

# Impact of Work-Related Factors on Stress and Health among 911 Calltakers and Dispatchers in California

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## Keywords

911, stress, mental health, physical health, burnout, work-life balance

## Citation

Turner KD, Lilly MM, Gamez AM, Kressler K. Impact of work-related factors on stress and health among 911 calltakers and dispatchers in California. *Ann Emerg Dispatch & Response*. 2019;7(1):5-11.

## ABSTRACT

**Introduction:** Empirical literature examining the health and wellness of emergency responders has continued to grow over the past decade. Yet there is a relative absence of literature on 911 telecommunicators, who are often the “first, first responders” in an emergency. Examination of work-related factors that enhance risk for stress and adverse outcomes may improve current prevention and intervention efforts in this population.

**Methods:** Civilian 911 calltakers and dispatchers from the state of California ( $N = 833$ ) participated in an online study to examine the impact of work-related factors (i.e., work-life balance, burnout, work conditions) on health-related outcomes (i.e., satisfaction with life, depression/anxiety, physical health). Further, the extent to which work-related factors had an indirect effect on health outcomes through perceived stress was tested using path analysis.

**Results:** Results indicated that burnout and work-life balance had significant direct effects on perceived stress and health-related outcomes. Further, perceived stress was a mechanism by which burnout and work-life balance had an impact on health-related outcomes.

**Conclusions:** Work conditions (i.e., mandatory overtime, weekend shifts) exhibited a direct effect only on satisfaction with life. Implications for study findings on the 911 industry are discussed.

## INTRODUCTION

Trauma exposure in the first responder community has been identified as a predictor of stress-related psychopathology and physical illness.<sup>1,2</sup> Heightened awareness of how duty-related trauma exposure may impact survivors prompted changes in the fifth edition of the Diagnostic and Statistical Manual,<sup>3</sup> which now specifies that repeated vicarious exposure to aversive trauma-related details in the course of professional duties may be sufficient to invoke posttraumatic stress disorder (PTSD). Despite this research, the impact of repeated, vicarious exposure to trauma among 911 calltakers and dispatchers/telecommunicators has been an understudied topic in the trauma and public safety fields.<sup>4,5</sup> Though not directly exposed to the traumatic event or circumstances, dispatchers as a group are persistently exposed to the repercussions of trauma,<sup>2,6,7</sup> which may result in a number of adverse outcomes such as PTSD and depressive symptoms,<sup>7,8</sup> stress-related reactions such as muscle tension, sympathetic arousal, and anger,<sup>9</sup> and secondary traumatic stress and occupational burnout.<sup>10,11</sup> The present study seeks to expand our understanding of adverse physical and psychological outcomes among 911 telecommunicators by examining work-related factors that predict heightened stress and poor health outcomes in this population.

In the state of California, most if not all calltakers and dispatchers are civilian professional staff employees in public safety agencies. They process nearly all aspects of communication between field personnel in response to calls for service and citizen calls. The emotional and psychological investment in every call for service and radio transmission qualifies them as the first of the first responders.<sup>12</sup> As articulated by Halpern and colleagues (2009), emergency work in general, whether on the front lines or working behind the scenes as a dispatcher, is often characterized by several common requirements: working under pressure, multi-tasking, making rapid and effective decisions, working in shifts with 24/7 coverage, and managing difficult emotions.<sup>13</sup> The work environment varies throughout the state of California, as some dispatchers must work alone without any help or assistance, and in such environments, they do not enjoy basic privileges such as

bathroom or lunch breaks and must call an officer from the field to relieve them of their duties.<sup>2,14</sup> The inability to have routine breaks may have adverse physiological effects on dispatchers, in addition to potential negative psychological effects because they are never in a position to be alleviated from the stressors of callers or radio traffic.<sup>2,12</sup> Moreover, unlike their sworn counterparts, dispatchers and calltakers are required to continue working and move on to the next call for service despite the potentially distressing nature of previous calls.<sup>14</sup> The nature of their work does not allow for time between calls to mentally process the previous call or events, nor have routine closure in traumatic events.<sup>2,6,15</sup> Further, 911 calltakers are propelled into the event from the moment that they answer a call. As they have absolutely no advanced warning before being thrust into action, each 911 call presents an increased risk of being “shocked into action.” On the other hand, field responders have a good idea of what they are responding to before they arrive, and therefore typically have time to mentally prepare for the event that they will encounter. These various duty-related characteristics may heighten risk for greater duty-related stress and distress, and consequently, worse health-related outcomes.

### **Work-Related Factors that Increase Risk for Stress and Poor Health**

The consistent interactions between 911 calltakers and dispatchers and emergency victims are to be expected in such a role; however, the effect of those cumulative interactions is not thoroughly understood and represents a significant gap in the literature related to stress outcomes in the 911 population.<sup>15</sup> Yet, research has been limited on identifying work-related factors that enhance risk for stress and psychopathology. Within the context of the 911 environment, three job-related factors may be particularly salient in predicting adverse outcomes, including job burnout, work conditions, and work-life balance. Over time dispatchers may become emotionally desensitized, as the ability to maintain empathy amid distressing human-induced events becomes increasingly difficult. Cumulative exposure to stressful events may take their toll on the dispatcher’s attitude, which may be perceived as the cynicism seen in individuals who report being burned out on their job. The resulting emotional detachment could be an expression of a learned sense of powerlessness, because ultimately they may not have influence over the desired outcome of any call for service. Feelings of powerlessness to produce desired field outcomes is consistent with burnout.<sup>15,16</sup> Notably, burnout has been associated with stress and negative physical health outcomes,<sup>4,17-19</sup> as well as depression, anxiety and poor overall mental health.<sup>10,15,19-21</sup> Across two dissertations, a 15% burnout rate among Illinois telecommunicators was observed,<sup>11</sup> while Goold found that telecommunicators report feelings of burnout at least several times per week.<sup>23</sup> Yet the extent to which job burnout is associated with overall stress levels and health outcomes in this population has not yet been examined.

### **Mental Health in Stressful Work Environments**

As described above, the 911 work environment is characterized by a number of challenging conditions. Within the 911 industry, employees are frequently employed on swing or night shift

schedules, are mandated to work overtime, may experience physical discomfort after sitting at a console for an extended period of time, and may be required to work weekends unexpectedly in the event that a co-worker is unable. Work environments characterized by these conditions have been associated with a host of adverse outcomes. Long work hours and overtime, for example, have been connected with greater levels of subjective stress,<sup>24</sup> poorer beneficial health behaviors and poorer subjective physical health,<sup>25,26</sup> and symptoms of anxiety and depression.<sup>27</sup> Evening shifts and rotating shifts have been associated with greater levels of stress and difficulties with fatigue,<sup>28</sup> poorer subjective health status, as mediated by poorer sleep quality,<sup>29</sup> and symptoms of depression and anxiety.<sup>30,31</sup> However, the association between work conditions and adverse outcomes has not been examined in the 911 population. Given previous evidence connecting work environment to various adverse outcomes, examination of self-reported physical health, depression and anxiety, and subjective well-being are central for exploration, and were selected for this study. Further, the extent to which work conditions contribute to adverse outcomes while also considering other work-related factors such as burnout has not been explored.

An additional work-related factor that may impact the health of 911 telecommunicators is work-life balance. The challenging work conditions within the 911 industry may make it difficult for telecommunicators to develop a subjective sense of balance between their work and personal life. The requirement to continually answer calls of a potentially upsetting nature may make it difficult for telecommunicators to truly leave their work at work, particularly when their attempts to develop and schedule personal activities may be thwarted when they are required to work an extra or extended shift. Research has consistently shown negative health outcomes that may manifest for individuals who believe that their work life interferes significantly with their personal life; specifically, reports of poor work-life balance have been connected to greater physical health problems,<sup>19,32,33</sup> stress, negative affect, and emotional exhaustion,<sup>19,34-36</sup> and symptoms of depression, anxiety, and overall lower well-being.<sup>19,37-39</sup> Yet similar to work conditions, the connection between work-life balance and health outcomes among 911 telecommunicators has remained absent in the literature. Investigation into whether work-life balance accounts for poorer health outcomes in this population while considering other important work-related factors is an additional aim of the present study.

The empirical literature has supported a connection between a number of work-related factors and poor employee health. Yet, few studies have employed multiple indicators of work-related factors and health-related outcomes. Further, examination of the indirect effect of perceived stress on the association between work-related factors and health-related outcomes has been minimal. Investigation of these factors and connections may be particularly relevant in high-stress work environments such as the 911 industry. As such, this study used path analysis to examine the direct effects of work-related factors (e.g., work conditions, burnout, and work-life balance) on health-related outcomes (e.g., satisfaction with life, depression/anxiety, and physical health), as well as the indirect effect of work-related factors on health-related factors via perceived stress, in a novel sample of 911 telecommunicators. It is hypothesized that each of work conditions,

burnout, and work-life balance will have direct effects on satisfaction with life, depression/anxiety, and physical health. Further, it is anticipated that work-related factors will have an indirect effect on health-related outcomes through heightened levels of perceived stress.

## METHODS

### Participants

Participants were recruited from local law enforcement agencies throughout the state of California. The survey was open to all law enforcement agency communication centers for a period of one week. The sample totaled 833 civilian 911 calltakers and dispatchers. Recruitment of participants in this study was conducted via a link to the online survey, sent to dispatch units using Survey Monkey. To be included in the study, all participants had to be current employees of a law enforcement agency and be employed as a call-taker, dispatcher, or supervisor. A total of 84% ( $n = 690$ ) were females, 16% ( $n = 133$ ) males. The ethnicity breakdown was as follows: 70% ( $n = 544$ ) identified as White/Caucasian/ European American, 21% ( $n = 160$ ) as Hispanic/Latino/Chicano, 5% ( $n = 41$ ) as Black/African American, and the remainder as Asian/Asian American, American Indian/Native American, Filipino/Pinoy/ Filipino American, or Other, Pacific Islander. The majority of the sample reported having less than two years of college (47%,  $n = 384$ ) or two years of more of college (24%,  $n = 196$ ). Annual family income was varied, with 3.6% ( $n = 30$ ) reporting an income less than \$40,000, 30% ( $n = 255$ ) reporting income between \$40,000 and \$79,999, 30% ( $n = 252$ ) reporting income between \$80,000 and \$119,999, and the remainder (24%,  $n = 282$ ) reporting income over \$120,000.

The majority of the sample identified as working in either the Southern (48%,  $n = 398$ ) or Northern (42%,  $n = 347$ ) region, with the remaining 10% ( $n = 82$ ) from the Central region of California. The majority of the sample identified as a dispatcher (69%,  $n = 575$ ) or call-taker (8%,  $n = 83$ ), and 23% ( $n = 191$ ) identified as a supervisor. In regard to years of experience in the 911 field, 15% ( $n = 121$ ) reported three years or less, 13% ( $n = 107$ ) reported three to seven years, 11% ( $n = 90$ ) reported seven to ten years, 23% ( $n = 186$ ) reported 10-15 years, and the remainder (39%,  $n = 322$ ) reporting working 15 years or more.

### Measures

**Depression and Anxiety.** The Depression (7 items) and Anxiety (7 items) subscales of the Depression and Anxiety Scale<sup>40</sup> was used to examine depression and anxiety symptoms. Sample items include "I felt downhearted and blue," and "I felt I was close to panic." Each item was measured using a 4-point scale ranging from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much, or most of the time*). Internal consistency for the 14 items was  $\alpha = .83$ .

**Physical Health.** The physical health scale of the Behavioral Risk Factor Surveillance System (12 items) measured physical health, injury, and frequency of engagement in physical activities, physical symptoms, and health behaviors.<sup>41</sup> A total of eight items measured the frequency of physical activity engagement (reverse scored), sleep (reverse scored), smoking behaviors, alcohol use, healthy eating (reverse scored), migraines, back pain, and chest pain. Internal consistency for the physical health scale was  $\alpha = .78$ .

**Satisfaction with Life.** The Satisfaction with Life scale (5 items)

measures general life satisfaction.<sup>42</sup> Sample items include "In most ways my life is close to my ideal," and "So far I have gotten the important things I want in life." All items were measured on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Internal consistency for the 5 item SWL scale was  $\alpha = .92$ .

**Perceived Stress.** The Perceived Stress Scale is a 10-item scale that measures the perception of stress.<sup>43</sup> Sample items include "Felt nervous and stressed" and "Felt that you were on top of things" (reverse coded). Each item used a five-point scale ranging from 0 (Never) to 4 (Very Often). Internal consistency for the PSS was  $\alpha = .94$ .

**Work-Life Balance.** Work-life balance was assessed using 15 items identified by Haymen.<sup>44</sup> Sample items include "Too tired to be effective at work," and "Job makes personal life difficult." Each item was measured on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Internal consistency for the 15 item work-life balance scale was  $\alpha = .87$ .

**Work Conditions.** The Work Conditions scale (9 items) measured the frequency of working on weekends, shift work, overtime, physical discomfort in the workstation, deprivation of fresh air/natural light, data entry errors, likeability and control within the past 30-days.<sup>14</sup> Each item was measured on a 5-point scale ranging from 0 (*never*) to 4 (*very often*). Internal consistency for the work conditions scale was  $\alpha = .84$ .

**Burnout.** The Maslach Burnout Inventory<sup>45</sup> is a 10-item scale that examined employee feelings of tiredness, disappointment, hopelessness, feeling trapped, helpless, depressed, physically weak, worthless, and difficulty sleeping. The items were measured on a 7-point scale ranging from 1 (*never*) to 7 (*always*). Internal consistency for the 10 items was  $\alpha = .94$ .

### Procedures

Institutional Review Board (IRB) approval was obtained prior to the distribution of the survey to all communication centers throughout California. Permission from the California Peace Officer Standards and Training (POST) organization was obtained allowing researchers to make the survey available to law enforcement agencies throughout California. Survey Monkey software was utilized to create, deploy, and store survey responses. All participation was voluntary, and information was confidential and anonymous. There were no incentives offered to agencies and participants to engage in the study. All participants were provided with an electronic informed consent page through the online link. The survey took approximately 15-20 minutes to complete. The survey was available for one week in April 2017.

### Data analysis

The statistical program IBM SPSS 25 was used to conduct descriptive analyses. The hypothesized model consisted of 7 observed variables that were tested using path analysis within the Structural Equation Model (SEM) software MPlus 7.4.<sup>46</sup>

## RESULTS

Average scores for each measure indicated that the majority of participants fell within the middle of the response item range, with the exception of depression/anxiety (Table 1). In this



sample, the average depression/anxiety score was associated with a response midway between “did not apply to me at all” and “applied to me to some degree, or some of the time” when asked whether the symptom of depression or anxiety applied to them over the past week. All variables of primary interest were significantly inter-correlated (Table 1). The largest correlations were observed between burnout and each of work-life balance, perceived stress, depression/anxiety, and satisfaction with life. Depression/anxiety was also strongly associated with work-life balance, perceived stress, and satisfaction with life.

To test the model in which work-related factors (i.e., work conditions, burnout, and work-life balance) impact health-related outcomes (i.e., satisfaction with life, depression / anxiety, and physical health) via perceived stress, a path analysis was conducted. The path analysis tested direct associations, and bias-corrected bootstrapping with 10,000 replaced samples was requested to test for indirect effects. Figure 1 reveals the results of the path analysis. Though the interpretation of fit statistics for path models has been questioned, the model showed excellent fit to the data (RMSEA = 0.00, CFI = 1.00, TLI = 1.00, SRMR = 0.00).

In regard to direct effects, burnout had a significant direct effect on perceived stress, as well as all of the health-related outcomes. Work-life balance also had a significant direct effect on perceived stress, but directly affected only satisfaction with life of the health-related outcomes. Work conditions had only a direct effect on satisfaction with life, but did not have a significant direct effect on perceived stress or the other health-related outcomes. Perceived stress had a significant direct effect on all of the health-related outcomes, with the strongest direct effect noted for satisfaction with life.

Indirect effects of the work-related factors on health-related outcomes via perceived stress were largely observed to be significant with one exception (see Table 2); namely, work conditions did not exert an indirect effect on any of the health-related outcomes via perceived stress. Notably, the strongest indirect effects were observed when satisfaction with life served as the dependent variable.

DISCUSSION

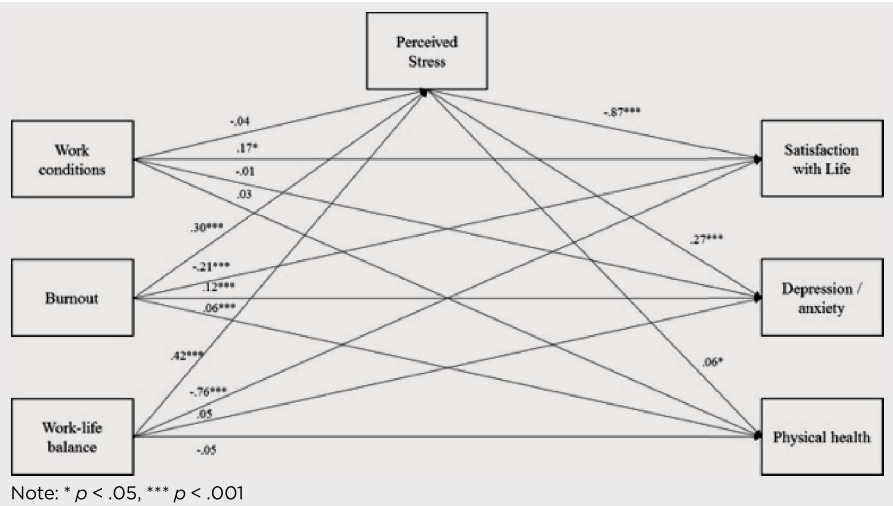
The current study sought to examine how work-related factors in the 911 environment impact health-related outcomes such as depression and anxiety, physical health, and satisfaction with life. Overall, the data revealed direct associations between many of the work-related factors and health-related outcomes. Further, perceived stress appears to be one mechanism that may explain how work-related factors influence health-related outcomes, as it had an indirect effect on most associations.

Among the work-related factors, burnout was strongly associated with stress and had a significant direct effect on all health-related outcomes. It was questioned in the development

	1.	2.	3.	4.	5.	6.	7.
1. Work conditions	-						
2. Burnout	.41	-					
3. Work-life balance	.45	.68	-				
4. Perceived stress	.30	.70	.59	-			
5. Satisfaction with Life	-.21	-.57	-.53	-.63	-		
6. Depression/ Anxiety	.26	.67	.51	.70	-.57	-	
7. Physical health	.16	.25	.17	.22	-.22	.26	-
Mean	2.31	3.26	2.83	1.60	4.69	.45	1.68
Standard deviation	.64	1.34	.38	.70	1.54	.46	.36
Range	0-3.78	.90-6.90	1.81-3.88	0-3.70	1-7	0-3	.63-3

Note: All correlations significant at p < .001

Table 1. Correlation matrix for primary variables of interest



Note: \* p < .05, \*\*\* p < .001

Figure 1. Path analytic model examining direct and indirect effects of work-related factors on health-related outcomes through perceived stress

of the model whether burnout is a work-related factor or an outcome. It is likely both, but was modeled as a work-related factor in the current study because the wording of the measure focuses largely on work-related feelings and beliefs, and it was strongly correlated with work conditions and work-life balance. Assessing for burnout in the workplace is crucial, as this study shows that it has a strong direct effect on stress and health, as well as a strong indirect on health through greater perceived



stress. Work within the 911 field may be especially conducive to the development of burnout, as dispatchers may become cynical due to recurrent exposure to horrific human events or emotionally detached to cope with the fact that there is often a lack of control over whether callers live or die. Psychoeducation may help dispatchers recognize when they are at risk for burnout, and programs that emphasize the critical and life-saving role performed by dispatchers, which may enhance dispatchers' sense of purpose and meaning, may help to reduce

Health-related outcome	Work-related factor	Estimate (s.e.)	p value
Satisfaction with Life			
	Work conditions	.04 (.03)	.20
	Burnout	-.26 (.03)	.00***
	Work-life balance	-.36 (.07)	.00***
Depression/anxiety			
	Work conditions	-.01 (.01)	.20
	Burnout	.08 (.01)	.00***
	Work-life balance	.11 (.02)	.00***
Physical health			
	Work conditions	-.00 (.00)	.27
	Burnout	.02 (.01)	.04*
	Work-life balance	.02 (.01)	.05*

Note: \*  $p < .05$ , \*\*\*  $p < .001$

**Table 2.** Indirect effect of perceived stress on the association between work-related factors and health-related outcomes

the prevalence of burnout in the 911 workplace. Notably, Ramos et al. found a negative correlation between job significance and burnout,<sup>19</sup> suggesting that improving employees' sense of job significance may reduce the prevalence of burnout.

Work-life balance was also an important duty-related predictor—both directly on stress and life satisfaction, but also through greater perceived stress. The ability to “leave work at work” and develop meaningful hobbies and relationships outside of the work environment may be especially protective for dispatchers. Learning to reduce conflict between job and personal demands may also be protective. Ramos and colleagues found a large correlation between work-life conflict and each of burnout and work engagement,<sup>19</sup> suggesting that reducing conflict and enhancing balance may affect not only health functioning, but other job-related factors. The question remains as to how we can encourage dispatchers to develop better balance, particularly in the context of the 911 environment in which there is often chronic understaffing and forced overtime. Dispatchers may find that they schedule events outside of work that need to be canceled in advance or last minute, disrupting the cultivation of better balance.

One method for enhancing better work-life balance is to create part-time non-benefitted positions and part-time

job share positions, the latter of which contribute to benefits at a half-rate. Though official statistics are not available, women are disproportionately represented among frontline telecommunicators, many of whom are also primary caretakers at home. The creation of job share positions allows individuals with responsibilities outside of work to split shifts and work more flexible hours that are negotiated with a job share peer. These positions may also relieve some of the overall burden on centers, and could result in less mandatory overtime. Some call centers have created in-house exercise facilities and have allotted time during which telecommunicators are expected to use the facility. For individuals who value exercise and physical health, the ability to exercise at work may enhance feelings that they are able to take care of themselves while also working a full-time position. Development of other classroom-based workplace wellness programs may also be fruitful for this population, and should begin with managers who are trained in the psychological impact of the work. Psychoeducation and normalization of the toll that the work may take on dispatchers should be emphasized. In addition, learning routines that can help dispatchers transition from the 911 work environment to the home environment may be one method to enhance work-life balance, and can include behaviors such as changing one's clothes, going for a short walk, listening to certain music, or engaging in a brief meditation exercise.

Of the work-related factors in the model, work conditions performed the most poorly. The only direct effect found for work conditions was on satisfaction with life, and this variable did not indirectly influence any of the health-related outcomes via perceived stress. A number of possibilities might explain the lack of findings related to work conditions. The first possibility is that the lack of associations could have resulted from measurement error. In the current study, items that assessed work conditions were created by the first author for a previous study and were largely specific to work in dispatch. This measure queries respondents regarding how often they have had to work weekends, work swing or night shifts, work overtime, and whether conditions in their work environment are favorable. Work within the 911 field is typically characterized by a number of unfavorable conditions such as mandatory overtime, shift work, and feeling out of control over one's work environment. In fact, the average work conditions score placed individuals between the response options of “Sometimes” and “Fairly Often,” and the standard deviation was rather small. It is possible that responses on this measure lacked the variability needed to significantly correlate with other variables. The work conditions variable was also strongly associated with burnout and work-life balance, both of which were stronger predictors in the model. As such, it is also possible that variability accounted for by work conditions in the model was trumped by the stronger impact of burnout and work-life balance. Finally, while the items showed acceptable internal consistency, the psychometric properties of the scale are in need of investigation.

In addition to potential measurement limitations for work conditions, another explanation may be that work conditions are more distally removed from perceived stress and health-related

outcomes and may interact with other factors not measured in this study (e.g., work-related social support, organizational compassion) to predict outcomes. Factors such as level of peer support, autonomy over schedule, and organizational compassion may buffer the impact of work conditions on stress levels and health,<sup>26</sup> while factors such as workplace bullying and perceived favoritism may exacerbate the impact of work conditions on stress levels and health. Future research that examines these complex associations within high stress work environments such as 911 are needed.

Physical health was another variable that performed less well in the model, showing significant associations with only burnout and perceived stress. The physical health measure used in the current study assessed overall health behaviors, such as exercising, sleeping, smoking, and healthy eating, but also assessed a number of somatic symptoms such as migraines, back pain, and chest pain, and did not assess for the presence of diseases that have been robustly associated with recurrent stress (e.g., hypertension, diabetes). While internal consistency for this measure was adequate, these factors may not be tapping into the same construct. Future research may benefit from focusing specifically on somatic symptomatology and/or the presence of disease. Another possible explanation for the lack of findings for physical health was that, like work conditions, a number of intervening factors not measured in this study may buffer against, or exacerbate, risk for poor physical health.

Results from the current study must be considered in light of several limitations. Most notably, the cross-sectional study design limits the ability to make causal statements regarding the direction of study effects. As mentioned previously, modeling study variables as a work-related predictor or a health-related outcome was deliberated carefully and the model showed good fit to the data. However, some of the variables examined in the current study, such as burnout, could be considered an outcome of stress, while variables such as poor satisfaction with life could be a predictor of stress. Further, results are based on self-report, which is prone to the effects of social desirability and reporting error. A strength of the study is a large sample of dispatchers from the state of California, though given that each state has its own statutes and regulations related to work in 911 that can impact the health and wellness of the workforce, the application of the results to dispatchers in other states cannot be fully determined. To our knowledge, research in the 911 field that uses a longitudinal design has not been published. Future research that incorporates more robust methodology, including prospective designs, would significantly enhance the strength of the conclusions that can be drawn regarding the physical and psychological impact of work within the 911 field, and lead to the development of empirically-informed prevention and intervention programs.

## CONCLUSION

The current study found that burnout and work-life balance are important predictors of perceived stress in the 911 workplace. Further, burnout predicted poorer satisfaction with life, greater

symptoms of depression and anxiety, and reports of poorer physical health. Satisfaction with life was the most robust of the outcome variables, suggesting that while some factors associated with the work environment impact mental and physical health, the greatest negative impact of work environment may be not on clinical levels of pathology, but on employees' broad sense of well-being and life satisfaction. The results also reveal that the work environment impacts 911 employees' health predominantly by enhancing self-reported levels of stress. These findings suggest that targeting stress levels by bolstering employees' coping strategies and recognizing stress-based reactions may break the link between employment in a challenging work environment and employee health and satisfaction.

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