as a strategy to combat stress-related disorders. *Nature Human Behaviour, 1*(11), 784-790. https://doi.org/10.1038/s41562-017-0200-8

Kristensen, P., Weisaeth, L., & Heir, T. (2012) Bereavement and mental health after sudden and violent loss: A review. *Psychiatry, 75*(1), 76-97. https://doi.org/10.1521/psyc.2012.75.1.76

Maguire, B. J., O'Neill, B. J., Phelps, S., Maniscalco, P. M., Gerard, D. R., & Handal, K. A. (2020). COVID-19 fatalities among EMS clinicians. *EMS*. Retrieved from: https://www.ems1.com/ems-products/personal-protective-equipment-ppe/articles/covid-19-fatalities-among-ems-clinicians-BMzHbuegIn1xNLrP/.

Murphy, D. L., Barnard, L. M., Drucker, C. J., Yang, B. Y., Emert, J. M., Schwarcz, L., Counts, C. R., Jacinto, T. Y., McCoy, A. M., Morgan, T. A., Whitney, J. E., Bodenman, J. V., Duchin, J. S., Sayre, M. R., & Rea, T. D. (2020). Occupational exposures and programmatic response to COVID-19 pandemic: an emergency medical services experience. *Emergency Medicine Journal*, *37*(11), 707-713. http://dx.doi.org/10.1136/emermed-2020-210095

PeConga, E. K., Gauthier, G. M., Holloway, A., Walker, R. S., Rosencrans, P. L., Zoellner, L. A., & Bedard-Gilligan, M. (2020) Resilience is spreading: Mental health within the COVID-19 pandemic. *Psychological Trauma: Theory, Research, Practice, and Policy, 12*(S1), S47-S48. https://doi.org/10.1037/tra0000874

Ponder, W. N., Walters, K., Simons, J., Simons, R., Jetelina, K. K., & Carbajal, J. (2022). *Network analysis of distress, suicidality, and resilience in a treatment seeking sample of first responders* [manuscript submitted for publication]. Department of Psychology, University of South Dakota.

Shen, S., Chen, Z., Qin, X., Shang, M., & Dai, Q. (2021) Remote and adjacent psychological predictors of early-adulthood resilience: Role of early-life trauma, extraversion, life-events, depression, and social-support. *PLoS ONE, 16*(6), e0251859. https://doi.org/10.1371/journal.pone.0251859

Smith, B. W., Dalen, J., Wiggins, L., Tooley, E., Christopher, P., & Bernard, J. (2008) The Brief Resilience Scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine, 15,* 194–200. https://doi.org/10.1080/10705500802222972

Türk-Kurtça, T., & Kocatürk, M. (2020). The role of childhood traumas, emotional self-efficacy and internal-external locus of control in predicting psychological resilience. *International Journal of Education and Literacy Studies, 8*(3), 105-115.

Weis, C. N., Webb, E. K., Stevens, S. K., Larson, C. L., & deRoon-Cassini, T. A. (2021) Scoring the Life Events Checklist: Comparison of three scoring methods. *Psychological Trauma: Theory, Research, Practice, and Policy*. Advance online publication. https://doi.org/10.1037/tra0001049

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https://doi.org/10.37576/abuse.2022.028

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