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Wildland firefighters and suicide risk: Examining the role of social disconnectedness

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ABSTRACT

Recent research has indicated that firefighters are at elevated suicide risk. Fire service organizations have called for research to examine fire service subgroups that might be at relatively increased suicide risk. Although anecdotal reports suggest that wildland firefighters represent one such group, to our knowledge, no study has empirically examined this conjecture. Thus, the present investigation examined if wildland firefighters report greater levels of suicide risk than non-wildland firefighters. Moreover, we sought to determine if two constructs proposed by the interpersonal theory of suicide to comprise suicidal desire—thwarted belongingness and perceived burdensomeness—statistically explain the link between wildland firefighter status and suicide risk. Merged data from two nationwide investigations of firefighter mental health were utilized ($N = 1,131$; 68.2% male, 89.4% White). A total of 1.8% ($n = 20$) of the sample identified as wildland firefighters. Compared to non-wildland firefighters, wildland firefighters reported greater levels of suicide risk. Thwarted belongingness, but not perceived burdensomeness, statistically explained this link. Findings suggest that programs enhancing social connectedness within the fire service, particularly among wildland firefighters, might be one avenue for suicide prevention among firefighters. Results of this novel investigation should be interpreted in light of the relatively small subgroup of wildland firefighters.

1. Introduction

Research has demonstrated that firefighters report elevated rates of suicidal thoughts and behaviors (Stanley et al., 2015, 2017b) and die by suicide at higher rates compared to other occupational groups (see McIntosh et al., 2016, for data on suicide rates by occupational group). As such, research into the understanding and prevention of suicide among firefighters has been identified as a critical priority (Henderson et al., 2016; International Association of Fire Chiefs [IAFC], 2017; National Fallen Firefighters Foundation [NFFF], 2016; Stanley et al., 2016).

Leading fire service organizations have advocated for the identification of fire service subgroups that might be at relatively increased risk for reporting suicidal thoughts and behaviors, in an effort to efficiently provision resources (e.g., NFFF, 2016). In response to this call, Stanley et al. (2017a) found that volunteer firefighters were more likely than career firefighters to report a history of suicidal behaviors and reported more severe suicide-related psychiatric symptoms (e.g., PTSD; Boffa et al., 2017; Stanley et al., 2017c). Importantly, the authors also found that relatively limited access to mental health services among volunteer firefighters statistically explained the elevated levels of

psychiatric symptomatology among this group, signaling a potential point of intervention. Additional research is needed, however, to examine other subgroups within the fire service.

Recently, several media reports have suggested that wildland firefighters may represent an at-risk fire service subgroup (Hansman, 2017). The precise number of individuals within the U.S. fire service who serve as wildland firefighters is, to our knowledge, not published (see Haynes and Stein, 2017, for a comprehensive profile of the U.S. fire service). However, it is important to acknowledge that wildland firefighters represent a relatively small proportion of the estimated 1,160,450 firefighters in the U.S. (Haynes and Stein, 2017). Some wildland firefighters work in full-time capacities while others work in either permanent or temporary seasonal positions (e.g., National Park Service, 2018). Simply, wildland firefighters are tasked with combating wildfires. They are deployed to areas as needed and often spend protracted periods of time away from their families and friends when deployed. In addition, a wildland crew composition is generally unique from other fire departments, with different configurations of firefighters comprising specialized groups for each contract (e.g., National Wildfire Coordinating Group, 2017). For instance, when a wildfire occurs, in addition to wildland firefighters who work for

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Table 1
Participant sociodemographic and firefighter experience characteristics

Characteristic	Full sample (N = 1,131)	Wildland firefighters (n = 20)	Non-wildland firefighters (n = 1,111)
Age, Mean (SD)	37.37 year (10.52 years) [Range: 18–76 years]	34.30 year (10.75 years) [Range: 23–58 years]	37.42 year (10.51 years) [Range: 18–76 years]
Sex, n (Valid %)			
Male	771 (68.3%)	10 (50.0%)	761 (68.6%)
Female	358 (31.7%)	10 (50.0%)	348 (31.4%)
Missing	2 (–)	0 (–)	2 (–)
Race/Ethnicity, n (Valid %)			
White/Caucasian	1,011 (89.4%)	19 (95.0%)	992 (89.3%)
Black/African American	9 (0.8%)	0 (0.0%)	9 (0.8%)
Hispanic or Latino/a	26 (2.3%)	0 (0.0%)	26 (2.3%)
Asian/Pacific Islander	6 (0.5%)	0 (0.0%)	6 (0.5%)
Native American or Alaska Native	62 (5.5%)	0 (0.0%)	62 (5.6%)
Other	17 (1.5%)	1 (5.0%)	16 (1.4%)
Marital Status, n (Valid %)			
Married	764 (67.6%)	10 (50.0%)	754 (67.9%)
Divorced or Separated	110 (9.7%)	1 (5.0%)	109 (9.8%)
Widowed	9 (0.8%)	0 (0.0%)	9 (0.8%)
Never Married	248 (21.9%)	9 (45.0%)	239 (21.5%)
Education, n (Valid %)			
Did not complete high school	6 (0.5%)	1 (5.0%)	5 (0.5%)
High school graduate/GED	75 (6.6%)	2 (10.0%)	73 (6.6%)
Some college	339 (30.0%)	1 (5.0%)	338 (30.5%)
2 years college	256 (22.7%)	4 (20.0%)	252 (22.7%)
4 years college	316 (28.0%)	9 (45.0%)	307 (27.7%)
Post-graduate education	138 (12.2%)	3 (15.0%)	135 (12.2%)
Missing	1 (–)	0 (–)	1 (–)
Total years of service, Mean (SD)	14.36 years (9.76 years) [Range: 0.5–60 years]	12.70 years (10.86 years) [Range: 2–35 years]	14.39 (9.74) [Range: 0.5–60 years]
Fire department type, n (Valid %)			
Career	466 (41.2%)	0 (0.0%)	466 (41.9%)
Volunteer	317 (28.0%)	0 (0.0%)	317 (28.5%)
Combination (Career and Volunteer)	322 (28.5%)	0 (0.0%)	322 (29.0%)
Military	6 (0.5%)	0 (0.0%)	6 (0.5%)
Wildland	20 (1.8%)	20 (100%)	0 (0.0%)

government agencies, the government contracts firefighters from the private sector to fill a wildland crew. These private companies pull from a registry of certified wildland firefighters to configure their crews. As such, wildland firefighters, on average, may not have the same degree of camaraderie with fellow firefighters as firefighters in non-wildland roles, potentially contributing to a diminished sense of belongingness.

Indeed, the interpersonal theory of suicide predicts that suicidal thoughts emerge in the context of perceived social disconnectedness (Joiner, 2005; Van Orden et al., 2010). According to the interpersonal theory of suicide, indices of social disconnectedness include thwarted belongingness (i.e., loneliness, absence of reciprocal care) and perceived burdensomeness (i.e., the belief that one's death is worth more than one's life to others, self-hate). The theory proposes that thwarted belongingness and perceived burdensomeness, when perceived as intractable, are each necessary but not sufficient for the emergence of serious suicidal thoughts. A recent meta-analysis has provided empirical support for theory predictions and has also uncovered that thwarted belongingness and perceived burdensomeness might, in some instances, each exert effects on suicidality independent of one another, a finding contrary to theoretical predictions (Chu et al., 2017). As noted, and consistent with anecdotal reports (Gabbert, 2017; Hansman, 2017; Keller, 2017), wildland firefighters are presented with conditions under which perceptions of social disconnectedness, including loneliness (cf. thwarted belongingness), may emerge. Moreover, a recent eusociality-based account of suicide suggests that individuals who display self-sacrificial tendencies, such as firefighters, might be at increased suicide risk if these self-sacrificial tendencies misfire and one perceives his/her death as worth more than his/her life (cf. perceived burdensomeness; Joiner et al., 2016). Thus, there is theoretical rationale to suspect that suicide risk might be elevated among wildland firefighters and that interpersonal theory of suicide constructs might account for this link. However, to our knowledge, no study has

empirically examined this conjecture.

Consistent with the mission to identify fire service subgroups at relatively increased suicide risk to inform the provision of appropriate suicide prevention services (NFFF, 2016), we endeavored to examine if wildland firefighters report suicidal symptoms at a higher rate compared to non-wildland firefighters. We also sought to determine if indices of the interpersonal theory of suicide statistically explain this link. Specifically, we hypothesized that wildland firefighter status would be associated with increased suicide risk and that this association would be statistically accounted for by higher levels of both thwarted belongingness and perceived burdensomeness. We examined thwarted belongingness and perceived burdensomeness as parallel mediators in our primary model. However, because of the high correlation between thwarted belongingness and perceived burdensomeness, considering these variables separately provides clinically important information (see Mitchell et al., 2017, for discussion); thus, we additionally examined thwarted belongingness and perceived burdensomeness as individual mediators in separate models. Determining if indices of social disconnectedness might account for the link between wildland firefighter status and suicide risk has logistical import as it would signal a point of intervention—that is, ensuring adequate social supports are provisioned for wildland firefighters (cf. Stanley et al., 2018).

2. Methods

2.1. Participants and procedures

Merged data from two large, nationwide studies of firefighters were utilized for the present study (Stanley et al., 2017b, 2015). Data were merged to increase the sample size of wildland firefighters represented, given that wildland firefighters represent a relatively small subset of the fire service (Haynes and Stein, 2017) and proportionately fewer

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