

## *Resilience mediates the relationship between social support and post-traumatic stress symptoms in police officers*

Erin C. McCanlies, PhD  
Ja Kook Gu, MPH  
Michael E. Andrew, PhD  
Cecil M. Burchfiel, PhD  
John M. Violanti, PhD

### ABSTRACT

**Objective:** Police officers in the New Orleans geographic area faced a number of challenges following Hurricane Katrina in 2005.

**Design:** This cross-sectional study examined gratitude, resilience, and satisfaction with life as mediators in the association between social support and post-traumatic stress disorder (PTSD) symptoms in 82 male and 31 female police officers. The Gratitude Questionnaire, Connor-Davidson Resilience Scale, Satisfaction with Life Scale, and the Interpersonal Support Evaluation List were used to measure gratitude, resilience, satisfaction with life, and social support, respectively. PTSD symptoms were measured using the PTSD Checklist-Civilian (PCL-C). Ordinary least square regression mediation analysis was used to estimate direct and indirect effects among gratitude, resilience, satisfaction with life, social support, and PTSD symptoms. All models were adjusted for age, alcohol, race, and previous military experience.

**Results:** Mean PCL-C symptoms were 29.1 (standard deviation [SD]=14.4) for females and 27.9 (SD=12.1) for males. There was no direct relationship between social support and PTSD symptoms ( $c' = -0.041$ ; 95% confidence interval [CI] =  $-0.199, 0.117$ ) independent of the indirect effect through resilience (effect =  $-0.038$ ; 95% CI =  $-0.099, -0.002$ ). Neither gratitude (effect =  $-0.066$ ; 95% CI =  $-0.203, 0.090$ ) nor satisfaction with life (effect =  $-0.036$ , 95% CI =  $-0.131, 0.046$ ) contribute to the indirect effect.

**Conclusions:** These results indicate that resilience mediates the relationship between social support

and symptoms of PTSD. Targeting social support and resilience in officers may facilitate reduction of PTSD symptoms.

*Key words:* mediation, resilience, PTSD, gratitude, satisfaction with life, police officers

### INTRODUCTION

Post-traumatic stress disorder (PTSD) is a serious disorder caused by exposure to one or more traumatic events including natural disasters. In 2005, Hurricane Katrina hit the central gulf coast of the United States.<sup>1</sup> It is considered to be one of the deadliest hurricanes in American history resulting in over 1,200 deaths and causing over 108 billion dollars in property damage. Widespread devastation occurred in Louisiana, Mississippi, and, to a somewhat lesser degree, Florida. Wind speeds of over 150 mph with widespread flooding were reported. For example, due to levee failure in New Orleans, approximately 80 percent of the city was under water at some point during the hurricane. Police officers who worked during and after Hurricane Katrina faced a number of physical and psychological challenges including rescuing individuals from flooded areas, controlling crowds, retrieving and removing bodies, all the while working out of temporary offices.<sup>2-4</sup> Due to the loss of electricity and phone lines, they had little to no communication with coworkers or headquarters, and frequently had to work in an openly hostile environment.<sup>2-4</sup> Their feelings of stress were further exacerbated because they simultaneously had to meet the needs of their own families.<sup>2,4,5</sup> Because police officers

are frequently exposed to traumatic events such as death, being shot at, and physical assault, rates of PTSD among police officers have been reported to be as high as 15 percent.<sup>6</sup> Following Hurricane Katrina, approximately 19 percent of the officers reported symptoms of PTSD.<sup>3,4</sup> Furthermore, among officers, PTSD is associated with a number of negative psychological and biological effects such as depression, suicidal ideation, cardiovascular disease, and diabetes.<sup>7-10</sup> For this reason, identifying factors that protect individuals from developing PTSD is important. Higher levels of social support have inconsistently been shown to mitigate symptoms of PTSD.<sup>11-13</sup> It has been suggested that other factors may mediate the relationship between social support and PTSD.<sup>13</sup> However, there is a dearth of information about which factors may mediate the relationship between social support and PTSD. This study is designed to evaluate the association between social support and symptoms of PTSD and whether gratitude, satisfaction with life, or resilience may mediate this relationship in officers who worked during or after Hurricane Katrina.

Social support is the interpersonal relationships that offer emotional comfort, financial aid, or assistance when necessary.<sup>11</sup> Social support increases an individual's sense of well-being, increasing positive feelings about self and others.<sup>14</sup> These factors in turn increase a sense of belonging and self-worth. Social support and having access to a social network appears to be important for mitigating symptoms of PTSD.<sup>11-13</sup> However, a longitudinal study that evaluated PTSD symptoms in 233 police officers found no association between social support and symptoms of PTSD.<sup>15</sup> One explanation for this is that it is not social support specifically that mitigates PTSD, rather it is other factors measured within the social support construct that reduce symptoms of PTSD. Alternatively, it may be that social support influences other factors, which in turn affect symptoms of PTSD. Resilience, gratitude, and satisfaction with life have been found to be associated with social support and lower symptoms of PTSD and may be one of these factors.<sup>16,17</sup>

Resilience is a concept that encapsulates the idea of overcoming and adapting to negative experiences.<sup>18,19</sup> Self-esteem, coping skills, hardiness, and

social support are positively associated with resilience<sup>18,20</sup> and negatively associated with PTSD.<sup>21,22</sup> Satisfaction with life is a person's self-assessment that his or her life is meeting expectations.<sup>23</sup> It is associated with feelings of well-being and increased health.<sup>24</sup> Satisfaction with life has been found to be positively associated with self-esteem and sociability, and negatively associated with factors such as neuroticism, emotionality, impulsivity, and symptoms of PTSD.<sup>17,23</sup> Similarly, gratitude, which is feelings of thankfulness or appreciation, has been found to be positively associated with positive affect, agreeableness, openness, extraversion, and lower symptoms of PTSD.<sup>17,25</sup> The association between social support, gratitude, resilience, satisfaction with life, and the negative association among these factors and PTSD make these good candidate mediators between social support and PTSD. Our objective is to evaluate if social support is associated with symptoms of PTSD and if this relationship is mediated by gratitude, resilience, and satisfaction with life.

## METHODS

To assess if gratitude, resilience, or satisfaction with life mediate the association between social support and PTSD in police officers who worked during or after Hurricane Katrina, we conducted a cross-sectional epidemiologic study. The participants, participant characteristics, and questionnaires used to assess social support, PTSD, gratitude, resilience, and satisfaction with life are described in detail below.

### *Participants*

Officers from a New Orleans, Louisiana, geographic area police department participated in this cross-sectional study. This department was approached to participate in this study due to its proximity to New Orleans and willingness to cooperate with the study investigators. In 2012, 250 officers in one district were given a packet containing instructions, a consent to participate form, and questionnaires. All the officers were invited to participate; there were no exclusion criteria. One hundred twenty-three officers (49.2 percent) completed the consent form and the questionnaires and mailed them in a self-addressed stamped

envelope directly to the project officer. However, officers who did not have complete data on the variables of interest were excluded from analysis, leaving a final sample size of 113 for this study. Out of the 113 officers, 91 worked during Hurricane Katrina; however, due to the extreme stress associated with post-Hurricane Katrina clean-up, we included all officers who returned forms. All participants signed consent forms. This research was approved by the National Institute for Occupational Safety and Health Human Subjects Review Board and State University of New York at Buffalo Health Sciences Internal Review Board.

#### *Demographic and lifestyle characteristics*

The participants completed questionnaires on personal characteristics, their work during Hurricane Katrina, health information, and medication taken. Information collected included age, race/ethnicity, sex, education, years served as a police officer, marital status, the number of sick days increased since Katrina, and the number of alcoholic drinks per week. A number of validated psychosocial instruments were used to collect information on PTSD as well as positive psychological factors including social support, resilience, satisfaction with life, and gratitude, which will be described below. Participants were told to use Hurricane Katrina as the index event when appropriate while completing the questionnaires.

#### *Exposure variable*

Social support in the context of this study is described as “the various resources provided by one's interpersonal ties,” and was assessed using the Interpersonal Support Evaluation List (ISEL).<sup>11</sup> The ISEL is composed of four separate social resources, including tangible support, belonging, self-esteem, and appraisal support. Tangible support measures the perceived availability of material assistance. Belonging assesses the presence of social connections and availability of people with whom one can spend time. Self-esteem assesses an individual's ability to think positively about oneself in comparison to others, and the appraisal subscale measures the availability of others with whom one can talk to about issues or problems.<sup>11</sup> An overall social support score is calcu-

lated by summing all the scores and was used in this study. The mean ISEL score in this population was 86.7 (standard deviation [*SD*] = 22.8).

#### *Outcome variable*

PTSD symptoms were measured using the PTSD Checklist-Civilian (PCL-C) version. The PCL-C consists of 17 questions that evaluate whether the participant experienced symptoms of PTSD over the last month. The symptoms are based on the DSM-IV symptom categories of re-experiencing, avoidance, and hyperarousal.<sup>26</sup> An overall symptom severity score (range = 17–85) is calculated by summing the scores. A diagnosis of PTSD is indicated if the total score exceeds a given threshold, which varies depending on the setting (eg, the Department of Defense uses a cut point between 30 and 35 for the general population, 36 and 44 for specialized medical clinics [eg, traumatic brain injury or pain], and 45 and 50 for VA or civilian specialty mental health clinics).<sup>27</sup> The overall score was used in the present study. Mean PTSD symptoms in this population were 28.2 (*SD* = 12.7).

#### *Mediator variables*

Resilience, satisfaction with life, and gratitude are positive psychological factors that may mediate the association between social support and PTSD. Each was assessed using reliable and valid assessments. Resilience was measured in the police officers using the abbreviated version of the Connor-Davidson Resilience Scale (CD-RISC10).<sup>22</sup> It is composed of factors that include the ability to cope with adverse situations, adaptability, self-esteem, and hardiness.<sup>22</sup> Higher scores indicate higher resilience.<sup>22</sup> An overall score can be calculated by summing the individual scores, which was used in this study. The mean resilience score was 30.4 (*SD* = 5.9) with a Cronbach's  $\alpha$  of 0.85.

How satisfied the police officers are with their life was measured using the Satisfaction with Life Scale.<sup>23</sup> This scale is designed to measure global cognitive judgements of one's satisfaction with their life.<sup>23</sup> The scores are summed and an overall score is then used to evaluate an individual's satisfaction

with life. A score of 30-35 indicates "highly satisfied," 25-29 indicates "things are mostly good," 20-24 indicates "generally satisfied," 15-19 indicates "slightly below average life satisfaction," 10-14 indicates "dissatisfied," and 5-9 indicates "extremely dissatisfied."<sup>23</sup> The overall score was used in this study. The mean satisfaction with life score in this population was 23.3 ( $SD=7.5$ ) with a Cronbach's  $\alpha$  of 0.92.

Gratitude is the tendency to acknowledge the positive values, benefits, and experiences of daily life.<sup>25</sup> It was measured using the Gratitude Questionnaire (GQ-6).<sup>25</sup> To calculate a total score, the scores for questions 1, 2, 4, and 5 are summed. The scores for 3 and 6 are reversed, then these scores are added to the total score calculated when 1, 2, 4, and 5 were summed. Higher scores reflect more gratitude and positive emotions such as life satisfaction, hope, and optimism.<sup>25</sup> The total score was used in this study. The mean gratitude score in this population was 34.7 ( $SD=7.3$ ) with a Cronbach's  $\alpha$  of 0.89.

#### STATISTICAL METHODS

Descriptive statistics were used to characterize the study population. Officers reported their race as "Caucasian," "African American," or "Other." Due to the small number of officers in the "Other" category, this category was combined with the Caucasian category. The potential confounders, age, number of alcoholic drinks per week, and sick days increased since Katrina were selected based on the literature, or because they were found to be associated with both the dependent and independent variables in this study. Pearson correlation analysis was used to evaluate associations among PTSD symptoms, social support, gratitude, resilience, and satisfaction with life. Although correlated mediators can result in reduced power and greater sampling variance; using highly correlated mediators in a mediation analysis can help clarify associations between variables.<sup>28</sup> In this case, mediation analysis can help to disentangle the association between social support, symptoms of PTSD, and the three mediators of gratitude, resilience, and satisfaction with life. Ordinary least square regression in mediation analysis was used to estimate direct and indirect effects of each

predictor on PTSD using the PROCESS macro for SAS.<sup>28</sup> Gratitude, resilience, and satisfaction with life were evaluated as potential mediators between social support and symptoms of PTSD. Direct and indirect effects were obtained.

#### RESULTS

Approximately 73 percent of the participants in this study were male. The majority of the police officers were between the ages of 40 and 49 years (Table 1). The majority of the participants were Caucasian/Other (58 percent), were married (58 percent), had attended at least some college (60 percent), and reported having 0-2 alcoholic drinks per week (57 percent). Approximately 37 percent of the officers reported heavy involvement in Hurricane Katrina, 25 percent reported moderate involvement, while 18 percent reported light involvement. Twenty percent of the officers reported no involvement in Katrina. The majority of the officers reported "no change," in the number of sick days increased since Katrina (56 percent), while 14 percent reported an increase of 1-5 d/yr since Katrina, and 11 percent reported an increase of six or more sick days since Katrina.

The correlation matrix shows that as social support increased so did gratitude ( $r=0.649$ ;  $p<0.001$ ), resilience ( $r=0.402$ ;  $p<0.001$ ), and satisfaction with life ( $r=0.531$ ;  $p<0.001$ ; Table 2). In contrast, as social support increased, symptoms of PTSD decreased ( $r=-0.458$ ;  $p<0.001$ ). Similarly, as gratitude ( $r=-0.347$ ;  $p<0.001$ ), resilience ( $r=-0.394$ ;  $p<0.001$ ), and satisfaction with life ( $r=-0.369$ ;  $p<0.001$ ) increased, symptoms of PTSD decreased.

We used 10,000 bootstrap samples to estimate the 95% confidence intervals (CI) in our mediation results. A 95% CI that includes zero indicates a non-significant effect, while a 95% CI that does not include zero is significant and indicates that the effect of the independent variable on the dependent variable is mediated by one or more of the mediators. The multiple mediator model indicates that higher levels of social support were associated with higher resilience ( $a_1=0.103$ ), satisfaction with life ( $a_2=0.194$ ), and gratitude scores ( $a_3=0.236$ ). In contrast, higher resilience ( $b_1=-0.366$ ), satisfaction with life ( $b_2=-0.186$ ), and

Table 1. Demographics, lifestyle, and job characteristics of the study population	
Sample characteristics	N (percent)
Gender	
Male	82 (72.6)
Female	31 (27.4)
Age	
<40	35 (32.4)
40-49	51 (47.2)
50+	22 (20.4)
Race	
Caucasian/other	65 (57.5)
Black	48 (42.5)
Education	
≤12 yr	12 (10.4)
Some college	69 (60.0)
≥College degree	34 (29.6)
Marital status	
Single	24 (21.1)
Married	66 (57.8)
Divorced	24 (21.1)
Length of service, yr	
0-9	22 (25.3)
10-19	32 (36.8)
20+	33 (37.9)
Alcoholic drinks per week	
0-2	64 (57.1)
3-4	29 (25.9)
5-6	13 (11.6)
7+	6 (5.4)
Military experience	
Yes	25 (21.9)
No	89 (78.1)

Table 1. Demographics, lifestyle, and job characteristics of the study population (continued)	
Sample characteristics	N (percent)
Involvement during Katrina	
Heavy	41 (37.3)
Moderate	27 (24.5)
Light	20 (18.2)
Did Not work during Katarina	22 (20.0)
Sick days increased since Katrina	
No change	63 (55.8)
1-5 d/yr	16 (14.2)
6+ d/yr	12 (10.6)
Did not work during Katarina	22 (19.5)

gratitude scores ( $b_3 = -0.279$ ) were associated with fewer symptoms of PTSD (Figure 1). The total effect ( $c$  effect =  $-0.180$ , 95% CI =  $-0.287$ ,  $-0.073$ ,  $p = 0.001$ ) and direct effect ( $c'$  effect =  $-0.041$ ; 95% CI =  $-0.199$ ,  $0.117$ ;  $p = 0.61$ ) results indicate that gratitude, resilience, and satisfaction with life mediate the relationship between social support and symptoms of PTSD (Table 3). Together, the specific direct and indirect effects indicate that there is no statistical evidence of a direct relationship between social support and PTSD independent of the indirect pathway through resilience (effect =  $-0.038$ ; 95% CI =  $-0.099$ ,  $-0.002$ ). Furthermore, neither gratitude (effect =  $-0.066$ ; 95% CI =  $-0.203$ ,  $0.090$ ) nor satisfaction with life (effect =  $-0.036$ ; 95% CI =  $-0.131$ ,  $0.046$ ) contributes to the indirect effect above resilience.

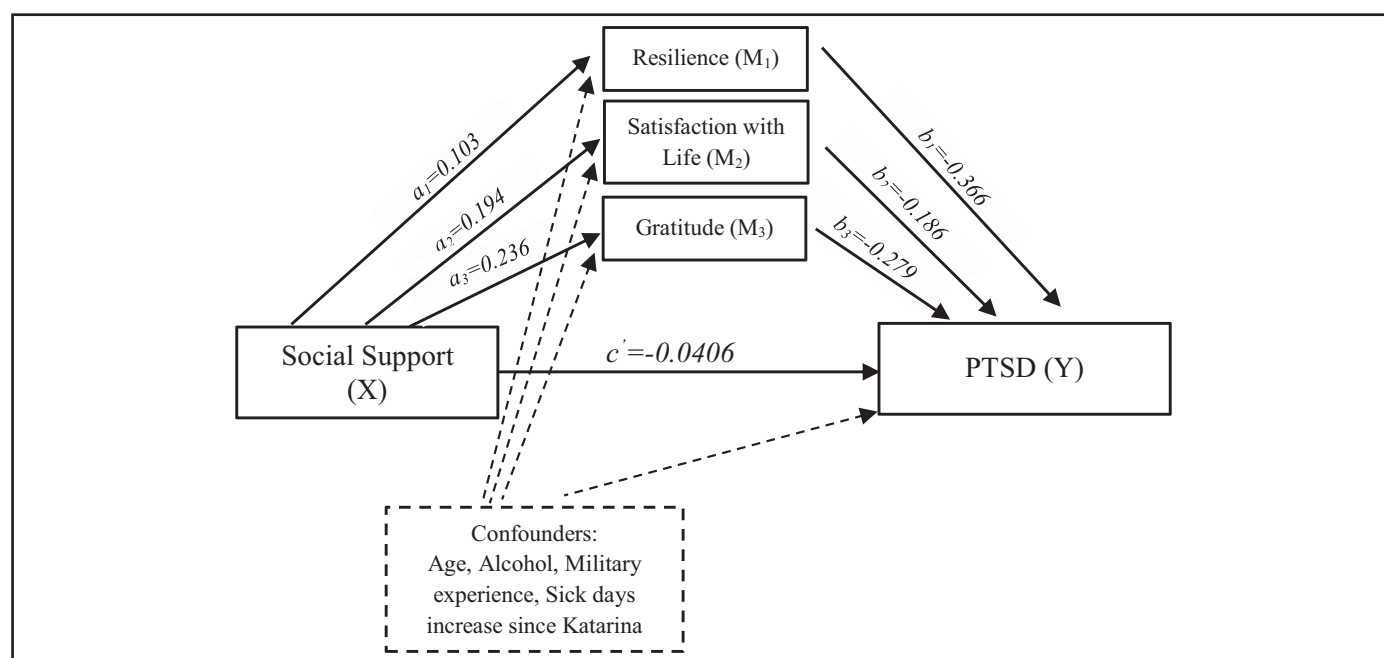
## DISCUSSION

Previous research has reported that higher social support is associated with fewer symptoms of PTSD, however, there is little information about which factors may mediate this relationship. This study evaluated if social support is associated with symptoms of PTSD, and if gratitude, resilience, or satisfaction with life mediate this relationship in police officers exposed to the effects of Hurricane Katrina. The results show



Table 2. Correlation matrix for main variables of interest					
	PTSD symptoms	Social support	Resilience	Satisfaction with life	Gratitude
PTSD symptoms	1.000				
Social support	-0.458***	1.000			
Resilience	-0.394***	0.402***	1.000		
Satisfaction with life	-0.369***	0.531***	0.434***	1.000	
Gratitude	-0.347***	0.649***	0.355***	0.641***	1.000

\*\*\*p-value < 0.001.



**Figure 1. Statistical diagram of the mediator model with resilience, satisfaction with life, and gratitude as potential mediators between social support and PTSD symptoms.**

that social support indirectly influences symptoms of PTSD through its effect on resilience. Higher social support is associated with higher resilience scores ( $a_1=0.103$ ), which in turn is associated with fewer symptoms of PTSD ( $b_1=-0.366$ ); neither gratitude nor satisfaction with life contributes to the indirect effect beyond resilience.

In contrast to our study, a number of studies have reported that social support is associated with fewer PTSD symptoms.<sup>13,23,29,30</sup> Dinenberg et al.<sup>12</sup> evaluated the association between social support and the development of PTSD in 579 individuals over a 5-year period of time who were participating

in the Heart and Soul study. They found that individuals with chronic illness who had social support, particularly “belonging” and “tangible support” at baseline, were less likely to develop PTSD.<sup>12</sup> Platt et al.<sup>13</sup> evaluated the association between social support and PTSD in approximately 31,650 individuals from the National Epidemiologic Survey on Alcohol and Related Conditions. They found that while “perceived support” was important for mitigating PTSD, having access to an “active and diverse social network” was also important.<sup>13</sup> Yuan et al.<sup>15</sup> reported that social adjustment prior to police work rather than social support in general protected officers from

Table 3. Total direct and indirect effects of social support and PTSD					
	Effect	Boot SE	Lower 95% CI	Upper 95% CI	p value
Total effect X on Y (c)	-0.180	0.054	-0.287	-0.073	0.001
Direct effect of X on Y (c')	-0.041	0.079	-0.199	0.117	0.610
Indirect effect					
Total Indirect					
Resilience	-0.038	0.024	-0.099	-0.002	
Satisfaction with life	-0.036	0.044	-0.131	0.046	
Gratitude	-0.066	0.073	-0.203	0.090	

developing PTSD symptoms. These studies demonstrate the complexity of the social support construct and indicate that different aspects of social support may be associated with fewer PTSD symptoms. In contrast, we did not find that social support directly influenced symptoms of PTSD independent of its effect on resilience ( $c' = -0.041$ ;  $p = 0.61$ ). Similar to our findings, there are other studies that did not find an association between level of social support and symptoms of PTSD. However, these studies suffer from small sample size and low levels of PTSD symptoms, thereby limiting their power to detect an association with social support if one existed.<sup>15,31</sup> It is possible that the lack of an association in our study is also due to our sample size; we may not have the power to show a direct effect between social support and PTSD. On the other hand, these results may indicate that social support is unrelated to lower symptoms of PTSD without the effect of resilience.

Social support has consistently been shown to be an important component of resilience.<sup>32-34</sup> Tsai et al.<sup>35</sup> used the 25 item Connor-Davidson Resilience Scale to evaluate whether resilience mediated the association between poor social functioning and PTSD. In this case, the resilience subscales of "positive acceptance of change," "tolerance of negative affect," "belief in fate," and "availability of secure relationships" were evaluated. The resilience subscale of "availability of secure relationships" mediated both the relationship between partner satisfaction and PTSD and the relationship between social functioning and PTSD.

Following a disaster, social support was one of the factors that predicted resilience, and among military personnel, social support that was maintained during deployment was also associated with resilience.<sup>32,33</sup> Our results further support the role of social support in the resilience construct.

We found that resilience is an important mediator between social support and symptoms of PTSD. Our results are consistent with a number of studies that have found that resilience is associated with fewer symptoms of PTSD.<sup>17,32,33,36</sup> In a multidimensional model of resilience, optimism and adaptive health practices were negatively associated with psychopathology.<sup>37</sup> Resilience in workers of high-risk occupations are less likely to experience symptoms of PTSD following a traumatic event.<sup>33</sup> Research has found that resilient people are more likely to display optimism, utilize a variety of coping skills, cultivate positive emotions, and are more likely to use humor to get through difficult situations.<sup>36</sup> All of these factors may protect individuals from symptoms of PTSD.<sup>16,32,36,37</sup> In fact, when resilient people experience traumatic events, they are less likely to experience symptoms of PTSD, and are often more likely to report positive emotions compared to people with less resilience.<sup>36</sup> In turn, individuals who remain optimistic, engage humor, and cope well in adversity are also more likely to obtain social support, which may further protect them from psychopathology.<sup>36,37</sup>

Besides resilience, gratitude and satisfaction with life increase positive emotions and are associated

with fewer symptoms of PTSD.<sup>17,23,25,38-40</sup> However, we did not find that gratitude or satisfaction with life mediates the relationship between social support and symptoms of PTSD. These results support previous research by Wood et al.,<sup>41</sup> who found that social support did not lead to gratitude, rather social support mediated the relationship between gratitude and stress. This indicates that gratitude may lead to increased social support, but social support does not necessarily lead to higher gratitude.<sup>41,42</sup> Although social support has been found to be associated with satisfaction with life, our results indicate it does not mediate the relationship between social support and PTSD.<sup>43,44</sup> Kong et al.<sup>42</sup> also found that gratitude led to social support. In this case, social support mediated the association between gratitude and satisfaction with life, thru high self-esteem. They did not evaluate if social support led to gratitude. However, these results indicate a potentially more complex relationship among social support, gratitude, PTSD, and satisfaction with life, warranting further research aimed at evaluating how these factors may relate to each other. It is possible that gratitude and satisfaction with life are more likely to moderate the association between social support and symptoms of PTSD; individuals with high social support and higher gratitude and/or satisfaction with life may be less likely to experience symptoms of PTSD compared to those with low gratitude and/or satisfaction with life. Further research evaluating whether gratitude and satisfaction with life moderate the relationship between social support and PTSD would be of interest.

The correlation analysis showed that as social support increased, symptoms of PTSD decreased. Similarly, as gratitude, resilience, and satisfaction with life increased, symptoms of PTSD decreased. Higher social support also correlated with increasing gratitude, resilience, and satisfaction with life. These results support previous research that has found that positive factors such as social support, gratitude, resilience, and satisfaction with life are positively correlated to each other and negatively correlated with symptoms of PTSD.<sup>16,17,23,38,40,45</sup> The mediation analysis further clarified these relationships, indicating that there was no direct relationship between social

support and PTSD independent of the indirect pathway through resilience, and that neither gratitude nor satisfaction with life contributes to the indirect effect above resilience.

There were both limitations and strengths to this study. The limitations include a small sample size, cross-sectional design, and potential recall bias. Approximately 49 percent of the officers invited to participate in this study responded. We did not have information on the nonresponders and therefore we could not compare the nonresponders to those that responded. It is possible that the officers who volunteered to participate are different than those who did not, resulting in misclassification bias. However, the rates of PTSD in our population are similar to those reported in other police populations who experienced Hurricane Katrina,<sup>3,4</sup> indicating that the officers who participated in this study may be representative of other officers affected by Hurricane Katrina. Because both the dependent and independent variable are collected simultaneously, cross-sectional studies preclude direction of causality. Therefore, we cannot determine if social support mediated through resilience causes fewer symptoms of PTSD, only that higher social support mediated through higher resilience is associated with fewer symptoms of PTSD. Last, the PCL-C provides a self-report measure of PTSD symptoms, not a clinical diagnosis. Experiencing symptoms of PTSD or asking for help is often perceived as a sign of weakness among police officers, and reprisal or job loss are potential consequences for officers that do report symptoms of PTSD.<sup>46,47</sup> For this reason, police officers may underreported symptoms of PTSD.<sup>47,48</sup> Recall bias is also a potential issue affecting these results. The officers were told to use Hurricane Katrina as the index event, however, due to the amount of time that elapsed since the event, the accuracy of the officers' memories to events prior to and since the hurricane may have affected their responses and therefore the relationships we observed. It should also be noted that because police officers are a unique occupational cohort the results of this study may not be generalizable to other dissimilar populations.

A strength of this study is that it is unique. There are few studies that have evaluated the effects of a



natural disaster on police officers. The results may be generalizable to a similar-sized police force in the same geographic area. Through the use of mediation analysis, this study has added to the existing literature and indicates why, in the presence of high resilience, higher social support may be associated with fewer symptoms of PTSD. Longitudinal research on a larger population may help to further clarify the relationships we observed in this study.

In conclusion, the results indicate that resilience mediates the relationship between higher levels of social support and symptoms of PTSD. Although, gratitude and satisfaction with life are negatively associated with symptoms of PTSD and positively correlated with social support, neither mediated the relationship between social support and symptoms of PTSD. Understanding factors that affect how social support may mitigate PTSD is important for treating and preventing PTSD as well as identifying those at greatest risk.

#### ACKNOWLEDGMENTS

*This study was funded by The National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (grant: R03 OH009582-02). The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the National Institute for Occupational Safety and Health.*

Erin C. McCanlies, PhD, Epidemiologist, Biostatistics and Epidemiology Branch, Health Effects Laboratory Division, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Morgantown, West Virginia.

Ja Kook Gu, MPH, Statistician, Biostatistics and Epidemiology Branch, Health Effects Laboratory Division, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Morgantown, West Virginia.

Michael E. Andrew, PhD, Statistician, Biostatistics and Epidemiology Branch, Health Effects Laboratory Division, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Morgantown, West Virginia.

Cecil M. Burchfiel, PhD, Epidemiologist, Biostatistics and Epidemiology Branch, Health Effects Laboratory Division, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Morgantown, West Virginia.

John M. Violanti, PhD, Full Research Professor, Principle Investigator, Department of Epidemiology and Environmental Health, School of Public Health and Health Professions, University at Buffalo, Buffalo, New York.

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