

Finding Control in the Chaos: A Case for Mindfulness in the Dispatch Center

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ABSTRACT

Background: Emergency dispatchers serve as a unique population to examine the impact of exposure to trauma given their continuous indirect exposure to stressful and traumatic calls. Furthermore, the unique experiences of emergency dispatchers warrants consideration of preventative measures to mitigate the negative outcomes associated with the job.

Methods: Due to the continuous stress and exposure to trauma, present perceived control is offered as a variable of interest. Present perceived control (PPC) is examined in two studies by the present researchers in relation to quality of life, exposure to traumatic events, and symptoms of PTSD.

Results: Results of study one indicate quality of life corresponded with and predicted more secondary traumatic stress, and PPC corresponded with and predicted less secondary traumatic stress. In contrast to the offered hypothesis, PPC did not buffer the effects of stress or increase quality of life. In response, the researchers assessed if PPC serves as a buffer against additional life stressors on symptoms of PTSD. Study two revealed more exposure to traumatic life events corresponded to increased PTSD symptom severity, and more PPC corresponded to lower PTSD symptom severity. Further PPC was identified as a significant moderator of the relationship between stressors and PTSD symptom severity.

Conclusions: Both studies shed light on the potential usefulness of incorporating mindfulness-based prevention among emergency dispatchers. By focusing on what dispatchers can control during 911 calls, the impact of exposure to trauma on quality of life and symptoms of PTSD may be alleviated.

INTRODUCTION

The increase in research related to consequences of exposure to trauma among military personnel has led to increasing interest in other groups who also experience occupational-based trauma. These groups include nurses, doctors, mental health professionals and, more recently, emergency dispatchers. Recent research has shed light on the adverse outcomes that dispatchers may experience from indirect trauma exposure.^{1,2} Review of the available research highlights the negative outcomes that these dispatchers may experience (i.e., Acute Stress Disorder, Post-traumatic Stress Disorder).^{1,2} To date, efforts to mitigate the effects of occupational-based trauma have focused on addressing teamwork, sick days, physical activity, and scheduling.^{3,4} Given the potential impairments associated with PTSD and related disorders, research efforts need to include more psychologically focused variables such as quality of life. According to Angermeyer and Killian,⁵ quality of life encompasses individuals' well-being and overall life satisfaction. When examining quality of life across veterans in comparison to civilians with PTSD, veterans of recent and past wars diagnosed with PTSD experience poorer quality of life across several domains (i.e., functioning, living conditions, and poorer satisfaction (Schnurr, Lunney, Bovin, & Marx, 2009). Thus, assessment of quality of life among emergency dispatchers may provide informative data on the impact of occupational trauma.

In addition to assessment of trauma symptoms and potential impairment in quality of life, appropriate intervention efforts need to be considered. Given that emergency dispatchers' experiences of trauma are predictable and foreseeable, it lends itself to the implementation of prevention efforts. Prevention efforts are widely implemented in the military arena (see review⁶); however, these military approaches may not be appropriate. In contrast

to a combat soldier whose exposure is direct and multisensory (e.g., olfactory, auditory, visual, tactile), dispatchers' exposure is exclusively indirect and auditory. Therefore, a more tailored preventative approach targeted to dispatchers may be warranted. One promising area that can serve as a target for an emergency dispatcher PTSD prevention protocol is perceived control. One theoretical model of PTSD posits that exposure to uncontrollable, unpredictable, and aversive events leads to PTSD-like symptoms.⁷ Frazier et al., 2011 expanded upon this model by studying the construct of perceived control.⁸ Perceived control can be divided into three sub-constructs: 1) what was controllable in a past event (*past perceived control*); 2) what may be controllable in a future event (*future perceived control*); 3) belief that aspects of the current situation, such as emotional responses, are able to be controlled (*present perceived control*). A series of studies conducted by Frazier and colleagues have consistently provided support that present perceived control is related and associated with better adjustment and less distress.⁸⁻¹¹ In other words, by focusing on what one can actually control in the present in the face of trauma, better adjustment and less distress can be achieved. Collectively, the results related to perceived control and trauma experiences have been mixed. However, these studies have been targeted mostly toward one-time, unexpected stressors, which is not congruent with the job description of emergency dispatchers. There is a need to understand how, and if, this construct might be applied to a more continuous and expected stress pattern. Further, it is worthwhile to take note of dispatchers' stressors both related to their job and outside of their job. That is, the impact of the PTSD symptoms is not confined to a specific life area, and addressing symptoms related to PTSD may prevent or reverse poor quality of life.¹² When considering the findings within a preventative lens, gaining an understanding of the impact on quality of life for dispatchers across various domains is important. The goal of the two studies presented here was to investigate emergency dispatchers' quality of life as it relates to the effects of trauma that occurs in the context of their workplace and outside their workplace, and the role of perceived control in maintaining quality of life.

STUDY 1

Purpose and Hypotheses

The goal of the first study was to investigate the effects of trauma that occurs in the context of the workplace (e.g., specifically stressful 911 calls) on secondary stress symptoms and the potential for present perceived control to buffer those effects. As a result, two variables related to emergency dispatchers' professional (D-SH: distress related to the handling of calls) and personal (D-WH: distress related to work and home) life were included as independent variables.

Distress related to the handling of calls (D-SH) is important to understand in the context of the relationship between the human factors of dispatching and the outcome of secondary traumatic stress. Dispatchers must receive, attend, decode, manage, multitask, and make rapid and effective decisions, all under the pressure of time and the life of the person in need. Although Meischke and

colleagues¹³ previously evaluated occupational perceived control and its relationship with symptoms of stress, it is worthwhile to re-evaluate this relationship with the inclusion of exposure to trauma through the context of handling calls. 911 calls serve as the means through which secondary trauma is repeatedly experienced on the job as a dispatcher. The stress associated with handling calls is likely an important factor in understanding the development of secondary stress symptoms and other adverse outcomes.

Distress related to work and home (D-WH) refers to the psychological impact that the calls have on the dispatcher's work and home life. Elucidating this relationship in the context of emergency dispatch affords the opportunity to examine the relationship between perceived control, quality of life, and secondary stress symptoms when indirect and continuous trauma is present. For study 1, *present perceived control* (PPC) served as the moderator and *secondary traumatic stress* (STS) as the dependent variable.

Hypothesis 1: Quality of life (D-SH and D-WH) would be positively correlated with negative outcomes (STS)

Hypothesis 2: *Present perceived control* (PPC) would be negatively correlated with negative outcomes (STS)

Hypothesis 3: Both Quality of Life and PPC would predict negative outcomes

Hypothesis 4: Relationship between quality of life and negative outcomes would be moderated by PPC

Methods — Study 1

Participants

Data for Study 1 were obtained from a study conducted by Trachik, Marks, Bowers, Scott, Olola, and, Gardett² that investigated the relationships between stress, compassion fatigue, and quality of life for 911 emergency dispatchers. Of the 205 participants from the initial study, 181 participants did not have missing data for the variables in question and were therefore included in the current study. The sample for the current study predominantly identified as female (69.1%), married (56.9%), white (86.1%), and between the ages of 41 to 45 (19.9%), and had a highest level of education of associate's degree (31.5%). Regarding work-related characteristics, those in the sample were primarily responsible for three types of dispatching (Emergency Police Dispatch, Emergency Fire Dispatch, and Emergency Medical Dispatch) (52.0%), had been working as a dispatcher for 13 to 19 years (24.3%), had worked in their current service 4 to 8 years (26.0%), and predominately worked the day shift (55.8%).

Measures

Measures from a 2015 study of emergency dispatchers were utilized.² These measures included demographic information (personal and professional), "Stress and Functioning Related to Traumatic Calls," and the Secondary Traumatic Stress (STS) subscale from the ProQOL-5.¹⁴ Although it was collected as part of the original studies protocol, present perceived control was not reported.

Present Perceived Control: The Perceived Control Over Stressful Events Scale (PCOSES) is a self-report designed to measure the amount of

perceived control a participant has over a traumatic event in the past, present, and future.⁸ For the current study, the analyses utilized scores from the Present Perceived Control Subscale. The highest possible score on the PPC is 4 (raw score 32) and the lowest is 1 (raw score 8). Scoring on the PPC ranges from 1 (Strongly Disagree) to 4 (Strongly Agree), with higher scores reflecting higher perceived control.

Data Analyses

Analyses were conducted in three steps. First, correlations were computed to assess simple relationships. Correlations were computed between each independent variable (D-SH, D-WH, and PPC) and Secondary Traumatic Stress. Second, regressions using the enter method were conducted with all independent variables (IVs) predicting each dependent variable (DV) to assess the degree to which the IVs predict common variance. Third, two moderator analyses using SPSS IBM v.22 PROCESS¹⁵ were used to assess the direct effects of a predictor quality of life (D-SH and D-WH), a potential moderator (PPC), and the interaction product of the predictor and moderator.

Results — Study 1

Correlations

All variables correlated significantly with secondary traumatic stress (STS) (see Table 1). Therefore, distress corresponded to increased STS, and more perceived control corresponded with decreased STS.

Measure	1	2	3	4	M	SD
1. D-SH	—	.78**	.38**	-.11	14.87	18.3
2. D-WH	.78**	—	-.42**	-.16*	5.15	10.21
3. STS	.38**	.42**	—	-.33**	21.93	5.83
4. PPC	-.11	-.16*	-.33**	—	3.19	.51

Note. ** p (one-tailed) < .01; * p (one-tailed) < .05. For all scales, higher scores are indicative of more extreme responding in the direction of the construct assessed. D-SH = Distress-Stressful to Handle; D-WH = Distress-Affected Work and Home; STS = Secondary Traumatic Stress; PPC = Present Perceived Control subscale of the Present Control Over Stressful Events Scale.

Table 1. Summary of Intercorrelations, Means, and Standard Deviations for Scores on the Total D-SH, Total D-WH, STS, and PPC

Regression Analyses

Two regressions using the enter method were completed. Table 2 presents the results of distress related to the handling of calls (D-SH) and present perceived control (PPC) predicting secondary traumatic stress (STS) ($R^2 = .228$, $F(2, 178) = 26.23$, $p < .001$). Table 3 presents the results of distress related to work and home (D-WH) and PPC predicting STS ($R^2 = .246$, $F(2, 178) = 28.99$, $p < .001$). D-SH and PPC, as well as D-WH and PPC, are significant predictors of STS.

Moderator Analyses

The PROCESS macro for IBM SPSS¹⁵ was used to evaluate PPC as a potential moderator of the relationships between distress and STS. Neither interaction term accounted for a significant portion

Coefficients								
Model	Unstandardized Coefficients		Standardized Coefficients				95.0% Confidence Interval for B	
	B	Std. Error	Beta		t	Sig.	Lower Bound	Upper Bound
Constant	31.00	2.52			12.30	.000	26.03	35.98
D-SH	.11	.02	.35		5.22	.000	.07	.15
PPC	-3.36	.76	-.29		-4.40	.000	-4.87	-1.85

Note. D-SH = Distress-Stressful to Handle; D-WH = Distress-Affected Work and Home; STS = Secondary Traumatic Stress; PPC = Present Perceived Control subscale of the Present Control Over Stressful Events Scale; $df = 178$.

Table 2. Summary of multiple regression of D-SH and PPC on STS

Coefficients								
Model	Unstandardized Coefficients		Standardized Coefficients				95.0% Confidence Interval for B	
	B	Std. Error	Beta		t	Sig.	Lower Bound	Upper Bound
Constant	30.74	2.49			12.33	.000	25.82	35.66
D-SH	.21	.04	.37		5.67	.000	.14	.29
PPC	-3.11	.76	-.27		-4.09	.000	-4.61	-1.61

Note. D-WH = Distress - affected work and home; STS = Secondary Traumatic Stress; PPC = Present Perceived Control subscale of the Present Control Over Stressful Events Scale; $df = 178$.

Table 3. Summary of multiple regression of D-WH and PPC on STS

of the variance in STS; therefore, PPC did not appear to moderate the relationship between D-SH and STS ($p = .727$), and PPC did not appear to moderate the relationship between D-WH and STS ($p = .658$). The extent to which distress affected the presence of STS did not depend on the degree of PPC.

Discussion — Study 1

The first three hypotheses regarding the correlation and predictive relationship between the variables of interest were supported, such that the quality of life (D-SH and D-WH) corresponded with and predicted more secondary traumatic stress (STS), and *present perceived control* (PPC) corresponded with and predicted less STS. However, our fourth hypothesis was not supported, such that *Present perceived control* (PPC) did not moderate the relationship between quality of life and negative outcomes. Therefore, PPC did not buffer the effects of stress or enhance the effects of quality of life. The relationship between quality of life and STS appears to be complex. Although the results of this study suggest that PPC may not buffer negative outcomes, there is reason to believe that PPC is nonetheless important to the relationship of quality of life and the effects of stress. The results indicate that quality of life across areas predicts secondary traumatic stress (STS) and PPC predicts STS; however, perceived control was only significantly negatively correlated with personal quality of life (D-WH). This associative relationship may point to several implications. First, further exploration of the relationship between PPC and the impact on personal quality of life should be considered. Second, a prevention

protocol may be useful to dispatchers to assist in the identification of risk by examining levels of PPC and STS. Dispatchers with lower levels of both low PPC and STS may be at particular risk for the development of adverse outcomes. Third, exposure to stressors is an inherent part of the duties of a dispatcher that cannot be modified; therefore, efforts to reduce exposure to stressors would be futile. Training efforts to increase levels of present perceived control may be of particular benefit to dispatchers in reducing in the risk of developing adverse outcomes.

STUDY 2

Purpose and Hypotheses

The goal of the second study was to investigate the potential for present perceived control to buffer against the effects of negative life events. The goal of this study was to assess the degree to which PPC can buffer those stressors that occur outside of the dispatch center, which may contribute to negative psychological health effects.

- Hypothesis 1:** Life events (LEC) would be positively correlated with PTSD symptom severity (PCL)
- Hypothesis 2:** Present perceived control (PPC) would be negatively correlated with PTSD symptom severity (PCL)
- Hypothesis 3:** Both life events and PPC would predict negative outcomes
- Hypothesis 4:** Relationship between life events and post-traumatic stress would be moderated by present perceived control.

Methods — Study 2

Participants

Participants for the second study were recruited from an emergency dispatching conference that took place in 2015. A total of 121 conference attendees completed the survey; 114 participants did not have missing data for the variables of interest and were therefore included in the current study. The 114 participants predominately identified as female (66.7%), married (67.5%), white (85.1%), mean age of 44.48 years (*SD* = 8.69), and whose highest level of education is high school (29.8%). Their number of years working as an emergency dispatcher ranged from 1 year to 41 years (*M* = 14.48, *SD* = 7.29), while their number of years working in their current service ranged from 8 months to 33 years (*M* = 12.06, *SD* = 6.94).

Measures

In addition to the PCOSES the following measures were administered:
*Life Events Checklist*¹⁶: A self-report measure to assess the presence of traumatic events across the respondent’s lifetime. The list includes sixteen stressful events and an additional item representing a stressful event not already listed. Participants report whether the event has occurred.
*PCL-5*¹⁷: A self-report measures that consists of 20 items that correspond with the DSM-5 PTSD symptoms and clusters. Each item is rated on a 5-point Likert scale from 0 (not at all) to 4 (extremely) to reflect the severity of a symptom during the past month.

Data Analyses

Similar to the first study, analyses were conducted in three steps. First, correlations were computed between each independent variable (LEC and PPC) and PCL severity score. Second, regressions using the enter method were performed with each independent variable (LEC and PPC) predicting the dependent variable (PTSD severity) to assess the degree to which the IV’s predict common variance. Third, a moderator analysis using SPSS IBM v.22 PROCESS (15) was used to assess the direct effects of a predictor (LEC), a potential moderator (PPC), and the interaction product of the predictor and moderator.

Results — Study 2

Correlations

All variables correlated significantly with PTSD symptom severity (Table 4). Increased number of traumatic life events corresponded with increased PTSD symptom severity. Increased PPC corresponded with decreased PTSD symptom severity.

Measure	1	2	3	M	SD
1. LEC	—	.011	.24**	17.85	10.0
2. PPC	.01	—	-.43**	3.01	.55
4. PCL-5	.24**	-.43**	—	15.04	13.62

Note. For all scales, higher scores are indicative of more extreme responding in the direction of the construct assessed. LEC = Life Events Checklist; PPC = Present Perceived Control subscale of the Present Control Over Stressful Events Scale; PCL-5 = Post-traumatic Stress Disorder Checklist-5. **p (one-tailed) < .01.

Table 4. Summary of Intercorrelations, Means, and Standard Deviations for Scores on the Total D-SH, Total D-WH, STS, and PPC

Regression Analyses

A regression was completed using the enter method with LEC and PPC predicting scores on the PCL (Table 5). The results of the regression indicated that the two predictors explained 24.0% of the variance (*R*²= .240, *F*(2, 111) = 17.57, *p* < .001).

Coefficients								
Model	Unstandardized Coefficients		Standardized Coefficients		95.0% Confidence Interval for B			
	B	Std. Error	Beta		t	Sig.	Lower Bound	Upper Bound
Constant	41.47	6.61			6.27	.000	28.37	54.57
LEC	.33	.11	.241		2.92	.004	.11	.55
PPC	-10.72	2.06	-.430		-5.19	.000	-14.81	-6.63

Note. LEC = Life Event Checklist; PCL = PTSD Checklist for DSM-5; PPC = Present Perceived Control subscale of the Present Control Over Stressful Events Scale; df = 111..

Table 5. Summary of multiple regression of LEC and PPC on PCL.

Moderator Analysis

The PROCESS macro for IBM SPSS¹⁵ was used to evaluate present perceived control as a potential moderator of the relationships between life events and post-traumatic stress symptom severity.

LEC and PPC accounted for a significant portion of the variance. PPC appeared to moderate the relationship between number of life events (LEC) and PTSD symptom severity (PCL).

Discussion — Study 2

Study one revealed that present perceived control was not a significant moderator of the relationship between quality of life and stress, but it did suggest that present perceived control may be a promising area for prevention, given its direct effect. Given that PPC may provide preventative effects, the researchers looked to see if PPC might also act as a buffer against the effects of additional life stressors on symptoms of post-traumatic stress. In study two, our hypotheses regarding life events and present perceived control were supported by correlations that indicated that more life events corresponded to higher PTSD symptom severity, and that more *present perceived control* (PPC) corresponded to lower PTSD symptom severity. In the regression analyses, both life events and PPC were predictive of PTSD symptom severity in the direction expected. The direct relationship between life events and PTSD symptom severity was positive, and the direct relationship between PPC and PTSD was negative. The regression results supported the hypotheses that more negative life events are predictive of PTSD symptom severity and that more PPC was predictive of less PTSD symptom severity.

The moderator analysis indicated that present perceived control is a significant moderator of the relationship between stressors and PTSD symptom severity, such that increased PPC corresponded to a decreased likelihood that stressors would correspond with PTSD symptom severity. Those who had the highest rates of *present perceived control* were unaffected by the deleterious predictive effects of adverse life events and post-traumatic stress symptoms. This relationship is observed by a nonsignificant *p*-value for those at the 75th and 90th percentile of PPC; whereas those at the 50th, 25th, and 10th percentiles are increasingly impacted by adverse life events and PTSD symptoms. Further, those with less *present perceived control* who are exposed to more life events are more likely to experience more PTSD symptoms. Therefore, it may be particularly important for emergency dispatchers to receive training focused on enhancing their present perceived control with regard to handling emergency calls.

Conclusions

Two studies were conducted with emergency dispatchers to better understand the relationship between present perceived control (PPC), quality of life, and secondary stress symptoms. The first study evaluated PPC as a moderator between distress related to handling 911 calls (D-SH) and to work and home life (D-WH) and secondary traumatic stress (STS). The results of the first study revealed that the extent to which distress affected the presence of STS did not depend on the degree of PPC. In other words, PPC may not act as a buffer for everyone. In light of this non-significant finding, regardless of whether someone has high or low levels of

stress at work or at home, someone who has less present perceived control was more likely to have higher levels of STS. This finding points to the potential for PPC as a focus of prevention. Since it is not possible to control the number of calls a dispatcher receives, it is important to focus prevention efforts on modifiable factors such as PPC. The second study evaluated PPC as a moderator between the relationships of trauma-related life events and PTSD symptom severity. The results of the second study demonstrated PPC as a moderator of the relationship between life events and PTSD symptom severity.

Together the results suggested that present perceived control is a worthwhile target for preventative efforts. PPC may act as a buffer to the emergence of secondary traumatic stress and may protect against the damaging effects of PTSD. In one study about firefighter satisfaction conducted by The United States Fire Administration, “needing a certain amount of control over the uncertainty of our job” was one of the top three answers to the question, “What do you need in order to be happy in your work?” Training efforts that focus on enhancing the perception of control a dispatcher has over 911 calls may aid against the negative impact of secondary stress symptoms.

Limitations

Several limitations exist in these studies. First, limitations presented in the original study² exist for the current studies. Second, different participants were used in each study. Utilizing different samples for each study may have introduced sample differences. Further research efforts should aim to examine PPC, quality of life, exposure to trauma, and symptoms of PTSD among the same sample of emergency dispatchers. The findings also highlight the need for research efforts that would increase the field’s understanding of the role of the present variables across levels of frequency of exposure (i.e., call volume).

IMPLICATIONS FOR THE DISPATCH CENTER

Further research is needed to evaluate the effectiveness of PPC as a prevention tool and its relationship with mindfulness. Based on the findings from the current studies, as well as previous work, it appears that PPC may function in a similar fashion to mindfulness by instructing individuals to not suppress, avoid, or focus on intrusive thoughts.¹⁸ First responders, such as emergency dispatchers, cannot control what 911 calls have been received (past) or what calls will be received (future). However, they do have control over the effect intrusive thoughts have in the present moment.

With regard to existing mindfulness intervention efforts, programs have included multiple components such as social support, didactic instruction, and mindfulness practice exercises with the goal of stress reduction and increased well-being.^{19,20} Mindfulness has been described within the context of a two-factor model consisting of emotion regulation and attentive focus on the present moment.²¹ Research efforts demonstrate that mindfulness skills increase following a structured format including teacher instruction, discussion, and practice opportunities, both within and outside of formal settings.²²⁻²⁴

In a study examining the use of mindfulness among veterans with a variety of mental and physical health problems including PTSD, veterans were provided with mindfulness-based stress reduction courses (MBSR).^{18,25} The standardized class series consists of weekly meetings that incorporate mindfulness meditation and yoga, formal instruction, and homework. Results demonstrated clinically significant decreases in PTSD symptoms following the intervention.¹⁸ Therefore, it may be beneficial to provide emergency dispatchers with training opportunities that incorporate instruction of mindfulness as a method to target perceived control. Given the similarities between PPC and mindfulness, the lack of PPC as a significant moderator may be attributed to the increased use of avoidance by emergency dispatchers.²⁶ Marks and colleagues²⁶ found that emergency dispatchers were more likely to engage in a cognitive avoidant coping strategy when faced with PTSD symptoms. As a result, the emergency dispatchers in this sample may not have the insight to recognize the impact that 911 calls have on their distress. The finding in study two of the present paper offers further support to this conclusion. As a result, it may be important to examine call volume, rather than distress of particular calls, as a potential indicator of the relationship with negative outcomes. For the purposes of developing prevention strategies, increasing PPC may be warranted in conjunction with supervisors monitoring the number of calls handled by dispatchers.

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