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Implementation of the Enhanced Stress First Aid Program in the Fire Service

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Background: Behavioral health is a critical issue in the fire service, with firefighters facing high rates of depression, PTSD, and substance misuse due to repeated trauma exposure. Stress first aid (SFA), a peer-support intervention adapted from the Marine Corps' combat and operational stress first aid framework, offers a promising approach to firefighter mental health.

Purpose: This case study of the Enhanced SFA program (ESFA) documented early-stage implementation amongst firefighters and company officers.

Setting: Online course.

Intervention: Enhanced Stress first aid course (ESFA) online.

Research Design: This program evaluation used a single-group, multi-time-point design.

Data Collection and Analysis: Surveys were conducted pre- and post-training, and at 3- and 6-month follow-ups to capture firefighter perceptions of usability, satisfaction, skill application, confidence to intervene, and organizational support.

Findings: Of 1,500 enrollees, 1,199 completed initial assessments. Due to significant attrition, findings are based on short-term, self-reported data, primarily from baseline (T0) and immediate post-training (T1). Participants strongly endorsed ESFA's relevance, format, and ease of use, with 83% intending to apply learned skills. At immediate post-training (T1), the majority of participants expressed strong support for implementing the ESFA program within their departments. Across all five implementation intent items, approximately two -thirds (62%–71%) of respondents agreed or strongly agreed with statements reflecting commitment, motivation, and determination to adopt ESFA. While statistical analysis was limited to descriptive methods due to attrition, the results suggest meaningful engagement with training.

Keywords: *first responders; exposure; mental well-being; traumatic events; support programs.*

Firefighting is a physically and psychologically demanding occupation (Campbell & Molis, 2022; Proudfoot, 2006). While fire suppression remains a core function, the modern fire service increasingly responds to a wide array of emergency medical incidents, rescues, hazardous material events, and disasters—many of which involve repeated exposure to trauma. These exposures, often cumulative, can take a substantial toll on mental and behavioral health, even among firefighters who demonstrate notable resilience (Carey et al., 2011; Corneil et al., 1999; Edwards & Wilkerson, 2020; Jahnke et al., 2016; North, Tivis, McMillen, Pfefferbaum, Cox, et al., 2002; North, Tivis, McMillen, Pfefferbaum, Spitznagel, et al., 2002). In recent years, the fire service has acknowledged the need for culturally competent behavioral health support. Formal efforts have evolved beyond reliance on traditional debriefing models such as Critical incident stress debriefing (CISD), which have shown limited efficacy and, in some cases, potential harm (Jahnke et al., 2023; Sliter et al., 2014; System, 2007). This shift in approach was driven by multiple converging factors. Fire service culture has increasingly recognized the limitations of one-time, post-incident interventions like CISD and the need for more continuous, embedded support that aligns with how firefighters interact daily. Simultaneously, national fire service organizations and peer support leaders have advocated for scalable, evidence-informed behavioral health programs that reflect operational realities. Additionally, philanthropic and federal funders (e.g., Movember, FEMA) have increasingly prioritized mental wellness initiatives that focus on peer-delivered, preventative care. These institutional, cultural, and funding dynamics collectively created momentum for revising the SFA model into a more accessible, fire service–specific format with greater relevance to frontline personnel and company officers. Newer models such as psychological first aid and stress first aid (SFA) have gained momentum (Jahnke et al., 2023; Klinger et al., 2021). Combat and operational stress first aid (COSFA), developed initially by the U.S. Marine Corps and adapted for first responders, provides a peer-delivered framework for identifying and addressing stress reactions early—before they escalate into more serious conditions (Millegan et al., 2016).

The SFA model has been increasingly promoted as a promising behavioral health strategy in the fire service. It emphasizes ongoing support through seven core actions: check, coordinate, cover, calm, connect, competence, and confidence. These actions are designed to be embedded into everyday interactions among coworkers, particularly company officers and peer support personnel, to reduce stigma, build resilience, and foster early intervention (Jahnke et al., 2023).

Despite growing interest and widespread adoption of the SFA model across the fire service, research evaluating its implementation and perceived impact remains limited. To address this gap, the Enhanced Stress First Aid (ESFA) program was developed to deliver an accessible, scalable version of SFA tailored for the fire service. Based on initial feedback, SFA has undergone iterative revisions to enhance the training approach. This includes online training, scenario-based learning, and optional components covering curbside manner and after-action review (Jahnke et al., 2023). With funding from Movember, the SFA development team was able to engage with the fire service to expand the footprint and accessibility of the SFA program. This paper presents a national case study of the ESFA training. We describe the implementation process, firefighter engagement, and early lessons learned to inform future program adaptation and adoption. Key outcomes include usability, confidence to apply learned skills, perceptions of organizational support, and readiness to intervene with peers showing signs of stress.

Materials and Methods

This paper is structured as a descriptive case study of ESFA's rollout, focusing on how the program was delivered, received, and adapted during implementation. This study was reviewed by our institutional review board (IRB) and was formally determined to be a program evaluation rather than human subjects research as defined by 45 CFR46.102. This determination was based on the study's primary aim to assess training usability and adoption.

Study Design

Pilot and Beta-Test Sessions: The research team started by evaluating the current SFA training program, which was delivered in person. SFA trainers delivered one in-person pilot / brainstorming session and two in-person beta-test sessions to observe participant engagement and areas where the course could be improved and to identify ways to expand program reach. The team agreed that, while in-person training should remain a core component for the program when possible, there was a need for an online program that leveraged adult learning principles to reach a larger audience and provide the basics of SFA. The SFA

trainers involved in the beta and pilot sessions had, on average, 14 years of experience delivering the SFA content and were made up of fire service personnel and behavioral health clinicians. This allowed for a broad range of expertise and buy-in from the fire service. The pilot training session occurred in September 2022 and lasted 2 days. The in-person beta-test sessions occurred in April 2023 in two diverse cities in the US (Wisconsin and Virginia) and lasted 2 days. Firefighters and company-level officers were recruited and voluntarily enrolled and willingly participated in the training. The two beta-test cities were selected through pre-existing partnerships with state training agencies and department leadership who had expressed prior interest in piloting behavioral health initiatives. These sites offered geographic, organizational, and demographic diversity, including a mix of career and combination departments and a range of fire service ranks. The sample size for the pilot and beta tests was determined pragmatically based on logistical feasibility and trainer availability, with the goal of gathering formative feedback rather than achieving statistical power. A comparison group was not included, as the primary aim of this early-stage program evaluation was to assess feasibility, usability, and perceived relevance, not effectiveness. At this stage, collecting broad user feedback to inform iterative development and adaptation for the fire service was prioritized over hypothesis testing or causal inference.

Enhanced SFA Online Training: After the in-person pilot and beta sessions, the SFA curriculum material underwent revision to become the ESFA. Core components from the original curriculum were streamlined and adapted for online delivery to improve accessibility, particularly for departments with geographic or scheduling barriers to in-person training, a growing concern following the COVID-19 pandemic (Klinger et al., 2021). The ESFA online training was delivered via a secure online learning management system as a self-paced, approximately 90-minute module. The program includes engaging learner content such as scenarios, videos, and interactive progress checks, and fire service–specific examples to reinforce key learning objectives.

The training introduces firefighters to the seven core SFA actions (check, coordinate, cover, calm, connect, competence, and confidence) and emphasizes how to recognize stress reactions, respond appropriately, and support peers across the stress continuum. ESFA was tailored specifically for company officers and peer supporters but made available to all personnel at the awareness level. Fire service–specific scenarios were developed with input from subject matter experts and tested in the pilot sessions to ensure relevance and realism. In addition to the core training, participants were encouraged to explore complementary components of the ESFA suite, including components entitled “Curbside Manner” (a tool for improving public-facing stress response) and “After Action Review” (a structured approach to post-incident team reflection).

Implementation Procedures

The project team worked with numerous fire departments, state training agencies, and firefighters nationwide through email and social media and in person at local, regional, and national conferences. The project team partnered with state training associations to adopt the ESFA training as part of state requirements. The team also encouraged firefighters to engage in the training individually or as part of a team training exercise on duty. Participation was voluntary and open to active-duty first responders. Inclusion required successful completion of the ESFA training and surveys. There were no exclusion criteria beyond failure to complete both the training and the evaluation. The research team completed a program evaluation to document training implementation and firefighter perceptions of acceptability and usefulness. The evaluations occurred immediately pre- (baseline; T0) and post-training (T1) as well as 3 (T2) and 6 (T3) months following the training via online survey (Qualtrics, Provo, UT). Participants were informed about the voluntary nature of the program evaluation and provided electronic consent prior to completing training surveys. Survey questions following the training included adoption and usefulness questionnaires as well as post-training perceptions. Questionnaires given 3 and 6 months after training included questions on the utility of the training program, department perceptions, organizational support, and skill perception and use. Findings from the 3- and 6-month surveys are presented as exploratory. Any participant who experienced acute distress or suicidality during or after the training would have been referred to department peer support resources, employee assistance programs, or national crisis hotlines, consistent with established firefighter behavioral health protocols.

Theory of Change and Logic Model

The ESFA program is grounded in a theory of change that connects seven core peer-support

actions to key psychological mechanisms and intended behavioral and organizational outcomes. This framework reflects the program's intent to enhance firefighter behavioral health through peer-delivered interventions embedded in everyday workplace interactions. As illustrated in the accompanying logic model (Table 1), each SFA action (check, coordinate, cover, calm, connect, competence, confidence) targets specific proximal mechanisms known to influence individual and team resilience—such as peer support climate, perceived safety, emotion regulation, and role-specific self-efficacy. These mechanisms are theorized to lead to longer-term distal outcomes, including improved coping, reduced isolation, greater use of behavioral health supports, and sustained job performance. By linking each ESFA action to measurable constructs, the logic model clarifies how this peer-based training aims to influence firefighter well-being through layered and reinforcing mechanisms of change.

Table 1. Logic Model: Enhanced Stress First Aid (ESFA) for Firefighters

SFA action	Proximal mechanism(s)	Intended distal outcome(s)
Check – Monitor peers for stress reactions.	Awareness of peer distress; early recognition; vigilance	Timely peer intervention; reduced symptom escalation
Coordinate – Link individuals to support resources.	Help-seeking efficacy; system navigation self-efficacy	Increased use of behavioral health services
Cover – Ensure safety and reduce exposure.	Perceived safety; situational control	Decreased acute stress; reduced exposure-related harm
Calm – Reduce physiological and emotional arousal.	Emotion regulation; stress management self-efficacy	Lower stress levels; improved coping under pressure
Connect – Promote social support and cohesion.	Peer support climate; belonging; interpersonal trust	Reduced isolation; enhanced team functioning
Competence – Restore or reinforce self-efficacy.	Role self-efficacy; perceived skill mastery	Return to baseline functioning; sustained job performance
Confidence – Reinforce hope and recovery beliefs.	Resilience beliefs; positive outlook; agency	Enhanced recovery; long-term psychological well-being

Measures

Participants completed the self-paced ESFA training and surveys online via secure, encrypted platforms (Qualtrics and a learning management system). While training completion was linked to survey responses using embedded metadata, no personally identifiable information was stored. All data were de-identified at the point of export and stored on password-protected, access-restricted servers in accordance with institutional data security protocols.

Only participants who completed both the training and the surveys were included in the analysis. Participants were asked standard demographic questions based on our previous research. These questions asked about age, gender, and rank in the fire department (Jahnke et al., 2013a; Jahnke et al., 2013b). Since the SFA had been primarily offered in person, participants were asked if they had taken the training in person and, if so, if they preferred the in-person or online format.

Net Promoter Score (NPS). The NPS (Score, 2018) is widely used by researchers and organizations to measure customer loyalty, satisfaction, and overall sentiment. Combined with other qualitative data, it can provide actionable insight. Though not directly in the logic model, the NPS supports implementation feasibility by measuring general acceptability of the intervention. Satisfaction with the program was asked about using the question, "How likely is it that you would recommend this training to a friend or colleague?" Response options ranged from 0 (*Not at all likely*) to 10 (*Extremely likely*), with 5 indicating *Neutral*. Respondents were categorized as promoters (those who responded 9 or 10), passives (7 or 8), or detractors (0–6). Subtracting the percentage of detractors from the percentage of promoters yields the net promoter score or, in this case, how likely firefighters are to promote this training program. Because the NPS was originally developed for commercial settings, its interpretation in public-sector training contexts should be made cautiously, as direct benchmarks are limited.

Usability and Satisfaction. To assess the usability, satisfaction, and perceived relevance of the ESFA, the project team tailored survey items aligned with established training evaluation frameworks (e.g., Davis, 1989; Kirkpatrick & Kirkpatrick, 2006) to assess the perceived relevance, usability, and acceptability of the ESFA program. Respondents evaluated various aspects of the program across a range of agreement levels on an 8-point Likert scale (from *strongly disagree* to *strongly agree*. While not drawn from a single validated tool, the items reflect key domains such as relevance, engagement, applicability, ease of use, and skill development, consistent with best practices in applied training evaluation.

Intent to Use Skills. Standard post-training evaluation framework questions (Davis, 1989) were tailored to assess motivation to act, competence, and confidence. Questions evaluated participants' perceptions of the utility, likelihood of application, and sharing of skills learned through the ESFA.

Mechanisms of Change. This questionnaire assessed firefighters' commitment, determination, motivation, effort, and desire to implement the ESFA program within departments (relating to all proximal mechanisms in the logic model). Respondents rated their agreement on statements reflecting those five key dimensions.

Department Readiness to Address Behavioral Health Issues. Questions were adapted from previous research (Jahnke et al., 2023) focused on how prepared departments were to provide support for firefighters experiencing behavioral health challenges, how well-trained personnel in the department were to manage behavioral health issues, and how confident personnel were in the skills and knowledge of their company officers to handle behavioral health issues. This measure assessed the SFA actions coordinate and confidence. Response options were on a 5-point Likert scale from *completely agree* to *completely disagree*.

Perceived Organizational Support. This questionnaire is from the seminal work (Eisenberger et al., 1986) that introduced the concept of perceived organizational support (POS), exploring how employees' beliefs about their organization's valuation of their contributions and concern for their well-being influence their commitment and job satisfaction. This assessed the SFA actions connect and coordinate.

Confidence to Intervene and Act. Confidence to intervene and act was assessed by the question "How confident do you feel in your ability to help a coworker struggling with behavioral health issues?" Response options ranged from *not at all confident* to *completely confident* on a 5-point Likert scale. This was adapted for the ESFA from the Self-Efficacy for Interpersonal Interactions (SEII) scale (Holmbeck, 1999). This assessed the SFA actions self-efficacy, competence, and confidence.

Data Analysis

Pilot and beta-test session feedback was examined using formative qualitative feedback from the sessions. Researchers conducted informal qualitative analysis based on instructor reflections and follow-up interviews. Rather than using formal coding frameworks, the research team documented and thematically discussed key insights shared by instructors regarding course delivery, participant engagement, and opportunities for adaptation. These discussions informed iterative improvements to the ESFA curriculum and clarified how best to tailor the content for frontline firefighters and company officers. A brief post-course evaluation survey was also administered during pilot and beta sessions to assess initial reactions.

For the broader program evaluation, survey responses were analyzed. The independent variable was exposure to the ESFA training (via online or in-person delivery). Dependent variables included perceived usability, intent to use skills, confidence to intervene, perceived organizational support, and department readiness.

Data Analysis Plan. Because this was a program evaluation rather than a hypothesis-driven trial, a formal sample size calculation was not conducted; instead, recruitment prioritized broad participation through collaboration with state training agencies and dissemination across national fire service networks and conferences. Given the program evaluation focus and substantial attrition over time, analyses were limited to descriptive statistics without the application of inferential methods. Demographic characteristics were summarized using frequencies and percentages for categorical variables and means and standard deviations (SDs) for continuous variables. Participant responses to key survey items, such as usability, acceptability, and confidence to intervene (measured on Likert scales), were presented as means, SDs, and proportions. To calculate the net promoter score, responses were categorized into three groups:

promoters (those who responded 9 or 10), passives (7 or 8), and detractors (0–6). The NPS was calculated as the difference between the percentage of promoters and the percentage of detractors. Data cleaning and analysis were conducted in R 4.1.2.

Results

The key goals of the ESFA course are to: (1) readily adopt and effectively apply ESFA principles; (2) integrate these principles into their operating framework and workplace climate; (3) utilize the tools as a critical component of a comprehensive behavioral health initiative; and (4) build upon the principles and initiatives to protect and enhance the wellness and well-being of firefighters and EMS personnel.

Participant Characteristics

Pilot and Beta-Test Sessions. The participants for the pilot session were 15 firefighters / company officers of varying age, rank, and gender. On average, the participants had 21.8 years of experience in the fire service. They represented both career and combination departments. SFA trainers reported that participants were, overall, motivated to be there and excited to engage in the training. The trainers estimated that participants had a rudimentary understanding, at best, of the SFA principles/program. Overall, the training was well received.

Thirty-nine firefighters and company officers participated in one of two beta-test sessions. On average, participants were 42.7 years of age, 59% male, and represented various ranks within the fire department. These sessions allowed the trainers / project team to regroup and improve the SFA training. It was noted collectively by the project team that the training needed to be directed toward line firefighters and company officers, as the company officer often acts as the change agent or "champion" within the crew. Often, the engagement or "buy-in" from the company officer can encourage the crew (line firefighters) to also engage in the behavior/material (in this case, SFA). It was suggested that tangible examples of what company officers can do in certain situations (self care, "buddy care," and problem solving) should be a focus for company officer training. The core principles of the SFA remain the same, but the team suggested these could be packaged and disseminated in a fashion more applicable to the fire service. These changes are being implemented by the project team to enhance the SFA training.

Enhanced SFA Online. Through strategic partnerships, our team was incredibly successful at engaging firefighters to enroll in the training. Over 1,500 firefighters enrolled to take the newly revised ESFA course online. After removing duplicates and participants with missing data, we analyzed 1,199 responses. Baseline demographics are displayed in Table 2. Participants were 31 years of age, on average; 76% male; 87% white; and represented various ranks in the fire department, including firefighters, company officers, chiefs, EMT/paramedic only, recruits, and other. Most participants (98.91%) were from the U.S. and represented three broad geographic regions (West, Midwest, and East). Substantial attrition between baseline and follow-up time points, as reflected in the tables, limited the feasibility of conducting more complex statistical analyses. However, this limitation does not detract from the value of examining the ESFA program's implementation and perceived impact within the fire service. Additionally, survey responses were optional, allowing participants to skip any questions they preferred not to answer, which contributed to the presence of missing data. Findings are based on short-term, self-reported data, primarily from baseline (T0) and immediate post-training (T1). Results primarily reflect participant perceptions of the program's usability and acceptability, and their intent to apply learned skills. Follow-up results at 3 and 6 months are presented as exploratory signals and should be interpreted with caution due to attrition (See Table 3).

Figure 1. Enrollment and Completion

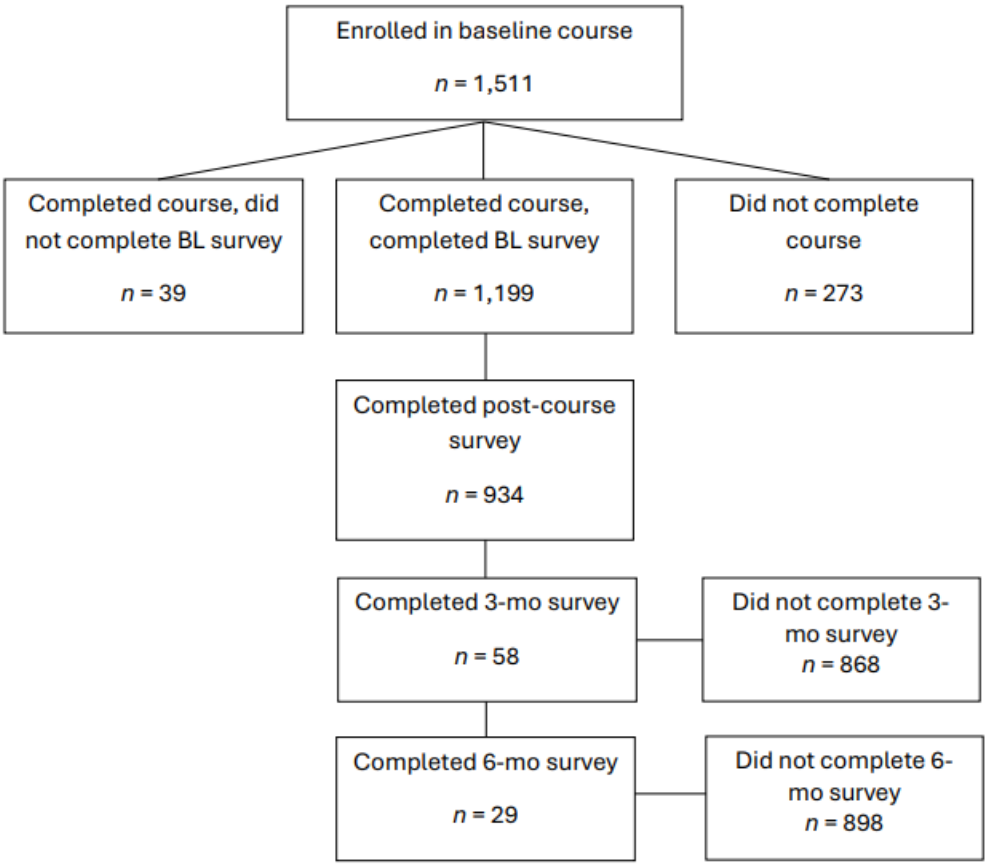

Table 2. Baseline Participant Demographics (N = 1,199), Mean (SD) or %

Variables	T0 (*n* = 1,199)	T1 (*n* = 934)	T2 (*n* = 58)	T3 (*n* = 29)
Gender				
Male	76.0%	76.0%	71.4%	71.4%
Female	24.0%	23.9%	28.6%	28.6%
Age in years	31.0 (12.6)	30.9 (12.6)	47.0 (11.8)	47.1 (14.2)
Race/ethnicity				
White	87.4%	87.7%	91.8%	90.9%
Black	5.8%	5.9%	0.0%	0.0%
Asian	2.3%	1.8%	0.0%	0.0%
American Indian or Alaska Native	1.0%	1.0%	4.1%	4.6%
Native Hawaiian or Pacific Islander	0.6%	0.5%	2.0%	4.6%
Other	3.0%	3.1%	2.0%	0.0%
Hispanic/Latino	7.9%	7.5%	4.2%	0.0%
Rank				
Firefighter/EMT/paramedic	49.2%	48.2%	38.0%	40.9%
Officer	5.8%	6.2%	10.0%	4.6%
Chief	3.4%	4.0%	28.0%	31.8%
EMT/paramedic only	7.7%	7.4%	6.0%	0.0%
Recruit	21.1%	22.1%	4.0%	4.6%
Other [a]	12.8%	12.1%	14.0%	18.2%
Region				
West	82.2%	83.2%	29.4%	30.0%
Midwest	5.6%	5.8%	23.5%	20.0%
East	11.1%	10.3%	47.1%	50.0%
Other (not residing in U.S.)	1.1%	0.7%	0.0%	0.0%
Years of service	5.7 (9.5)	5.7 (9.7)	20.1(14.0)	22.1 (14.9)

[a] This category includes fill-in-the-blank responses such as fire investigator, truck operator, safety officer, chaplain, counselor, and other specialized or administrative fire service roles not captured by the predefined rank categories.

Table 3. Attrition Summary Across Time Points

Time point	*N*	% of enrolled	Notes
Enrolled (initial sign-ups)	1,511	100%	All firefighters who registered for ESFA
Baseline (T0)	1,199	79.9%	Completed training + baseline survey
Post-Training (T1)	934	62.3%	Completed immediate post-training survey
3-Month Follow-Up (T2)	58	3.9%	Completed 3-month survey
6-Month Follow-Up (T3)	29	1.9%	Completed 6-month survey

Participants were slightly more likely to prefer in-person delivery of the SFA (29.4%) over online delivery (22.0%). However, many respondents had no preference on delivery approach (47.7%; Table 4). It is important to note that all respondents were asked about in-person versus online delivery, regardless of prior experience.

Table 4. ESFA In-Person vs. ESFA Online (N = 1,199)

Response	%
I prefer in-person delivery of ESFA.	29.4%
I prefer online delivery of ESFA.	22.0%
I like both in-person and online versions.	0.9%
I don't prefer either in-person or online versions of the training.	47.7%

Quantitative Findings

Note that in the tables different time points are used based on which variables were assessed at each interval. For example, "confidence to intervene" was assessed at baseline (T0), while "intent to use skills" was assessed at post-training (T1). Each table indicates what time points the data represents.

Net Promoter Score. The average NPS was 7.47 (SD: 2.23). We categorized 37.26% of respondents as promoters, 30.83% as passives, and 31.91% as detractors. Data are shown in Table 5.

Table 5. Net Promoter Score (n = 934)

Mean (SD)	7.47 (2.2)
Detractors *N* (%)	298 (31.9%)
Passives *N* (%)	288 (30.8%)
Promoters *N* (%)	348 (37.3%)

Participant Evaluations of the ESFA Trainings. Strong overall support existed for the ESFA program's relevance (76.35% *strongly agree* / *agree*), applicability (83.05% *strongly agree* / *agree*), and ease of use (89.29% *strongly agree* / *agree* at T3). Areas of slightly lower agreement (e.g., novelty, comparisons to similar programs) suggest opportunities for further communication of unique benefits or differentiation (Table 6). The skills taught in the ESFA program were widely regarded as useful and practical, with high reported intentions to use them in the future (83.06% *very likely* to *likely*; Table 7). A majority of participants actively shared the knowledge gained, suggesting a positive ripple effect within their professional networks.

Table 6. Usability and Satisfaction

	T1 (n = 926)	T3 (n = 28) [a]
The Enhanced Stress First Aid (ESFA) program outcomes (organization and peer support skills) are or are likely to be relevant and significant for first responders (e.g., firefighters, police, paramedics).		
Strongly disagree / disagree	1.0%	0
Somewhat disagree	0.7%	0
Neither agree nor disagree	7.2%	3.6%
Somewhat agree	11.7%	7.1%
Strongly agree / agree	76.4%	89.3%
N/A	3.1%	0
The ESFA techniques and peer support skills are meaningful to first responders.		
Strongly disagree / disagree	1.0%	0
Somewhat disagree	0.8%	0
Neither agree nor disagree	5.8%	6.9%
Somewhat agree	9.5%	3.5%
Strongly agree / agree	79.9%	89.7%
N/A	3.0%	0
The ESFA program is new, different, or interesting.		
Strongly disagree / disagree	2.4%	3.5%
Somewhat disagree	1.7%	0
Neither agree nor disagree	15.5%	17.2%
Somewhat agree	23.2%	10.3%
Strongly agree / agree	53.9%	65.5%
N/A	3.4%	0
The ESFA skill-building program has significant potential to be used in the first responder context.		
Strongly disagree / disagree	1.1%	0
Somewhat disagree	0.7%	3.5%
Neither agree nor disagree	7.2%	6.9%
Somewhat agree	12.7%	20.7%
Strongly agree / agree	75.1%	69.0%
N/A	3.2%	0
The aim of the ESFA program is acceptable, and I recommend it being used with first responders.		
Strongly disagree / disagree	1.2%	0
Somewhat disagree	0.5%	0
Neither agree nor disagree	7.2%	10.3%
Somewhat agree	9.1%	6.9%
Strongly agree / agree	79.0%	82.8%
N/A	3.0%	0
The ESFA program is applicable to first responders.		
Strongly disagree / disagree	0.9%	0
Somewhat disagree	0.3%	3.7%
Neither agree nor disagree	5.4%	3.7%
Somewhat agree	7.9%	7.4%
Strongly agree / agree	83.1%	85.2%
N/A	2.5%	0
The ESFA program is user friendly.		
Strongly disagree / disagree		0
Somewhat disagree		0
Neither agree nor disagree		3.6%
Somewhat agree		7.1%
Strongly agree / agree		89.3%
N/A		0
The ESFA training to recognize distress and build my peer support skills was realistic.		
Strongly disagree / disagree		0
Somewhat disagree		3.6%
Neither agree nor disagree		0

	T1 (n = 926)	T3 (n = 28) [a]
Somewhat agree		25.0%
Strongly agree / agree		71.4%
N/A		0
The skills developed from ESFA are better than that of similar programs in the first responder context.		
Strongly disagree / disagree		3.6%
Somewhat disagree		0
Neither agree nor disagree		14.3%
Somewhat agree		14.3%
Strongly agree / agree		60.7%
N/A		7.1%
The ESFA program is "fit for purpose" and of value and significance in comparison to other programs to improve first responders' support and well-being.		
Strongly disagree / disagree		0
Somewhat disagree		3.6%
Neither agree nor disagree		3.6%
Somewhat agree		7.1%
Strongly agree / agree		85.7%
N/A		0

[a] Exploratory.

Table 7. Intent to Use Skills

	T1 (n = 921)	T3 (n = 28) [a]
How useful do you think the skills you learned are?		
Not at all useful	1.6%	0
Slightly useful	4.2%	3.6%
Moderately useful	21.1%	21.4%
Very useful	45.6%	50.0%
Extremely useful	27.5%	25.0%
How likely are you to use these skills in the future?		
Very unlikely	1.6%	0
Unlikely	1.3%	0
Neutral	14.0%	14.3%
Likely	48.0%	32.1%
Very likely	35.1%	53.6%
To what extent did you share the knowledge you learned in the ESFA course with your department?		
I did not share anything from ESFA with my department/coworkers.		10.7%
I shared very little from ESFA with my department/coworkers.		21.4%
I shared a moderate amount of the ESFA with my department/coworkers.		32.1%
I shared a lot of the ESFA content with my department/coworkers.		35.7%

[a] Exploratory.

Mechanisms to Change. Between 30% and 36% of respondents strongly agreed they are likely to implement ESFA, indicating substantial support for the program. The highest level of strong agreement (35.94%) was observed for the statement, "We want to implement this change." Another 31% to 35% of respondents moderately agreed with the likelihood of implementation across dimensions, further reinforcing overall positive attitudes toward ESFA adoption. Approximately 26% to 33% of respondents were neutral across all statements, reflecting some

uncertainty about implementation. Only a small percentage (1%–3%) strongly or moderately disagreed with the likelihood of implementing ESFA, suggesting minimal resistance to the program (Table 8).

Table 8. Mechanisms to Change: T1 only

	T1 (n = 908)
How likely are you to implement the Enhanced Stress First Aid (ESFA) program within your department? (We are committed to implementing this change.)	
Strongly disagree / moderately disagree	3.4%
Neutral	27.6%
Strongly agree / moderately agree	68.9%
How likely are you to implement the ESFA program within your department? (We are determined to implement this change.)	
Strongly disagree / moderately disagree	3.6%
Neutral	30.4%
Strongly agree / moderately agree	66.0%
How likely are you to implement the ESFA program within your department? (We are motivated to implement this change.)	
Strongly disagree / moderately disagree	3.5%
Neutral	27.7%
Strongly agree / moderately agree	68.8%
How likely are you to implement the ESFA program within your department? (We will do whatever it takes to implement this change.)	
Strongly disagree / moderately disagree	5.2%
Neutral	32.9%
Strongly agree / moderately agree	62.0%
How likely are you to implement the ESFA program within your department? (We want to implement this change.)	
Strongly disagree / moderately disagree	2.9%
Neutral	26.4%
Strongly agree / moderately agree	70.8%

Department Engagement (Exploratory)

Due to significant attrition, department engagement was analyzed exploratorily. Perceptions of department readiness to support firefighters remained consistent across T2 and T3, with strong agreement (37.93%) maintained over time, even with attrition. There was an increase in complete agreement regarding personnel training and company officers' skills, indicating positive shifts in confidence at T3. Neutral responses (i.e., *somewhat disagree*, *neither agree nor disagree*, or *somewhat agree*) increased in multiple areas (e.g., confidence in officers), suggesting a need for further clarification or improvement in department initiatives. Overall, while agreement rates are strong, variability in disagreement and neutral responses highlight opportunities for continued development and communication around behavioral health initiatives (Table 9).

Table 9. Department Engagement (Exploratory)

Variables/Questions	T2 (n = 58)	T3 (n = 29)
My department is prepared to provide support for firefighters experiencing behavioral health issues.		
Completely disagree	6.9%	3.45%
Somewhat disagree	15.5%	17.2%
Neither agree nor disagree	8.6%	13.8%
Somewhat agree	31.0%	27.6%
Completely agree	37.9%	37.9%
Personnel in my department are well trained to handle behavioral health issues.		
Completely disagree	15.5%	10.3%
Somewhat disagree	20.7%	27.6%
Neither agree nor disagree	15.5%	10.3%
Somewhat agree	32.8%	27.6%
Completely agree	15.5%	24.1%
I am confident in the skills and knowledge of the company officers in my department to handle behavioral health issues.		
Completely disagree	15.5%	10.3%
Somewhat disagree	20.7%	17.2%
Neither agree nor disagree	20.7%	31.0%
Somewhat agree	29.3%	13.8%
Completely agree	13.8%	27.6%

Organizational Support (Exploratory). Through exploratory analysis, we analyzed organizational support. Recognition of extra effort and pride in accomplishments improved, with more participants feeling their contributions were valued and appreciated, despite attrition. Moderate agreement increased across several dimensions, indicating broader but less intense organizational support. Uncertainty increased in areas like complaint responsiveness and well-being, as seen in rising neutral responses. Slight disagreement rose in some areas (e.g., job satisfaction, noticing best efforts), suggesting a potential divide in perceptions of organizational support. These results highlight both strengths and opportunities for improvement in the organization's efforts to support firefighters as well as potential areas for enhancement of the SFA model (Table 10). While in-person training has often been conducted regionally or at a single department, the more diffuse reach of online training cannot likely influence organizational support specifically without a framework for implementation at the department level.

Table 10. Organizational Support (Exploratory)

	T2 (n = 58)	T3 (n = 29)
The organization values my contribution to its well-being.		
Strongly disagree / moderately disagree	8.6%	20.7%
Slightly disagree	6.9%	10.3%
Neither agree nor disagree	17.2%	13.8%
Slightly agree	12.1%	6.9%
Strongly agree / moderately agree	55.2%	48.3%
The organization fails to appreciate any extra effort from me.		
Strongly disagree / moderately disagree	44.8%	44.8%
Slightly disagree	6.9%	17.2%
Neither agree nor disagree	12.1%	3.5%
Slightly agree	22.4%	17.2%
Strongly agree / moderately agree	13.8%	17.2%
The organization would ignore any complaint from me.		
Strongly disagree / moderately disagree	53.5%	41.4%
Slightly disagree	13.8%	13.8%
Neither agree nor disagree	8.6%	24.1%
Slightly agree	12.1%	10.3%
Strongly agree / moderately agree	12.1%	10.4%
The organization really cares about my well-being.		
Strongly disagree / moderately disagree	13.8%	13.8%
Slightly disagree	8.6%	13.8%
Neither agree nor disagree	10.3%	20.7%
Slightly agree	20.7%	0
Strongly agree / moderately agree	46.6%	51.7%
Even if I did the best job possible, the organization would fail to notice.		
Strongly disagree / moderately disagree	43.1%	37.9%
Slightly disagree	8.6%	13.8%
Neither agree nor disagree	20.7%	20.7%
Slightly agree	19.0%	17.2%
Strongly agree / moderately agree	8.6%	10.4%
The organization cares about my general satisfaction at work.		
Strongly disagree / moderately disagree	13.8%	13.8%
Slightly disagree	12.1%	27.6%
Neither agree nor disagree	17.2%	13.8%
Slightly agree	24.1%	6.9%
Strongly agree / moderately agree	32.8%	37.9%
The organization shows very little concern for me.		
Strongly disagree / moderately disagree	48.3%	37.9%
Slightly disagree	12.1%	10.3%
Neither agree nor disagree	13.8%	20.7%
Slightly agree	12.1%	17.2%
Strongly agree / moderately agree	13.8%	13.8%
The organization takes pride in my accomplishments at work.		
Strongly disagree / moderately disagree	13.8%	10.4%
Slightly disagree	12.1%	13.8%
Neither agree nor disagree	15.5%	17.2%
Slightly agree	15.5%	27.6%
Strongly agree / moderately agree	43.1%	31.0%

Confidence to Intervene and Act (Exploratory). The proportion of participants with high confidence (*fairly confident* or *completely confident*) increased from baseline (prior to taking the course, 58.81%; T0) to 82.76% (T2) and was sustained at 75.0% (T3). The near elimination of low confidence (*not at all confident* or *slightly confident*) by T3 suggests that participants reported greater self-efficacy in helping coworkers. The increase in *somewhat confident* responses at T3 suggests a need for continued reinforcement to maintain the highest confidence levels over time. Overall, the results indicate that participants reported increased confidence to intervene and act in behavioral health situations, with self-reported gains largely sustained over time (Table 11).

Table 11. Confidence to Intervene and Act (Exploratory)

Response	T0 (n = 1,199)	T2 (n = 58) [a]	T3 (n = 28) [a]
Not at all confident	1.6%	0	0
Slightly confident	12.4%	5.2%	3.6%
Somewhat confident	27.2%	12.1%	21.4%
Fairly confident	42.0%	50.0%	42.9%
Completely confident	16.8%	32.8%	32.1%

[a] Exploratory.

Discussion

This evaluation provides early-stage evidence on the usability, acceptability, and short-term self-reported outcomes of the Enhanced Stress First Aid (ESFA) program. Findings should be interpreted within the context of a program implementation evaluation, with primary insights drawn from baseline and immediate post-training responses. While exploratory follow-up data are included, they are presented cautiously due to substantial attrition. The findings indicate strong participant agreement regarding the program's usability, acceptability, and practicality in fostering skills to address behavioral health issues. Additionally, participants reported increased confidence to intervene and act and perceived organizational support for mental health initiatives. These findings are consistent with the broader literature emphasizing the importance of peer support and early intervention models in improving psychological safety and resilience within emergency services settings (Anderson et al., 2020; Fallon et al., 2023).

Peer-based behavioral health interventions are increasingly recognized as critical for supporting first responders, particularly where stigma and structural barriers limit help-seeking (Fallon et al., 2023). The ESFA program builds on this foundation by equipping firefighters—especially company officers—with a standardized, accessible approach to recognizing and responding to peer stress. Findings from this evaluation, including increased confidence to intervene, align with outcomes from peer support training in police and EMS settings and reflect social cognitive theory's emphasis on self-efficacy (Anderson et al., 2020; Fallon et al., 2023). By testing a fully online, self-paced model across a national fire service sample, this study extends prior SFA research (Jahnke et al., 2023) and addresses accessibility challenges common in rural or under-resourced departments. Participant preference for flexible, scenario-based learning also echoes trends in adult professional training (Iverson & Colky, 2004). However, persistent neutral responses regarding department-level behavioral health strategies underscore the difficulty of achieving sustained culture change—highlighting the need for interventions like ESFA to be paired with organizational leadership and systems-level support to foster psychological safety.

Limitations

While this study provides valuable insights into the implementation, perceived usability, and acceptability of the ESFA program among firefighters, several limitations should be considered when interpreting the findings. The project team was incredibly successful at fire department outreach and engaging firefighters to take the initial online training. However, participation significantly declined after the initial survey and successful completion of the online learning module. While over 1,500 participants enrolled in the online training, data from later time points (T2 and T3) were limited due to high attrition rates, potentially reducing the robustness

of longitudinal comparisons. High attrition rates are common in human subjects research involving online, self-paced programs—particularly when participant follow-up is conducted solely via email without direct or sustained engagement. In this study, the lack of personal contact, competing job demands, and the voluntary nature of participation likely contributed to reduced response rates at the 3- and 6-month follow-ups.

Data were missing due to participant attrition at follow-up and the optional nature of survey responses, which limited the ability to conduct more advanced statistical analyses. Missing data at follow-up may have excluded individuals with differing experiences or outcomes, potentially biasing the results. The reliance on self-reported surveys introduces the potential for social desirability bias, where participants may overstate positive outcomes or underreport challenges. Prior research on firefighter behavioral health interventions suggests that social desirability bias may lead to inflated reports of confidence or skill application, particularly in peer-support or leadership roles where helping others is culturally valued (Fallon et al., 2023; Jahnke et al., 2023). As such, reported gains should be interpreted cautiously, as they may overestimate actual behavior change or long-term impact. Self-reported measures of behavioral changes and confidence may not fully capture actual practice in real-world settings. We currently present group-level data, though future exploration of within-subjects changes will be important in future investigation. Additionally, high attrition at the follow-up timepoints introduces the potential for nonresponse bias. Responders and non-responders were generally similar at baseline; however, longitudinal follow-up samples increasingly reflected older and more experienced personnel. Female participation and representation from higher ranks (e.g., chiefs) also increased over time, while Hispanic/Latino and other minoritized racial/ethnic groups were less represented in later time points. This attrition pattern suggests potential response bias, which may affect the generalizability of follow-up findings (Groves & Peytcheva, 2008). As such, findings from T2 and T3 should be interpreted with caution and are presented as exploratory, as attrition may bias results in a more favorable direction by reflecting participants who were more motivated, engaged, or positively disposed toward ESFA.

Though consistent with the makeup of the fire service (Fahy, 2022), the sample primarily consisted of firefighters living and working in the U.S., with 87% identifying as white and 76% male. This demographic homogeneity may limit the applicability of the findings to more diverse populations or international firefighting contexts. Participants were largely self-selected, which could introduce selection bias, as those more motivated to engage in behavioral health initiatives may have been overrepresented.

The study design did not include a control group for comparison, making it difficult to attribute observed changes solely to the ESFA training rather than other concurrent factors, such as organizational initiatives or personal experiences. Follow-up assessments were conducted up to 6 months post-training. This period may not fully capture long-term retention of skills, sustainability of confidence, or the true impact of the program on behavioral health outcomes.

As a program evaluation, this study primarily used measures focused on perceptions of program usability, acceptability, and intent to use skills rather than objectively measuring outcomes (e.g., reduced incidents of PTSD or increased help-seeking behavior). Future studies should include control groups or alternative interventions for comparison. It will be necessary to explore long-term effects of the ESFA program to assess sustained behavioral changes and impacts on organizational culture. Future research should investigate the program's effectiveness across diverse and international populations. Future research should also incorporate objective measures of program impact, such as peer support utilization rates or reductions in behavioral health incidents. By addressing these limitations, future research can provide a more comprehensive understanding of the effectiveness and scalability of ESFA in improving firefighter behavioral health.

Despite numerous strengths, this study highlights key areas for improvement, such as increasing long-term engagement, addressing neutral or uncertain perceptions, more broadly engaging at the department/organization level, and refining strategies for diverse and underserved populations. For chiefs and training officers, several practical lessons emerged from this implementation experience that highlight both opportunities and challenges for future rollout. Following implementation of the intervention, key after-action insights were summarized to inform future rollout efforts (see Box 1).

Box 1. Summary of After-Action Insights

After Action Insights

What Worked. The online, self-paced delivery broadened access across departments nationally, while fire service–specific scenarios made the content practical and relevant. Participants reported high initial engagement, usability, and intent to use ESFA skills.

What Didn't. Follow-up participation declined sharply, limiting longer-term insights. Department-level change was difficult to achieve when implementation rested solely on individual learners without leadership reinforcement.

What We Would Do Differently. Future rollouts should include structured department-level supports and stronger follow-up mechanisms to sustain skill use. We would also provide more tailored tools for company officers, who are critical to embedding ESFA into daily practice.

Conclusion

This evaluation provides early evidence that the ESFA program is both feasible and acceptable for widespread use within the fire service. Participants reported high levels of perceived usefulness, confidence to apply learned skills, and intent to intervene with peers showing signs of stress—key indicators of the program's utility in addressing behavioral health challenges in this high-risk population. The online, self-paced delivery model was well-received, suggesting strong potential for scalable, flexible implementation, especially in resource-limited or geographically dispersed departments. Future research should build upon these findings by incorporating control groups and extended follow-up periods to assess long-term outcomes. Broadening the participant base to include more diverse fire service populations and evaluating organizational-level impacts will also be essential. By addressing these gaps, ESFA has the potential to serve as a cornerstone for firefighter behavioral health initiatives, ultimately enhancing the preparedness, safety, and well-being of first responders across the nation.

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