

# Being Called to Safety: Occupational Callings and Safety Climate in the Emergency Medical Services

Stephanie A. Andel, MA, Shani Pindek, PhD, and Paul E. Spector, PhD

**Objective:** The aim of this study was to investigate the importance of safety climate in the Emergency Medical Services (EMS) and to assess occupational callings as a boundary condition for the effect of safety climate on safety behaviors. **Methods:** EMS professionals ( $n = 132$ ) participated in a three-wave survey study. Hierarchical linear regressions were conducted to test the moderating effects of occupational callings. **Results:** Safety climate was significantly related to safety behavior, and occupational callings moderated this direct relationship ( $\Delta R^2 = 0.02$  to  $0.03$ ,  $P < 0.05$ ). Specifically, when occupational callings were high, the relationship between safety climate and safety behaviors was stronger, and when occupational callings were low, the relationship was weaker. **Conclusion:** In this EMS sample, safety climate was an important predictor of safety behavior. Further, occupational callings moderated this relationship, suggesting that callings may serve as a boundary condition.

Injury rates in the Emergency Medical Services (EMS) are quite high.<sup>1-4</sup> In fact, according to the Bureau of Labor Statistics, the rate of injuries involving days away from work, job transfer, or job restriction was over triple that of the average across *all* occupations in 2014 (333 per 10,000 full-time employees vs 107.1 per 10,000 full-time employees).<sup>5</sup> With such disquieting statistics, it is imperative to understand the antecedents of these incidents and resulting injuries. To address this alarming issue, a growing body of research has examined several variables related to EMS safety behavior.<sup>6-8</sup> This paper will focus on two types of safety behaviors, namely (1) safety participation, or discretionary behavior that promotes workplace safety, and (2) safety compliance, or adherence to generally mandated safety policies and procedures.<sup>9,10</sup>

One key predictor of safety behavior is safety climate, or employee perceptions of safety policies, practices, and procedures.<sup>11</sup> Although research examining safety climate within the EMS literature is scarce, results suggest that safety climate is an important predictor of safety behavior within the EMS population.<sup>7,8</sup> This aligns with results from general workplace safety research, which has consistently found safety climate to be one of the most prominent predictors of safety behavior across occupations.<sup>9,12</sup>

Thus, research focusing both within and outside of the EMS population consistently finds a clear relationship between safety climate and employee safety behavior. What is still unclear, however, is if there are boundary conditions under which safety climate is effective in leading to safety performance. This paper describes a longitudinal study that investigated the role of one such potential boundary condition, occupational callings, in the safety climate-safety behavior relationship.

Occupational callings may be defined as “occupation[s] that a person feels drawn to, finds intrinsically enjoyable and meaningful, and identifies as a central part of his or her identity” (p. 2).<sup>13</sup> Occupational callings have been found to relate to various positive outcomes in the workplace, such as organizational commitment and workplace engagement.<sup>14-16</sup> However, occupational callings have yet to be examined in the realm of workplace safety. Further, a recent review has noted that scant research has examined occupational callings in relation to *any* behavioral outcomes in the workplace.<sup>17</sup> With these research gaps in mind, we posit that callings may be relevant to the safety domain. Specifically, we postulate that occupational callings may lead individuals to be more committed and engaged in *all* aspects of their job, including safety behaviors. This is similar to recent research that found another work-identity variable, namely work ownership (ie, the degree to which one feels that their work has become an extension of the self), to be relevant within the workplace safety domain.<sup>18</sup> Thus, the aims of this study were to replicate past findings regarding the importance of safety climate in the EMS population and to investigate occupational callings as a potential boundary condition for the effects of safety climate on safety behaviors.

To investigate these issues, we conducted a three-wave longitudinal study with a sample of EMS professionals. Such a design is optimal for a couple of reasons. By using three time points, we were able to measure each study variable at different time points, thus combating concerns of common method bias.<sup>19</sup> Further, by including more than two time points, we can be more confident in making inferences regarding temporal precedence, and we are also able to better understand how our study variables (eg, safety behavior) may evolve over time.<sup>20</sup>

## METHODS

### Study Design and Sampling

EMS professionals were recruited to participate in this three-wave longitudinal study through a publicly available list of licensed EMS professionals on the Florida Department of Health website ([www.floridahealth.gov](http://www.floridahealth.gov)). From this list, 17,609 emails with a link to the initial survey were sent out. It is unclear how many were received by active EMS professionals, as 442 generated undeliverable return messages, many individuals responded that they were not EMS professionals, and it is impossible to know how many more failed to notify us. Further, an unknown number no longer checked the e-mail supplied. One basis for a response rate is to consider that 1201 individuals clicked the link to open the survey and thus had the opportunity to read the consent form. A total of 377 respondents began this T<sub>1</sub> survey, and 335 individuals completed the survey. Of those respondents who completed the survey, 309 were currently serving as EMS professionals (a 25.7% response rate of 1201 potential respondents). Five weeks later, those who completed the first survey and indicated a willingness to be resurveyed were invited to complete an additional survey. One hundred sixty-six current EMS professionals completed the Time 2 (T<sub>2</sub>) survey. Finally, 132 current EMS professionals completed the Time 3 (T<sub>3</sub>) survey that was sent to those who completed the second survey. Altogether, respondents were surveyed three times, 5 weeks apart. At each time point, up to three reminders (1 week apart) were sent

From the The University of South Florida, Tampa, Florida (Ms Andel, Dr Spector); and the University of Haifa, Haifa, Israel (Dr Pindek).

This research was supported in part by the Sunshine Education and Research Center at the University of South Florida. The Center is supported by Training Grant No. T42-OH008438 from the Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH).

The authors have no conflicts of interest.

Address correspondence to: Stephanie A. Andel, MA, Department of Psychology, University of South Florida, 4204 East Fowler Ave, PCD 4118G, Tampa, FL 33620 ([sandel@mail.usf.edu](mailto:sandel@mail.usf.edu)).

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DOI: 10.1097/JOM.0000000000000899

out to individuals who had not yet completed the most recent survey. Respondents were not compensated for their participation in this study. In order to keep responses anonymous, individuals were directed to an external survey after completing the first and second study surveys in order to provide their email addresses for the subsequent surveys. This allowed for respondent emails to be separate from their responses in order to ensure that individual data could not be linked back to respondents. Further, in order to link the survey responses across the three time points, respondents were asked to answer three self-generated identification code questions that only they would know the answer to (eg, What is your mother’s birthday?), but would not reveal their identities.<sup>21</sup> This procedure allowed us to match the survey responses, while also maintaining the anonymity of the responses.

For the current study, we used listwise deletion in order to include only those who completed surveys at all time points of the study ( $n = 132$ ). Our final sample consisted of 75% males, with an average age of 39.4; 84.9% of the respondents were White, 7.6% were Hispanic, 0.8% were Black, 0.8% were Asian, and 6.1% were another ethnicity. The average length of emergency service was 11.3 years, and 83.4% of the sample worked at least 40 hours per week. Eighty-three percent of the sample consisted of paid employees, and 12% were volunteer EMTs. Sixty-one percent of the sample were Emergency Medical Technicians (EMT-Basic or EMT-Intermediate), and 34% were Paramedics (5% of the sample did not provide information regarding volunteer status nor practice level). Overall, the demographics in the current study generally reflect those of the national population of EMS professionals.<sup>22,23</sup>

This study has received approval from the University of South Florida institutional review board, and the requirement for signed informed consent was waived for this project.

**Measures**

**Safety Climate**

Safety climate perceptions were measured with the National Institute for Occupational Safety and Health (NIOSH) short Safety Climate Scale.<sup>24</sup> This scale consists of six Likert-type items with four response options ranging from *strongly disagree* to *strongly agree*. Sample items from the scale are, “New employees quickly learn that they are expected to follow good safety practices” and “I feel free to report safety violations where I work.” Safety climate was measured at T<sub>1</sub> ( $\alpha = 0.87$ ).

**Occupational Callings**

Occupational callings were assessed with a shortened and adapted version of Dobrow and Tosti-Kharas’<sup>25</sup> occupational calling scale. This scale consists of eight Likert-type items with

a 7-point response scale ranging from *strongly disagree* to *strongly agree*. A sample item from the scale is, “I feel a sense of destiny about being an EMT.” Occupational calling was measured at T<sub>2</sub> ( $\alpha = 0.91$ ).

**Safety Compliance**

Safety compliance was assessed with three items developed by Neal and Griffin.<sup>26</sup> The three Likert-type items had five response options ranging from *strongly disagree* to *strongly agree*. A sample item from the safety compliance subscale is “I use all the necessary safety equipment to do my job.” Safety compliance was measured at T<sub>2</sub> ( $\alpha = 0.89$ ) and T<sub>3</sub> ( $\alpha = 0.89$ ).

**Safety Participation**

Safety participation was assessed with three items developed by Neal and Griffin.<sup>26</sup> The three Likert-type items had five response options, ranging from *strongly disagree* to *strongly agree*. A sample item from this scale is “I voluntarily carry out tasks or activities that help to improve workplace safety.” Safety participation was measured at T<sub>2</sub> ( $\alpha = 0.80$ ) and T<sub>3</sub> ( $\alpha = 0.82$ ).

**RESULTS**

Descriptive statistics and correlations are reported in Table 1. Consistent with previous research, safety climate was significantly and positively related to safety participation at T<sub>2</sub> ( $r = 0.22$ ,  $P < 0.05$ ) and T<sub>3</sub> ( $r = 0.23$ ,  $P < 0.01$ ). Further, safety climate was significantly and positively related to safety compliance at T<sub>2</sub> ( $r = 0.42$ ,  $P < 0.01$ ) and T<sub>3</sub> ( $r = 0.38$ ,  $P < 0.01$ ).

Hierarchical linear regression was conducted to investigate the moderating role of occupational callings in the relationships between safety climate and safety behavior (ie, safety participation and safety compliance; see Table 2). For each of these regressions, prior safety behavior (ie, T<sub>2</sub> safety participation/compliance) was entered as the first step in order to control for prior levels of these behaviors. To show the form of the moderator effects, we plotted the relationship of each behavior on safety climate at one standard deviation above and one standard deviation below the mean on occupational callings. Further, it should be noted that the analyses were repeated, including demographics (gender, age, and tenure) as controls. Because the inclusion of these demographics did not change the pattern of the results, all results are reported without the demographics included.

Occupational callings significantly moderated the relationship between safety climate and T<sub>3</sub> safety participation, when controlling for T<sub>2</sub> safety participation ( $\Delta R^2 = 0.02$ ,  $P < 0.05$ ). That is, when occupational callings were high, the relationship between safety climate and safety participation was stronger, whereas when occupational callings were low, the relationship between safety climate

**TABLE 1.** Descriptive Statistics and Correlations

Variable	M	SD	1	2	3	4	5	6	7	8	9
1 Safety climate (t <sub>1</sub> )	3.09	0.62	0.87								
2 Safety compliance (t <sub>2</sub> )	4.37	0.66	0.42 <sup>b</sup>	0.89							
3 Safety compliance (t <sub>3</sub> )	4.37	0.56	0.38 <sup>b</sup>	0.69 <sup>b</sup>	0.89						
4 Safety participation (t <sub>2</sub> )	4.00	0.74	0.22 <sup>a</sup>	0.53 <sup>b</sup>	0.43 <sup>b</sup>	0.80					
5 Safety participation (t <sub>3</sub> )	4.01	0.77	0.23 <sup>a</sup>	0.47 <sup>b</sup>	0.57 <sup>b</sup>	0.68 <sup>b</sup>	0.82				
6 Calling (t <sub>2</sub> )	5.29	1.28	0.31 <sup>b</sup>	0.22 <sup>a</sup>	0.18 <sup>a</sup>	0.18 <sup>a</sup>	0.21 <sup>a</sup>	0.91			
7 Age	39.41	13.05	0.16	0.08	0.10	0.14	0.17 <sup>a</sup>	-0.15	—		
8 Gender	1.25	0.44	-0.03	-0.02	0.00	-0.13	-0.14	0.07	-0.12 <sup>a</sup>	—	
9 Job tenure, years	11.25	10.38	0.08	0.06	0.11	0.21 <sup>a</sup>	0.23 <sup>b</sup>	-0.07	0.65 <sup>b</sup>	-0.24 <sup>b</sup>	—

N = 132. Reliabilities are on the diagonal. The time point for each measure is in parentheses.

<sup>a</sup>P < 0.05.

<sup>b</sup>P < 0.001.

**TABLE 2.** Hierarchical Regression Analyses of Safety Compliance and Safety Participation on Safety Climate, Calling, and Their Interaction

	Safety Compliance						Safety Participation					
	$\beta$	$R^2$	Adj. $R^2$	$\Delta R^2$	$\Delta F$	dfs	$\beta$	$R^2$	Adj. $R^2$	$\Delta R^2$	$\Delta F$	dfs
Step 1												
Control	0.69						0.68					
		0.48	0.48		119.33 <sup>b</sup>	1,130		0.46	0.45		109.33 <sup>b</sup>	1,130
Step 2												
Control	0.65 <sup>b</sup>						0.65 <sup>b</sup>					
Safety Climate	0.11						0.07					
Calling	0.01						0.07					
		0.49	0.48	0.01	1.22	2,128		0.47	0.46	0.01	1.42	2,128
Step 3												
Control	0.59 <sup>b</sup>						0.60 <sup>b</sup>					
Safety Climate	-0.46 <sup>a</sup>						-0.36					
Calling	-0.70 <sup>b</sup>						-0.45					
Climate*Calling	1.08 <sup>b</sup>						0.80 <sup>a</sup>					
		0.51	0.51	0.03 <sup>b</sup>	8.37 <sup>b</sup>	1,127		0.49	0.47	0.02 <sup>a</sup>	4.22 <sup>a</sup>	1,127

*N* = 132. For each regression, the control variable is the measure of the dependent variable taken at the prior time point.

<sup>a</sup>*P* < 0.05.

<sup>b</sup>*P* < 0.01.

and safety participation was weaker (see Fig. 1). Further, occupational callings also served as a significant moderator in the relationship between safety climate and T<sub>3</sub> safety compliance, even when controlling for T<sub>2</sub> safety compliance ( $\Delta R^2 = 0.03, P < 0.01$ ). Specifically, when occupational callings were high, the relationship between safety climate and safety compliance was stronger, whereas when occupational callings were low, the relationship between safety climate and safety compliance was weaker (see Fig. 2).

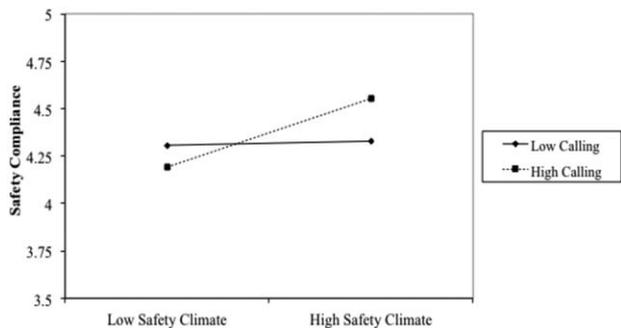
Lastly, in a series of supplementary analyses, we conducted independent *t* tests to compare means across a couple of important individual difference variables. First, we statistically compared responses between paid and volunteer respondents on the study variables. Results of this analysis demonstrated that there were no significant differences between the groups on either of the predictors (ie, safety climate, occupational callings). Further, there were no significant differences on safety compliance at T<sub>2</sub> and T<sub>3</sub> and safety participation at T<sub>2</sub>. The only significant difference between groups was for safety participation at T<sub>3</sub>, in which volunteers engaged in higher levels of safety participation (*M* = 4.41, *SD* = 0.64) in comparison to paid workers (*M* = 3.95, *SD* = 0.77).

Similarly, we statistically compared responses between EMTs and Paramedics on the study variables. Results showed

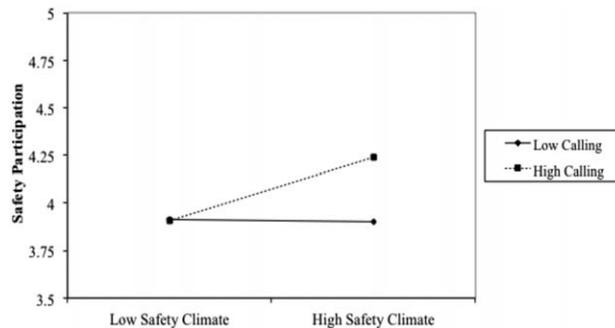
no significant differences between the groups for any of the study variables, including safety behaviors. However, the difference for the occupational callings variable was marginal (*P* = 0.05), and thus, we repeated the moderation analyses with the inclusion of practice level as a control variable. All of our results remained significant and in the expected direction.

### DISCUSSION

Overall, results from this study suggest that safety climate is important and relevant within the EMS. Further, results provide evidence to suggest that occupational callings serve as a boundary condition under which safety climate is effective in promoting safety behaviors (ie, safety participation and safety compliance). Specifically, when occupational callings were high, the relationship between safety climate and safety behaviors was stronger, and when occupational callings were low, the safety climate-safety behavior relationship was weakened. These results remained consistent, even when controlling for demographics and practice level. Similarly, occupational callings were significantly and positively correlated with both safety climate perceptions and safety behaviors. Thus, it seems that those individuals with strong occupational callings not



**FIGURE 1.** Graphic representation of the interaction between safety climate and occupational callings in predicting safety compliance.



**FIGURE 2.** Graphic representation of the interaction between safety climate and occupational callings in predicting safety participation.

only perceive a stronger safety climate but are also more inclined to act according to it.

Ultimately, this pattern of results suggests that although past research has found safety climate to be one of the strongest predictors of safety behavior,<sup>9</sup> boundary conditions do indeed exist. Particularly, it seems that when individuals perceive their organization to prioritize and support their safety efforts *and* when they feel a sense of purpose as an EMS professional, they will be most likely to engage in safe work behaviors. On the contrary, if individuals do not feel a strong sense of purpose at their job (ie, low occupational callings), then a high safety climate may not have as strong an influence on their safety behaviors.

Interestingly, there were no significant differences between paid individuals and volunteers on the majority of the study variables. It is particularly surprising that there was no significant difference on the occupational callings measure, as it would seem that individuals who willingly volunteer their time to serve as an EMS professional should feel a greater sense of “calling” to the profession. This null finding may be due to the fact that the volunteer sample size was small ( $N=16$ ), so statistical power to detect differences was low. The one significant difference between these groups was on the safety participation measure at  $T_3$ . This result suggests that individuals who volunteer within EMS tend to go “above and beyond” when it comes to safety by engaging in extra, voluntary safety behaviors. However, this result should also be considered with caution, as it only came out for the safety participation measures at  $T_3$  and not at  $T_2$ . Therefore, it is possible that this single significant finding may be the result of a Type I error.

Overall, the results of this study have important implications for practice. For instance, these results suggest that if an EMS organization is looking to increase employee safety, they may wish to consider individual differences such as occupational callings when placing employees within their organization or when designing safety training programs. This could be practically done by incorporating a measure of occupational callings (eg, a measure similar to that of Dobrow and Tosti-Kharas<sup>25</sup> occupational calling scale) in an existing battery of typical selection assessments in order to provide information about individuals who might benefit from additional encouragement of safety performance. Alternatively, if an organization wishes to develop a training program to improve employee safety, a validated occupational callings measure could be included in a training prescreen assessment. This information could then be used to design training programs for individuals depending on their level of occupational callings. This is in line with an established area of research within the training literature that finds training is enhanced when it is tailored to individuals according to where they lie on a particular attribute (ie, attribute-treatment interactions).<sup>27,28</sup>

Of course, it is important to note that the results of this study should not overshadow the importance of safety climate. In fact, this research suggests that the combination of a strong safety climate and high occupational callings has the potential to result in optimal safety performance.

### Limitations and Suggestions for Future Research

Although we believe this study to be informative, it is not without limitations. For instance, all of the study variables were collected with self-reported measures. By only incorporating self-report survey data, it is possible that common method bias may have affected these results. However, it should be noted that it is unlikely that common method bias would have produced the moderator effects.<sup>29,30</sup> Further, collecting the measures across three time points helps to control for this issue.<sup>31</sup> This becomes particularly true when we controlled for behavior variables from the previous time point. Specifically, if the relationship between safety climate ( $T_1$ ) and safety behavior ( $T_2$  and  $T_3$ ) was the result of common method bias,

then that biasing effect would have been partialled out when we controlled for behavior at  $T_2$ . Nonetheless, it would be beneficial for future research to replicate these results with the inclusion of additional data sources (eg, supervisor ratings of safety behaviors).

Another limitation is that of the initial response rate. Specifically, depending upon the criteria used to calculate the response rate, it may range between 2% (based on the number of emails sent) and 26% (based on the number of individuals who clicked on the survey and thus had the opportunity to read the consent form). We recognize that these rates are not high. However, it should be noted that response rates are generally lower for online survey recruitment than for other recruitment methods.<sup>32,33</sup> Further, and perhaps most importantly, empirical evidence suggests that response rate does not significantly impact effect sizes in self-report survey studies.<sup>34,35</sup>

Further, the retention rates between  $T_1$  and  $T_2$  was somewhat low. This may be due to a variety of reasons, including that there was no offered compensation and the fact that  $T_2$  data were collected during the holiday season, thus creating the potential for a lack of respondent availability. Future research may wish to replicate these findings with an additional EMS sample, perhaps while incorporating an incentive in order to maintain higher retention rates across time points.

Lastly, it should also be noted that due to the nature of the sample, it was not possible to aggregate perceptions of safety climate into a group-level variable, and therefore, this study looked solely at individual *perceptions* of safety climate. However, we argue that individual safety climate perceptions were most appropriate to measure in this current study, as we were interested in individual-level effects (and not group effects). Further, prior research has found similar relationships of both individual and group-level safety climate with outcomes.<sup>9</sup> Regardless, it would be helpful to replicate our results using a multilevel design that could assess climate at an aggregate level.

In terms of future research, it would be beneficial for researchers to examine the degree to which occupational callings are malleable. Specifically, is there anything that organizations can do in order to cultivate high occupational callings within current employees? In addition, although this study examined an important individual-level variable in relation to safety behaviors (ie, occupational callings), it would be beneficial for future research to examine other individual-level variables that may potentially serve as boundary conditions in the relationship between safety climate and safety behaviors.

Overall, this study adds to the EMS safety literature by examining the effect of occupational callings in the relationship between safety climate perceptions and safety behaviors. Ultimately, results of this study provide evidence to suggest that occupational callings may be an important variable to consider when EMS organizations are interested in improving employee safety behaviors.

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