Women Firefighters and Workplace Harassment

Associated Suicidality and Mental Health Sequelae

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Abstract: This cross-sectional study investigated the association between harassment, career suicidality, and psychiatric symptoms among women firefighters. Women firefighters ($n = 290$) completed self-report measures of experiences with harassment on the job, career suicidality, and various psychiatric symptoms. Logistic regression analyses and one-way analyses of variance were used to address study aims. Of the sample, 21.7% reported having experienced sexual harassment and 20.3% reported having been threatened or harassed in another way on their firefighting job. Sexual harassment and other threats/harassment on the job were both significantly associated with a greater likelihood of reporting career suicidal ideation, as well as reporting more severe psychiatric symptoms. Harassment and threats experienced on the job may be associated with increased suicide risk and more severe psychiatric symptoms among women firefighters. Efforts are needed to reduce the occurrence of harassment and threats within the fire service and provide support for women firefighters who have been harassed or threatened.

Key Words: Firefighter, women, harassment, workplace, suicide

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Of the estimated 1,160,450 career and volunteer firefighters who served in the United States in 2015, approximately 7.3% were women (Haynes and Stein, 2017). Given that the fire service has historically been a male-dominated field, recent efforts have called for increased investigation of the health and well-being of women firefighters (Jahnke et al., 2012). Indeed, workplaces with a sex imbalance may present unique challenges. One identified challenge is the increased potential for emotional, physical, or sexual harassment (Gruber, 1998).

Workplace harassment is defined as "interpersonal behavior aimed at intentionally harming another employee in the workplace" and may span verbal, psychological, physical, and sexual domains (Bowling and Beehr, 2006). The mental health sequelae of workplace harassment appear to be widespread, demonstrating associations with increased anxiety and depression symptoms (Bowling and Beehr, 2006), problematic alcohol use (Rospenda et al., 2009), sleep disturbances (Niedhammer et al., 2009), and suicidal ideation (Milner et al., 2016). Studies examining the effects of workplace harassment on mental health outcomes have been meta-analyzed, and findings generally suggest deleterious effects of workplace harassment (Bowling and Beehr, 2006; Chan et al., 2008; Williness et al., 2007). Together, findings suggest that workplace harassment, particularly in occupations for which a marked sex imbalance exists, may have marked effects on mental health.

Although the effects of harassment on the job have been examined among women in specific occupational groups, such as women physicians (Frank et al., 1998) and women military service members (LeardMann et al., 2013; Magley et al., 1999), little is known about harassment experiences among women in the fire service (Griffith et al., 2016a, 2016b; Hulett et al., 2008; Rosell et al., 1995). We wish to emphasize from the outset that in researching harassment reported by women firefighters and its attendant health impacts, we do not suggest that harassment is an issue unique to the fire service. We additionally emphasize that harassment experienced by women firefighters on the job need not be from other firefighters, either male or female, and instead can also be experienced from laypersons. Examining the association between harassment on the job and mental health outcomes among women firefighters is important for several reasons. For one, there have been recent efforts to increase the number of women represented within the fire service (Hulett et al., 2008). Thus, it follows that efforts to improve the psychosocial workplace environment for women firefighters would be beneficial. Further, if harassment is identified as a potential contributor to mental health morbidity among women firefighters, it would underscore a malleable work-related condition that, if intervened upon by fire service stakeholders, could lead to increased health and well-being of women firefighters.

One of the most comprehensive assessments of issues unique to women firefighters within the fire service was conducted by Hulett and colleagues (2008) and later replicated by Griffith and colleagues (2016). In the original study, 675 men and women firefighters across the contiguous United States completed a battery of self-report surveys on broad issues relevant to women in the fire service. Among respondents to the survey, 84.7% of women (compared with 12.4% of men) reported having experienced differential treatment because of their sex. Moreover, verbal harassment and sexual advances were reportedly experienced by 42.9% and 30.2% of women firefighters, respectively. In 2016, Griffith and colleagues sought to replicate these findings among a sample of 141 men and women firefighters, and the results were generally consistent, indicating that a strikingly high prevalence of workplace harassment among women firefighters has persisted. Despite the comprehensiveness of these two reports, the effects of harassment on women firefighters' mental health were not examined.

Complementary lines of scholarship, however, have examined the effects of harassment on mental health-related outcomes among women firefighters. For example, one study of 206 women firefighters found that more than half (58.2%; $n = 120$) of respondents reported experiencing sexual harassment (Rosell et al., 1995), which was defined in this study as "unwelcome sexual advances, requests for sexual favors, and other verbal or physical contact of a sexual nature." Women firefighters who reported experiencing sexual harassment were significantly more likely than those who did not to also report job stress, fears of going to work, and utilization of sick days to avoid work. Moreover, of the 120 women firefighters reporting sexual harassment, the majority (58.3%) did not notify their supervisors. Thus, although sexual harassment of women firefighters appears to occur at alarmingly high rates and is associated with increased stress levels, it might be an unrecognized issue among leadership, resulting in missed opportunities for prevention and intervention efforts. Importantly, when supervisors are aware of complaints regarding harassment, women firefighters generally agree that their complaints are addressed by supervisors (Griffith et al., 2016a).

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The extant literature on harassment and attendant mental health complaints is limited in several important ways. First, studies have not comprehensively examined various forms of harassment, including sexual and verbal harassment, and their differential effects on mental health outcomes. Further, only a limited range of impacted mental health domains has been assessed among women firefighters, specifically, and these domains have been general (e.g., stress) rather than specific (e.g., insomnia). Moreover, to our knowledge, no study has examined the effects of harassment on other important mental health outcomes, such as suicidality, among women firefighters. Examining factors that may increase risk for suicidality among firefighters is particularly important in light of recent research indicating that the firefighters may represent a group at elevated risk for suicide compared with the general population (Martin et al., 2016; Stanley et al., 2015, 2016). Thus, additional research on the effects of harassment on women firefighter mental health is warranted.

The Present Study

This cross-sectional study aimed to investigate 1) the prevalence of sexual harassment and other threats/harassment experienced on the job, 2) the association between harassment and career suicidality, and 3) the association between harassment and other psychiatric symptoms (i.e., capability for suicide, anxiety sensitivity, alcohol use, depression, perceived burdensomeness, thwarted belongingness, insomnia, posttraumatic stress disorder [PTSD], and suicide risk) in a sample of women firefighters. Consistent with previous literature, we hypothesized that both sexual harassment and other threats/harassment experienced on the job would be associated with 1) increased likelihood of career suicide ideation, plans, and attempts, even after controlling for pre-career ideations, plans, and attempts, respectively; and 2) more severe psychiatric symptoms.

Again, we note that harassment is not an issue unique to the fire service and can be experienced from a variety of individuals—not only fellow firefighters.

METHODS

Participants

A sample of 290 current US women firefighters was included in the current study. Participants all identified as female and ranged in age from 18 to 58 years (mean [SD], 37.33 [9.59]). For self-reported race/ethnicity, 92.8% identified as White/Caucasian, 2.4% Black/African American, 1.7% Hispanic or Latino/Latina, and 3.1% other race/ethnicity. On average, participants reported 12.26 years of firefighter service (SD, 7.94; range, 1–39). See Table 1 for detailed demographic characteristics.

TABLE 1. Participant Demographics and Firefighter Characteristics (n = 290)

	n	Valid %
Age (mean [SD], 37.33 [9.59]; range, 18–58)		
Race/ethnicity		
White/Caucasian	269	92.8%
Black/African American	7	2.4%
Hispanic or Latino/Latina	5	1.7%
Other	9	3.1%
Sexual orientation		
Heterosexual/straight	251	86.6%
Gay/lesbian/homosexual	25	8.6%
Bisexual	7	2.4%
Not sure/decline to state	7	2.4%
Fire department type		
Career	122	42.1%
Volunteer	74	25.5%
Combination	85	29.3%
Wildland	9	3.1%
Firefighter rank		
Lower rank	171	59.0%
Higher rank	58	20.0%
Officer rank	20	6.9%
Other rank	41	14.1%
Geographic region		
Northeast	39	13.7%
Midwest	78	27.5%
South	92	32.4%
West	75	26.4%
Missing	6	–
Geographic location		
Large city	62	21.5%
Mid-size city	40	13.8%
Urban fringe of city	46	15.9%
Large town	33	11.4%
Small town	61	21.1%
Rural	47	16.3%
Missing	1	–
Years of firefighter service (mean [SD], 12.26 [7.94]; range, 1–39)		
Estimated no, women in department (mean [SD], 24.66 [51.53]; range, 0–400)		

Note: lower rank: firefighter I, firefighter II, engineer/technician/chauffeur; higher rank: sergeant, lieutenant, captain; officer rank: battalion chiefs, assistant chiefs, deputy chiefs, commissioners.

Measures

Demographics Overview

A self-report measure was used to assess participants' sociodemographic and fire service characteristics.

Acquired Capability for Suicide Scale-Fearlessness About Death

The Acquired Capability for Suicide Scale-Fearlessness About Death (ACSS-FAD; Ribeiro et al., 2014) is a 7-item self-report measure designed to assess an individual's perceived fearlessness about death. Fearlessness about death is hypothesized to confer risk for near-lethal and lethal suicidal behaviors in the context of suicidal intent, and it may be developed, in part, through exposure to painful and provocative events (e.g., occupation-related trauma; Joiner, 2005; Van Orden et al., 2010). Items are rated on a 0 to 4 scale; total scores range from 0 to 28, with increasing scores signaling greater fearlessness regarding death. The ACSS-FAD has been shown to have good internal consistency and convergent validity in community and psychiatric samples (Ribeiro et al., 2014). The ACSS-FAD demonstrated adequate internal consistency in the present sample ($\alpha = 0.75$).

Anxiety Sensitivity Index-3

The Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007) is an 18-item self-report measure designed to assess anxiety sensitivity concerns. Anxiety sensitivity is a psychological construct implicated in the pathogenesis of anxiety and related disorders (Reiss et al., 1986), and research has also demonstrated its link to more severe suicide risk (Capron et al., 2012). Participants rate the extent to which they agree with a series of statements (e.g., "I worry that other people will notice

my anxiety") on a 5-point Likert scale (0, very little; 4, very much). Total scores range from 0 to 72, with increasing scores representing greater anxiety sensitivity concerns. The ASI-3 has demonstrated good internal consistency, reliability, and validity (Osman et al., 2010; Taylor et al., 2007). In the current study, the ASI-3 demonstrated strong internal consistency ($\alpha = 0.92$).

Alcohol Use Disorders Identification Test-Consumption

The Alcohol Use Disorders Identification Test-Consumption (AUDIT-C; Bush et al., 1998) is a 3-item self-report measure used as a screening tool for alcohol use disorders. Items assess frequency and quantity of alcohol consumption. Total scores range from 0 to 12, and higher scores signal more problematic alcohol use. The AUDIT-C has been shown to have good sensitivity and specificity in detecting alcohol use problems, and the AUDIT-C demonstrated workable but nonoptimal internal consistency in the present study ($\alpha = 0.67$).

Center for Epidemiologic Studies Depression Scale-Revised

The 20-item Center for Epidemiologic Studies Depression Scale-Revised (CESD-R; Eaton et al., 2004) is a self-report measure of depression symptom severity. Individuals rate how often they have experienced a range of depression symptoms in the past week on a 0 (not at all or less than 1 day) to 4 (nearly every day for 2 weeks) scale. Total scores range from 0 to 80, and higher scores indicate more severe depression symptoms. The CESD-R has demonstrated good reliability and validity (Eaton et al., 2004). In this study, the CESD-R demonstrated strong internal consistency ($\alpha = 0.95$).

Interpersonal Needs Questionnaire

The 15-item Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2012) is a self-report measure of perceived burdensomeness (6 items) and thwarted belongingness (9 items). Both constructs are key components of the interpersonal theory of suicide (Joiner, 2005; Van Orden et al., 2010). Individuals rate the extent to which a series of statements apply to them on a 1 (not at all true for me) to 7 (very true for me) scale. Total scores range from 6 to 42 and 9 to 63, respectively, and higher scores indicate a greater degree of each respective construct. The INQ subscales have been shown to have good internal consistency and predictive validity (Van Orden et al., 2012), and they demonstrated strong internal consistency in the present sample ($\alpha = 0.95$ and 0.92, respectively).

Insomnia Severity Index

The Insomnia Severity Index (ISI; Bastien et al., 2001) is a 7-item self-report measure that assesses severity of sleep difficulties, sleep satisfaction, and impairment and distress associated with sleep problems. Each item is rated on 0 to 4 scale, and total scores range from 0 to 28. Higher scores on the ISI signal more severe insomnia symptoms. The ISI has been shown to have strong psychometric properties, including strong reliability, validity, and sensitivity to change (Bastien et al., 2001; Morin et al., 2011). The ISI demonstrated strong internal consistency in the current sample ($\alpha = 0.90$).

PTSD Checklist for *DSM-5*

The PTSD Checklist for *DSM-5* (PCL-5; Weathers et al., 2013) is a 20-item self-report inventory that assesses the intensity, frequency, and severity of PTSD symptoms utilizing the criteria delineated in the *Diagnostic and Statistical Manual of Mental Disorders*, *5th Edition* (*DSM-5*). Participants rate the degree to which they have been bothered by a range of PTSD symptoms in the past month (0, not at all; 4, extremely). Total scores range from 0 to 80, with increasing scores indicating more severe PTSD symptoms. The PCL-5 has demonstrated strong psychometric properties (Bovin et al., 2016), and for the current study, the PCL-5 demonstrated strong internal consistency ($\alpha = 0.96$).

Self-Injurious Thoughts and Behaviors Interview-Short Form

The Self-Injurious Thoughts and Behaviors Interview-Short Form (SITBI-SF; Nock et al., 2007) is a 72-item interview assessment designed to assess information regarding the nature and timing of past and current suicidality (e.g., thoughts, plans, attempts). This investigation used an adapted version of the SITBI-SF to assess participants' experiences with suicidal thoughts and behaviors before and since becoming firefighters (i.e., pre-career and career suicidality). Previous studies have used a similar self-report version of the SITBI-SF (Stanley et al., 2015; Zetterqvist et al., 2013). The SITBI-SF has been shown to have high interrater reliability and good test-retest reliability (Nock et al., 2007).

Suicidal Behaviors Questionnaire-Revised

The 4-item Suicidal Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001) is a self-report measure designed to assess suicide risk potential. The items assess lifetime and past-year suicidal ideation, as well as future likelihood of suicidal behavior. Total scores range from 3 to 18, with greater scores signaling more severe suicide risk. Prior studies indicate that the SBQ-R demonstrates good internal consistency and is able to differentiate between suicidal and nonsuicidal subgroups (Osman et al., 2001). The SBQ-R demonstrated good internal consistency in the present study ($\alpha = 0.80$).

Quality of Worklife Module

The Quality of Worklife Module (QWM; National Institute for Occupational Safety and Health, 2000) is a 72-item subset of the General Social Survey administered biannually by the National Opinion Research Center. Items were selected by the National Institute for Occupational Safety and Health to assess a range of workplace experiences (e.g., hours worked, job demands). Two items from the QWM were adapted for this study to assess participants' experiences with harassment specifically while working on the job as a firefighter: 1) "Have you been sexually harassed by anyone while you were on the job as a firefighter?" (yes/no) and 2) "Have you been threatened or harassed in any other way by anyone while you were on the job as a firefighter?" (yes/no). Of note, these items did not probe whether harassment and/or threats were from another firefighter.

Procedures

This web-based study represents a subset of a larger investigation of women firefighter behavioral health ($N = 313$; Stanley et al., 2017). Only individuals who completed the QWM ($n = 290$) were included in the present study (i.e., data were missing for 7.3% of participants in the full sample). There were no significant demographic differences between included and excluded participants. Participants were recruited from e-mail Listservs, social media outlets, and websites maintained by various local and national firefighter organizations. The majority (54.5%) reported being referred to the study via social media. Inclusion criteria were 1) aged 18 years or older, 2) current firefighter serving in the United States, and 3) identify as a woman. Informed consent was obtained electronically before study enrollment, and all participants were required to correctly answer five comprehension questions to demonstrate an understanding of all study procedures. After this, participants completed a battery of self-report questionnaires on Qualtrics, a Health Insurance Portability and Accountability Act-compliant and secure web-based survey platform. The survey took approximately 30 minutes to complete, and to reduce fatigue associated with completing the questionnaires, participants had the option to pause and return to complete the survey up to 1 week after initiating it. After completing the survey, participants were provided with information about various mental health resources (e.g., National Suicide Prevention Lifeline [1-800-273-TALK]) and were given

the option to provide their e-mail address to be entered into a raffle for 1 of 15 Amazon.com electronic gift cards worth $20. The University's institutional review board approved all study procedures.

Data Analysis

First, descriptive statistics were used to characterize the sample and responses to self-report measures. Descriptive statistics were also used to identify rates of QWM sexual harassment; QWM other threats/harassment; and SITBI-SF career suicide ideation, plans, and attempts in the sample. Then, a series of three separate logistic regression analyses were conducted to evaluate the extent to which QWM sexual harassment was associated with the presence/absence of SITBI-SF career suicide ideation, plans, and attempts, controlling for SITBI-SF pre-career suicide ideation, plans, and attempts, respectively. Three separate logistic regression analyses were also used to evaluate the association between QWM other threats/harassment and SITBI-SF career suicide ideation, plans, and attempts, again, controlling for SITBI-SF pre-career suicide ideation, plans, and attempts, respectively. Finally, one-way analyses of variance were used to compare self-report measure scores of individuals with and without a history of QWM sexual harassment, as well as individuals with and without a history of QWM other threats/harassment. Specifically, differences in ACSS-FAD fearlessness about death, ASI-3 anxiety sensitivity, AUDIT-C alcohol use, CESD-R depression symptoms, INQ perceived burdensomeness, INQ thwarted belongingness, ISI insomnia symptoms, PCL-5 PTSD symptoms, and SBQ-R suicide risk were evaluated. Separate models were used to examine each symptom domain to reduce the statistical impact of overlapping constructs on our findings. For all analyses, *p*-values less than 0.05 were considered statistically significant; *p*-values of 0.05 or higher and less than 0.10 were considered nonsignificant trends.

RESULTS

Descriptive Statistics

Of the sample, 21.7% ($n = 63$) reported a history of sexual harassment, 20.3% ($n = 59$) reported a history of other threats/harassment, and 13.4% ($n = 39$) reported a history of both while on the job as a firefighter. With regard to SITBI-SF career suicidality, 37.9% ($n = 110$) reported career suicidal ideation, 10.3% ($n = 30$) reported career suicide plans, and 3.8% ($n = 11$) reported at least one career suicide attempt. Chi-square tests revealed that neither the prevalence of a sexual harassment history nor the prevalence of other threats/harassment significantly differed by fire department geographic region (e.g., Northeast, Midwest) or location (e.g., large city, rural; $ps > 0.05$). Similarly, logistic regression analyses did not reveal a significant association between the estimated number of women firefighters in one's fire department and likelihood of reporting a history of sexual harassment or other threats/harassment ($ps > 0.05$). Means, standard deviations, ranges, and zero-order correlations for self-report measures are presented in Table 2.

The Association Between Harassment History and Career Suicidality

Sexual Harassment

Individuals reporting a history of sexual harassment while on the job as a firefighter were significantly more likely than those without this history to report experiencing SITBI-SF career suicidal ideation (adjusted odds ratio [AOR], 2.046; 95% confidence interval [CI], 1.119–3.739), controlling for pre-career ideation. A history of sexual harassment while on the job as a firefighter demonstrated a nonsignificant trend ($p < 0.100$) toward being associated with a SITBI-SF career history of suicide plans (AOR, 2.162; 95% CI, 0.946–4.943), controlling for pre-career plans. Sexual harassment history was not significantly associated with a career history of suicide attempts (AOR, 1.118; 95% CI, 0.273–4.569), controlling for pre-career attempts.

Other Threats/Harassment

Individuals reporting a history of other threats/harassment while on the job as a firefighter were significantly more likely than those without this history to report experiencing SITBI-SF career suicide ideation (AOR, 2.415; 95% CI, 1.299–4.491) and career suicide plans (AOR, 2.803; 95% CI, 1.234–6.366), controlling for SITBI-SF pre-career ideation and plans, respectively. A history of other threats/harassment while on the job as a firefighter was not significantly associated with a SITBI-SF career suicide attempt history (AOR, 1.417; 95% CI, 0.353–5.691), controlling for pre-career attempts.

Differences in Psychiatric Symptoms

Sexual Harassment

Participants with a history of sexual harassment while on the job as a firefighter reported significantly higher levels of ASI-3 anxiety sensitivity ($F[1,259] = 18.041$, $p < 0.001$, $\eta^2 = 0.065$), CESD-R depression symptoms ($F[1,275] = 11.965$, $p = 0.001$, $\eta^2 = 0.042$), INQ thwarted belongingness ($F[1,279] = 7.340$, $p = 0.007$, $\eta^2 = 0.026$), ISI insomnia symptoms ($F[1,274] = 10.602$, $p = 0.001$, $\eta^2 = 0.037$), PCL-5 PTSD symptoms ($F[1,258] = 27.519$, $p < 0.001$, $\eta^2 = 0.096$), and SBQ-R suicide risk ($F[1,288] = 10.723$, $p = 0.001$, $\eta^2 = 0.036$) than those without a history of sexual harassment on the job. There were no significant differences between these two groups in ACSS-FAD fearlessness about death, AUDIT-C alcohol use, or INQ perceived burdensomeness. Detailed statistics are presented in Table 3.

Other Threats/Harassment

Participants with a history of other threats/harassment while on the job as a firefighter reported significantly higher levels of ASI-3 anxiety sensitivity ($F[1,259] = 8.605$, $p = 0.004$, $\eta^2 = 0.032$), CESD-R depression symptoms ($F[1,275] = 11.684$, $p = 0.001$, $\eta^2 = 0.041$), INQ thwarted belongingness ($F[1,279] = 11.864$, $p = 0.001$, $\eta^2 = 0.041$), ISI insomnia symptoms ($F[1,274] = 9.455$, $p = 0.002$, $\eta^2 = 0.033$), PCL-5 PTSD symptoms ($F[1,258] = 26.348$, $p < 0.001$, $\eta^2 = 0.093$), and SBQ-R suicide risk ($F[1,288] = 10.314$, $p = 0.001$, $\eta^2 = 0.035$) than those without this history. Again, there were no significant differences between these two groups in ACSS-FAD fearlessness about death, AUDIT-C alcohol use, or INQ perceived burdensomeness. See Table 3 for detailed statistics.

DISCUSSION

This study examined experiences with harassment and threats on the job in a sample of women firefighters. Specifically, we evaluated the association between harassment and attendant mental health sequelae, including suicidality and other psychiatric symptoms. Consistent with study hypotheses, a history of sexual harassment and other threats/harassment were both significantly associated with a history of career suicidal ideation, as well as more severe psychiatric symptoms, with a few exceptions. Findings have implications both for research and fire service mental health initiatives.

First, it is noteworthy that our study sample yielded relatively lower rates of sexual harassment (21.7%) and other forms of threats/harassment (20.3%) than those found in other women firefighter samples. For example, the aforementioned study by Hulett and colleagues (2008) found that 30.2% of the women firefighters in their sample reported instances of sexual advances and 42.9% reported verbal harassment in the workplace. Similarly, a study of women firefighters conducted by Rosell and colleagues (1995) found that more than half (58.2%) reported experiences of sexual harassment. There are several plausible explanations for this pattern of findings. It is possible that rates of harassments and threats experienced by women firefighters have, indeed, declined over time (e.g., the highest rates of sexual harassment were found in Rosell and colleagues' 1995 study). However, we caution against this interpretation because previous studies, as well as

TABLE 2. Means, Standard Deviations, Ranges, and Zero-Order Correlations

	1	2	3	4	5	6	7	8	9	10	11
1. ACSS-FAD fearlessness about death	1										
2. ASI-3 anxiety sensitivity	−0.181**	1									
3. AUDIT-C alcohol use	−0.006	0.138*	1								
4. CESD-R depression symptoms	−0.022	0.564**	0.134*	1							
5. INQ perceived burdensomeness	−0.022	0.423**	0.155*	0.642**	1						
6. INQ thwarted belongingness	0.029	0.458**	0.197**	0.633**	0.520**	1					
7. ISI insomnia symptoms	−0.005	0.422**	0.102	0.630**	0.289**	0.457**	1				
8. PCL-5 PTSD symptoms	−0.012	0.504**	0.182**	0.684**	0.426**	0.517**	0.467**	1			
9. SBQ-R suicide risk	0.103	0.444**	0.188**	0.608**	0.593**	0.554**	0.405**	0.478**	1		
10. QWM sexual harassment	−0.016	0.255**	0.096	0.204**	0.056	0.160	0.193**	0.310**	0.189**	1	
11. QWM other threat/harassment	0.063	0.179**	0.105	0.202**	0.113	0.202**	0.183**	0.304**	0.186**	0.544**	1
Mean	17.63	17.32	3.70	15.01	9.10	25.48	10.65	17.06	5.81	0.22	0.20
SD	5.50	13.56	2.05	14.43	6.12	12.85	6.13	17.18	2.93	0.41	0.40
Range	3–28	0–61	1–10	0–64	6–39	9–59	0–28	0–71	3–17	0–1	0–1
α	0.75	0.92	0.67	0.95	0.95	0.92	0.90	0.96	0.80	—	—

*$p < 0.05$; **$p < 0.01$.

PTSD indicates posttraumatic stress disorder.

the current study, did not use a representative sampling strategy. Thus, this pattern of results may reflect variations across convenience samples rather than a true fluctuation of prevalence rates across time. Other studies included more detailed definitions of what constitutes harassment to their participants, whereas in the current study, participants were not provided with such definitions. Therefore, it is possible that participants in this study may have denied experiencing harassment in the workplace due to narrower interpretations of what qualifies as harassment. Regardless, the rates of sexual harassment and other forms of threats/harassment experienced by women firefighters in our sample remain nontrivial and deserving of attention, particularly because of their occurrence across geographic regions and locations and their associations with increased suicide risk and psychiatric symptoms.

Indeed, it is striking that women firefighters in this study who reported a history of sexual harassment on the job were more than twice as likely as those who did not report this history to report experiencing thoughts of suicide during their firefighting careers. A similar pattern of findings was yielded for women firefighters who reported a history of

TABLE 3. Differences in Self-Report Measure Scores by Harassment History

	Mean (SD)					
	No History	Yes History	*F*	*df*	*p*	η^2
Sexual harassment						
ACSS-FAD fearlessness about death	17.68 (5.56)	17.47 (5.34)	0.072	1, 279	0.789	<0.001
ASI-3 anxiety sensitivity	15.46 (13.12)	23.71 (13.18)	18.041	1, 259	<0.001	0.065
AUDIT-C alcohol use	3.59 (2.08)	4.05 (1.91)	2.220	1, 241	0.138	0.009
CESD-R depression symptoms	13.46 (13.32)	20.60 (16.85)	11.965	1, 275	0.001	0.042
INQ perceived burdensomeness	8.91 (6.14)	9.73 (6.07)	0.870	1, 281	0.352	0.003
INQ thwarted belongingness	24.39 (12.66)	29.34 (12.86)	7.340	1, 279	0.007	0.026
ISI insomnia symptoms	10.02 (6.03)	12.87 (5.99)	10.602	1, 274	0.001	0.037
PCL-5 PTSD symptoms	14.17 (14.69)	26.88 (21.12)	27.519	1, 258	<0.001	0.096
SBQ-R suicide risk	5.51 (2.93)	6.86 (2.66)	10.723	1, 288	0.001	0.036
Other threat/harassment						
ACSS-FAD fearlessness about death	17.46 (5.55)	18.31 (5.31)	1.107	1, 279	0.294	0.004
ASI-3 anxiety sensitivity	16.07 (12.99)	22.02 (14.70)	8.605	1, 259	0.004	0.032
AUDIT-C alcohol use	3.59 (2.07)	4.12 (1.93)	2.703	1, 241	0.101	0.011
CESD-R depression symptoms	13.53 (13.54)	20.72 (16.33)	11.684	1, 275	0.001	0.041
INQ perceived burdensomeness	8.74 (5.77)	10.44 (7.22)	3.630	1, 281	0.058	0.013
INQ thwarted belongingness	24.17 (12.44)	30.61 (13.23)	11.864	1, 279	0.001	0.041
ISI insomnia symptoms	10.08 (6.06)	12.84 (5.93)	9.455	1, 274	0.002	0.033
PCL-5 PTSD symptoms	14.32 (15.15)	27.02 (20.34)	26.348	1, 258	<0.001	0.093
SBQ-R suicide risk	5.53 (2.87)	6.88 (2.92)	10.314	1, 288	0.001	0.035

PTSD indicates posttraumatic stress disorder.

other threats and harassment while on the job as a firefighter. Of note, these effects were observed even after controlling for pre-career suicidal ideation, suggesting that the increased rates of suicidality were not merely a manifestation of pre-career risk. Although a causal relationship cannot be established between career harassment and suicidality based on our cross-sectional data, these findings underscore the potential potent effects of harassment and threats experienced on the job by women firefighters. For instance, a history of sexual harassment and other threats/harassment were each significantly associated with higher levels of SBQ-R current suicide risk in our sample. Based on these findings, it is evident that further prospective work is needed to understand how harassment experiences may impact suicide risk. Additional research is also needed to identify possible theoretical explanations for our differential pattern of findings with regard to career suicidal ideation and suicide attempts. In particular, higher risk samples are needed to replicate these findings given that relatively few participants reported career suicide attempts, and we may have been underpowered to detect significant effects.

It is also worth commenting on the psychiatric symptom clusters that were elevated among women firefighters reporting a history of sexual harassment and other threats/harassment on the job. Thwarted belongingness was one such symptom cluster found to be elevated among women firefighters with a history of sexual harassment and other threats/harassment. Given that the construct of thwarted belongingness is intended to capture feelings of loneliness, social isolation, and lack of meaningful social connection (Van Orden et al., 2010), harassment and threats experienced by women firefighters in a predominantly male occupation may increase such feelings. A history of sexual harassment and other threats/harassment on the job were also each associated with more severe PTSD symptoms and anxiety sensitivity. Because such harassment may itself serve as a traumatic experience, resulting in overarousal and hypervigilance (American Psychiatric Association, 2013), PTSD symptoms and sensitivity to anxiety-related physical sensations may have been increased in this subgroup. Unfortunately, because of the nature of data collected, we were unable to determine whether the PTSD symptoms being reported were from harassment experienced on the job, specifically, or other exposure to trauma. However, given that firefighters are likely to experience a high degree of trauma exposure by virtue of their occupational responsibilities, it is noteworthy that those who additionally reported sexual harassment and other threats/harassment on the job reported more severe PTSD symptoms than those who did not report such experiences. Finally, insomnia and depression symptoms are not only symptoms of PTSD (American Psychiatric Association, 2013), but they have also been associated with increased thwarted belongingness and loneliness, including among firefighters (Chu et al., 2017; Hom et al., 2017a, 2017b), potentially explaining their increased severity among women firefighters in our sample with a history of harassment and/or other threats. Further research is needed, however, to better understand the mechanisms underlying each of these associations.

It is interesting to note that capability for suicide, perceived burdensomeness, and alcohol use were not elevated among those with a history of sexual harassment or other threats/harassment on the job. For capability for suicide, and especially alcohol use, this pattern of findings may have been the result of the relatively weak internal consistency of measures used to assess these constructs. It is also possible that harassment and threat experiences may not affect these psychiatric symptom clusters. Firefighters—regardless of harassment history—may have similar degrees of fearlessness about death and elevated physical pain tolerance due to their vocational demands. Likewise, women firefighters, by virtue of their occupational responsibilities, may maintain perceptions that they are valuable to others, even after experiences of harassment or threats (i.e., rather than perceptions of burdensomeness). Again, however, further research is needed to parse apart these relationships.

In terms of implications for fire service mental health initiatives, findings suggest that efforts may be needed across geographic regions and locations both to reduce the occurrence of harassment and threats among women firefighters, as well as provide the appropriate support and interventions for women firefighters who have experienced harassment and threats. Based on previous reports (Griffith et al., 2016b; Hulett et al., 2008), it appears that harassment of women firefighters may be an unrecognized issue among some within the fire service. Thus, efforts are needed at organizational and leadership levels to enhance awareness regarding the problem of harassment and threats within the fire service and to develop a culture in which such behaviors are not tolerated. In parallel, improving connection to care for those who have experienced harassments and threats is essential (see Spencer-Thomas et al., 2016, for resources), especially given that firefighters, particularly those at elevated suicide risk, appear open to engaging with mental health services (Hom et al., 2016).

Limitations and Future Directions

This study was challenged by several limitations. First, because only cross-sectional data were collected, we were unable to determine whether suicidal thoughts and behaviors, as well as other psychiatric symptoms, occurred before or after experiences of harassment and other threats. Future prospective studies are needed to delineate the temporal relationship between harassment and suicidality in other women firefighter samples. The inclusion of multiple assessment time points will also afford the opportunity to examine potential mediators of the relationship between harassment/threats and suicide risk. Moderation analyses may also be useful in illuminating whether the trajectory from harassment to suicide risk and elevated psychiatric symptoms may be influenced by certain factors (e.g., proportion of women firefighters in one's department). Second, the QWM provided limited information regarding harassment and threat experiences. Additional information regarding whether harassment and threats were perpetrated by other firefighters; the frequency, severity, and timing of harassment and threats experienced; and women firefighters' experiences after harassment and threats (e.g., whether incidents were reported, support received from leadership) will be useful to collect in future studies. As alluded to previously, it may also be useful to provide participants with detailed definitions regarding what constitutes sexual and other forms of harassment because these terms may be interpreted differently across individuals. Likewise, the PCL-5 provided limited information regarding whether participants' responses were anchored to an experience of harassment on the job versus harassment outside of the workplace setting. To better understand the impact of workplace harassment on PTSD symptoms, future studies are needed to delineate the impact of harassment experienced on the job from other types of trauma.

Third, because a convenience sample was used, findings may not be generalizable and additional, nationally representative samples are needed. Relatedly, the distribution of sociodemographic and firefighter variables in our sample did not afford us the opportunity to evaluate whether race/ethnicity or sexual orientation might be associated with increased risk of harassment, threats, and attendant mental health sequelae. Future studies would benefit from an examination of minority groups among women firefighters. Although our study did not find significant associations between the number of women firefighters in one's department and likelihood of reporting a history of sexual harassment or other threats/harassment, studies are needed to evaluate whether the proportion of women firefighters in one's department may impact frequency of harassment because this figure may be a more meaningful metric. Fourth, as noted, because of the relatively low proportion of our sample reporting career suicide plans and attempts, it is possible that we were underpowered to detect significant results. Those at particularly high risk may have also died by suicide and not been included in our study. Additional research with higher risk samples is thus indicated. Finally, although it is certainly informative to examine harassment and threat experiences among women in the fire service, as revealed by previous

studies, male firefighters also experience harassment while on the job (Griffith et al., 2016b; Hulett et al., 2008). Our findings may not be generalizable to male firefighters, especially because women appear to be more likely to seek emotional support than men (see Tamres et al., 2002, for review); thus, further studies examining experiences of harassment and threats among male firefighters are needed.

CONCLUSIONS

Overall, this study revealed that women firefighters who have experienced sexual harassment and/or other threats/harassment while on the job might be at increased risk for suicidal thoughts and other attendant mental health sequelae. Further research is needed to understand the mechanisms by which harassment and threats may impact risk for suicide and elevated psychiatric symptoms, as well as to understand the temporal relationship between these experiences and symptom clusters. However, findings underscore the need to reduce the occurrence of harassment and threats within the fire service and to provide appropriate support and resources for women firefighters who have been harassed or threatened on the job.

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The authors declare no conflict of interest.

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