# Exploration of The Relationship Between Organizational Support Factors in Completing Mindfulness Interventions and Changes in Stress Levels Among Emergency Medical Dispatchers

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**Abstract**

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**Background**

Emergency medical dispatchers (EMD) are the first of the first responders. They are exposed to high stress situations multiple times a day and are required to maintain a calm and composed demeanor while trying to assist people in an emergency situation and emotional situation, all while at the same time communicating important information with the first responders that will arrive at the scene. They work long hours and often have to work overtime. Research has shown this can lead to high levels of stress and burnout among this population which may also lead to additional health related complications such as depression, suicidal ideations, obesity, or cardiovascular diseases. Studies have shown that mindfulness interventions that were designed for other first responders such as police officers, fire fighters, or emergency department personnel have been beneficial. An

online mindfulness-based training called Destress 9-1-1 was designed specifically to address the needs of emergency medical dispatchers experiencing high stress, quick paced environments. This is a seven-week online mindfulness training that consists of one thirty-minute training weekly teaching mindfulness skills that EMDs can use throughout their day to minimize stress levels.

**Objective**

This project aimed to determine if organizational support factors had an impact on EMDs engagement in mindfulness practices and perceived daily stress after completing the seven-week online mindfulness training.

**Methods**

Survey data was collected from the participants that completed the DeStress 9-1-1 online mindfulness training. The survey measured the participants' perceptions of the organizational support for engaging in the mindfulness training and their experience with the training. Survey questions addressed factors that contributed to participants completing the training, such as the location they took the training, whether the training was mandatory or not, and what type of support the participants received from their organization in completing the training. Questions also addressed the participants' level of perceived stress reduction after taking the training as well as how often they practiced the skills taught in the training.

Descriptive and bivariate analysis (t-tests, chi-square tests, and Anova tests) were used to determine the association of organizational support factors, (mandatory vs not mandatory,

location where the training was completed, support received from the organization), and daily practices as well as perceived stress of the emergency medical dispatchers.

**Results**

The sample consisted of 603 emergency medical dispatchers who completed all seven modules of the DeStress 9-1-1 online mindfulness training intervention and the post-training survey. Participants represented agencies across the United States and its territories, with the largest proportion of respondents (28%) located in Region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee). The majority of respondents (68%) identified their role as both call receiver and dispatcher.

The results indicated that participants who were not mandated to take the training had a higher self-reported rate of stress reduction *($t = -3.25$, $p = .001$)* and more frequent engagement in practicing the skills taught in the training *( $t = -3.51$, $p = .001$)* , compared to EMDs who reported the training was a work requirement. Those who took the training at home had a higher level of self-reported overall stress reduction than those who took it at work *($t = 2.34$, $p = .023$)*.

The results also indicate that participants who received organizational support had a higher level of self-reported stress reduction (*$F(3, 378) = 5.52$, $p = .001$)* than participants who indicated they received no support. Participants who received organizational support also indicated a higher frequency of practicing mindfulness *($F(3, 369) = 3.85$), $p = .010$)* than participants who indicated they received no support.

A correlation test was conducted to determine a relationship between practice frequency of the skills learned in the training and a change in perceived stress reduction. The results indicated that those who practiced the skills taught during the training reported decreased daily stress ($p < .001$, 95% CI [0.67, 0.73]).

There was not a significant statistical difference in practice frequency between those who took the training at work versus those who took the training at home *($t = .091$, $p = .928$)*.

**Conclusion**

The findings indicated a greater association between participants who were not mandated to complete the training and those who were able to complete the training at home with higher levels of self-reported perceived stress reduction following completion of the training. The results also demonstrated that participants who practiced the skills taught during the training reported decreased daily stress. These findings may help inform organizational policies and workplace wellness practices within emergency call centers. Potential applications include incorporating the training into onboarding programs for new employees as well as ongoing wellness training opportunities for current employees. Organizations should consider providing flexibility and designated time to complete the training to allow EMDs to engage in the training in a manner that is most beneficial to them.

Future research could include longitudinal studies to determine whether stress reduction and mindfulness practice frequency are sustained over time among EMDs. Additional research may also examine the impact of the training environment, organizational culture, and leadership factors, such as supervisor attitudes and leadership engagement, as well

as organizational conditions including staffing adequacy, turnover rates, and mandatory overtime.

## Introduction

### Stress and Burnout Among Emergency Medical Dispatchers

Stress and burnout are increasingly prevalent across today's emergency workers [1], with particularly high levels observed among emergency medical dispatchers [2]. To date, much of the research on occupational stress and burnout has focused on firefighters, police officers, and paramedics, while comparatively less attention has been given to emergency medical dispatchers [3,4]. Although research specific to dispatchers has historically been limited [5], some research has been done in recent years examining stress, burnout, and mental health outcomes among emergency medical dispatchers, but more research is needed on how organizational factors may contribute to these outcomes, what can be done to address these issues and if there are lasting effects to making changes within the organization.

Emergency medical dispatchers are often described as the "first of the first responders," as they are typically the first point of contact during an emergency [6]. When an individual calls 911, dispatchers are responsible for rapidly gathering critical information, providing life-saving instructions to callers, and coordinating the appropriate emergency response while maintaining composure in highly stressful situations [3]. These demands are especially pronounced during critical incidents such as shootings, deaths, or emergencies involving children, which can significantly intensify emotional strain [7].

Multiple factors contribute to stress and burnout among emergency medical dispatchers. These include repeated exposure to traumatic events through emergency calls,

compassion fatigue [6], long and irregular work hours [8], mandatory overtime [3], and insufficient organizational support [9]. Emergency medical dispatchers must also stay calm and neutral while helping others who are experiencing feelings of anger, panic, and stress due to the current situation they are facing [2]. Prolonged exposure to these occupational stressors has been associated with adverse mental health outcomes, including depression, anxiety, vicarious trauma [10], and post-traumatic stress disorder [3].

Stress and burnout among emergency medical dispatchers have both personal and professional consequences. On a personal level, elevated stress has been linked to increased rates of depression, suicidal ideation [4], anxiety, and physical health conditions such as obesity [11], cardiovascular disease [12] and high cortisol levels [13,14]. Professionally, dispatcher stress and burnout are associated with increased absenteeism [15], high turnover rates [16], and a greater risk of critical errors, which may compromise both employee well-being and public safety [2].

**Mindfulness interventions to reduce occupational stress**

Many workplace strategies for addressing occupational stress rely on reactive approaches, such as managing the consequences of burnout through sick leave or employee turnover[17]. However, organizations may benefit from adopting proactive strategies that focus on preventing or reducing stress before it leads to adverse outcomes. One approach that has shown promise is the implementation of workplace mindfulness interventions for employees who experience chronic occupational stress [15]. Mindfulness is commonly

defined as moment-to-moment awareness developed through purposeful, nonjudgmental attention to present experiences [3].

Although research on mindfulness-based interventions (MBIs) remains limited within the emergency medical dispatcher population[11], studies conducted in other high-stress professional groups have demonstrated positive outcomes and support the need for further research in this area. For example, a pilot study conducted among psychiatry trainees in Australia evaluated the Therapeutic Relaxation and Enhanced Awareness Training (TREAT) program. Participants completed eight weekly one-hour mindfulness training sessions and completed pre- and post-intervention surveys. Results indicated that the intervention improved trait mindfulness and reduced burnout. Participants also reported increased ability to manage stress using the mindfulness techniques they had learned[17].

Another study evaluated the Emotional Resilience Skills Training (ERST) among public safety personnel, including firefighters, police officers, paramedics, and public safety communicators. Overall, the intervention demonstrated benefits across groups; however, the magnitude of improvement varied. Firefighters showed smaller gains, which may have been influenced by factors such as prior exposure to resilience training and differences in how the program was implemented. In contrast, public safety communicators may have had fewer existing supports. These findings suggest that organizational context and support may play an important role in the effectiveness of workplace interventions [15].

Destress 9-1-1 is an online mindfulness-based intervention specifically designed for emergency medical dispatchers. The program was developed to accommodate the unique demands of the role, including limited time availability and high workload. The intervention consists of a seven-week program in which participants complete one 30-minute guided session per week to learn mindfulness skills aimed at reducing occupational stress and mitigating the psychological impact of repeated exposure to traumatic calls [3]. Results from Destress 9-1-1 indicated that there is a reduction in stress levels of emergency medical dispatchers after participating in the intervention [3]. Overall, an emerging approach to supporting emergency medical dispatchers involves strengthening individual coping and emotional resilience through structured interventions that can be integrated into the work environment.

**Organizational support for successful implementation of digital health promotion interventions.**

The way an individual feels about their work environment has an impact on their levels of stress and burnout. Birze and team state in their study that "perceived emotional support is the extent to which employees feel their organization values their work and cares for their well-being" [5]. If an individual has a positive perception of their organizational support they are likely to have reduced levels of stress as opposed to those who have a negative perception of organizational support. This has been associated with feelings of stress, burnout, and emotional exhaustion [5]

Successful implementation of online health promotion programs, particularly online mindfulness interventions, may require changes within the organization itself[18]. Leadership plays an important role in shaping workplace culture, and employees who feel supported by their organization are more likely to engage in workplace initiatives[5]. Research has shown that a lack of perceived organizational support is associated with higher levels of stress and burnout, as well as reduced ability to use available wellness tools [5,18].

Additionally, research has linked low levels of organizational support among emergency medical dispatchers to higher rates of post-traumatic stress symptoms [5]. When employees feel unsupported, they may be less likely to acknowledge or express their stress, which can further contribute to burnout [5]. Overall, these findings suggest that improving organizational support may be a key factor in increasing engagement and effectiveness of online mindfulness interventions.

In the evaluation of the 9-1-1 Destress online mindfulness intervention, participants call center was identified as the primary factor associated with participant engagement [18]. This suggests that differences in leadership practices and workplace expectations may have influenced how employees were able to participate in online training. Some participants reported that they were required to continue taking calls while completing the training, which limited their ability to fully engage in the intervention[18]. They also described a lack of protected time and space to complete the program, indicating limited organizational accommodation for participation[18].

It is important for individuals to feel supported by leadership within their organization, especially in high stress occupations. There are many ways that this can be done. Organizational support in busy call centers may include allowing workers to take mindfulness training on company time or to provide encouragement for participation in mental health-related interventions. In addition, continuing education is a requirement for EMDs and providing CEU credits for taking the training is another possible incentive for EMDs to take the training. By allowing workers to have designated time and space to complete the 9-1-1 Destress mindfulness training, it will allow them the ability to focus on the information in the training and learn the skills to apply throughout their day, therefore reducing their overall stress levels.

The primary objective of this study was to examine whether emergency medical dispatchers perceived organizational support for completing the Destress 9-1-1 online mindfulness training was associated with their engagement with the training and their perceived reduction in overall daily stress. This was assessed using survey data collected from 603 emergency medical dispatchers across the United States and its territories who completed the 7-week online mindfulness-based intervention and post-training survey beginning in 2018. Participants included call receivers, dispatchers, combined call receiver/dispatchers, managers, trainers, and other emergency communication personnel.

## Methods

**Study Setting:** The Destress 9-1-1 mindfulness training was developed and tested in a randomized controlled trial [3] and released to the public in 2018, after the clinical trial was conducted. The training was made available at no cost on the website of the Northwest Center for Public Health Practice, although people do need to create a log in to register for the course. The study did not require the participants to take the training at a specific place or time.

**Participant Selection:** The data analyzed consisted of the survey responses from the participants that completed all seven modules of the Destress 9-1-1 online mindfulness-based training and the post-training survey. While the training and the survey were designed with emergency medical dispatchers as the primary demographic, the training is offered for free online and open to anyone who would like to take it. There was no specific recruitment requirement. Anyone who would like to sign up and complete the training was welcome, although it was designed for emergency medical dispatchers.

**Intervention:** Each week an automated email system alerts participants to engage in the weekly sessions and at the end of the seven-week course, participants are asked to fill out a survey in order to receive a certificate of completion. The weekly session consists of videos, readings, and practice exercises. Table one describes each of the weekly modules.

**Table 1: Destress Module Descriptions**

| Week | Module | Description |
|---|---|---|
| 1 | Introduction | Discusses stressors that may occur as a 911 telecommunicator, what mindfulness is and how mindfulness can play a role in addressing the stressors |
| 2 | The Judging Mind | Discusses the human tendency to make snap judgments about different aspects of life, how this can be limiting, and exercises that can help notice triggers of snap judgements and how to address them |
| 3 | Patience | Focuses on patience and how slowing down and completing breathing exercises can help to reduce stress. |
| 4 | Non- Striving | Non-Striving is the feeling of pressure to always be working toward a particular goal or purpose. This training will provide mindfulness strategies to address this feeling. |
| 5 | Thought Is Not Reality | This session focuses on being aware of our thoughts that occur and how they may impact stress. |
| 6 | Developing Kindness | This session focuses on practicing kindness toward oneself and others as well as withholding judgement. |
| 7 | Make it your own | This session is about looking back at the experiences though the training and creating a plan to incorporate the skill learned into daily life. |

**Measurements:** Survey data was collected using SurveyMonkey and included both open-ended and closed-ended questions focused on participants' perceptions of the training content, organizational support received, mindfulness engagement, and perceived stress reduction. Additional questions were added to the survey a couple of years after the initial release (which was in 2018) to determine components that would be beneficial to improving dissemination of the training. As such, the sample size varies for some questions. This study specifically examined questions related to organizational support, mindfulness practice frequency, and perceived stress reduction following the training.

**Organizational support factors**

Six organizational factors were included in this study. The first variable used an open-ended question to assess whether participation in the training was mandatory. Participant responses were coded into a binary variable (mandatory versus not mandatory). Responses indicating the training was required for employment or completed for continuing education credits were coded as "mandatory," while all other responses were coded as "not mandatory."

Perceived organizational support during the training was also assessed. Participants were asked to indicate what type of organizational support they had received for taking the training. Support options included uninterrupted or paid time, verbal encouragement from a supervisor, continuing education credits, no support, or other forms of support. Participants could check multiple responses.

Public safety access point region was included to identify the geographic region in which participants completed the training (regions are designated by the CDC)[19]. The study included ten regions defined by academic institutional sites: Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont), Region 2 (New Jersey, New York, Puerto Rico, US Virgin Islands), Region 3 (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia), Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee), Region 5 (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin), Region 6 (Arkansas, Louisiana, New Mexico, Oklahoma, Texas), Region 7 (Iowa, Kansas, Missouri, Nebraska), Region 8 (Colorado,

Montana, North Dakota, South Dakota, Utah, Wyoming), Region 9 (Arizona, California, Hawaii, Nevada, American Samoa, Guam, Northern Mariana Islands, Trust Territory of the Pacific Islands), and Region 10 (Alaska, Idaho, Oregon, Washington)[19]. Agency role was also measured to determine participants' occupational position, including call receiver, dispatcher, combined call receiver/dispatcher, manager, trainer, or another role. Source of training awareness assessed how participants learned about the training (e.g., supervisor recommendation, coworker recommendation, media/news outlets, or other sources). Training location captured where participants completed the training, such as at home, at work, or another location.

**Outcomes Variables**

Two outcome variables were included in this study. The first outcome variable was mindfulness practice frequency, which assessed how often participants used the mindfulness skills taught during the training. Responses were measured using a five-point Likert scale ranging from 1 - every day, 2 - many times per week, 3 - a few times per week, 4 - a few times per month, and 5 - never, with lower scores indicating greater mindfulness practice frequency.

The second outcome variable assessed was perceived stress reduction following the training. Responses were measured on a five-point Likert scale ranging from 1 - a great deal, 2- a lot, 3- a moderate amount, 4- a few times per month, and 5 -none at all, with lower scores indicating greater perceived stress reduction.

**Data Analysis:** The survey questions used in this study were used from a previously developed questionnaire and chosen to evaluate whether participants who completed the seven-week training course experienced a reduction in perceived overall stress, how often the participants engaged in the mindfulness activities and whether organizational support factors influenced the outcomes of the results.

All analyses were conducted using the RStudio statistical software program. Descriptive statistics were conducted to provide an overview of participant responses across the eight variables included in the research question. Bivariate analyses were performed using independent sample t-tests, Chi square test, one-way ANOVA tests, and Tukey post-hoc tests to examine relationships and statistical significance between organizational factors related to training participation and the outcome variables of perceived stress reduction and mindfulness practice frequency following the training. The organizational support variables used for this analysis were training requirement, training location, and support received. The outcome variables used for this analysis were practice frequency and perceived daily stress reduction. The analysis did not include the "other" category in the analysis as they are open ended questions.

## Results

**Descriptive analysis:** There was a total of 1,029 participants that began Module 1 of the training, 65% (n= 669) participants that completed the training through module 7 and 59% (n=603) completed the survey. The greatest attrition rate (16%) was between module one and two (Table 2).

Table 2: Registered Participant and Module Completion

| Registered Participants | N = 2,279 |
|---|---|
| Module | # of people who completed module |
| 1 | 1,029 |
| 2 | 866 |
| 3 | 761 |
| 4 | 727 |
| 5 | 708 |
| 6 | 689 |
| 7 | 669 |

The descriptive characteristics of survey respondents are presented in Table 3. The participants were distributed across all ten U.S. Public Safety Access Point (PSAP) locations, although the representation was uneven. The largest proportion of the participants came from region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee), which accounted for 28% (n = 145) of the sample. The majority of the participants were both a call receiver and dispatcher with 78% (n = 393), whereas 8% (n=49) were managers. Eight participants (1%) were not employed by any of the call centers. The primary source of training awareness came from the supervisors at 70% (384).

Regarding the organizational factors, 57% (156) of the participants were required to take the training, 88% (n= 375) took the training at work whereas the remaining took it at home or elsewhere. The responses to the support received included continuing education credits (36%, n= 152) and verbal encouragement from my supervisor (22%, n= 92). However, 33% (n = 140) indicated that they did not receive any support.

For the outcome variables, there was moderate engagement with the mindfulness practices following the training. 50% (n =300) of respondents indicated they engaged in mindfulness practice a “few times per week”. The perceived daily stress reduction had the largest respondent of “A little” at 33% (n = 190) and “A moderate amount” at 33%, (n = 188).

Table 3: Descriptive Table of Survey Responses

| **Survey Question** | **N** | **%** |
|---|---|---|
| **Organizational Factors** | | |
| **Training Requirement** | | |
| Required | 156 | 57% |
| Not Required | 117 | 43% |
| **Public Safety Access Point (PSAP) Location** | **515** | |
| Region I: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont | 13 | 2.52% |
| Region II: New Jersey, New York, Puerto Rico, US Virgin Islands | 23 | 4.47% |
| Region III: Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia | 61 | 11.85% |
| Region IV: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee | 145 | 28.16% |
| Region V: Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin | 50 | 9.71% |
| Region VI: Arkansas, Louisiana, New Mexico, Oklahoma, Texas | 35 | 6.80% |
| Region VII: Iowa, Kansas, Missouri, Nebraska | 17 | 3.30% |
| Region VIII: Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming | 57 | 11.18% |
| Region IX: Arizona, California, Hawaii, Nevada, American Samoa, Guam, Northern Mariana Islands, Trust Territory of the Pacific Islands | 56 | 10.87% |
| Region X: Alaska, Idaho, Oregon, Washington | 58 | 11.26% |
| **Agency Role** | **581** | |
| Call receiver only | 16 | 2.75% |
| Dispatcher only | 20 | 3.44% |
| Both call receiver and dispatcher | 393 | 67.64% |
| Managers | 49 | 8.43% |
| Trainer | 35 | 6.02% |
| Other | 68 | 11.70% |
| **Source of Training Awareness** | **551** | |
| My supervisor | 384 | 69.69% |
| Co-worker | 56 | 10.16% |
| Professional list serve | 13 | 2.36% |
| Newsletter | 13 | 2.36% |
| Conference | 7 | 1.27% |
| Facebook post | 10 | 1.18% |
| NWCPHP e-mail announcement/website | 19 | 3.45% |
| Other | 68 | 12.34% |
| **Training Location** | **428** | |
| At work | 375 | 87.62% |
| At Home | 50 | 11.68% |
| Both | 3 | .70% |
| **Support Received** | **419** | |
| Uninterrupted time/paid time off | 79 | 18.85% |

| | | |
|---|---|---|
| Verbal encouragement from my supervisor | 92 | 21.96% |
| Continuing education credits | 152 | 36.28% |
| No support | 140 | 33.41% |
| Other | 15 | 3.58% |
| **Outcome** | | |
| **Practice Frequency** | **604** | |
| Every day | 40 | 6.62% |
| Many time per week | 111 | 18.38% |
| A few times per week | 300 | 49.67% |
| A few times per month | 98 | 16.23% |
| Never | 55 | 9.10% |
| **Daily Stress Reduction** | **576** | |
| A great Deal | 51 | 8.85% |
| A lot | 95 | 16.49% |
| A moderate amount | 188 | 32.64% |
| A little | 190 | 32.99% |
| None at all | 52 | 9.03% |

**Bivariate Analysis:**

Table 4: Bivariate analysis of organizational factors association with perceived stress reduction and practice frequency. (T-test)

| **Organizational factor association with perceived stress reduction and practice Frequency (The lower the number the greater the impact the organizational factor had. )** | Mean (SD) | P-Value | T | 95% CI |
|---|---|---|---|---|
| **Perceived Stress Reduction** | | | | |
| **Mandatory Training Status** | | 0.001 | -3.2457 | -0.70, - 0.17 |
| Mandatory | 3.29(1.08) | | | |
| Not Mandatory | 2.86(1.07) | | | |
| **Training Location** | | 0.023 | 2.3396 | 0.06, 0.76 |
| At Work | 3.15(1.09) | | | |
| At Home | 2.75(1.13) | | | |
| **Practice Frequency** | | | | |
| **Mandatory Training Status** | | < 0.001 | -3.5126 | -0.64, -0.18 |
| Mandatory | 3.16(0.99) | | | |
| Not Mandatory | 2.75(0.87) | | | |
| **Training Location** | | 0.928 | 0.090445 | -0.30, 0.32 |
| At work | 3.01(0.96) | | | |
| At Home | 3.00(0.99) | | | |

Table 4 presents the T-test results of the bivariate analysis examining the relationship between the organizational support variables of mandatory training status and the training location and the outcome variables of perceived stress reduction and mindfulness practice

frequency. Lower scores on the outcome variables represent greater perceived stress reduction and more frequent mindfulness practice. Participants who were not required to complete the training reported greater perceived stress reduction *(t= -3.25, p = .001)* and more frequent mindfulness practice *(t= -3.51, p = .001)* compared to participants for whom the training was mandatory. Similarly, participants who completed the training at home reported greater perceived stress reduction than those who completed the course at work *(t= 2.34, p = .023)*. However, training location was not significantly associated with mindfulness practice frequency *(t = 2.34, p = .023)*.

Table 5: Bivariate analysis of support factors association with perceived stress reduction and practice frequency (ANOVA Test and Tukey Post Hoc Tests)

| **Support Received Association with Perceived Stress Reduction and Practice Frequency (ANOVA test)** | **Mean (SD)** | **F (df1, df2)** | **P - Value** |
|---|---|---|---|
| **Perceived Stress Reduction** | | 5.52 (3, 378) | 0.001 |
| CEU | 3.15 (1.04) | | |
| No Support | 3.27 (1.08) | | |
| Verbal Encouragement | 2.90 (1.37 | | |
| Designated Time | 3.19 (1.06) | | |
| **Practice Frequency** | | 3.85(3,379) | 0.010 |
| CEU | 3.00 (0.92) | | |
| No Support | 3.19 (1.04) | | |
| Verbal Encouragement | 3.10 (1.10) | | |
| Designated Time | 3.06 (0.98) | | |
| **Support Received Impact on Perceived Stress Reduction and Practice Frequency (Tuckey Post -Hoc test)** | **Mean Difference** | **95% CI** | **P-Value** |
| **Stress Reduction & Support Received** | | | |
| No support vs CEU | 0.12 | -0.23, 0.46 | .814 |
| Verbal Encouragement vs CEU | -0.47 | -0.86, 0.08 | .011 |
| Designates Time vs CEU | 0.04 | -0.43, 0.51 | .997 |
| Verbal Encouragement vs No support | -0.59 | -0.98, -0.20 | .001 |
| Designated Time vs No support | -0.08 | -0.55, 0.39 | .971 |
| Designated Time vs Verbal Encouragement | 0.51 | 0.01, 1.01 | 0.46 |
| **Practice Frequency and support Received** | | | |
| No support vs CEU | .19 | -0.12, 0.50 | .408 |
| Verbal Encouragement vs CEU | -.027 | -0.62, 0.08 | .198 |
| Designated Time vs CEU | 0.06 | -0.36, 0.48 | .980 |
| Verbal Encouragement vs No Support | -0.45 | -0.80, -0.11 | .005 |
| Designated time vs No Support | -0.12 | -0.54, 0.29 | .869 |

| | | | |
|---|---|---|---|
| Designated time vs Verbal Encouragement | 0.33 | -0.12, 0.78 | .226 |

The one-way ANOVA test (Table 5) revealed statistical significance in perceived stress reduction across organizational support groups, (*F (3, 378) = 5.52, p = .001)* and in practice frequency across organizational support groups, *(F (3, 369) = 3.85), p = .010).* The Tukey post hoc test indicated that participants receiving verbal encouragement reported significantly greater stress reduction than participants that did not receive organizational support *(MD = -0.59, p = .001,)* and participants receiving verbal encouragement reported significantly greater perceived stress reduction over continuing education credits *(MD = -0.47, p = .011).* The Tukey post hoc analysis also indicated that those who received verbal encouragement reported an increase in practice frequency compared to those who did not receive any organizational support *(p = .005).*

A correlation test was conducted between practice frequency and perceived stress reduction to determine if there was a relationship between the two variables. The results from this test indicated that there is a statistically significant association between practice frequency and perceived stress reduction. Greater frequency of mindfulness practice was associated with greater perceived stress reduction ($p < .001$, 95% CI [0.67, 0.73]).

## Discussion

The goal in completing this study was to determine what organizational factors contributed to completing the Destress 9-1-1 training and reducing the overall perceived stress reduction after completion of the training. Sixty-five percent of the participants that began the training completed all seven modules. This is higher than the original randomized trial

where forty-eight of the participants completed all seven modules[18]. This indicates that there is an increase in completion of the training. This higher completion rate may suggest organizational factors such as having the training be mandatory or having it be a requirement for continuing education credit would increase the rate at which training was completed (participants are required to complete the survey to receive their certificate). There may also be an intrinsic motivation to take the training, as one survey respondent stated they took the training "To help manage the stress of my career and everyday life." Given that EMD's encounter stressful situations every day that lead to more serious complications such as anxiety and depression, they have recognized the importance of improving their mental health and were motivated to engage in the Destress 9-1-1 training as a tool they can benefit from long-term to help them cope with the daily occupational stress they experience.

**Perceived Stress Reduction**

The results indicate that participants who were not mandated to take the training over those who were mandated to take the training had a higher rate of self-reported stress reduction. This may indicate that individuals that chose to take the training to help them cope with a stressful work life had more engagement with the training content and were able to create an environment that was more conducive for full engagement with the training to learn and practice the skills that were taught. The results also indicate that those who were able to take the training at home over those who took the training at work had a higher rate of overall stress reduction. This result may also indicate that having the proper environment to focus on the content in the training helps to improve engagement. In a

previous study conducted by Kerr and team on the Destress 9-1-1 training, participants indicated that completing the training at work was difficult due to having to share computers and having a busy environment with multiple distractions [18]. This made engagement with the content difficult. It may be recommended that having a quiet environment and dedicated time made available to complete the training would be beneficial, even for those who are mandated to take it.

Participants who received different forms of organizational support (continuing education credits, No support, verbal encouragement, or designated time) reported relatively similar levels of stress reduction following the training. Those who received verbal encouragement did report on average a higher rate of stress reduction where those who did not receive any kind of support had a lower rate of stress reduction. A chi-square test was conducted (see Appendix A), which showed that among participants who reported a great deal of perceived stress reduction, 41% indicated that they received verbal encouragement as a form of support. This finding may be meaningful for organizational practice, as verbal encouragement represents a low-cost intervention that may improve engagement with mindfulness training in emergency dispatch settings. Although there was not a large statistical significance in the results, any amount of support may help in reducing the overall stress levels of EMD's as they work in a highly demanding and high stress environment.

**Practice Frequency**

The results were similar for engagement in practice frequency of skills taught in the training. Individuals who were not required to take the training had a higher rate of engagement with the practices and skills that were taught in the training. This would once again indicate that those who were not mandated were more engaged with the training and the practice as it was their choice to participate rather than being required to do so.

The location where participants took the training did not have a statistically significant impact on how often participants engaged in the practices. There was also not a significant difference in the types of organizational support received and the frequency at which participants engaged in the practices. While these findings suggest that organizational factors may play a smaller role in long term engagement with mindfulness practices, the observed differences between groups may still have practical relevance within high stress emergency communication environments. Practice frequency may instead be more strongly influenced by individual factors such as buy-in to the mindfulness program, available time to practice, or competing personal and workplace priorities.

There is a significant positive association between the frequency in which participants engaged in the mindfulness skills taught in the training and perceived stress reduction. The more they engaged in practice the lower their perceived overall stress. These findings show that this online mindfulness training is beneficial in reducing overall stress levels if people take the time to complete the training and engage in practicing the skills. This would suggest that organizational support in completing the training, even if it is minor,

contributes to continued engagement with mindfulness practice which would then lead to a decrease in stress reduction. This relates to previous studies that have been completed such as TREAT, where the participants had designated time (in person training) to learn the skills and practice at a later time.

**Strengths and Limitations**

Several limitations should be considered when interpreting these findings. First, the study relied on a survey that was adapted midway, which led to a smaller sample size for some of the independent variables used in the analysis. Second, the survey was conducted only among participants who completed the 7-week course. As a result, individuals who did not complete the training were not represented, limiting the ability to assess reasons for non-completion or evaluate whether insufficient organizational support contributed to attrition. Third, the responses that determined whether the training was mandatory or not were open ended questions and re-coded to a binary variable. Coding was conducted by lead researcher, but not double coded by a second coder.

This study also has several strengths. First, the sample consisted of emergency medical dispatchers from across the United States and its territories, which is the target demographic that is intended to benefit from this study and intervention, which allows for generalizability among this population. Second, the study examined multiple organizational factors, including training mandated status, support type, and training location, which provides a comprehensive view of implementation conditions.

## Conclusion

The Destress 9-1-1 training program is showing to be effective at reducing the overall perceived stress for emergency medical dispatchers, especially for those who are not mandated to take it and those who are able to complete the course at home. Although more research needs to be conducted, this training would likely be beneficial to all emergency medical dispatchers with strong verbal encouragement from leadership to complete it and they are provided with a conducive environment and time to complete the training. If emergency medical dispatchers are required to take the training in between emergency calls and are just trying to complete it to say they did, they will likely not gain the full intended benefits as opposed to if they were provided a quiet space with designated time.

These findings may help inform organizational policies and workplace wellness practices within emergency communications. Potential applications include incorporating the training into onboarding programs for new employees as well as offering as ongoing wellness training opportunities for current employees. Organizations should consider providing flexibility and designated time to complete the training to allow EMDs to engage in the training in a manner that is most beneficial to them. Taking a proactive approach to address the stress experienced by EMDs can help to address other areas of the organization such as absenteeism and high turnover rate. This may indicate that making these changes are meaningful not only for the EMD's in reducing their overall stress but also in addressing organizational issues as well.

Future research could include longitudinal studies to determine whether stress reduction and mindfulness practice frequency are sustained over time among EMDs. The survey was conducted after seven weeks of practicing the skills in the training. These skills may take some time to fully incorporate into daily practice and therefore decrease the stress levels a person may experience. Additional research may also examine the impact of the training environment, organizational culture, and leadership factors, such as supervisor attitudes and leadership engagement, as well as organizational conditions including staffing adequacy, turnover rates, and mandatory overtime. Looking at how a training like this is beneficial for both the EMD's and the call centers may help improve dissemination of the Destress 9-1-1 training.

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## Appendix

Appendix A:

Bivariate analysis of organizational factor impact on outcome variables (Chi- Square test)

| **Organizational factor impact on outcomes (The lower the number the greater the impact the organizational factor had. )** | | | | | | $X^2$ (df) | P-Value |
|---|---|---|---|---|---|---|---|
| **Perceived Stress Reduction** | **A Great Deal N (%)** | **A Lot N (%)** | **A Moderate Amount N (%)** | **A Little N (%)** | **None At All N (%)** | | |
| **Mandatory Training Status** | | | | | | 14.89 (4) | 0.005 |
| Mandatory | 6 (30.00%) | 25 (50.00%) | 36 (47.37%) | 43 (58.90%) | 15 (88.24%) | | |
| Not Mandatory | 14 (70.00%) | 25(50.00%) | 46 (52.63%) | 30 (41.10%) | 2 (11.76%) | | |
| **Training Location** | | | | | | 8.31 (4) | 0.081 |
| At Work | 28 (82.35%) | 67 (90.51%) | 108 (85.71%) | 110 (94.91%) | 30 (96.77%) | | |
| At Home | 6 (17.65%) | 7 (9.46%) | 18 (14.29%) | 7 (5.98%) | 1 (3.23%) | | |
| **Support Received** | | | | | | 20.79 (12) | 0.054 |
| CEU | 9 (26.27%) | 21 (28.37%) | 46 (36.51%) | 38 (32.48%) | 10 (32.26%) | | |
| No Support | 9 (26.47%) | 22 (29.73%) | 36 (28.57%) | 49 (41.88%) | 13 (41.94%) | | |
| Verbal Encouragement | 14 (41.18%) | 20 (27.03%) | 29 (23.02%) | 16 (13.68%) | 3 (9.68%) | | |
| Designated time | 2 (5.88%) | 11 (14.87%) | 15 (11.91%) | 14 (11.97%) | 5 (16.13%) | | |
| **Practice Frequency** | **Every day** | **Many time per week** | **A few times per week** | **A few times per month** | **Never** | | |
| **Mandatory Training Status** | | | | | | 12.77(4) | 0.013 |
| Mandatory | 5 (38.46%) | 21(42.00%) | 60 (51.22%) | 20 (64.52%) | 16 (84.21) | | |
| Not Mandatory | 8 (61.54%) | 29 (58.00%) | 63 (48.78%) | 11 (35.48%) | 3 (15.79%) | | |
| **Training Location** | | | | | | 3.24 (4) | 0.519 |
| At work | 18 (85.71%) | 74 (93.67%) | 168 (88.42%) | 52 (86.67%) | 31 (93.94%) | | |
| At Home | 3 (14.29%) | 5 (6.33%) | 22 (11.58%) | 8 (13.33%) | 2 (6.06%) | | |
| **Support Received** | | | | | | 24.63(4) | 0.017 |
| CEU | 7 (33.33%) | 22 (27.85%) | 68 (35.79%) | 18 (30.00%) | 9 (27.27%) | | |
| No Support | 6 (28.57%) | 23 (29.11%) | 59 (31.05%) | 23 (38.33%) | 18 (54.55%) | | |
| Verbal Encouragement | 8 (38.10%) | 18 (22.78%) | 45 (23.68%) | 10 (16.67%) | 1 (3.03%) | | |
| Designated time | 0 (0.00%) | 16 (20.25%) | 18 (9.47%) | 9 (15.00%) | 5 (15.15%) | | |