Stressors and Associated Health Effects for Women Police Officers

in

"Dying for the Job"

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Brief History of Police Women

Women have been a part of law enforcement for over one hundred years (Kruger, 2007). The New York City prison system hired "police matrons" in 1845 to protect female prisoners, prepare paperwork and answer telephones (Kruger, 2007). In the 1910s, the first female police officers were hired (Kruger, 2007). With the passage of Title VII of the 1964 Civil Rights Act and subsequent amendments, state and local governments provided more equal opportunities for women in law enforcement (Kruger, 2007). As a result, a steady increase in the number of women officers was found from 1972 to 1999 with female officers gaining approximately half a percent each year in large agencies: 2.0% to 14.3%, followed by a slight decline from 1999 to 2001 (down to 12.7%) (National Center for Women and Policing, 2002). The latest statistics (1987-2007) from the U.S. Department of Justice, Bureau of Justice Statistics provides a more in-depth picture by type of agency. Representation of female officers in local police departments (regardless of population size) gained about half a percent each year from 1987 to 2007 from 7.6% to almost 12% (Langton, 2010). However, over the same time period, a nominal increase occurred in state police departments and federal agencies (3.8% to 6.5%), while a slight decline occurred in sheriffs' departments (approximately 12.5% to 11.2%) (Langton, 2010). The majority of the largest local police departments in the U.S. and the largest federal law enforcement agencies reported steady but small increases in the percentage of female officers over a ten-year period from 1997 to 2007 (Langton, 2010).

The representation of female racial minorities in policing is relatively low. In 2003, approximately 11.3% of police officers in local police departments were female, of whom 7.0% were white, 2.7% were black, 1.3% Hispanic, and 0.3% other (includes Asian, Native Hawaiians, Pacific Islander, American Indians, Alaska Natives and any other race) (Hickman & Reaves,

2006). The number of female officers decreased with decreasing population size; the same trend is true for minority female representation. In the largest local police departments (serving 1,000,000 or more residents), the percentage of female officers was 17.3% of which 9.4% were minority women. For medium sized local police departments (50,000 – 99,999), the percentage of female officers was 8.8% of which 2.1% were minority women. In the smaller sized local police departments (2,500 – 9,999), the percentage of female officers was 6.2%; 0.9% of that proportion was comprised of minority women (Hickman & Reaves, 2006). Women comprise nearly 50% of the general U.S. workforce with 8.8% being minority women (U.S. Bureau of Labor Statistics, 2004).

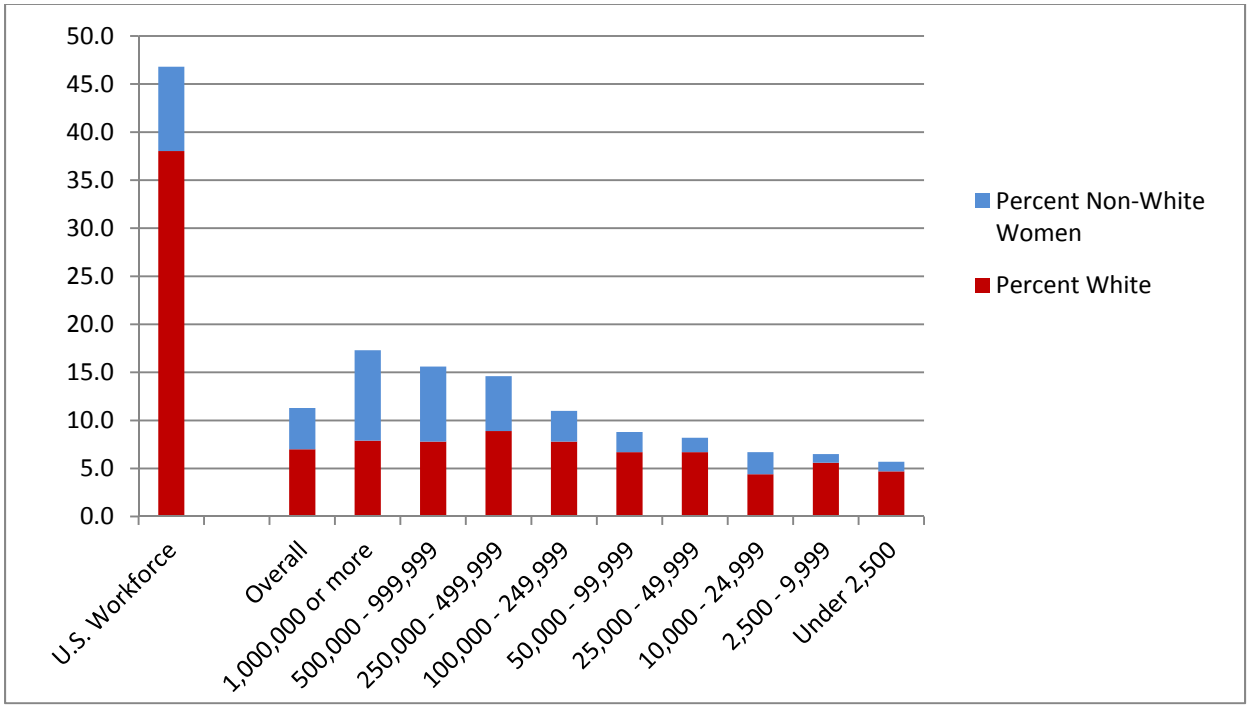

Figure 1. Female racial minorities in the U.S. workforce and in law enforcement by population size served in 2003. Source: Bureau for Labor Statistics, 2003 and Bureau of Justice Statistics, 2006.

Few women officers are in the top policing positions. According to a report from the National Center for Women and Policing (2002), women are more likely to hold lower ranking positions than men: Line Operations, 13.5% women, 86.5% men; Supervisory: 9.6% women, 90.4% men; and Top Command: 7.3% women, 92.7% men. Of the 247 agencies surveyed, 56% had no women in the Top Command positions and 88% had no women of color in the Top Command positions (NCWP, 2002). These data represent the large police agencies (100 or more sworn officers). Since women officers represent an even smaller percentage of officers in small agencies (fewer than 100 sworn officers), the percentage of women holding top positions is also likely to be much smaller. Of the women in 235 small and rural police agencies surveyed, 9.7% held Line Operation positions, 4.6% of Supervisory positions and 3.4% of Top Command positions (NCWP, 2002). The overwhelming majority (97.4%) had no women in the Top Command positions (NCWP, 2002).

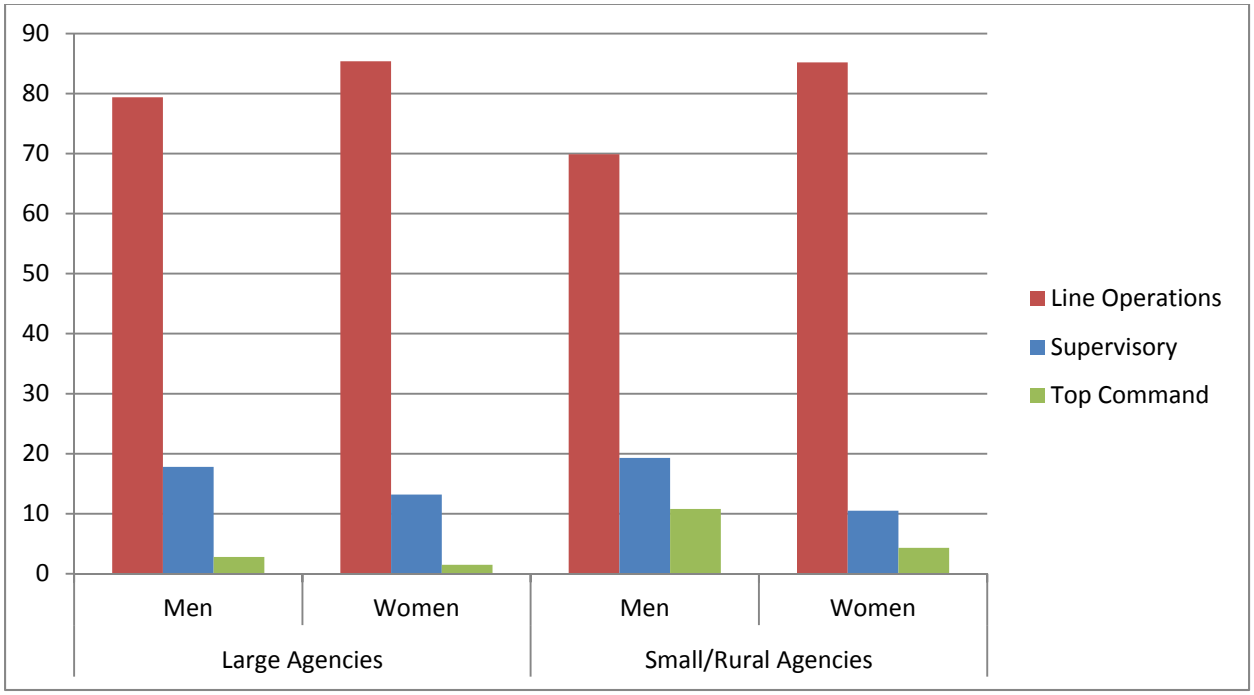

Figure 2. Percentage of men and women officers by police rank and agency. Source: NCWP, 2002.

Given the lack of female officers in law enforcement agencies, it is not surprising that policing has long been labeled a 'male-dominated occupation.' Prior research has identified specific sources of stress associated with being female in a male-dominated workplace. We will discuss several of these stressors.

Sources of Stress for Female Police Officers

Regardless of gender, there are well-documented aspects of policing that are stressful including erratic work hours, mandatory night shift, confronting death and violence, the threat of physical danger, and working with the public (Gershon, Barocas, Canton, Li & Vlahov, 2009; Violanti & Aron, 1994). Research to identify sources of workplace stress specific to female officers is limited. In their study of Norwegian police officers, Berg and colleagues (2005) found that female officers experienced fewer job stressors than their male counterparts; however, they appraised these stressors as being more severe than men. Gershon et al. (2009) reported similar levels of perceived work stress among 1,072 male and female officers from the Baltimore, MD Police Department. The sources of stress may be different. Morash, Kwak and Haarr (2006) found the female officers reported significantly higher levels of harassment, bias, underestimation of physical abilities and lack of influence than their male counterparts. These and other potential sources of stressors specific to police women are described below.

Are police women as skilled and able to perform the same policing duties as police men?

Despite research confirming that women are as capable as men to serve as police officers (Dejong, 2005), early debates centered on their physical strength and their skills and abilities to maintain authority (Morash, Kwak & Haarr, 2006).

> "Simply stated, the presence of women in law enforcement indicated that the profession cannot be that demanding and physically challenging if females can successfully do the job" (Seklecki & Paynich, 2007).

Much of this criticism against women in policing has come from their male counterparts. More recently, the focus of this criticism seems to have shifted from lack of physical abilities to psychological and emotional weakness (Gosset & Williams, 1998; Seklecki & Paynich, 2007). Either criticism creates unnecessary stress for female officers.

Seklecki and Paynich (2007) surveyed over 500 female officers from randomly selected police agencies across the U.S. using the National Directory of Law Enforcement Administrators, Correctional Institutions, and Related Agencies database. They found that nearly 40% of women felt they were made to feel less welcome than men and over 30% said they were treated worse than men during their rookie years. Gossett (1996) reported that female officers in the Dallas-Fort Worth area identified stressors on the job as treatment by male officers and supervisors, the need to prove themselves, and difficulties with promotion .

In their study of Australian female police officers, Thompson and colleagues (2006) found that interpersonal stressors, including lack of colleague support, contributed significantly to their stress levels. Lack of colleague support is particularly problematic in terms of psychological well-being. Families and non-police friends may not understand the types of

situations an officer experiences and describing these experiences may create additional fear and worry for their loved ones. A fellow officer is in the best position to comprehend and support their colleague (Waters and Ussery, 2007).

In addition to the psychological reaction, not “fitting in” can also be a safety issue in policing. Female officers have reported that their male counterparts fail to provide adequate backup and protection and have questioned their abilities as a police officer (Haarr, 1997). Police solidarity is an important component of safety, yet female officers may feel isolated from coworker support (Shelley, Morabito & Tobin-Gurley, 2011).

The need to fit in creates a dilemma for female officers. On one hand, women are not expected to act like men as this would be seen as breaking away from the traditional female stereotype. At the same time, women must perform duties as well as or better than their male counterparts (Seklecki & Paynich, 2007). Female officers may become fearful of making mistakes and develop a fear of failure (Wertsch, 1998). Also, a mistake by one female officer may be extended to all female officers in that unit or department (Martin & Jurik, 1996).

In addition, the duties for female officers are likely to be different than those for male officers. Female officer duties are more likely to include paperwork, community relations, training and non-emergencies (Brown & Fielding, 1993; Dick & Jackowicz, 2001) and they have become the unofficial subject matter experts on domestic and child abuse (Wertsch, 1998; Westmarland, 2001). Male officers are assigned to more danger-prone situations, including violent crime and emergency response (Brown & Fielding, 1993; Dick & Jackowicz, 2001; Wertsch, 1998). This imbalance provides fewer opportunities for female officers to gain experience and advance in their policing career (Brown & Fielding, 1993; Dick & Jackowicz, 2001).

Police officers are public servants; their job requires considerable "face time" with the community. While few in number, prior research has shown that, in general, the public is supportive of female officers (Schuck & Rabe-Hemp, 2007). This may be true for two different reasons. Perpetrators may be more fearful of a female officer's reaction to a potentially dangerous situation than male officer's reaction. According to Johnson (1991),

> "(S)everal police women remarked that when a male perpetrator is arrested by a male officer the male ego is challenged – battle lines are immediately drawn…It was also noted that some male offenders comply because they assume that since the woman officer does not have the body strength, she is more likely to use the gun or they believe that women with guns are unpredictable."

Conversely, some have suggested that women may be better at policing than men due to fewer citizen complaints, excessive force liability lawsuits, and allegations of excessive force (Schuck & Rabe-Hemp, 2007). In interviews with female officers, Johnson (1991) found that women felt that having better communication skills compensated for their lack of physical skills. Schuck and Rabe-Hemp (2007) raised caution in suggesting that women are better than men because that perception creates unrealistic expectations for female officers which may have similar consequences as the earlier assumptions that women could not perform police work.

Do police women experience harassment and sexism during recruitment, hiring and promotion?

Sexual harassment and sexual discrimination are two large sources of stress for female officers. Previous research on stress and gender indicates that interpersonal issues, that is, lack of

co-worker support, sexual harassment, discrimination, conflict and lack of confidentiality, are significant stressors for women officers, who rate emotional support as more important than men (Deschamps, Paganon-Badinier, Marchand & Merle, 2003; Thompson et al., 2006).

In their study of police officers from New York City, NY, Oakland, CA and San Jose, CA, Liberman et al., (2002) found that while routine work stressors were similar among male and female officers, women and minority officers reported a more discriminatory work environment.

Morash, et al., (2006) found that female officers experienced significantly more problems with sexual harassment, bias, and underestimation of their physical ability than male officers. Several prior studies have reported that the majority of female officers have experienced sexual discrimination (Greene & del Carmen, 2002; Chaiyavej & Morash, 2008). Even more troublesome is that this behavior is often tolerated, ignored or endorsed among organizational subcultures (NCWP 1999). When Hassell and Brandl (2009) found that the least common workplace stressor for officers in their study was sexually offensive behavior, they offered potential explanations for this contradictory finding: police women may view sexual harassment as "the price of fitting in" or they may simply handle the situation. Either way, it is troublesome that this behavior was accepted.

Are the expectations for police women different than those for police men?

Policing requires some of the longest and most inflexible work hours during childbearing and child-raising years. Consequently, female officers may postpone or forgo having children (Mason & Goulden, 2004) or they may choose to forgo career advancement in order to start and care for a family (Whetstone, 2001).

Women officers who decide to have children may qualify for the Family and Medical Leave Act of 1993 (FMLA). However, there is no standard policy in place for police women during their pregnancy. Under FMLA, the officer may qualify if she develops complications during pregnancy (i.e. serious health condition). Otherwise, she may be expected to continue in her current position. Schulze (2010) found that only 13% of police agencies surveyed had a leave policy in place for pregnant officers and these policies varied considerably. For example, five of the 203 agencies surveyed permit additional time off in excess of the FMLA, while the New York City Police Department provides up to one year of unpaid child care, up to eight weeks of paid leave and an optional maternity uniform for pregnant officers (Schulze, 2010).

Certain exposures aligned with policing may pose significant health risks to the officer and her unborn child. Shift work and long work hours have been associated with preterm birth (Bodin, Axelsson & Ahlborg, 1999). Pregnant officers are more susceptible to adverse health effects from occupational chemical exposure (i.e. heavy metals, organic solvents, pesticides) and physical hazards (radiation, trauma, noise) (Czarnecki, 2003). For example, lead exposure during pregnancy is associated with preeclampsia, spontaneous abortion, premature membrane rupture, and neurobehavioral effects in children (Gardella, 2001; Winder, 1993). In addition to lead, firearms training exposes officers to other metals like copper, arsenic and barium, which could lead to harmful health effects (Dams et al., 1988), and to firearms cleaning products, which often contain organic solvents known to have teratogenic effects (Czarnecki, 2003). Police officers are exposed to high noise levels during firearms training, when using vehicle sirens and in traffic. The known effects of noise exposure on pregnancy are well-documented and include preterm delivery (Nurminen, 1995; Zhan et al., 1991), miscarriage (Zhan et al., 1991; Zhang, Cai & Lee, 1992), intrauterine growth retardation (Nurminen, 1995) and hypertension (Zhan et al., 1991).

To reduce these potential exposures and related health effects, some agencies either place pregnant officers on 'light duty,' administrative duties that do not require them to perform the typical physical duties and mandatory overtime, or prohibit pregnant officers from working in a 'uniformed capacity' (Schulze, 2010). Still other agencies deny work limitations or light duty to pregnant officers. Officers in advanced pregnancies may have difficulty wearing their bullet-proof vest or reaching for their weapon (Shelley, et al., 2011).

Returning to work following the birth of a child may also be a source of stress for female officers. Considerable attention has been raised regarding the issue of work-life balance (positive) or work-life conflict (negative). Being a police officer requires availability and flexibility. Shift work and long working hours can disrupt an officer's ability to have a normal family life (Davey, Obst & Sheehan, 2001). Women who have traditionally had more domestic responsibilities may find the 'balance' to be their greatest stressor (He, Zhao & Archbold, 2002). Women may be more likely to experience feelings of abandonment and neglect (mother's guilt) and pressure from coworkers and the public to conform to traditional family roles (i.e. staying at home) (Schulze, 2010). Police women who are already mothers may face discrimination when applying for employment, as police work requires substantial flexibility in scheduling (Correll & Benard, 2007).

Among all police women, are there certain groups who may be more adversely affected by occupational stressors?

The stressors discussed above represent examples for all police women. In our review of the literature, two groups of police women were identified who may be more adversely affected by these stressors. We briefly discuss each.

As described earlier, many of the smaller and more rural police departments have a low percentage of women officers (6.2%). Krimmel and Gormley (2003) found that when the percentage of women in a department is less than 15%, female officers have lower levels of job satisfaction, higher levels of work-related depression and lower self-esteem. This may be due to the fact that the frequencies of stressors are increased or because they lack support from coworkers and the administration. Belknap and Shelley (1992) commented that,

> "[P]olicewomen in departments in which policewomen make up a smaller percentage of the department are expected to face more resistance than policewomen in departments where policewomen make up a larger percentage of the department."

Women in smaller police agencies were more likely to perceive gender differences in policing styles and the percentage of women officers is significantly related to these perceptions (Belknap & Shelley, 1992; Greene & del Carmen, 2002).

Minority police women experience both sexual and racial discrimination (Dodge & Pogrebin, 2001; Haarr, 1997; Hassell & Brandl, 2009; Taylor Greene, 2000). In their study of 1,191 police officers from the Milwaukee Police Department, Hassell and Brandl (2009) found that white, black and Latina female officers had more negative workplace experiences than white male officers. In addition, black and Latina female officers had higher stress levels than white male officers. In a qualitative study of urban police officers, Dodge and Pogrebin (2001) found a variety of stressors experienced by black female officers. Among these were struggles to fit it with other women officers or other black officers. Black women felt they needed to work twice as hard as their white female counterparts for recognition (Dodge & Pogrebin, 2001). They also

felt unsupported by their black male counterparts who seemed self-interested in fitting in with white male officers and who thought showing support for black females would prohibit their own inclusion (Dodge & Pogrebin, 2001).

Health Effects of Stress on Female Police Officers

Research investigations examining the association between police stressors and health outcomes, including psychological and physical health, in female police officers are rare. Many studies have included only male officers (Garbarino et al., 2011) or did not compare differences in men and women (Arial, Gonik, Wild & Danuser, 2010; Collins & Gibbs, 2003; Davey et al., 2001; Gershon et al., 2009). In studies including only male officers, the interpretation of associations of interest may be extended to women officers. In studies including both men and women, the sample size for female officers tends to be small which makes detecting significant differences problematic.

Stress and Psychological Health

In general, stress-related mental ill-health has worsened for police officers over the past two decades (Collins & Gibbs, 2003). Results from studies examining sex differences in the association between stress and psychological health are mixed.

Yoo and Franke (2011) compared measures of psychological distress between female and male police officers in Iowa. Female officers had significantly higher levels of perceived stress, higher job demand with lower job control (i.e. job strain), more fatigue and exhaustion (i.e., vital exhaustion), and felt they put forth more effort with fewer rewards (i.e., effort-reward imbalance) than the male officers (Yoo & Franke, 2011). In a study of Baltimore, MD police

officers, He and colleagues (2002) found that female officers had significantly higher levels of somatization (i.e., psychological distress from perception of cardiovascular, gastrointestinal, or respiratory disorders) and depression compared to male officers. For male officers both work environment and work-family conflict were significant predictors of somatization, anxiety and depression, yet for female officers only work-family conflict significantly predicted these health outcomes (He et al., 2002).

Prolonged occupational stress due to emotional and interpersonal interactions can lead to symptoms of burnout symptoms, such as depersonalization, emotional exhaustion, and reduced professional efficacy. These symptoms may in turn have negative consequences for both the individual and the organization (Maslach, Schaufeli, & Leiter, 2001). Martinussen and colleagues (2007) examined work and non-work stressors and their association with burnout in a sample of Norwegian police officers. Burnout scores were similar for male and female officers; both work-home pressures and lack of support were associated with all three dimensions of burnout (Martinussen, Richardsen & Burke, 2007). As described above, both work-family balance and lack of coworker support are substantial sources of stress for female police officers.

Another negative health outcome that female officers may experience is posttraumatic stress disorder (PTSD). PTSD is an anxiety disorder that occurs following a tragic event (http://www.nimh.nih.gov/health/publications/post-traumatic-stress-disorder-ptsd/nimh_ptsd_booklet.pdf). Symptoms of PTSD must occur for at least one month and include re-experiencing symptoms (i.e. flashbacks, bad dreams), avoidance symptoms (i.e. feeling emotionally numb, losing interest in activities), and hyperarousal symptoms (i.e. easily startled, having trouble sleeping) (http://www.nimh.nih.gov/health/publications/post-traumatic-stress-disorder-ptsd/nimh_ptsd_booklet.pdf). Several studies of PTSD in the general population have

reported that women have higher rates of PTSD when compared to men (Breslau, Davis, Andreski, Peterson & Schultz, 1997; Kessler, Sonnega, Bromet, Hughes & Nelson, 1995); the difference is not entirely due to greater exposure to sexual assault in women (Pole et al., 2001).

PTSD can be a reality for police officers who are confronted with violent and tragic events in their jobs, a situation somewhat similar to the military. Reports on gender differences in PTSD among the military are somewhat mixed. Some studies indicate that female veterans have higher rates of PTSD than male veterans (Stretch, Knudson & Durand, 1998; Wolfe, Brown & Kelley, 1993), whereas others report no gender differences (Sutker, Davis, Uddo & Ditta, 1995), or even lower prevalence rates of PTSD among female veterans when compared with their male counterparts (Kulka et al., 1990). Studies have examined the association between traumatic police events and PTSD but very few have examined whether there are differences between male and female officers. Following the 1998 fire at a gathering place in Sweden which claimed the lives of 63 teens, Renck and colleagues (2002) measured PTSD symptoms in 41 police officers who were either at the scene of the fire or at the hospitals where the injured were transported. They found that female officers, while small in number (n = 5), had higher levels of intrusive thoughts (one component of PTSD) than male officers (Renck, Weisæth & Skarbö, 2002).

Among 655 police officers (519 men and 136 women) from three large U.S. metropolitan areas, there were no significant differences in PTSD symptoms by sex (Pole et al., 2001). Pole and colleagues (2001) suggest that training factors along with selection into policing may help protect female officers from the increased vulnerability to PTSD found in the general female population. In addition to this inoculation factor, coping mechanisms may also play an important role in reducing the risk. While in general male and female officers may have similar levels of

police stress, the way in which they cope with stress may be different (Haarr & Morash, 1999; He et al., 2002). Martinussen and colleagues (2007) suggest that female police officers may use more active coping mechanisms to help them deal with negative situations. He and colleagues (2002) found that female officers used significantly more constructive coping than male officers: making a plan of action and following it, 48% vs. 44%; talking with family and friends, 52% vs. 37%; praying for guidance and strength, 59% vs. 29%; and relying on faith, 62% vs. 35%. Use of constructive coping was found to reduce depression in female officers (He et al., 2002).

Stress and Cardiovascular Disease

Cardiovascular disease (CVD) has been and continues to be the leading cause of death for women in the United States (http://www.cdc.gov/women/lcod). Psychological stress has been independently associated with increased risk for CVD (Rozanski, Blumenthal & Kaplan, 1999; Tennant, 2000). Like other health effects, the association between work stress and CVD is understudied in female officers. Below are brief summaries from the few published studies we identified with CVD, CVD risk factors and subclinical CVD as the outcome.

One of the more recent studies of the health effects of policing on women was by Yoo and Franke (2011). Using self-report questionnaires, police women had a significantly increased prevalence of hypercholesterolemia, a known independent CVD risk factor (Ridker, Rifai, Cook, Bradwin & Buring, 2005), compared to a civilian cohort matched on age, race, and socioeconomic status (46% vs. 29%) (Yoo & Franke, 2011). They found that both occupation and gender were significant predictors of perceived future ill health (Yoo & Franke, 2011). Two-thirds (68%) of the female officers surveyed felt that being a police officer and 42% felt that being both a police officer *and* being female increased their risk of chronic disease (Yoo &

Franke, 2011). Importantly, those female officers who reported that being an officer contributed to their chronic disease risk were more likely to be overweight or obese, have higher levels of perceived stress, job strain and effort-reward imbalance, and lower social support than those who reported the opposite (Yoo & Franke, 2011). The findings were similar for those who reported being a *female* officer contributed to chronic disease risk with the addition of significantly higher CVD symptoms or history than those who reported the opposite (Yoo & Franke, 2011).

In the BCOPS Study, a significant association was found between workplace stress and the metabolic syndrome (MetSyn) in female but not in male officers (Hartley, Burchfiel, et al., 2011). The MetSyn is a group of risk factors, including abdominal obesity, elevated triglycerides, hypertension, glucose intolerance and reduced high density lipoprotein cholesterol, that has been shown to increase risk for developing CVD and diabetes (Grundy et al., 2005). MetSyn scores range from 0 to 5 with scores of 3 or more indicating presence of MetSyn (Grundy et al., 2005). Using the Spielberger Police Stress Survey, positive and significant associations were found for all three types of police stressors in women: organizational stressors, physical and psychological threats, and lack of support, with the number of MetSyn components and specifically with higher odds of having abdominal obesity and reduced HDL-cholesterol (i.e. "good" cholesterol).

Adding to the findings of this study, the association between MetSyn and subclinical CVD was examined in the same BCOPS Study cohort. Carotid intima media thickness (IMT), measured non-invasively with B-mode ultrasound, was used as the measure of sublinical CVD (Riley, 2002). Prior studies have indicated that the association between MetSyn and carotid IMT is stronger in women than in men (Iglseder, Cip, Malaimare, Ladurner & Paulweber, 2005; Kawamoto, Tomita, Inoue, Ohtsuka & Kamitani, 2007). A positive and significant association

was found between MetSyn and carotid IMT in female but not male officers (Hartley, Shankar, et al., 2011). Importantly, carotid IMT was significantly higher among women officers who had either hypertension or reduced HDL-C (Hartley, Shankar, et al., 2011).

In addition to using questionnaires, psychological stress can also be assessed objectively through analysis of salivary cortisol. Cortisol is an important glucocorticoid hormone that can measure the body's physiological reaction to stress. Cortisol levels rise when the body reacts to an environmental or physiological event, like waking up in the morning, or when it is exposed to a potentially stressful situation, such as being involved in a high-speed chase. Once the situation is over, the increased secretion of cortisol ends and cortisol output returns to normal. Cortisol can be measured non-invasively from samples of blood or saliva. In the BCOPS Study, the association between salivary cortisol levels at awakening and brachial artery reactivity (BAR) was examined. BAR measures the function of the endothelium or lining of blood vessels using flow-mediated dilation (FMD) via ultrasound (Corretti et al., 2002). Dysfunction of the endothelium is a marker of early or subclinical CVD (Widlansky, Gokce, Keaney & Vita, 2003). Results indicated that elevated cortisol secretion after awakening was significantly and inversely associated with impaired FMD in female but not male officers (Violanti et al, 2009). Violanti and colleagues (2009) suggested that this association might have been more easily detected in women since women may experience greater stress due to responsibilities outside police work, conflict with colleagues, and social isolation.

Health Outcomes of Depression

In the United States, the lifetime prevalence of depression among adults is 16.5% with an average age of onset at 32 years (http://www.nimh.nih.gov/statistics/1MDD_ADULT.shtml).

Women are 70% more likely than men to experience depression during their lifetime (http://www.nimh.nih.gov/statistics/1MDD_ADULT.shtml), and this increased prevalence may be due to hormonal or biological factors (http://www.nimh.nih.gov/health/publications/depression/what-causes-depression.shtml). The risk of developing CVD in those with depression is approximately 1.7 times higher than in those without depression (Keyes, 2004). Kinder and colleagues (2004) found that young women with a history of depression were twice as likely to have MetSyn as those without depression; yet, there was no association in young men. In the BCOPS Study, female officers had a higher prevalence of depression than male officers (16.0% vs. 10.2%) (Hartley, et al., 2012). The results for the association between depressive symptoms and subclinical CVD are mixed. Violanti and colleagues (2013) found a significant inverse association between depressive symptoms and BAR, a subclinical measure of CVD. While this association was not gender-specific, the association was significant among those who were current cigarette smokers. This may be particularly important for women officers, as the percentage of current smokers in the BCOPS Study was twice as high for women than men: 26.0% vs. 13.1% (Violanti et al., 2013). Other studies utilizing the same sample found no association between depressive symptoms and carotid intima media thickness (Violanti et al., 2012) or the MetSyn (Hartley, et al., 2011). Hartley and colleagues (2011) found a significant association between depressive symptoms and MetSyn in a sample of male police officers from Spokane, Washington. However, this cohort was significantly older than the BCOPS Study participants, and age is a risk factor for subclinical CVD.

Prior studies have suggested a link between depression and osteoporosis. Eskandari et al. (2007) found the prevalence of low bone mineral density to be higher in premenopausal women

with depression than in those without depression. Osteoporosis, also known as porous bone, is a disease characterized by reduced bone mineral density and deterioration of bone tissue leading to increased risk of fracture (http://www.niams.nih.gov/Health_Info/Bone/Osteoporosis/overview.asp). Risk factors for osteoporosis include being female, older age, small body size, being Caucasian or Asian and having a family history of osteoporosis, and a host of modifiable risk factors including low levels of sex hormones, low calcium and vitamin D levels, certain medications and lifestyle (i.e. alcohol abuse, cigarette smoking, physical inactivity) factors (http://www.niams.nih.gov/Health_Info/Bone/Osteoporosis/overview.asp). In the BCOPS Study, higher levels of self-reported depressive symptoms were significantly associated with lower levels of bone mineral density among female officers but not among male officers (Charles et al., 2012). The authors suggested the inverse association found in female officers may be due to additional stressors experienced by women including many discussed above, racial discrimination, sexual harassment, childcare and household responsibilities (Charles et al., 2012).

Summary

In summary, female police officers comprise a small yet slowly increasing percentage of police departments today, even though policies have been in existence for decades to increase their representation. Female officers face unique stressors as a result of working in a male-dominated occupation, including work factors such as perception of inadequate physical ability, sexual harassment and discrimination, and non-work stressors like family responsibilities and pregnancy. The proportion of female officers tends to decrease with decreasing police

department size. In the smaller police departments, women officers in general and minority women in particular may have less coworker support and be more affected by these stressors. Prior investigations including the study of police officers in Buffalo, New York have found significant cross-sectional associations between police stressors and psychological and physiological health. These include associations with burnout, depression, metabolic syndrome, and subclinical (or early) cardiovascular disease.

Future research studies of police officers should strive to include more female police officers, particularly women in the smaller police agencies. Increased participation by female officers in research studies will help to identify specific biologic mechanisms driving the sex differences, such as differences in hormone levels or inflammation. Additionally, research studies with prospective designs are highly desirable and will help to determine causal associations (i.e., does depression lead to metabolic syndrome).

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