Original Article

Worried Sick: Perceptions of Low Public Support, Stress, and Somatic Health Problems in Law Enforcement

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Abstract Recent surveys suggest that confidence in police reached its lowest level on record in the wake of controversial police custody deaths and associated protests in recent years. Meanwhile, research has found links between perceptions of low public support for police and a variety of negative outcomes among police officers, including stress and withdrawal. The consequences of psychological stress, according to much other research, include a variety of physical health problems. The present study synthesizes these bodies of research by examining whether perceptions of low public support are associated with physical, somatic symptoms in police officers, including headaches, gastrointestinal problems, sleep disturbances, and upper respiratory infections. Structural equation modelling of 4,221 officer surveys from a Southeastern U.S. state collected in January of 2022 suggests that officers are quite literally worried sick about poor police–public relations, and that stress mediates this relationship. We discuss the implications of these findings for officer wellness and the relationship between mental and physical well being among officers. Furthermore, we discuss practical recommendations for police leaders who may be struggling to promote officer wellness during a period of intense public scrutiny.

Introduction

According to Gallup polls, confidence in the police reached an all-time low in 2020 following widely shared video footage of the murder of George Floyd, an unarmed Black man who was suffocated to death by Minneapolis police officer Derek Chauvin as other officers and citizens looked on. Although confidence in police rebounded slightly in 2021, it remains near historic lows (Brenan, 2021). However, contentious relationships between police and the public have been a common theme in police research going back decades. Many of the earliest police ethnographies describe a public that demonstrated outright hostility towards the police, as well as its effect on police officers' attitudinal orientations (e.g. Banton, 1964; Whitaker 1964; Skolnick, 1966).

Invariably, these researchers note how such hostility from the public contributes to various manifestations of officer stress, distress, and compromised attitudes that serve as coping responses. Jerome Skolnick (1966), for instance, notes that officer perceptions of hostility and danger from

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the public—both real and perceived—contribute to officers' despondency, social isolation, and withdrawal (both on and off the job), as well as a state of persistent anxiety, hypervigilance, and unease. Niederhoffer (1967), in his treatise on police cynicism and *anomie*, describes how tension between police and the public (as well as the tension between the ideals and pragmatic realities of policing) leads officers to a sense of helplessness, futility, alienation, and despair. Police officers have long felt unfairly maligned and misunderstood by the public, leading to a great deal of stress (Banton, 1964; Whitaker, 1964; Ahern, 1972). Systematic, quantitative research on police stress since then, however, has generally focussed on the way personal and vicarious exposure to trauma produces posttraumatic stress, and how organizational stressors predict burnout and organizational stress (for a review, see Violanti *et al.*, 2017). Given substantial tensions between police and the public in recent years, it is prudent to also explore whether police–public relationships produce stress among police officers, especially given the potential negative outcomes stemming from stress.

It is widely recognized that stress is much higher among police officers than the general public, and that is problematic in its own right. However, research focussing on general populations finds clear links between psychological stress and physical health problems, including gastrointestinal symptoms, upper respiratory infections, and cardiovascular disease (Schat *et al.*, 2005). The evidence suggests that both stress and low social support contribute to compromised physical health via both cellular and humoral processes of immune function, among other mechanisms (Cohen and Herbert, 1996).

It is therefore plausible, although unestablished in research, that criticism of the police could produce stress that manifests as somatic health problems among police officers. The present study evaluates these linkages. First, focussing on general stress rather than PTSD or burnout, it is among the first to explore how officers' perceptions of anti-police sentiment produce psychological stress. Second, it logically extends this analysis to explore whether such stress is associated with a variety of physical health problems, including sleep disturbances, headaches, gastrointestinal problems, and upper respiratory infections. Because stress and physical health problems have the potential to lead to a number of compromises to police services—including the not-strictly-financial costs of absenteeism, poor field performance, liability, and insurance for healthcare and disability—the results are relevant to a variety of stakeholders, including individual police officers, police leaders, and the general public.

Public antipathy and officer stress

In light of contentious police–community interactions in recent years, it is important to consider the ways negative public opinion towards police may contribute to officer stress. This section briefly reviews research on the various stressors that police encounter in their work, beginning with the inherent stressors associated with day-to-day police work before discussing the effects of negative police–community relations and critical coverage from media as sources of officer stress.

It is generally accepted that the work of police officers is accompanied by a great deal of stress. There is ample research suggesting that job-related stressors lead to heightened psychological distress among officers (Brough, 2004; Martin *et al.*, 2009; Violanti *et al.*, 2017). Typically, these sources of stress are categorized as operational/occupational or organizational stressors (Collins and Gibbs, 2003), as well as acute or routine stressors (Violanti and Aron, 1994). Operational stressors concern an officer's work in the field, such as responding to calls for service and interacting with civilians (Edwards *et al.*, 2021). Acute operational stressors, such as killing someone in the line of duty or a fellow officer being killed, were ranked by officers as the two most powerful stressors (Violanti and Aron, 1994). In addition, reports from officers highlight the risks associated with their day-to-day tasks—experiencing traumatic events, exposure to human suffering, threats of physical attacks, routine use of force, aggressive suspects—as significant and *routine* sources of stress (,McCarty *et al.*, 2019; Edwards *et al.*, 2021).

Notwithstanding the inherent stress of police work, a great deal of research on stress in policing

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has found that considerable stress comes from organizational, rather than operational, sources (Collins and Gibbs, 2003). Organizational stressors are those that primarily concern management, discretion, and culture related to a workplace, and some studies suggest that organizational stressors may contribute more significantly to stress than operational stressors (Taylor and Bennell, 2006). For example, organizational/management-related stressors led to higher exposure to stress among officers compared to operational stressors (Brown and Campbell, 1990). Furthermore, officers identified a variety of organizational stressors, many that were not even necessarily specific to police work, as their most significant sources of job-related stress (Collins and Gibbs, 2003). Organizational stressors may include changes in leadership (Scott, 2004), high workloads (McCarty *et al.*, 2019), lack of communication, lack of control, and lack of organizational support (Collins and Gibbs, 2003). Furthermore, a study of Scottish police officers suggested that the highest levels of reported stress were associated with organizational factors, such as inadequate staff, inadequate resources, and lack of communication, rather than operational factors unique to policing (Biggam *et al.*, 1997).

Low public support of police as a source of officer stress is a key but neglected consideration. Criticism of the police has become particularly acute in recent years. In the summer of 2014, an unarmed Black man named Michael Brown was shot and killed by a white police officer in Ferguson, Missouri. Although the officer was eventually cleared (Eckholm and Apuzzo, 2015), a toxic cocktail of historically biased policing (USDOJ, 2015) and the early spread of misinformation about the shooting on social media (Jackson, 2017) contributed to numerous protests—both peaceful and violent, both locally and nationally (Bacon, 2014; Bever, 2014; Holpuch, 2014). Some police advocates warned that such vitriol towards the police was straining police attitudes and causing them to withdraw—a phenomenon that came to be known by terms such as the 'Ferguson Effect' and the 'War on Cops' (e.g. Byers, 2014; ; MacDonald, 2015a, 2015b; Lichtblau, 2016; MacDonald, 2017). A string of controversial police killings since Ferguson has contributed to intense episodic criticism of the police, even leading to calls to eliminate police entirely (e.g. Vitale, 2017). Police leaders have indicated that their officers are demonstrating historic levels of burnout and stress in the face of their diminished respect in society (e.g. Byers, 2015; Martin, 2015), and large police departments have vocalized concerns over increases in officer resignations after community unrest aimed at police throughout 2020 (DeStefano, 2020; Main and Spielman, 2021; PERF, 2021). Both qualitative and quantitative research has supported the anecdotal evidence that officer stress and burnout rose following anti-police protests in 2014 (Deuchar *et al.*, 2019; Marier and Fridell, 2020). Officers identify reform-related pressures (Ortega *et al.*, 2007), general pressures of being under public scrutiny (Antoniou, 2009), and perceptions that accomplishments are not recognized by the public (Cebulak, 2001) as significant sources of stress. Officers, perhaps more than ever, feel that the public and the media combine to create a climate that is anti-police (Saunders *et al.*, 2019). Among the various stressors that officers face, officers identified the media and the socio-political climate—a combination of strained police–community relations, intense media coverage of police misconduct, and intense scrutiny of all police action—as the stressors that have increased most noticeably in recent years (Saunders *et al.*, 2019).

Stress stemming from negative media coverage is not a new phenomenon in policing (Violanti and Aron, 1994), though the force with which negative media coverage highlights public antipathy towards law enforcement may be growing (Saunders *et al.*, 2019). A study of 135 rural police officers found that perceived criticism or negative portrayal in the media was a significant positive contributor to officer stress (Scott, 2004). These findings were echoed in more recent research, which reveals that officers who have negative perceptions of community sentiment towards them also reported higher levels of stress and burnout (McCarty *et al.*, 2019). Similarly, police officers are acutely aware of negative public narratives surrounding public safety work, and these negative public narratives have a significant influence on job satisfaction among officers (Saunders *et al.*, 2019). Among Ferguson-era police officers, hostile media effects contribute to a sense of delegitimization of police and a fear of false

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allegations of officer misconduct (Nix and Pickett, 2017). Officer concerns stemming from hostile media effects may also be associated with officer concerns that crime is rising despite the efforts of police (Nix and Pickett, 2017). In short, low public support for police—experienced through public protests, deteriorating police–community relations, and intense media scrutiny—are an essential understudied source of police officer stress.

Stress and physical health

Stress may be considered a product of experiencing acutely stressful events, a set of circumstances that people would generally agree is stressful, or the combined effects of individual stressors over time (Cohen *et al.*, 1995). In general, stress captures the process that individuals experience when environmental demands exceed the capacity of an individual (Cohen et al., 1995; 2007;). Despite a lack of consensus on the perfect definition of stress, there is a consistent evidence that stress is associated with a variety of negative physical health outcomes (Segerstrom and Miller, 2004; O'Connor *et al.*, 2021) and that stress affects health outcomes in humans through a variety of mechanisms.

At a basic level, stress can influence how effectively the body adapts and responds to change. These changes may stem from a change in habits (e.g. increased smoking, decreased exercise) or a change in environment (e.g. experiencing a traumatic event). To survive, the human body relies on two endocrine response systems—namely, the hypothalamic–pituitary–adrenocortical axis (HPA) and the sympathetic–adrenal–medullary (SAM) system—to releases hormones (e.g. cortisol or adrenaline) efficiently in an attempt to maintain homeostasis in the face of continually changing environments (Cohen *et al.*, 2007; O'Connor *et al.*, 2021). Over time, if there is an imbalance in the release of mediators designed to protect, it can be damaging to physical health (O'Connor *et al.*, 2021; McEwen, 1998). Repeated routine exposure to stressors may lead to 'inefficient switching on and off of stress mediators' (O'Connor *et al.*, 2021, p. 7) or 'mediators failing to mount an adequate response when required' (O'Connor *et al.*, 2021, p. 7) in the face of acutely stressful situations. Long-term exposure to stress negatively affects the cardiovascular, metabolic, neural, behavioural, and cellular systems in individuals (McEwen, 1998). Chronic overuse and dysregulation of systems (SAM and HPA axis) called on to respond to stress increases risk of disease development (McEwen and Seeman, 1999), suppresses immune response (Segerstrom and Miller, 2004), and heightens the likelihood of negative affective states (Cohen *et al.*, 2007), all of which lead to a host of downstream health disorders.

Elevated psychological stress has been linked to cardiovascular (CVD) morbidity (Rozanski *et al.*, 1999), with some research suggesting that high levels of work stress could be associated with as much as a 50% increase in the CVD risk (Kivimäki *et al.*, 2006). In addition, stressful life events are associated with depressive symptoms, as roughly a quarter of individuals who experience extremely stressful events develop depression (Van Praag *et al.*, 2004). Finally, while some evidence is mixed (Duijts *et al.*, 2003; Heffner *et al.*, 2003), recent experimental research on human subjects suggests that stress affects key pathogenic processes related to cancer development (Antoni *et al.*, 2006). Other research indicates that stress may influence asthma, herpes viral infections, wound healing, and autoimmune disease development (Cohen *et al.*, 2007).

Stress and health outcomes among emergency personnel

In addition to the well-established research on psychological stress and physical health, there is considerable research on the relationship between stress and health outcomes among emergency workers and police personnel specifically. Studies of emergency service workers' physical health outcomes suggest that the rigors of shift work, lack of physical activity, and poor nutrition jointly contribute to elevated levels of obesity and cardiovascular health risks or conditions (Faghri *et al.*, 2015; Smith *et al.*, 2019). Police officers who encounter acutely stressful situations experience measurable physiological changes. Officers' physiological responses during simulated police call scenarios suggest that acutely stressful situations result in immense physiological

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activation. Heart-rate variability analysis indicates that more than twice the percentage of officers is at risk for sudden cardiac death compared to the proportion of risk among the general population (McCraty and Atkinson, 2012). Furthermore, officers who experience acutely stressful or traumatic events tend to experience poor sleep quality, a factor often linked to negative cardiovascular health outcomes (Bond *et al.*, 2013; Charles *et al.*, 2011a). These effects are not limited to acutely stressful experiences, as some elements of day-to-day police work, such as seeing abused children, responding to a serious traffic accident, and having seen dead bodies are significantly associated with reduced sleep quality and greater sleep disturbances (Bond *et al.*, 2013).

A retrospective study of 2,376 police officers suggests that officers have a greater risk of CVD and a greater risk of CVD mortality compared to other occupations (Vena *et al.*, 1986). Much of this elevated risk is attributed to higher levels of stress experienced during one's career (Vena *et al.*, 1986). Higher perceptions of stress were associated with higher risk of CVD (Franke *et al.*, 2002) and higher levels of somatization[1] symptoms (Yun *et al.*, 2013) among police officers, and these results are echoed across a variety of other contexts and health outcomes. A Polish study identifies an association between elevated stress levels and the prevalence of metabolic syndrome, which captures a variety of cardiovascular risk factors such as excess body fat, abnormal cholesterol, or increased blood pressure (Janczura *et al.*, 2015). A study of 223 Norwegian police officers found that elevated burnout, often associated with elevated stress, was significantly associated with higher psychosomatic complaints, such as poor appetite, headaches, and pain in the chest (Martinussen *et al.*, 2007). An earlier study supplied similar evidence of the relationship between work stress, higher levels of somatization, and elevated blood pressure among a sample of police officers aged 50 and older (Gershon *et al.*,2002). Similarly, a study of 1,072 police officers who completed detailed questionnaires found that work stress was significantly associated with depression, anxiety, and somatization, or perceived physical dysfunction associated with psychological stress (Gershon *et al.*,2009). Furthermore, officers feeling more intense organizational and administrative pressure experienced a higher number of symptoms of metabolic syndrome (Hartley *et al.*, 2011).

The preceding review can be summarized with a few generalizations. Contemporary police officers have faced substantial criticism in recent years, and while there are reasons to believe that such compromised police–public relationships produce psychological stress among police officers, few systematic studies have explicitly measured this link. Another body of research consistently finds that psychological stress predicts a host of physical health problems. Taken together, the existing evidence specifies a plausible processual chain in which officer perceptions of low public support are associated with stress, which in turn is associated with somatic health complaints among officers.

Current study

Fig. 1 summarizes the relationships we explore in this study. Based on prior research, we propose that: (1) perceptions of low public support are associated with officer stress, (2) stress will subsequently be associated with a variety of somatic complaints among police officers, including sleep disturbances, headaches, gastrointestinal issues, and more frequent or severe upper respiratory infections, and (3) by way of corollary, officer perceptions of low public support will indirectly contribute to somatic health complaints through their impact on officer stress.

Methodology

This study uses survey data and structural equation modelling (SEM) to explore the relationships between perceptions of public support, stress, and somatic health complaints among police officers. The following sections describe the data, variables, and analytic approach used in this study.

[1] Somatization refers to perceived or reported physical dysfunctions associated with psychological distress. This was often measured via the SCL-90 (Derogatis and Cleary, 1977) or adapted Brief Symptom Inventory (Derogatis, 2001), a self-report inventory designed to screen for psychological distress and other psychological disorders.

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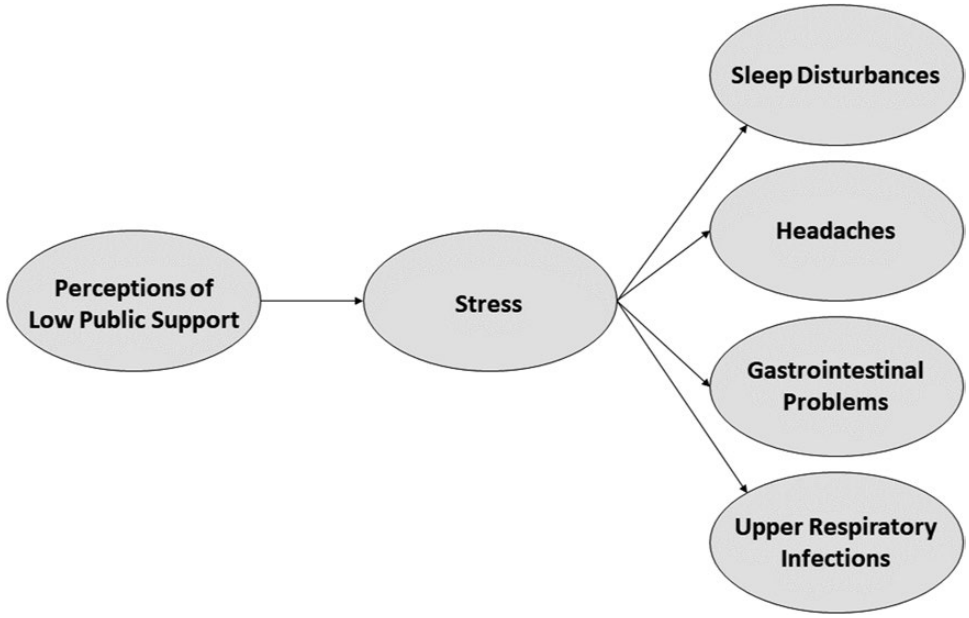

Figure 1: Theoretical framework linking perceptions of low public support to stress and somatic health complaints.

Data

The data used in this study were collected as part of a broader study of officer health and wellness in a southeastern U.S. state conducted in January 2022. The project consisted of a collaboration between university researchers and the state justice academy, at the direction of the police and sheriff training and certification commissions. The survey instrument captured a variety of dimensions of physical and mental health, as well as attitudes about police and the public. The survey was conducted via Qualtrics, a widely used online survey platform. The state justice academy maintains a database of users who have conducted academy and in-service training. All users in the database were emailed an invitation to participate in a survey on 'law enforcement/detention health, fitness, and wellness.' A total of 62,702 invitations were sent and 6,773 responses were received, corresponding to a 10.8% response rate. This number also included corrections officers, non-sworn criminal justice personnel, retirees, and former law enforcement officers, however, none of whom were considered for the present study. In all, 4,398 active-duty law enforcement officers responded to the invitation, of which 4,221 completed the survey and are included in the analyses.

Variables

Dependent variables Four outcomes were evaluated in this study, namely sleep disturbances, headaches, gastrointestinal problems, and upper respiratory infections. These multi-item scales are adapted from the Physical Health Questionnaire, originally developed by Spence *et al.* (1987), and since revised by several others (e.g. Rogers and Kelloway, 1997; Schat and Kelloway, 2000, 2003). These scales have demonstrated good construct validity in prior analyses (Schat *et al.*, 2005). Each of the four variables was measured using three or four survey items using a 5-point response scale. Respondents were asked how frequently a variety of symptoms had occurred in the past year (never, rarely, sometimes, often, or all of the time). See Table 1 for a list of the survey items used to measure each variable.

Mediating variable This study used the Perceived Stress Scale-10 (PSS) to measure overall levels of stress

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Table 1: Measures, constructs, descriptive statistics, and confirmatory factor analysis of study variables

Variables		Descriptive statistics			CFA results		
Construct	Survey Item	Range	Mean	SD	B	β	SE
Sleep	How often have you had difficulty getting to sleep?	1–5	2.696	1.039	1.000	.748	.010
	How often have you woken up during sleep?	1–5	3.293	0.975	0.974	.728	.010
	How often have you had nightmares or disturbing dreams?	1–5	2.080	0.891	0.945	.706	.013
	How often has your sleep been peaceful and undisturbed? (reversed)	1–5	2.853	0.960	0.963	.720	.012
Headaches	How often have you experienced headaches?	1–5	2.494	0.892	1.000	.769	.008
	How often did you get a headache when there was a lot of pressure on you to get things done?	1–5	2.156	0.945	1.183	.909	.006
	How often did you get a headache when you were frustrated because things were not going the way they should have or when you were annoyed at someone?	1–5	2.020	0.915	1.154	.887	.007
GI problems	How often have you suffered from an upset stomach (indigestion)?	1–5	2.296	0.891	1.000	.789	.009
	How often did you have to watch that you ate carefully to avoid stomach upset?	1–5	2.101	1.034	.837	.660	.012
	How often did you feel nauseated (sick to your stomach)?	1–5	1.839	0.725	1.005	.793	.010
	How often were you constipated or did you suffer from diarrhoea?	1–5	2.167	0.890	.891	.703	.011
Upper respiratory infections	How many times have you had minor colds (that made you feel uncomfortable but didn't keep you sick in bed or make you miss work)?	1–5	2.145	0.719	1.000	.734	.016
	How many times have you had respiratory infections more severe than minor colds that laid you low (such as bronchitis, sinusitis, flu, COVID-19, etc.)?	1–5	1.836	0.697	.944	.693	.017
	When you had a bad cold, flu, etc., how long did it typically last?	1–5	1.972	0.765	.800	.587	.018
Stress	How often have you been upset because of something that happened unexpectedly?	1–5	2.414	0.723	1.000	.688	.009
	How often have you felt that you were unable to control the important things in your life?	1–5	2.134	0.883	1.005	.692	.010
	How often have you felt nervous and stressed?	1–5	2.771	0.863	1.114	.766	.007
	How often have you felt confident about your ability to handle your personal problems? (reversed)	1–5	1.882	0.764	0.927	.638	.010
	How often have you felt that things were going your way? (reversed)	1–5	2.573	0.780	0.692	.476	.012
	How often have you found that you could not cope with all the things that you had to do?	1–5	1.847	0.841	1.083	.745	.009
	How often have you been able to control irritations in your life? (reversed)	1–5	2.264	0.816	0.809	.557	.011
	How often have you felt that you were on top of things? (reversed)	1–5	3.715	0.719	1.010	.695	.010
	How often have you been angered because of things that were outside your control?	1–5	2.285	0.836	1.030	.709	.009
	How often have you felt difficulties were piling up so high that you could not overcome them?	1–5	1.959	0.850	1.200	.825	.007
Low public support	Most people respect the police. (reversed)	1–5	2.603	1.053	1.000	.634	.030
	The relationship between my agency and the public is very good. (reversed)	1–5	1.932	0.929	0.932	.591	.028

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Table 1. Continued

Variables		Descriptive statistics			CFA results		
Construct	Survey Item	Range	Mean	SD	B	β	SE
Control variables	Male	0–1	86.1%	–	–	–	–
	White	0–1	84.3%	–	–	–	–
	Age	1–6	2.940	1.127	–	–	–
	Education	1–4	2.712	0.850	–	–	–
	Day shift	0–1	66.6%	–	–	–	–
	Rural agency	0–1	35.5%	–	–	–	–

(Cohen *et al.*, 1983). This measure of stress is much more general than other forms of stress often used in policing research, such as posttraumatic stress (PTSD) or occupational stress and burnout, although variations of this scale have occasionally been used in samples of police officers (e.g. Charles *et al.*, 2011b; Walvekar *et al.*, 2015). It is the most widely used survey instrument for measuring perceptions of stress in the general population. Ten items measure the degree to which respondents assess circumstances and situations in their life as unpredictable, uncontrollable, and overbearing. Responses were recorded using a 5-point Likert scale. The full ten-item instrument appears in Table 1.

Independent variable Two survey items measured officer perceptions of support for the police, each of which was recorded using a 5-point Likert scale: 'Most people respect the police' and 'The relationship between my agency and the public is very good' (Marier and Moule, 2018).[2] Responses ranged from 'strongly disagree' to 'strongly agree.' These items were reverse-coded so that higher scores represented more perceived antipathy for the police (or, put differently, officer perceptions of low public support for police).

Control variables To control for the potentially spurious relationships between personal or work factors and stress or somatic health complaints, several control variables were also modelled, including gender (dichotomous, male = 1), race[3] (dichotomous, white = 1), age[4] (measured on a 6-point ordinal scale), education[5] (measured on a 4-point ordinal scale), shift (dichotomous, dayshift = 1), and rurality (dichotomous, rural = 1).

Analytic approach

SEM was used in this study in order to examine the relationships between perceptions of public antipathy, stress, and somatic health complaints. SEM provides distinct advantages for path analysis, including the simultaneous modelling and estimation of direct and indirect effects (e.g. MacCallum *et al.*, 2000).[6] All analyses were

[2] These items were drawn from a 3-item scale that was originally called 'public antipathy for the police' (Marier & Moule, 2018). While addressing the same underlying concept, we have simplified the language to 'low public support.' The third item was measured but ultimately dropped from this study because of poor fit during CFA. That item read 'The media treat the police unfairly.' CFA suggests that measure may, in fact, capture a concept that is distinct from public antipathy/low public support.

[3] Race response categories included White, Black, Hispanic, or Latino, Hawaiian or Pacific Islander, Native American, and Bi-racial/Multi-racial.

[4] Age response categories included 20–29, 30–39, 40–49, 50–59, 60–69, and 70 or older.

[5] Education response categories included High School, Some College, Associates/Bachelors Degree, and Graduate/Professional School.

[6] In supplemental analyses, we examined a model in which 100% of the relationship between low public support and physical health outcomes operated via stress; that is, a model in which there were no direct effects from perceptions of low public support to physical health outcomes. The coefficients and fit statistics are very similar and statistical inferences were identical.

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performed using Mplus version 8.6. The WLSMV estimator was used given its distinct advantages for categorical/ordinal outcomes (Muthén *et al.*, 2015).

Prior to SEM, confirmatory factor analysis (CFA) was performed to verify the measurement model, which is essential prior to evaluating the structural model (Brown, 2015). Global fit statistics suggested that the model fit the data reasonably well (RMSEA = 0.060, CFI = 0.949, TLI = 0.941, SRMR = 0.034, n = 4,273). Standardized and unstandardized factor loadings are reported in Table 1, in addition to descriptive statistics.

Results

Fig. 2 reports the standardized coefficients of the direct effects. Only the paths of statistically significant relationships are depicted. Control variables were modelled but are omitted from the figure for clarity. All direct effects, including control variables, are reported in Table 2. Global fit statistics indicate good model fit (RMSEA = 0.052, CFI = 0.949, TLI = 0.940, and SRMR = 0.039). With regard to the direct effects, we found evidence for all of the hypothesized relationships in the expected directions. Perceptions of low public support are associated with significantly more stress (β = .335, $p < 0.001$). Stress is associated with a significant increase in sleep disturbances (β = .625, $p < 0.001$), headaches (β = .630, $p < 0.001$), gastrointestinal problems (β = .589, $p < 0.001$), and upper respiratory infections (β = .413, $p < 0.001$). Perceptions of low public support also had small but statistically significant direct effects on sleep disturbances (β = .069, $p < 0.001$) and upper respiratory infections (β = .079, $p < 0.01$) that did not operate via stress.

Indirect and total effects are reported in Table 3. There is evidence for all of the hypothesized indirect effects, at a level suggesting nearly full mediation. All of the total and indirect effects are significant at the $p < 0.001$ level. Stress mediates 74.9% of the relationship between perceptions of low public support and sleep disturbances (β = .209), 90.6% of the relationship between perceptions of low public support and headaches (β = .211), 100% of the relationship between perceptions of low public support and gastrointestinal problems (β = .197), and 63.6% of the relationship between perceptions of low public support and upper respiratory infections (β = .138). Bias-corrected confidence intervals using 5,000 replications were obtained (MacKinnon *et al.*, 2002), and the results provided further evidence that the mediation effects observed here are significant.

Discussion

This study finds that officers' perceptions of low public support are associated with their mental and physical health. Specifically, low public support is associated with overall levels of police stress, which in turn is associated with sleep disturbances, headaches, gastrointestinal problems, and upper respiratory infections. It is therefore the first study to explicitly link the relationship between police and the public with the manifestations of somatic health problems among police officers.

Perceptions of low public support and police stress

Prior research has identified a host of stressors related to police work (Violanti *et al.*, 2017). Despite ample narrative and anecdote, little quantitative, systematic research has explored the relationship between strained police/community relations and police stress. Perceptions among police officers that the public is hostile and unappreciative have been a longstanding concern (e.g. Banton, 1964; Whitaker 1964; Skolnick, 1966; Ahern, 1972). Furthermore, there is a little question that tension between police and the public has been particularly acute in recent years. In 2020, polls found that confidence in the police had reached the lowest levels ever recorded (Brenan, 2021). Vocal protests against the police have occurred nationwide (Bacon, 2014; Bever, 2014; Holpuch, 2014), and some have called for the elimination of American policing entirely (Vitale, 2017). Police leaders say officers are particularly stressed out and demoralized about their eroding support from the public (Byers, 2015; Martin, 2015). In this context, only a single quantitative

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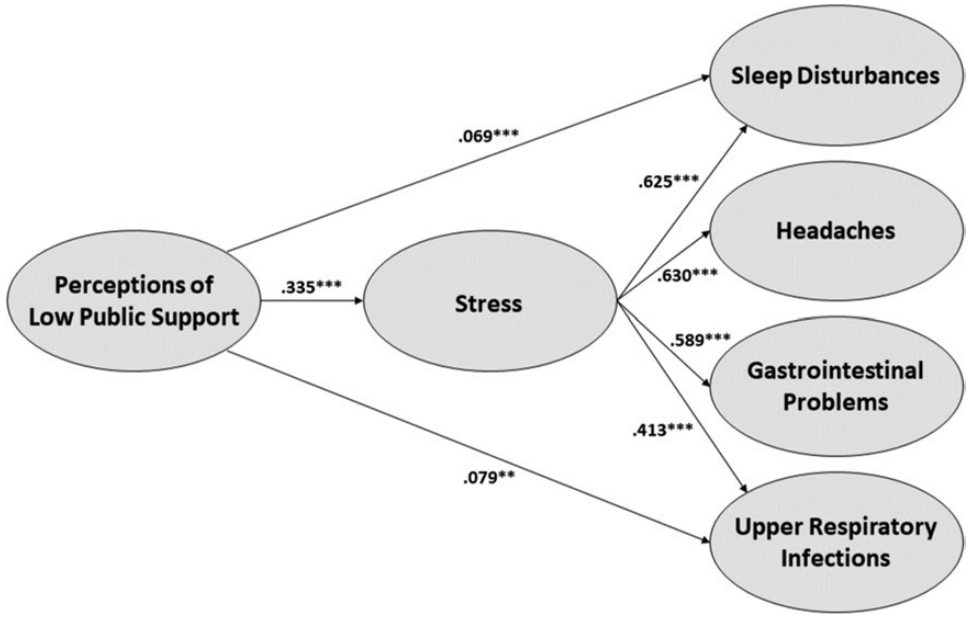

Figure 2: Direct effects of perceptions of low public support and stress on somatic health complaints, standardized.

Table 2: Direct effects of low public support, stress, and covariates on stress and somatic complaints, $n = 4{,}221$

	Stress		Sleep disturbances		Headaches		G.I. problems		Upper respiratory infections	
	β	SE	β	SE	β	SE	β	SE	β	SE
Perceptions of low public support	.355***	.022	–	–	–	–	–	–	–	–
Stress	–	–	.652***	.011	.638***	.011	.589***	.013	.443***	.018
Male	−.289***	.050	−.163***	.043	−.317***	.043	−.197***	.045	−.210***	.054
White	.156***	.044	.001	.039	.062	.037	.149***	.041	.113*	.049
Age	−.111***	.017	.014	.016	−.056***	.014	.041*	.016	.017	.019
Edu	.027	.017	−.023	.015	−.029*	.014	.002	.016	−.039*	.019
Dayshift	.019	.036	−.168***	.032	.097**	.030	−.051	.034	.007	.041
Rural	−.009	.034	−.018	.030	.052	.029	.033	.032	.047	.038

RMSEA = 0.051, CFI = 0.950, TLI = 0.942, and SRMR = 0.039.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

study has explored a relationship between low public support and stress, finding that a form of organizational stress (burnout) was significantly higher among officers after Ferguson protests than before (Marier and Fridell, 2020).

The present study finds that officers' perceptions of low public support are associated with elevated levels of stress among police officers. In addition to the relationships with somatic health complaints discussed below, the finding of a significant

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Table 3: Indirect and total effects of low public support on somatic complaints via stress

	β	SE
Low public support → stress → sleep disturbances		
Total effect	.279***	.023
Indirect effect	.209***	.014
Low public support → stress → headaches		
Total effect	.233***	.023
Indirect effect	.211***	.015
Low public support → stress → GI problems		
Total effect	.197***	.024
Indirect effect	.197***	.014
Low public support → stress → upper respiratory infections		
Total effect	.217***	.027
Indirect effect	.138***	.011

*** $p < .001$.

relationship between perceptions of public support and officer stress is important for several reasons. First, although perceptions of low public support have been particularly acute in recent years, such attitudes are not historically unique; they have been, and will continue to be, present to some degree among many police officers. Second, and relatedly, this study identifies the police/public relationship as an important factor associated with stress among police officers. Most of the research on police stress has focussed on traumatic experiences and organizational dysfunction as sources of police stress, largely ignoring the substantial and complex relationship between police and society.

Police stress and somatic health problems

Research indicates that, compared to other occupations, police officers have relatively poor nutrition and physical activity (Faghri *et al.*, 2015), greater risk of cardiovascular health risks (Smith *et al.*, 2019) and cardiovascular mortality (Vena *et al.*, 1986). Elevated health risks are often considered to be a product of officers facing higher levels of stress throughout their careers; however, only a limited number of studies have explicitly explored the relationship between stress and physical health among officers (see Franke *et al.*, 2002; Janczura *et al.*, 2015). This is somewhat surprising, given evidence that psychological health (including general psychological stress) is significantly related to a variety of physical health outcomes among the general population (Cohen *et al.*, 2007).

This study identifies officer stress as an essential mediating factor explaining the link between public antipathy towards police and negative health outcomes for officers. These negative health outcomes include significantly higher reports of sleep disturbances, headaches, gastrointestinal problems, and upper respiratory infections. In short, poor police–community relations are making officers physically sick, and elevated levels of stress plays an essential role. This is vital information for police organizations and police leaders, as these health problems among officers will also affect absenteeism, job performance, and, most importantly, a host of other long-term health outcomes for officers.

Implications

Stepping back from the multi-step processual chain, this study suggests that physical health could be related to criticism from the public. Some commentators, such as MacDonald (2015a, 2015b), might therefore promote the argument that the public should be more respectful and deferential to police, adding compromised officer health to a long list of negative consequences of criticism of the police (which, according to the argument, also includes de-policing and higher crime). But the right to protest and redress government oversights or shortcomings is a fundamental democratic value. American history has demonstrated that protests against the police happen with some regularity, and it would be naive to expect or demand that they stop simply due to the pleas of a few pro-police pundits. The clear implication, then, is not to suppress criticism, which may motivate institutional changes that improve policing, but rather to develop interventions that can either (1) mitigate the effect of criticism on officer stress or (2) mitigate the effects of stress on officers' physical health.

Police leaders—facing a retention crisis and costs associated with burnt out or physically sick employees at risk of missing work—must consider the protective factors at their disposal to support officers. A wide range of services are available to support officers who face acute challenges or stressors

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(Ramchand *et al.*, 2019). A growing number of departments emphasize support related to general stress and wellness; however, these approaches are found more frequent within larger police departments and the efficacy of these approaches requires more testing. In addition, many of these services are still aimed at responding to officers exposed to acutely stressful situations (Ramchand *et al.*, 2019). To address this service need, there may be opportunities for departments to bolster mindfulness-based stress reduction (MBSR) programmes. Evidence from research across a variety of subjects suggests that MBSR can enhance one's ability to cope with routine stressors as well as situations that introduce more extraordinary or acute stressors (Grossman *et al.*, 2004). MBSR interventions in policing, though limited in their testing, have been shown to significantly reduce feelings of general stress and sleep disturbances, and these results are tied to positive changes in different facets of mindfulness, such as acting with awareness and non-judging approaches (Hoeve *et al.* 2021).

Beyond enhancement and systematic study of formal support systems, our results should lead to greater consideration of the informal means through which organizations and police leaders can support officers. First, police leaders can work to enhance peer and social support networks within their departments. Ramchand *et al.* (2019) highlight the importance of peer support programmes as an informal, proactive path to identifying and supporting at-risk officers, as well as a path to decreasing stigma around seeking help for mental health concerns among police officers.

Second, leaders play an important role in clarifying and directly providing social support to officers that may effectively buffer the effects of stress on physical health outcomes (Karasek *et al.*, 1982). In this context, feelings of social support could dampen the effects of public antipathy on stress or, alternatively, stress on health outcomes. Perceived social support—from co-workers, supervisors, or family and friends—has been found to reduce the strength of stressors themselves *and* disrupt the connection between stressors and negative individual responses (Viswesvaran *et al.*, 1999). Police leaders must play an essential role in providing this support, as evidence suggests that supervisor support plays an essential role in buffering against job stress and burnout (Baruch-Feldman *et al.*, 2002), whereas support from family and friends may effectively buffer against more general psychological stress (Cullen *et al.*, 1985). However, feeling support from *multiple* sources, rather than just one source, may be most effective for health and wellbeing (Hämmig, 2017). The current study, while relying on a measure of general stress, enhances our understanding of socio-political factors as an evolving source of officer stress (see Saunders *et al.*, 2019, as well). Supervisor and social support may be required to confront sources of stress that are felt both on and off the job.

Finally, police leaders must assist in creating an organizational culture that encourages officers to recognize and vocalize the detrimental effects of their own stress, making it more likely that officers are comfortable utilizing formal support resources. Overcoming the stigma related to mental health—particularly for scenarios *aside* from those that fall under critical or acute incidents—may make officers hesitant to seek support (Soomro and Yanos, 2019). Officers report concerns that negativity surrounding mental health concerns from senior management introduces concerns that any emotional response to stress could be perceived as weakness and hinder career advancement (Edwards and Kotera, 2021). Police leaders, through supporting officers and leading by example in discussing their own experiences with stress, are in a position to directly address this stigma.

Strengths, weakness, and future research

This study was made possible through collaborative practitioner–researcher partnerships between university researchers, the state justice academy, and the state commissions overseeing police and sheriff standards and training. This section shares some details of the collaboration, which provided several advantages (and some disadvantages) that may inform other research partnerships and research designs. This study was part of a larger project that was initiated at the behest of a curriculum developer and instructor at the state justice training academy whose area of expertise was officer health, exercise,

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and wellness. The practitioner's primary goal was to evaluate any linkages between physical fitness and a variety of police outcomes. It is important to note that, despite not previously knowing the eventual co-authors of this study, the academy instructor reached out to researchers at their previous undergraduate university—illustrating the opportunities for both practitioners and researchers when strong networks are developed between institutions of higher education (or specific departments) and their alumni.

During the initial stages of research project development, legislation was passed in the state mandating that the state commissions on police and sheriff standards and training jointly direct a study on the benefits, if any, of physical fitness standards for law enforcement personnel—and to present the findings of such a study to a legislative oversight committee. The stated objective was to determine what policies might be enacted, whether implemented through legislation or directives from the standards and training commissions, to improve policing via officer health and fitness. Given the work already underway by the authors of this study, the chairs of the police and sheriffs training and standards commissions joined the collaboration. In addition to addressing the legislative directive, this larger collaboration led to additional research objectives important to criminal justice practitioners—including development of a survey of agency heads to identify existing practices and core concerns, as well as the relationship between wellness, fitness, attrition, and retention. Though not part of the legislative directive, stakeholders identified psychological health—not just physical health—as critical to effective police service. While many of the research questions are not addressed in the present study, they are mentioned to illustrate the iterative, collaborative process that simultaneously contributed to a body of scientific research, as well as provided CJ leaders and practitioners with objective, current, and actionable data necessary for policy decisions. The present study, for instance, emerged from discussions with the practitioners about the ways in which current public sentiment about the police might be affecting officers' mental and physical health and police performance, which police leaders identified as a major concern.

Perhaps the greatest advantage afforded by the collaboration from the researchers' perspectives was a convenient, no-cost, representative, and exceptionally large sampling frame of law enforcement officers. Most law enforcement and detention officers in the state have participated in pre-service or in-service training through the state justice academy, and the state maintains a database of these students that includes email addresses. While this database includes a mix of law enforcement officers, detention officers, non-sworn employees (e.g. communications personnel), and former employees who have since retired or separated from service, researchers were able to send digital survey invitations to over 60,000 CJ personnel and obtain over 6,000 responses—providing us with one of the largest LEO survey samples ever collected. In addition, given the widespread reach of the state justice academy, the respondents may be more representative of the 'average' officer in the state, since they are not concentrated among a particular agency, geographic region, agency size, or agency type. Furthermore, the practitioner partners afforded the research project a good deal of legitimacy among notoriously sceptical officers. Not only did the survey invitation come from the justice training academy but also the chairs of the CJ and sheriff's standards and training commissions contacted agency leaders ahead of time, informed them of the research project, asked them to notify their officers, and encourage them to complete the surveys, and in the process established legitimacy and buy-in.

However, a clear challenge emerged with the research design: because invitations were emailed to an unknown mix of sworn and non-sworn, active and former, and law enforcement and detention officers, the response rate of active-duty law enforcement officers specifically is indeterminable. Officers experiencing more stress or physical health problems were almost certainly less likely to take time to respond to an unsolicited survey than healthy officers; if true, the model may systematically underestimate the strength of the relationships involved. While our sample closely resembled the ratio of male to female officers in the state, our respondents were somewhat more likely to be White (86.1% sample versus 80.2% statewide; USDOJ, 2011). While we control for these measures, it is likely that

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other, unmeasured differences between our sample and the population of officers also exist. Survey methodologists emphasize that there is no minimum response rate considered to be 'acceptable,' and therefore our findings ought to be interpreted with appropriate caution (Groves, 2006; Peytchev, 2013; Nix *et al.*, 2019).

An additional challenge was the state-imposed deadline established by the legislative directive, which provided approximately six months from concept to final report. This time crunch necessitated another compromise, and potential weakness, of the present study: the cross-sectional surveys limit causal inference in a way that time-series designs and intervention evaluations do not. It is plausible, for instance, that overall levels of stress distort officers' perceptions of public sentiment, rather than vice versa. It is also plausible that physical health problems produce stress, making this association bi-directional.

Future research, in addition to remedying the noted weaknesses of this study, could build on this research in several ways. First, future research should continue to consider police–public relationships as a source of police stress. A respectable body of research frequently identifies exposure to violence and organizational dysfunction as sources of police stress. Yet, despite its emphasis in the earliest descriptions of police work (e.g. Banton, 1964; Whitaker 1964; Skolnick, 1966) and editorials by police leaders (e.g. McGuire, 1979), almost no modern, systematic, quantitative research explicitly explores how tension between officers and their communities contributes to officer stress. Second, future research should continue to explore the linkages between officers' physical health and stress among police officers specifically. An enormous body of health research has identified a link between psychological health and physical health among the general public; however, only a few have done so with police, and most explore cardiovascular disease or risk. Given evidence that police officers are physically less healthy than the general public, and yet work a job with the potential for substantial physical demands, the connection between psychological wellbeing and physical health, controlling for pre-existing health conditions, deserves more attention than it has heretofore received. Finally, the bulk of police stress research focuses on post-traumatic stress and organizational stress. These are undoubtedly highly relevant forms of stress for officers, but the more generalized forms of stress operationalized in this study must be given more consideration.

Conclusion

As an institution, policing encountered more public critique in recent years than ever before. During this time, officer stress reached similarly newfound heights. Police organizations feel the effects of these trends in the forms of understaffed precincts, growing costs to recruit and train new officers, and concerns about their ability to repair police–community relations. The present study responds to these issues by examining the effects of public antipathy towards police on officer stress, and, subsequently, officer stress on individual officer health outcomes. Results of SEM analyses reveal that, at the officer level, psychological stress mediates the relationship between perceived low public support of police and officer health outcomes. In other words, officers are genuinely worried sick about low public support or public antipathy towards police. Given this, the paper provides recommendations to police leaders that may help to mitigate the effects of perceived low support on officer health. These recommendations include bolstering formal and informal support systems to confront the effects of general psychological stress. We hope that future research will continue to evaluate the effects of—and effectiveness of responses to—declining police–community relations and growing psychological stress in policing.

Supplementary Material

Supplementary material is available at *Policing* online.

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