

**THE ROLE OF RESILIENCE AND COGNITIVE COPING IN PREDICTING
POST-TRAUMATIC SYMPTOMS IN LAW ENFORCEMENT EMPLOYEES**

by

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ABSTRACT

Previous studies have established a relationship between occupational stressors and the development and overall experience of Post-Traumatic Stress Disorder (PTSD; Maguen et al. 2009; Marmar et al., 2006). The current study extended previous studies by investigating the unique contributions of psychological resilience and cognitive emotion regulation coping strategies in predicting PTSD symptom severity among law enforcement personnel. These factors were examined in a comprehensive model that included the robust effects of social support. A total of 118 law enforcement participants (42% women; $M_{age} = 41.74$ years) were recruited from two Canadian municipal police organizations. Participants completed self-report measures of resilience, work stressors, coping strategies, and PTSD symptoms via an online or paper-to-pen survey. Multiple regression analyses revealed that lower resilience, greater use of rumination and catastrophizing coping strategies, and lesser use of positive reappraisal as a coping strategy, uniquely predicted more severe PTSD symptoms above and beyond the influence of social support. In addition, higher levels of resilience moderated the relationship between work stressor volume and PTSD symptoms. These findings inform prevention strategies to better promote mental wellness in this occupational context.

Keywords: post-traumatic stress disorder, resilience, coping, law enforcement personnel, mental health, social support

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List of Abbreviations

ACT	Acceptance and Commitment Therapy
ANOVA	Analysis of Variance
CERQ	Cognitive Emotion Regulation Questionnaire
CD-RISC-25	Connor Davidson Resilience Scale – 25
DSM-5	Diagnostic and Statistical Manual of Mental Disorders – 5
MANOVA	Multivariate Analysis of Variance
OSI-R	Occupational Stress Inventory – Revised
OSI-R-SS	Occupational Stress Inventory – Revised – Social Support
ORQ	Occupational Role Questionnaire
PCL-5	PTSD Checklist for <i>DSM-5</i>
PRQ	Personal Resources Questionnaire
PSQ	Personal Strain Questionnaire
PTG	Post-Traumatic Growth
PTSD	Post-Traumatic Stress Disorder
SEC	Stressful Experiences Checklist
SPSS	Statistical Package for Social Sciences

1.0 The Influence of Resilience and Coping in Moderating Post-Traumatic Symptoms in Law Enforcement Employees

There is a general consensus that police work is filled with stressful situations (Marmar et al., 2006; Violanti et al., 2016) especially given the repeated exposure to critical incidents incurred by employees in this occupational context (i.e., police officers, and civilian support staff assisting in the work of policing). Critical incidents are defined as those events outside the usual range of experiences for an individual that have the potential to overwhelm the individual's psychological coping mechanisms (Jacobsson, Backteman-Erlanson, Brulin, & Hörnsten, 2015). Indeed, contemporary literature suggests that law enforcement employees and other first responder groups are at an increased risk of exposure to traumatic events as a function of their work (Skogstad et al., 2013). Some studies have reported that, when compared to other professional groups, law enforcement employees report more problematic scores on stress-related outcomes (e.g., of psychological and physical well-being; Johnson et al., 2005). Furthermore, recent research suggests that Canadian law enforcement personnel experience significant and heterogeneous difficulties with mental health (Carleton et al., 2017). Thus, this is an important area of study, given the substantial impact on law enforcement employees' well-being and occupational functioning (e.g., Menard & Arter, 2013). Some of these stress-related effects include loss of productivity, reduced organizational commitment (Ellrich, 2017), burnout and emotional distress (Huey & Kalyal, 2017).

1.1 Stress in Policing

Scholars have identified several sources of occupational stressors that can be grouped into two broad categories of organizational (“job context”) and operational stressors (“job content”; McCreary & Thompson, 2006; Shane, 2010). Organizational stressors can be defined as certain characteristics of the organization that may create or amplify stress for employees, including policies and practices that are enforced within the organization (Shane, 2010). This class of stressors is not necessarily unique to police organizations; nonetheless, they provide a stable source of stress for law enforcement employees. Organizational stressors consist of lack of support for employees within the organization, difficult co-worker relationships, administrative stressors (such as job overload, job insecurity, and excessive paperwork) and bureaucratic characteristics of being a police organization (He, Zhao, & Archbold, 2002; McCarty, Zhao, & Galand, 2007). The bureaucratic nature of the policing work environment typically involves a specified set of rules, detailed work procedures to abide by, as well as a distinct chain of command to which employees must adhere (Comam & Evans, 1991; He et al., 2002). According to researchers, this type of practice impedes communication flow within all levels of the organization and may limit employees’ real and perceived opportunities to provide sufficient input into policies and procedures that affect their work (Comam & Evans, 1991).

In contrast to organizational stressors, operational stressors arise from aspects of police work inherent in the occupation and are typically more specific to policing (Shane, 2010). These include threat of physical danger, witnessing extreme violence and injuries, court appearances, public criticism, and making critical on-the-spot decisions

(Violanti et al., 2016). Moreover, many law enforcement employees are required to work shift-work, which can further contribute to their experience of stress (Ma et al., 2015).

In addition to operational or work-related stressors, police officers and civilian employees may also experience a range of personal stressors. For example, law enforcement employees face social, psychological and personal stressors, such as rejection and isolation from loved ones due to missed engagements as a result of working long shifts (Anshel, 2000). They are also familiar with stress resulting from strained personal relationships (e.g., divorce, McCoy & Aamodt, 2010).

Research suggests that, in addition to examining the incidence of police-related stressors, other factors are important to how employees are affected by, and respond to, these stressors. For example, factors like the nature of the stressful event experienced, the frequency of stressful encounters, ethnic and gender influences are important properties to consider. The nature of some of these work-related stressors may be traumatic or non-traumatic (Chopko et al., 2013). For instance, events like the violent death of a work partner or taking someone's life in the line of duty are rated as highly stressful by police officers (Weiss et al., 2010) and are likely to be traumatic to many law enforcement personnel. Fortunately, these highly rated stressful events typically have low prevalence rates (< 4%; Violanti et al., 2016).

1.11 Sources of variation in stress reactions. There are additional considerations for understanding stressors within law enforcement contexts. Individuals who belong to an ethnic minority group within the police force report different stress experiences when compared to their majority counterparts (e.g., McCarty et al., 2007).

For instance, African American police officers report inadequate support from supervisors as a more potent stressor when compared to Caucasian or Hispanic officers (Violanti & Aron, 1995).

Another participant characteristic that may be associated with stressful experiences is age. Some research suggest a negative association between an officer's age and increased level of stress experienced (Brooks & Piquero, 1998), whereas others find weak positive relationships between an officer's age and specific stress outcomes (e.g., anxiety and depression; Ramey et al., 2016). When examining the number of years spent working in police organizations, which may loosely be viewed as a proxy for age, studies have reported a curvilinear relationship between years spent working and perceived work stress (Patterson, 1992). Specifically, Patterson found that police officers with the least job experience (< one year), as well as those who had the most job experience (> 12 years), reported the least amount of perceived stress, whereas officers in the middle of their employment years reported the most amount of stress (Patterson, 1992). Even though years spent working had a curvilinear relationship with self-reported levels of work stress, working in the high-demand occupation of policing for an extended period of time could have some unpleasant consequences (e.g., increased risk of disability in retirement; Krause, 1997).

Based on the existing literature, men and women working in law enforcement typically rate the frequency of overall stressors to a similar degree (Violanti et al., 2016). Nonetheless, policewomen are far more likely than their male counterparts to face gendered stressors like sexual harassment, language harassment (e.g., gender-oriented humor; Kurtz, 2008), underestimation of physical abilities, and bias (Morash,

Haarr, & Kwak, 2006). According to an Australian study on policewomen, Thompson, Kirk, and Brown (2006) reported that interpersonal sources of stressors (such as gender-based discrimination), accounted for the most variance in ratings of stress experienced by policewomen, especially when compared to organizational or operational sources of stress. Moreover, there are stressors that might affect one gender in greater severity than the other, and both genders may respond differently to similar stressors encountered in policing. For example, Violanti and colleagues (2016) study found that policewomen were generally more stressed by lack of organizational or peer support (37% higher than policemen) when compared to policemen. In contrast, when compared to policewomen, policemen rated operational stressors (such as court appearances and public criticism) as significantly more stressful (Violanti et al., 2016).

Finally, the type of position occupied within the police organization may differentially influence which sources of stress are considered most prevalent to an employee. Violanti and Aron (1995) found that law enforcement employees occupying mostly administrative positions (i.e., desk sergeants) rated organizational stressors as most intensely experienced, when compared to other employees within the organization (e.g., patrol officers). Furthermore, officers in their early to mid-thirties rated operational stresses (e.g., shift work) as the most intense stressor encountered (Violanti & Aron, 1995). These findings are not surprising, given that the thirties are characteristically when individuals are developing significant intimate relations, and/or raising small children.

A neglected but equally important minority group in law enforcement context are the police communicators (4% of the police department; Greenland & Alam, 2017)

and other civilian support staff. These employees are exposed to stressful traumatic content in their direct dealings with the public (through dangerous situations over phone lines), and in reading police reports (Regehr, LeBlanc, Barath, Balch, & Birze, 2013). Given that dispatch communicators are not physically present at an emergency site, and are typically the first point of contact for distressed callers, they may feel isolated and powerless to assist during an emergency (Regehr et al., 2013). When determining how to approach a possibly dangerous situation, the police depend on the dispatcher's understanding and interpretation of the situation (Franklin & Hunt, 1993). Thus, police communicators are a vital part of the department and should be included in research investigating stress response in law enforcement personnel.

Regardless of the source of occupational stressors that law enforcement employees face, these stressful events can have a variety of effects on employees at both organizational and operational levels.

1.12 Effects of stress on law enforcement employees. Stressful events that overwhelm one's coping capacities can result in physiological (e.g., hypertension, glucose intolerance; Hartley et al., 2012) and psychological disturbances (e.g., depression; Carleton et al., 2017), and such experiences are not limited to one domain in a person's life. There are often spillovers that occur from one domain (e.g., work) to another domain (e.g., personal life). Police work-life conflicts can lower job satisfaction (Howard, Donofrio, & Boles, 2004), negatively influence organizational commitment, and increase job turnover intentions (Sachau, Gertz, Matsch, Palmer, & Englert, 2012). Without a doubt, studies have found that work-to-family conflict is a stronger predictor of these negative effects of stress when compared to family-to-work spillovers (Howard

et al., 2004; Sachau et al., 2012). Work-to-family conflict occurs when disruptions arise in the family life due to work responsibilities. In contrast, family-to-work conflicts are disruptions that ensue in the workplace as a result of family problems (Byron, 2005). Finally, another set of hazards associated with trauma exposure include compromised occupational performance, which may lead to procedural violations, miscarriages of justices, injury of both officers and citizens (Arnetz, Nevedal, Lumley, Backman, & Lublin, 2009), and opens the employee and organization up to the risk of litigation for professional misconduct.

In light of these numerous organizational, operational and psychological stressors, encountered by law enforcement employees (i.e., sworn officers and civilian employees) and the negative impact of these stresses, it is essential to understand sources of individual differences in law enforcement employees that might impact vulnerability and resiliency to psychological consequences of these stressors.

1.2 Mental Health and Wellness of Law Enforcement Employees

Exposure to organizational and operational stressors have been related to a number of mental health difficulties that affect the full psychological functioning of law enforcement employees (for review, see Gershon, Barocas, Canton, Li, & Vlahov, 2009). One reaction to the presence of stressors is burnout, which is defined as a prolonged response to chronic emotional and interpersonal stressors experienced on the job (Maslach, Schaufeli, & Leiter, 2001). Burnout has important wellness consequences for law enforcement employees, due to significant associations with physical health complaints and thoughts of suicides among police officers (Mikkelsen & Burke, 2004).

In addition to burnout, law enforcement personnel suffer significantly from increased vulnerabilities to the development of mental health disorders including, but not limited to, major depression (22%; Chen et al., 2006), suicidal ideations (9% Chopko, Palmieri, & Facemire, 2013), and alcohol use difficulties (20% binge drinking; Chopko et al., 2013). According to a recent study on prevalence of mental health disorders in law enforcement among public safety personnel, approximately 42% of Canadian law enforcement personnel currently experience at least one type of mental health difficulty, such as depression, anxiety and post-traumatic stress disorder (Carleton et al., 2017), relative to approximately 20% in the Canadian general population (Smetanin et al., 2011).

Post-traumatic stress disorder (PTSD) has been recognized as a deleterious outcome associated with stress among law enforcement employees, due to the pervasiveness and severity of this disorder. PTSD is a psychological condition that results from experiencing or witnessing a traumatic event, or cumulative traumatic stressors (American Psychiatric Association, 2013). PTSD is typically characterized by intrusive or re-experiencing symptoms (e.g., nightmares, flashbacks), persistent avoidance and hyperarousal in the absence of immediate risk. According to the American Psychological Association (2013), the diagnostic criteria for PTSD requires that an individual present with symptoms from eight mandatory criteria. For Criterion A (one symptom required), the individual must be exposed to a potentially traumatic event (e.g., death, violence) directly or by learning of the traumatic event through vicarious means. Criterion B (one symptom required) necessitates that the traumatic event is re-experienced in some way, either through intrusive thoughts or flashbacks. The third

category, Criterion C (one symptom required) follows closely to Criterion B, such that the affected individual actively avoids trauma-related stimuli. Criterion D and E each require at least two symptoms, and these symptoms should be increasingly getting worse over time. For example, negative affect (Criterion D) or hypervigilance (Criterion E) should worsen after experiencing the traumatic event. In addition to the aforementioned categories, before a diagnosis is rendered, symptoms must persist for more than one month following the event(s), must result in significant functional impairment, and must not be due to other health conditions (Criteria F, G and H respectively; for a more detailed understanding of PTSD symptoms, please refer to the Diagnostic and Statistical Manual of Mental Disorders-5; *DSM-5*; American Psychiatric Association, 2013).

Several estimates of the incidence and prevalence of PTSD among law enforcement personnel using convenience samples have been reported. The incidence of current duty-related PTSD diagnoses in police officers ranges from 5% to 19% (Berger et al., 2012; Maia et al., 2007; Martin et al., 2009; Pietrzak et al., 2012). Approximately 10% of police officers are diagnosed with PTSD at any given point in their lifetime (Perrin, Digrande, Wheeler, & Thorpe, 2007) and this rate is comparable to the lifetime prevalence for PTSD found in the general population (van Ameringen, Mancini, Patterson, & Boyle, 2008). Interestingly, when compared to policewomen and policemen, (Perrin et al., 2007), as well as the general population (Tolin & Foa, 2006), police dispatchers report higher prevalence rates for PTSD (31%; Regehr et al., 2013).

Given the nature of police officers' work, it is understood that there are more officers (e.g. 35%; Haugen, Evces, & Weiss, 2012) who may not meet criteria for full PTSD but suffer meaningful impairments from sub-threshold symptoms (i.e., partial

PTSD; Pietrzak et al., 2012). These trauma reactions can manifest as increased somatic complaints (Lilly, Pole, Best, Metzler, & Marmar, 2009), increased alcohol misuse (Chopko et al., 2013), increased problems with anxiety and depression (Bowler et al., 2016), and suicidality (Chae & Boyle, 2013).

Exposure to a traumatic situation is necessary but not sufficient for the development of stress symptoms and subsequent emergence of PTSD (Martin et al., 2009). Indeed, the assertion that trauma experience is the leading factor in the development of PTSD has been rejected by empirical data (Johnson & Thompson, 2008). Thus, researchers have turned to examining other factors that exacerbate or attenuate post-traumatic stress reactions.

Although law enforcement personnel are exposed to numerous stressors, and potentially traumatic events, some police officers are resilient to these negative effects and are minimally affected by these experiences. Only a minority will eventually develop chronic PTSD (Martin et al., 2009). For the majority (60%) of individuals who experience initial post-traumatic stress symptoms, these symptoms typically disappear without any intervention (McFarlane, 2000). Others, however, may develop partial PTSD or subclinical symptomology, which may contribute to significant functional impairments (Pietrzak et al., 2012). To better inform police selection and prevention strategies, research is needed to better understand the vulnerabilities and resiliency of policing employees. Thus, the proposed research aims to contribute to this gap in research within law enforcement contexts. To inform this work, the state of the literature on these individual difference factors for response to potentially traumatic events in the police context is reviewed and summarized below.

1.3 Risk Factors Influencing Vulnerability to PTSD in Law Enforcement

Employees

Individual differences in PTSD vulnerability may be influenced by several factors. The nature of these events themselves and the chronicity of exposure are important influences. For example, the risk of developing PTSD increases as the number of traumatic events experienced increases (Neuner et al., 2004). Many policing employees typically rate acts of violence against self or other as some of the most distressing work-related events experienced (e.g., Violanti & Aron, 1995). Exposure to children who have suffered from abuse, killing someone in the line of duty, or experiencing a fellow officer being killed in the line of duty are events that typically make it to the top list of traumatic events (Violanti & Aron, 1995; Violanti et al., 2016). In addition to the less common stressors just noted, situations requiring the use of force have been reported as frequent and highly stressful events (Violanti et al., 2016).

Bouncing back from traumatic exposure may depend on the presence or absence of a mix of risk and protective factors. Risk factors are related to the development, and maintenance of post-traumatic symptoms, whereas protective factors can prevent, reduce symptomatology or promote recovery (King, Vogt, & King, 2004). Thus, examining these variables informs our understanding of characteristics that may elucidate stress reactions in policing employees. Research has identified a series of risk and protective factors involved in the modulation of post-traumatic responses. A non-exhaustive list, particularly as it pertains to law enforcement, is discussed in this section and in the following section.

Before moving into discussion of participant characteristics that may increase the risk of developing PTSD, it is necessary to first clarify the use of the term “gender” throughout the current research. *Gender* has traditionally been defined as socially constructed roles related to sex distinctions, as opposed to the definition of *sex* which is viewed as anatomical or chromosomal categories of male and female (Walker & Cook, 1998). Understanding the differences between sex and gender, however, is more complex than simply defining these terminologies as *nature* versus *nurture*. According to the Institute of Medicine, “gender should be used to refer to a person’s self-representation, as male or female, or how that person is responded to by social institutions on the basis of the individual’s gender presentation” (pp. 176; Institute of Medicine, 2001). Thus, this definition acknowledges that gender is fluid and is more appropriately viewed on a spectrum, rather than as a binary term. Most of the literature in policing fail to make distinctions between “gender differences” and “sex differences” in their research findings. In addition, the policing literature tends to discuss gender as a binary term (e.g., see Violanti et al., 2016). As such, the proposed research will focus on broad interpretations, and associate (any) statistical differences in gender to the individuals’ self-identified gender.

1.31 Gender considerations. Gender is often implicated as a risk factor in the development of PTSD in general clinical populations (e.g., Tolin & Foa, 2006). In these contexts, women appear to suffer from PTSD more intensely and more frequently than men. Indeed most studies indicate that women are more likely than men to meet criteria for PTSD (2:1 ratio), even though they are less likely to experience traumatic events (Tolin & Foa, 2006). In a meta-analytic study by Tolin and Foa (2006), men were more

likely to report trauma events such as accidents and nonsexual assault, whereas women reported more sexual abuse (Tolin & Foa, 2006). Despite this gendered nuance in traumatic experiences, women reported significantly higher scores on measurements of PTSD when compared to men (Ditlevsen & Elklit, 2010). Interestingly, these gender differences in the clinical population have not been validated in law enforcement samples (Darensburg et al., 2006; Perrin et al., 2007). In reality, PTSD is consistently found at similar prevalence rates for both policemen and policewomen (Pole et al., 2001).

It is not fully understood why these gender disparities in PTSD screenings in clinical samples are relatively absent in police samples. Evidence indicates that these gender variances are not due to higher occurrence of sexual assault among women or preexisting depression and anxiety disorder typically reported in female clinical samples (Breslau, 2009; Stein, Walker, & Forde, 2000). These gender differences, however, might be due to female samples experiencing greater trauma-related cognitions and emotions (i.e., peri-traumatic dissociation; e.g., depersonalization) during the trauma experience, when compared to men (Lilly et al., 2009).

Although prevalence rates are similar for policemen and policewomen, there may be gender differences in the way PTSD is developed, experienced, or maintained. According to Ellrich and Baier's (2017) study with German police officers who were violently assaulted, preparatory and debriefing sessions received during special operations reduced post-traumatic symptoms in policewomen but not policemen (Ellrich & Baier, 2017). In addition, self-blame attitudes were associated with greater post-traumatic stress in policewomen but not policemen (Ellrich & Baier, 2017). Blaming

oneself for mistakes may lead to strong negative emotional reactions, such as guilt, which therefore could be potentiated in policewomen. Moreover, meta-analytic results from clinical samples have shown that individuals who experienced intense emotions like fear, helplessness or horror during or following trauma report more severe post-traumatic stress symptoms (Ozer et al., 2003).

When other mental health issues are examined among police officers, gender disparity is evident. For instance, the prevalence of depression is greater among policewomen (22%) than policemen (12.1%; Darensburg et al., 2006). In contrast, the prevalence of alcohol use dependence is higher in policemen than in policewomen (Violanti et al., 2011). Both of these gendered nuances are consistent with findings of studies conducted with American and Canadian clinical populations (National Institute of Mental Health, 2017; Smetanin et al., 2011; Weissman et al., 1993)

1.32 Age. In a large-scale non-law enforcement sample, Ditlevsen and Elklit (2010) found that older age groups were associated with lower PTSD symptom severity scores, however, gender ratios for PTSD fluctuated as a function of age. For example, females in the 21-25 age group had PTSD rates nearly three times that of their male counterparts (Ditlevsen & Elklit, 2010). In contrast, the effects of age on post-traumatic symptom severity among law enforcement have yielded mixed results. Some studies have reported a direct positive association between age and PTSD symptoms severity, such that higher rates of PTSD are more common in older police officers (Darensburg et al., 2006) and older Chinese fire fighters (Chang et al., 2003). Other researchers, however, have failed to find significant age differences in PTSD prevalence in police officers (McCaslin, et al., 2006).

1.33 Ethnicity. Some American studies have suggested that Hispanic civilians (Galea et al., 2002) and Hispanic police officers (Pole et al., 2001; Pole, Best, Metzler, & Marmar, 2005) have higher rates of PTSD than their non-Hispanic counterparts. For instance, Pole et al. (2001) examined 655 urban police officers and found a significant but weak relationship between being Hispanic and PTSD symptom severity. Hispanic police officers reported more severe duty-related PTSD symptoms than their non-Hispanic counterparts and this association remained, despite the fact that all ethnic groups in this study were similar on measures of general psychiatric distress and trauma exposure (Pole et al., 2001). Interestingly, these symptom severity differences were particularly evident in the avoidance and hyperarousal symptom domains of PTSD and not on the re-experiencing symptoms domain. The elevated symptoms among Hispanic police officers were statistically explained by greater peri-traumatic dissociation, reduced social support, use of maladaptive coping and greater perceived racism (Pole et al., 2001).

1.34 Clinical risks. Personal circumstances that occur outside of work experiences, such as negative life events, can also impact the development and experience of post-traumatic symptoms (Mikkelsen & Burke, 2004). For example, Maguen et al. (2008) found that negative life events, such as loss of a loved one prior to deployment, were associated with more severe PTSD symptoms in a sample of military personnel. In addition, there is some evidence to suggest that prior trauma contributes to the experience of current symptomatology. A history of past trauma, and prior personal or familial psychiatric disorder (e.g. mood, anxiety, substance abuse) have been identified as vulnerability factors in law enforcement personnel (Inslicht et al., 2010;

Pole, 2008). When these prior factors interact with experiencing a critical incident, one's likelihood of developing post-traumatic distress can be greatly increased (Inslicht et al., 2010). To illustrate, Pole and his colleagues (2007) revealed that self-reported childhood trauma was a risk factor for subsequent psychiatric symptomatology as demonstrated by increased startle reactivity in police recruits (Pole et al., 2007). These results suggest that hypersensitivity to threat and elevated physiological system reactivity (which can result from early childhood trauma; Boyce & Ellis, 2005) can predispose an individual to greater PTSD symptom severity following traumatic stress exposure (Pole et al., 2007, 2009). This is not a surprising conclusion, as studies have revealed the impact of early trauma exposure by means of altering psychobiological systems involved in subsequent threat reactivity and appraisal (Cicchetti & Rogosch, 2001).

Echoing the relationship between prior trauma, current trauma, and PTSD symptoms, Kim, Kim, and Kong (2017) reported a significant positive relationship between different types of childhood maltreatment (physical, sexual) and post-traumatic symptoms of individuals who served in the military (Kim et al., 2017). In contrast, in law enforcement samples, some studies have demonstrated that prior trauma is, at best, weakly related to PTSD symptoms or not significantly associated at all, when considering the influence of various risk factors simultaneously (Hodgins, Creamer, & Bell, 2001; Maguen et al., 2009).

In sum, many of the personal characteristics that have predicted post-traumatic severity in civilians (or military populations; e.g., previous individual or familial psychiatric issues, gender) have not consistently predicted PTSD severity among police officers (Hodgins et al., 2001; McCaslin et al., 2006). For law enforcement, this may be

explained by a variety of factors such as differences in time-period being accessed (e.g., immediately after a disaster rather than time delay; Martin et al., 2009) and the presence of organizational support for the policing employees.

1.35 Occupational factors specific to PTSD. There is some debate surrounding which variables are most associated with post-traumatic symptoms in police officers, especially considering that most police officers are resilient (Martin et al., 2009). As previously discussed, critical incidents and organizational constraints are prevalent sources of stress for officers (Violanti et al., 2016). Critical events are inherent in policing and often include a component of life or injury threat (e.g. burning car, Maguen et al., 2009). There is evidence to suggest that critical events play a role in the development of PTSD, and the more threatening the event is perceived to be, the greater its impact on subsequent psychological distress (McCaslin et al., 2006). Indeed, studies confirm that cumulative exposure to critical incidents and limited work experience increase an officer's risk of developing PTSD (Lieberman et al., 2002).

Other studies have highlighted routine work environment stressors as more important than critical incidents in the development and maintenance of psychological distress among law enforcement officers (Lieberman et al., 2002; Maguen et al., 2009). For instance, Collins and Gibbs (2003) found that some of the highest ranked stressors were not related to critical incidents, but rather to concerns with the work environment such as officer's workload and inadequate support (Collins & Gibbs, 2003). The correlational study reported by Haisch and Meyers (2004) found that employees at greatest risk for PTSD also reported high levels of routine work-related stress.

An excellent American study conducted by Maguen et al. (2009) examined several risk factors for PTSD in police officers while they were still in training and one year after their duties commenced. Although negative life events and critical incident exposure emerged as significant predictors of PTSD symptoms, routine work environment factors (e.g., stressful work relationships, feelings of discrimination) were the strongest predictors of symptom severity, above and beyond the effects of critical incidents and negative life events. In addition, work environment mediated the relationship between negative life events, critical incidents and subsequent PTSD symptoms (Maguen et al., 2009). Thus, individuals experiencing work-related stress symptoms may be “triggered” at work and this may subsequently impact their work related performance (Bolton et al., 2004).

1.36 Peri-traumatic dissociations. Peri-traumatic dissociations include cognitions and emotions that reflect alterations in awareness (e.g., depersonalization, time distortion) while experiencing a trauma (Spiegel & Cardena, 1991). For instance, a sense of emotional numbing has been reported in about 40% of earthquake survivors and in 53% of people who witnessed an execution (Freinkel, Koopman, & Spiegel, 1994). Furthermore, a meta-analysis of civilians by Ozer and colleagues (2003) found that peri-traumatic dissociation was one of the strongest correlates of PTSD. Individuals who experienced intense emotions like fear, helplessness, or horror during or following a trauma reported significantly greater severity of PTSD symptoms (Ozer et al., 2003). Moreover, measures of peri-traumatic distress obtained within hours or weeks of a traumatic event have been prospectively predictive of subsequent PTSD diagnosis. Similar to civilians, dissociations were also related to PTSD in police officers (Hodgins

et al., 2001; Marmar et al., 2006). Indeed, Marmar et al. (2006) found that peri-traumatic reactions explained an additional 21.5% of the variance in current PTSD symptoms after accounting for demographics and trauma history.

In regard to gender, Lilly, Pole, Best, Metzler, and Marmar (2009) found that group differences in PTSD symptom severity between civilian women and policewomen were accounted for by group differences in peri-traumatic emotional distress. When compared to policewomen, civilian women experienced greater peri-traumatic distress and consequently more severe PTSD symptoms, even though they reported less trauma exposure (Lilly et al., 2009). Although men were not examined in Lilly et al.'s (2009) study, their results indicated that gender differences in civilian population with regards to PTSD symptom severity might not be due to biology (i.e., chromosomal variation between males and females). Rather, it may be due to the intensity of emotions felt during or after trauma. Kunst (2011) recognized that civilian participants who had a combination of low positive emotionality and high negative emotionality, as well as those who were high on both features (i.e., experienced both positive and negative emotions intensely), suffered from more severe PTSD symptoms (Kunst, 2011). This is interesting, as it indicates that the endorsement of negative emotionality, regardless of the presence of positive emotions may be particularly problematic for PTSD. Thus, managing one's emotions is necessary when dealing with stressful experiences and this is true for both civilian (Kunst, 2011) and law enforcement samples (Huey & Kalyal 2017).

Given the variety of risk correlates that can negatively impact a law enforcement personnel's experience and severity of post-traumatic stress symptoms, it is vital to

understand protective factors that can reduce symptomatology and promote recovery from stressful responses. Furthermore, an examination of individual differences in these protective factors could inform our understanding and design of prevention and intervention strategies to minimize the severity of post-traumatic symptoms in law enforcement members.

1.4 Protective Factors Influencing Vulnerability to PTSD in Law Enforcement

Personnel

Personal protective variables such as social support, emotion regulation (coping), and resilience have been shown have an effect on an individual's severity of, and vulnerability to, post-traumatic symptoms (e.g., McCaslin et al., 2006). Some of these protective features (e.g., resilience) have been well examined in the general population and some first responder samples, but have received less attention in law enforcement personnel specifically.

1.41 Social Support. The importance of a supportive work environment cannot be overstated. Having a supportive and healthy relationship with one's supervisor, as well as a supportive work environment overall (e.g., support from colleagues), is crucial to shaping one's experience of stress (Violanti & Aron, 1995). Meta-analytic studies consistently show that a negative work environment can lead to, or exacerbate, physiological and psychological issues among employees (Ozer et al., 2003; Prati & Pietrantoni, 2010). According to Viswesvaran, Sanchez, and Fisher's (1999) meta-analytic study with general population samples, social support was found to mitigate the perception of stressors and reduce the level of distress experienced by individuals (Viswesvaran, Sanchez, & Fisher, 1999). Evidence indicates that a supportive work

environment acts as a buffer against the development of PTSD even for those exposed to traumatic incidents or those experiencing negative life events (Maguen et al., 2009; Thompson, Kiri, & Brown, 2005). Ozer and colleagues (2003) found that poor social support was a robust predictor of PTSD, and it was the second strongest predictor of PTSD risk ($r = -.28$) after the influence of peri-traumatic dissociation ($r = .35$). Particularly, poor social support significantly increased a person's risk of developing PTSD (Ozer et al., 2003).

It is important to note that all types of support are not equally related to improved mental health functioning. Negative or neutral social support may be detrimental to one's well-being, as it can heighten or maintain emotions like fear (Charuvastra & Cloitre, 2008; Koenen, Stellman, Stellman, & Sommer, 2003). Negative social support includes receiving negative responses (e.g., blame) from one's social network, or having negative interactions with others following the experience of a traumatic event (Borja, Callahan, & Long, 2006). Studies show that these types of negative responses can impact the experience of post-traumatic symptoms (Andrews, Brewin, & Rose, 2003; Borja et al., 2006). A meta-analysis by Prati and Pietrantoni (2010) specifically focusing on first responders reported that *perceived* social support was significantly stronger than *received* social support. Thus, the understanding that you are not alone, and that others will provide necessary needed help, can be protective. Notably, police officers who report greater perceived availability of social support tend to endorse fewer PTSD symptoms (McCaslin et al., 2006; Pole et al., 2005). This is not surprising, given that a positive work environment (where discussions on distressing events are encouraged) have been associated with reduced PTSD symptoms (Stephens & Long, 2000). Finally,

there is some evidence to suggest that receiving positive collegial social support amidst a traumatic event is significantly associated with lower levels of PTSD symptoms (Martin et al., 2009).

1.42 Coping. Coping refers to the set of cognitive and behavioural strategies incorporated by a person to manage stressful situations (Folkman, Lazarus, Gruen, & DeLongis, 1986). An individual's coping style plays an important role in mitigating the adverse effects of traumatic stress. Coping styles as measured by the *Coping Inventory for Stressful Situations* (Endler & Parker, 1994) commonly classifies styles into task-oriented, emotion-oriented, and avoidant-oriented. Task-oriented coping is active in nature, as it involves attempts to modify or eliminate the stressor by engaging in problem solving (Regehr et al., 2013). Emotion-oriented coping relies on the use of thoughts and behaviours to manage the emotional reactions of the stressor, without necessarily solving the problem. In contrast, avoidant coping styles reflects attempts to actively avoid confronting the problem and is considered the least effective (Ben-Zur, 2009). For example, the avoidant style of managing stress can be manifested as increased alcohol use. Chopko et al. (2013) found that greater alcohol use among police officers was most strongly predicted by PTSD avoidance symptoms. In their descriptive analysis of alcohol use among police officers, Violanti and his colleagues (2011) noted that alcohol use was one of the primary coping strategies employed by police officers when dealing with stressors. According to Lindsay and Shelly (2009), the police subculture encourages the use of alcohol in many instances (e.g., social outlet). They found that, although officers drank for stress-related reasons (e.g., drinking for tension

reduction), a minority of officers most at risk for alcohol dependence admitted that fitting in (i.e., drinking for conformity purposes) contributed to their drinking habits.

Following a traumatic event, emotion and avoidant (or passive) coping styles have been differentially associated with the development and maintenance of post-traumatic symptoms (Gershon et al., 2009; Haisch & Meyers, 2004; Marmar et al., 2006). A Canadian study by Regehr et al. (2013) found that police communicators who used emotion-focused methods of coping experienced increased post-traumatic symptoms, increased anxiety and higher rates of depression. In contrast, those who employed task-oriented coping had lower levels of depression (Regehr et al., 2013). This pattern is not always the case, however, as Marmar et al. (2006) found that it was greater use of problem-solving strategies that was related to more severe current PTSD symptoms. Thus, additional research is needed to further clarify the role that coping strategies play in mitigating the impact of stressful experiences.

It is noteworthy to mention that studies describing the experience of emotional coping tend to focus on those with a dysfunctional or negative valence, such as self-blame or worry (e.g., Regehr et al., 2013). Therefore, it is not surprising that the literature is filled with conclusions that describe emotion-focused coping as deleterious to law enforcement personnel well-being (e.g., Haisch & Meyers, 2004). Research also suggests, however, that individuals who are able to accurately identify their emotional reactions are less distracted and are consequently less affected by severe emotional reactions (Gohm, Baumann, & Snizek, 2001). Such individuals who manage these difficult emotions are likely able to focus needed attention on constructive and adaptive coping strategies. In addition, it has been argued that emotion-focused coping can also

include adaptive approaches, such as positive reframing (Baker & Berenbaum, 2007) especially when the stressor is something that has no immediate or eventual “solution” (i.e., it must be tolerated).

Rather than use the traditional classifications of task-oriented, emotion-oriented or avoidant-oriented coping when describing coping styles, a more useful approach to understanding coping patterns is to classify these skills as adaptive or maladaptive. Doing so acknowledges that certain emotion-focused strategies (e.g., positive reframing Baker & Berenbaum, 2007) can be helpful to individuals in stressful situations. Garnefski and colleagues (2002) developed a cognitive coping instrument (*Cognitive Emotion Regulation Questionnaire*; CERQ; Garnefski et al., 2002) that distinguishes nine independent coping strategies that people use in a variety of situations. Furthermore, on a theoretical level, this comprehensive list of nine coping strategies can be arranged into adaptive coping styles (i.e., positive refocusing, positive reappraisal, putting into perspective, refocus on planning, and acceptance) and maladaptive coping styles (or “less adaptive” i.e., rumination, self-blame, blaming others, and catastrophizing; Garnefski et al., 2002). Using this comprehensive classification of adaptive and maladaptive coping strategies can help identify potential individual differences that may exist in coping styles.

Dealing with emotions is an essential part of daily police work and officers must regulate their own emotional reactions and facilitate the emotions of those they deal with regularly. Canadian researchers, Huey and Kalyal (2017) demonstrated this dynamic in their detailed interviews of police officers. They observed that police officers often described themes containing emotional distress in response to traumatic

situations, as well as describing the importance of empathy when dealing with victims and their families (Huey & Kalyal, 2017). Given the relevance of peri-traumatic emotions in PTSD development, use of some degree of emotion-focused coping that supports acceptance or tolerance of negative emotions, rather than suppression of those emotions, may be beneficial in managing traumatic stress symptoms. Thus, a comprehensive tool like the CERQ is important to use in evaluating specific cognitive and emotion coping skills used in policing, and especially with regard to how endorsing specific CERQ strategies relate to the experience of PTSD. From the perspective of policing research and PTSD, the current study will explore the aforementioned CERQ coping strategies within the contexts of PTSD.

1.43 Psychological resilience. Most definitions of resilience fall under 3 categories: outcome, personality, and process (Block & Kremen, 1996; Luthar, Cicchetti, & Becker, 2000; Masten, 2007). From an outcome perspective, resilience is defined as successful adaptation to chronic stressors or adversities (Masten, 2007; Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003). As a personality trait, resilience is described as a positive attribute that facilitates an individual's ability to bounce back from adversity (Fyhn, Fjell, & Johnsen, 2016; Tugade & Fredrickson, 2004). Individuals high on this resilience trait are able to thrive and even grow in the face of stressful situations (Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003). From a process standpoint, resilience is viewed as a dynamic process that changes over time (Luthar et al., 2000; Olsson et al., 2003). It may include prevention or attenuation of psychological disturbance after traumatic exposure, or it may involve a process of rapid recovery following exposure to adversity (Davydov, Stewart, Ritchie, & Chaudieu, 2010). The

process definition typically involves an interaction with risk factors and protective resources that could change from situation to situation (Olsson et al., 2003). Therefore, an individual who has faced adversity may be resilient in one domain (e.g., occupation) but not in another domain (e.g., emotions). Moreover, even though a person may react positively to adversity at time A, it does not mean that this same person will react in the same way to a similar situation at time B (Luthar et al., 2000). Thus, although no universal definition exists, resilience may best be conceptualized as a multidimensional construct, which includes relatively constant aspects like temperament, as well as specific skills that can be learned over time (e.g. active problem-solving skills); both aspects of which are essential to cope well with psychological insults (Campbell-Sills, Cohan, & Stein, 2006; White, Driver, & Warren, 2008).

1.431 Resilience and psychological distress. Resilience is not uncommon, and can be viewed as more than simple recovery from distress (Bonanno, 2004). Indeed, some academics argue that resilience has a distinct trajectory from recovery (Norris, Tracy, & Galea, 2009). Here, recovery is characterized by a temporary period of psychopathology followed by gradual restoration back to healthy psychological functioning, whereas resilience implies the ability to maintain normal levels of functioning despite adversity (Bonanno, 2004; Deshields, Tibbs, Fan, & Taylor, 2006).

Research examining the role of psychological resilience in the relationship between various stressors and psychiatric symptoms has been well studied (Wu, Zhang, Liu, Zhou, & Wei, 2015; Ying, Wu, Lin, & Jiang, 2014). For instance, resilience has been shown to moderate the link between combat stress and substance use difficulties (Austin-Ketch et al., 2012), as well as the link between stress and depression (Wingo et

al., 2010). Furthermore, resilience has positive effects across various population groups, such that higher levels of resilience are associated with better mental health functioning (e.g., Lee, Ahn, Jeong, Chae, & Choi, 2014). Among young civilians, resilience moderated the impact of childhood neglect on their current psychiatric symptoms (Campbell-Sills et al., 2006). In particular, individuals who reported significant emotional neglect and low resilience had the most severe symptoms. In contrast, those who reported significant emotional neglect and high resilience were relatively asymptomatic (Campbell-Sills et al., 2006).

Resilience also has been found to mitigate some of the ill effects of PTSD severity across various groups of first responders (e.g., McCanlies et al., 2014) and military groups (e.g., Blackburn & Owens, 2016). Specifically, endorsing higher levels of resilience has been associated with reduced impact of traumatic stress among firefighters (Lee et al., 2014), paramedics (Streb, Hällner, & Michael, 2014) and is also tied to reduced impairment on social functioning among veterans (Wingo et al., 2017). Social functioning refers to an individual's degree of involvement of different roles in various social environments. The presence of PTSD can affect more than just the person with the diagnosis, but also family, close friends, and colleagues. For example, Tsai, Harpeze-Rotem, Pietrzak, and Southwick (2012) found that veterans who met criteria for PTSD and who also reported lower resilience scores, had more significant difficulties with romantic partner relationships (Tsai et al., 2012). In addition to difficulties in romantic partner relationships, within policing, post-traumatic symptoms may have far reaching consequences (e.g. litigation) due to added interaction with the public.

In sum, although resilience has been studied among first responder groups (e.g., Fyhn et al., 2016), it is necessary to evaluate the role resilience plays in a comprehensive model of protective factors in relation to PTSD. Specifically, it should be determined whether (or not) resilience will continue to predict less severe PTSD symptoms beyond the established protective factors of social support. More importantly, the proposed study seeks to examine whether the protective effects of resilience will dissipate as a function of increased number of stressful events.

1.5 Issues Within the Existing Literature

Within the contexts of policing research and PTSD, the current study will explore less well examined coping strategies, such as positive reframing (i.e., adaptive coping), within the contexts of PTSD, especially given that dealing with emotions is an essential part of daily police work (Huey & Kalyal, 2017). Doing so will lead to a more comprehensive understanding of adaptive (e.g., positive reframing) and maladaptive (e.g., self-blame) emotion regulation skills in its association with PTSD. In addition to exploring less well examined coping styles, the proposed research seeks to examine whether the protective effects of resilience will dissipate as the frequency of stressful experiences increase.

Another key issue within the existing research is the finding that much of the relevant literature identifying key variables related to PTSD typically focus attention on sworn police officers (i.e., licensed to carry a weapon, along with the power to make arrests; Gershon, Lin, & Li, 2002) and give less consideration (if any) to other valuable members of law enforcement. As a whole, civilians employed by police services across Canada represent approximately 30% of total personnel (Connor, 2018). Within the

overall proportion of civilian employees, police communicators or emergency dispatchers (as they are commonly known) represent about 4% of these employees. Although police communicators make up a smaller percentage of employees within the police organization, they are the hidden emergency responders given that they are not appearing at the scene of an emergency. Dispatch operators (i.e., police communicators) however, are a critical part of the response team as their actions inform crisis management (Regehr et al., 2013). Police communicators are exposed to vicarious traumatic content in their direct dealings with the public through dangerous situations over phone lines, and in reading police reports. Police communicators as well as civilian administrative support staff, and victim service employees of the police organization are not physically present at an emergency site, and are typically the first point of contact for distressed callers. As a result, they may feel isolated and powerless to assist during an emergency (Regehr et al., 2013).

1.6 Current Study

In response to critical incidents or routine work stress exposure, police officers and civilian support staff may develop sub-clinical PTSD symptoms while a smaller subset will go on to develop PTSD (Martin et al., 2009). Consequently, continued research into factors that make one vulnerable or resistant to PTSD may inform our understanding of key variables in the etiology of this condition among police officers and inform strategies for its prevention and intervention. The existing literature has focused heavily on risk and less on personal protective factors that affect vulnerability of post-traumatic symptoms in police officers (e.g. Marmar et al., 2006). Thus, the current research focused on understanding personal protective factors of resilience and

coping strategies that have received less attention in the police literature, and did so in a broader law enforcement sample.

The current study had several goals. First, the proposed study identified the severity and prevalence of PTSD symptoms in a sample of law enforcement employees that includes sworn police officers, auxiliary police officers, dispatch operators, and civilian support service staff within two police organizations. Second, this research examined the degree to which variations in cognitive and emotion coping skills predict concurrent post-traumatic stress symptom severity. Third, the proposed research examined the moderating role of resilience, on the association between frequency of occupational (i.e., organizational and operational) stressors and current post-traumatic stress symptom severity. Finally, the current study sought to understand the profile of coping strategies that “resilient” employees endorse.

1.7 Hypotheses

The following hypotheses have been generated from the literature review and were tested in the sample of law enforcement personnel:

H1: To situate findings for subsequent hypotheses generated in the current study, it was anticipated that greater levels of occupational stress would positively predict PTSD symptom severity.

H2: It was predicted that higher levels of social support, resilience, and “adaptive” coping styles (i.e., positive refocusing, positive reappraisal, putting into perspective, refocus on planning, and acceptance) would be independently and significantly related to the experience of less severe PTSD symptoms. In addition, higher levels of “less adaptive” coping strategies (i.e., rumination, self-blame, blaming others, and

catastrophizing) would be significantly associated with the experience of more severe PTSD symptoms.

H3: Greater levels of “adaptive” coping, and lower levels of “less adaptive” coping strategies, would predict reduced PTSD symptom severity above and beyond the effects of social support (after first controlling for age, gender and job role).

H4: Greater levels of resilience would predict reduced PTSD symptom severity above and beyond the effects of social support (after first controlling for age, gender, and job role).

H5: To further understand what type of coping strategies resilient law enforcement employees are endorsing, it was anticipated that greater levels of “adaptive” coping, and lower levels of “less adaptive” coping skills would predict greater resilience (after controlling for the influence of age, gender and job role).

H6: Greater work stressor volume would significantly predict more severe current post-traumatic symptoms.

H7: Resilience would moderate the relationship between work stressor volume and PTSD symptom severity.

2.0 Method

2.1 Participants

The current thesis is an essential component of an ongoing evaluation of the mental health functioning among municipal police organizations in New Brunswick. The present study included men and women law enforcement employees, including sworn police officers, civilian support staff administrators, and police communicators/dispatchers. A total of 118 participants were recruited from employees

at two police organizations, police organization A ($n = 31$; 75.6% response rate) and police organization B ($n = 87$; 44.6% response rate), with support from their respective Police Chiefs. There were no demographic differences between these two sub-samples as a function of age, $F(1, 106) = .81, p = .37$, gender, $\chi^2(1, N = 118) = 1.01, p = .31$, employee status (police officer vs. civilian employee), $\chi^2(1, N = 117) = 3.59, p = .06$, and years of employment, $F(1, 110) = .28, p = .60$. In addition, there were no mean differences on any of the standardized measures of interest, as a result of police organization membership (see Table 1); therefore, both sub-samples were merged into one large sample. The combined sample had almost equal representations of gender (42% women) and the majority of the sample were police officers (74%). The average age for participants were 42.28 years, ranging from 23 to 62 years of age ($SD = 10.82$). Most participants had been working within their respective police organization for approximately 16 years (range = < 1 to 37 years, $SD = 9.56$). Among police officers, a variety of ranks were represented, with the most common rank being Constables (68.5%). In addition, 10.2% of civilian staff members were 911 dispatch operators/police communicators, and the rest consisted of office administration clerks and supervisor/managers. For more information about the participants in the current study, see Table 2.

2.2 Materials

2.21 Demographics Questionnaire. Participants completed a demographics form, as well as background information related to their work, including current rank for police officers and type of work for civilian employees (e.g., communication dispatchers; see Appendix A).

2.22 Assessment of Post-Traumatic Stress Disorder. The PTSD Checklist for *DSM-5* (PCL-5) was used to assess symptoms associated with PTSD (Weathers et al., 2013). The PCL-5 is a widely used self-report measure of PTSD (see Appendix B). It is a 20-item instrument that reflects the *DSM-5* symptoms of PTSD and is designed to measure responses to traumatic experiences. The PCL-5 can be administered in one of three formats depending on how Criterion A is assessed. Criterion A requires that the individual be exposed to a potentially traumatic event (e.g., death, violence) directly, or by learning of the traumatic event through vicarious means. The PCL-5 however, can be administered without assessing Criterion A. Another alternative format provides examples of qualifying traumatic events, asks respondents to identify their worst traumatic event, and then the clinician assesses whether their worst trauma meets Criterion A. Finally, a third format includes a more detailed measure of Criterion A (Blevins, Weathers, Davis, Witte, & Domino, 2015). According to these test developers, the first format is designed to be used when trauma exposure is measured by some other method (i.e., not measured by a clinician; Blevins et al., 2015). Given that the current study examined work-related traumatic exposure via the use of other standardized measures, the first format (i.e., without Criterion A) was employed in the current research.

Respondents were instructed to indicate on the PCL-5 the degree to which they were bothered by a variety of symptoms in the past month (e.g., in the past month, how much were you been bothered by: "Repeated, disturbing, and unwanted memories of the stressful experience?"). Items were rated on a 5-point likert scale ranging from 0 (a little bit) to 4 (extremely), with a total score computed by summing all item ratings. The

resulting score was continuous, based on the severity of symptoms experienced, with higher scores reflecting more severe post-traumatic symptoms. Furthermore, according to some studies, a PCL-5 cut-off score of 33 indicates a provisional diagnosis of PTSD based on the *DSM-5* scoring criteria (Weathers et al., 2013; Wortmann et al., 2016). Items on the PCL-5 can be further calculated to yield four *DSM-5* PTSD symptom clusters, and these clusters reflect Criterion B, C, D and E of the *DSM-5* diagnosis (Wortmann et al., 2016). Within policing contexts, however, most studies examine post-traumatic stress as a continuous variable. Thus, the current research refrained from categorizing the PCL-5 scores and used a total score as an index of posttraumatic stress severity.

The PCL-5 has established psychometric properties, with excellent internal consistency ranging from $\alpha = .94 - .96$ (Blevins et al., 2015; Bovin et al., 2016; Wortmann et al., 2016). Furthermore, the PCL-5 has shown reliable stability over time, with adequate test-retest reliability (test-retest correlation coefficient = .84, $N = 99$), after an approximate 4-week interval from the first test administration (Bovin et al., 2016). The PCL-5 also has strong correlations with other measures of PTSD (e.g., $r = .85$ with Post-Traumatic Distress Scale; Blevins et al., 2015) and weaker correlations with non-trauma scales (e.g., $r = .08$ with Psychopathic Personality Inventory; Bovin et al., 2016). For the current study, the PCL-5 showed excellent internal consistency with an alpha level of .96.

2.23 Frequency of Stressful Experiences. The Stressful Experiences Checklist (SEC; see Appendix C) was designed for use by members at the Center for Criminal Justice Studies at the University of New Brunswick. The SEC is intended to capture the

nature of stressful experiences in policing and personal contexts. It asks participants to indicate, from a list of stressful events, any situations that have occurred at any point in their lives, and to further denote those that have occurred within the past two years. For the purposes of the present research, the most recent (i.e., within the past 2 years) responses were used for subsequent analyses. The SEC has been used in previous research conducted with municipal police organizations and has been modified based on these pilot data. The checklist originally contained 12 items rated on a bivariate scale (i.e., yes or no) to a variety of occupational sources of stress. The checklist also allowed participants the opportunity to identify other stressful experiences not included in the questionnaire in an open-ended format. These open-ended responses were coded into five additional items reflecting personal sources of stress. Thus, the version of the SEC used in the current study includes a checklist of both occupational and personal stressors for a total of 17 items. For the current study, the SEC had an acceptable measure of internal consistency ($\alpha = .81$).

2.24 Occupational Stressors and Social Support. The Occupational Stress Inventory – Revised (OSI-R, Osipow, 1998; see Appendix D) was used to assess occupational (i.e., operational and organizational) stressors. The OSI-R has normative data across several professional groups, including public safety personnel (e.g., law enforcement employees, fire-fighters; Osipow, 1998). It is a comprehensive and copyrighted tool that measures three domains of occupational adjustment – occupational stress, psychological strain, and coping resources. Occupational stress was measured by *Occupational Role Questionnaire* (ORQ) scale, psychological strain was captured by *Personal Strain Questionnaire* (PSQ) scale, and coping resources was measured by

Personal Resources Questionnaire (PRQ) scale. Each scale was further represented by several subscales. For the purposes of the current study, the full ORQ scale and one subscale of the PRQ scales were utilized.

The ORQ includes six sub-scales (10 items per subscale) that capture specific attributes related to one's work environment: *Role Overload*, *Role Insufficiency*, *Role Ambiguity*, *Role Boundary*, *Responsibility*, and *Physical Environment*, with a total of 60 items. Law enforcement employees who score high on the *Role Overload* subscale may describe their workload as increasing or unreasonable, and individuals may feel unsupported by their organization or supervisor. *Role Insufficiency* reflects a poor fit between the individual's goals and capacities and the job they are performing. High scores on the *Role Ambiguity* subscale may report unclear sense of work expectations, whereas high scorers on the *Role Overload* subscale may report conflicting demands between supervisors and overwhelmed with competing duties/tasks. Individuals who score high on *Responsibility* may feel burdened by work responsibilities and performance quality of self and others they supervise. Finally, *Personal Environment* reflects stressors in the actual physical workspace, such as high levels of noise, moisture or dust as well as an erratic work schedule.

In the current study, respondents' raw subscale scores were computed to a standardized T-score based on the normative data available for public safety individuals. Scores over 70T indicate significant levels of maladaptive stress, T-scores in the 60-69 range suggest mild levels of maladaptive stress and strain, and T-scores in the 40-59 range are within one standard deviation of the mean and are considered normal in range. Studies indicate that the overall ORQ and its subscales have excellent internal

consistencies, with Cronbach's alpha ranging from .72 to .89 (Osipow, 1998).

Furthermore, test-retest correlations for these ORQ subscales are considered good with an overall r score of .61 ($N = 62$; 2 week-interval; Osipow, 1998). For the present study, all the ORQ subscales were found to have good internal consistency ($\alpha = .71$ -.83).

The Personal Resources Questionnaire (PRQ) scale was also used from the OSI-R. It is comprised of four scales – *Recreation, Self-Care, Social Support, and Rational/Cognitive Coping*. This aspect of the questionnaire taps into important personal characteristics of occupational adjustment. Of specific interest to the current study was the *Social Support* subscale. Respondents who score high on the *Social Support* subscale report having the support of at least one person who loves and values them.

Respondent's raw score on the *Social Support* subscale is computed to standardized T-scores. Scores below 30T indicate significant deficits in social support availability and/or quality, scores in the range of 30T-39T suggest mild deficits and 40T-59T reflect average social support. Scores $\geq 60T$ indicate increasingly strong social support (Osipow, 1998). Studies indicate that the *Social Support* subscale has good internal consistency, with Cronbach's alpha of .87 (Layne, Hohenshil, & Singh, 2004). In addition, the test-retest correlation for the *Social Support* subscale is satisfactory ($r = .52$; $N = 62$; 2 week-interval; Osipow, 1998). The current study also found that the *Social Support* scale displayed excellent internal consistency ($\alpha = .90$).

2.25 Psychological Resilience. The Connor Davidson Resilience Scale – 25 (CD-RISC-25; Connor & Davidson, 2003; see Appendix E) was used as a self-report measure of resilience. The CD-RISC is a well-validated tool that comprises of 25 items which capture the capacity to handle adverse situations. Thus, the conceptualization of

the CD-RISC-25 instrument most closely resembles the definition of resilience from a process perspective (i.e., defined as a dynamic process that changes over time; Connor & Davidson, 2003; Luthar et al., 2000). Respondents who completed the CD-RISC-25 were instructed to score each item based on how often they experienced feeling a particular way over the past month. Items were rated on a five-point likert scale ranging from 0 (rarely true) to 4 (true nearly all of the time), with higher scores reflecting greater resilience.

The CD-RISC-25 items reflect five core characteristics of resilience which Connor and Davidson (2003) named factors 1, 2, 3, 4, and 5. These five factors reflect personal competence, positive acceptance of change, tolerance of negative affect, control, and spiritual influences, respectively (Connor & Davidson, 2003). Subsequent factor analysis by Pietrzak, Russo, Ling, and Southwick (2011), confirmed four (not five) subscales: positive acceptance of change, tolerance of negative affect, belief in fate, and availability of secure relationships. None of these five (or four) characteristics, however, are separated or analyzed in its distinct subscales on the CD-RISC-25 in most studies. Thus, the total score is most commonly used and this total score was used in the current study. In addition, a total score allowed for comparison with other studies that have examined the influence of resilience (i.e., the influence of CD-RISC-25).

The CD-RISC-25 has excellent psychometric properties, with Cronbach's α ranging from .89 to .94 for internal consistency (full scale score; Connor & Davidson, 2003; Pietrzak et al., 2011), and test-retest correlation coefficient of ($r = .87$; $n = 24$; Connor & Davidson, 2003). It is also positively related to other measures of resilience (e.g., $r = .68$; Ego-Resiliency Scale; Karairmak, 2009), and negatively correlated with measures

of stress (e.g., $r = -.76$ with Perceived Stress Scale; Connor & Davidson, 2003). The CD-RISC-25 has been found to be reliable in law enforcement samples (e.g., $\alpha = .85$; McCanlies et al., 2014), and this was the case for the present sample ($\alpha = .95$).

2.26 Coping Capacity and Skills. The Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski et al., 2002) is a comprehensive instrument that measures various dimensions of coping and specifically captures a person's cognitive responses to stressful or threatening experiences. It consists of 36 items reflecting nine sub-scales (four items per scale) that are conceptually distinct.

On a theoretical level, these CERQ subscales can be split into adaptive styles and maladaptive styles (Garnefski et al., 2002; see Appendix F). These adaptive styles are as follows: *Acceptance* exemplifies thoughts of resigning yourself to what has happened. *Positive refocusing* measures the ability to focus on thoughts of other positive experiences rather than the actual negative event; *Refocus on planning* refers to thinking about steps to take, and how to handle the negative event; *Positive reappraisal* entails re-thinking of the event in a way that assigns a positive meaning in terms of personal growth; and *Putting into perspective* refers to thoughts of playing down the seriousness of the stressful event(s) relative to other events. In contrast, maladaptive CERQ measured strategies include the following: *Self-blame* defined as putting the blame of what you have experienced on yourself; *Rumination* captures feelings and thoughts associated with the negative event; *Catastrophizing* consists of thoughts that explicitly emphasize the worst-case scenario of an experience; and *Blaming others* means assigning blame to third parties for the problem. Participants were instructed to respond to each CERQ item using a five-point Likert scale with values ranging from 1 (almost

never) to 5 (almost always). Subscale scores (range: 4-20) are obtained by summing the scores belonging to the particular subscale; the higher the score, the greater endorsement of the specific coping strategy.

Garnefski and Kraaij (2007) demonstrated that the CERQ scale had good psychometric properties. Specifically, these researchers reported Cronbach's α values above .75 for all these nine subscales of the CERQ. Likewise, the Cronbach's α values for the current study were good (α 's > .77). The CERQ has established test-retest reliability ($r = .48-.65$; one year between measurements; $N = 301$; Garnefski & Kraaij, 2007). As expected, the adaptive subscales of the CERQ have been negatively associated with depression (measured by the Symptom Check List-90; partial $r = -.11$), whereas the maladaptive subscales have been positively correlated with depression (measured by the Symptom Check List Revised-90; partial $r = .48$; Garnefski et al., 2002).

2.3 Procedure

The survey package used in the current study was administered in two optional formats: online and paper. The online questionnaire package was hosted on Qualtrics™ web platform. Qualtrics™ is a safe and reliable web-based survey tool that allows researchers to develop, publish and collect responses to surveys. The survey package included informed consent forms (see Appendices G and H) presented first, a brief demographic questionnaire presented second, followed by the remaining measures presented in a counter-balanced order. Furthermore, at the end of the survey, participants received a contact information sheet (see Appendix H) on mental health service resources in their area.

Once research ethics approval was received for the larger study, from which data for the current study was drawn, participants were administered the survey package in their preferred format. The larger study was a two-year follow up study to one that was conducted in the fall of 2015 with one of the two police organizations used in the current study (police organization B). The 2015 study ($N = 121$) was conducted in order to examine the mental health and wellness of municipal law enforcement employees, and to recommend helpful strategies to support mental well-being among those employees.

All potential participants received an email describing the survey, its purpose, and a link to the confidential online survey format, as well as instructions on how to complete the paper format to ensure that all members of Police Organizations A and B had opportunities to participate. In addition, these email invitations were specific to each organization based on timelines for participant recruitment. For example, given that members of Police Organization B were surveyed for the second time, the email invitation these members received referenced the previous study. Thus, participants from Police Organization B were told that the current study was intended, in part, to determine the successful implementation of supports/ strategies introduced after the first study was conducted in 2015. In contrast, the email invitation for members of Police Organization A made no reference to the previous study. Both Police Organizations were informed that researchers were interested in determining the influence of personal protective factors in mitigating stressful experiences. In addition, a verbal announcement containing similar information to the email invitation was made by the research team during staff shift change briefings and staff meetings. In these in-person

recruitments, law enforcement potential participants were provided with a sheet of paper containing general information about the study, as well as an email web link to the online study format. During the verbal announcements, as well as in the email invitation, all employees were told that that they could complete the survey using their medium of preference (paper or online), and during their scheduled work time to maximize recruitment. Moreover, participants were able to pick up and drop off the paper surveys (in a sealed envelope) in a secure box at the police station. In addition, participants were informed that only aggregate anonymous data would be shared with their employer. Regardless of the medium of questionnaire administration format, participants were first presented with an informed consent form, which contained relevant information on the current study. The informed consent was also required before participants' data could be used. For the online version, only those individuals who consented to participate were allowed to continue to the questionnaire package. In order to ensure confidentiality for the paper surveys, additional envelopes were provided to the participants so that they could separate these consent forms prior to submitting the survey package in the secure box. The completed surveys were picked up frequently, over a 4-week data collection period.

Given that the time commitment to complete the questionnaire package was approximately 30 minutes, participants who chose to complete the survey were invited at the end of the survey to enter their names in a draw for one of 10 \$20 amazon.ca gift cards. Employees could choose not to participate in the study without penalty and did not suffer any difficulties as a result of their decision.

3.0 Results

Once data collection was complete, the dataset was downloaded from Qualtrics™ into Statistical Package for Social Sciences (SPSS). Data was analyzed primarily using SPSS (version 23), and STATA (version 15) when it was necessary.

3.1 Data Conditioning

Paper versions of the administered survey were merged with the online data version to create one large data file in SPSS. The data file was then screened and cleaned by following the guidelines outlined in Tabachnick and Fidell (2007). Descriptive statistics and frequency analyses were run on all the measures under consideration in the current study. This procedure was done in order to assess for accuracy of data input, and to identify potential out of range values and errors in the data file. Once the data set was screened, it was assessed for missing data patterns, univariate outliers, and assumptions of using a linear model.

3.11 Missing values analyses. Approximately 10% (12 cases out of 130) of participants were missing over 20% of their total data across study measures. In addition, no scale was missing more than 10% of its data with the exception of SEC work stressor volume, which was missing approximately 37% of its data. This is not surprising, given that the SEC work stressor volume scale measured recent stressful experiences in the past two years. Participants may have experienced a number of work-related stressors in their lifetime; however, not all those stressful experiences occurred in the past 2 years. Due to the prevalence of missing data in the present sample, Little's Missing Values test was used to assess the randomness of missing data patterns. Missing values analyses was used on all variables of interest, including PCL-5 (PTSD symptom

severity), CD-RISC-25 (resilience), SEC (work stressor volume), CERQ subscales (Coping strategies), ORQ subscales (occupational stressors) and OSI-R-SS, (social support) to screen for randomness in patterns of missing information. Fortunately, no statistically significant associations were found ($p > .05$), indicating that data was likely missing in a random fashion. Following this analysis, the 12 cases that were missing over 20% of their data were deleted, and a second analysis demonstrated that no scale was missing more than 5% of its data with the exception of SEC which, as expected, was missing approximately 34% of its data. Next, linear interpolations was used to replace missing values for scaled scores only, in order to protect the sample size for subsequent analyses (Kang, 2013).

3.12 Key assumptions of using a linear model. Once missing data patterns were evaluated, data was screened for univariate outliers. Univariate outliers were defined by standardized scores greater than +3.29 or less than -3.29 (Tabachnick & Fidell, 2007). In addition, histogram distributions were examined to determine whether potential outliers were discontinuous with the rest of the distribution. No univariate outliers were identified. Next, the assumptions of normality, linearity and homoscedasticity were assessed. To examine normality, skewness, kurtosis, histogram distributions and probability plots (p-p plots) were inspected. According to Tabachnick and Fidell (2007), standardized scores for skewness and kurtosis greater than +3.29 or less than -3.29 indicate deviations from normality. Using these criteria, PCL-5 (skewness = 6.37) and CD-RISC-25 (skewness = 5.11) showed variations from normality. Given the nature of police samples, it is reasonable to expect slight variations from normality for PTSD and resilience. Residual scatterplots were also inspected for linearity and homoscedasticity,

and patterns of relationships were concluded to meet these assumptions; thus, no adjustments were made to the true nature of the data.

3.13 Multivariate outliers. Multivariate outliers were assessed using Mahalanobis distances. This assessment was done by regressing participant ID number onto the relevant variables in the data file. Upon examination of the frequencies of these Mahals, no multivariate outliers were identified.

3.14 Multicollinearity and singularity. Multicollinearity is said to exist when two or more independent variables are too highly correlated ($r = > .90$, Tabachnick & Fidell, 2007). After inspecting the patterns of relationships between variables, significant associations between pairs of independent variables emerged. In particular, two subscales of the CERQ, namely “refocus on planning” and “positive reappraisal”, were highly interrelated ($r = .72$). According to Tabachnick and Fidell (2007), bivariate correlations of this magnitude is cause for concern. They suggest omitting one of these offending variables in subsequent analyses. Therefore, subsequent analyses, particularly for hypothesis 3 and hypothesis 5, were tested by omitting either *positive reappraisal* or *refocus on planning*. After examining several important indices, including *multiple R*², standard error of estimate, tolerance values, and variance inflation factors, results were similar. Thus, subsequent analyses were carried out as proposed (i.e., including both variables).

3.15 Power analyses. Type I error was controlled with a significance value of $p < .05$ for correlation and regression analyses conducted in the current sample. A more conservative p value of .01 was used for ANOVA and MANOVA analyses due to the multiple comparisons that were performed. A priori power analyses (Soper, 2017) were

tested to determine the required sample size for the current study. Using 15 variables as the highest number of predictors based on H3, with a medium effect size ($f^2 = .15$), and an alpha of .05, it was determined that a minimum sample size of 139 participants was required (i.e., $\geq .80$). An initial 130 participants were recruited; however, after data cleaning and conditioning, a total of 118 remained. A majority of the study hypotheses for the current study were adequately powered (because they required less variables in their models), with the exception of the hypotheses involving the CERQ subscales (i.e., H3, H5). Therefore, H3 and H5 were run as originally proposed, and rerun after modifying these analyses to reduce the number of variables. These analyses were modified by merging the five adaptive CERQ strategies (i.e., *acceptance*, *positive refocusing*, *refocus on planning*, *positive reappraisal*, and *putting into perspective*) into one composite “adaptive” subscale. Similarly, the four maladaptive CERQ subscales (*self-blame*, *rumination*, *catastrophizing*, and *blaming others*) were also combined into a composite subscale “maladaptive” subscale. Testing H3 and H5 as originally proposed (i.e., all 9 CERQ subscales), and in the aforementioned modified format, yielded statistically significant results (not shown in the current thesis). Consequently, the analyses for H3 and H5 were tested as originally proposed. Smaller effects may be more difficult to detect but these did not emerge in the reduced regression models. Hence, there is confidence in these findings as at least reflecting moderate to large effects and associations.

3.2 Descriptive Characteristics

Means, standard deviations, and frequency analyses were conducted for several instruments used in the current study. These descriptive results are available in Tables 1, 3, and 4.

On average, participants reported experiencing six lifetime traumatic events related to their work, such as witnessing someone physically injure themselves. Moreover, when examining more recent experiences (in the past 2 years), the average frequency of traumatic experiences only reduced to approximately four events. Thus, many of these experiences were recent. With respect to non-traumatic work stressors, participants also experienced average levels of stress in all of the six domains of the ORQ relative to public safety norms (Osipow, 1998). With regards to PTSD, the majority of the sample displayed mild symptoms of the disorder as measured by the PCL-5 (see Table 3 for these descriptive values). A minority of law enforcement employees met criteria for a provisional diagnosis of PTSD (14.4% of full sample; 6.6% civilian support staff, 14% policemen, and 26% policewomen). It is noteworthy to mention that there were no statistically significant differences between PTSD prevalence as a function of gender (see Table 1).

Overall, participants endorsed average levels of personal protective factors (i.e., social support, resilience and cognitive coping strategies). Specifically, scores were in the average range for social support (OSI-R-SS), resilience (CD-RISC-25), and CERQ cognitive coping (see Table 3).

3.21 Group similarities and differences. With the purpose of understanding the data collected in the current study, particularly as they pertain to law enforcement

employees, several analyses of variances (ANOVAs) were conducted on dependent variables of interest: PTSD symptom severity (PCL-5), resilience (CD-RISC-25), work stressor volume (SEC), and social support (OSI-R-SS). Likewise, several one-way multivariate analyses of variances (MANOVAs) were independently conducted for two dependent variables including coping strategy subscales (CERQ subscales), and occupational stressor subscales (ORQ subscales). These ANOVAs and MANOVAs were conducted as a function of four independent variables: gender (men vs. women), study format (online vs. paper) and employee status (police officer vs. civilian employee). Means and standard deviations are presented in Tables 1 and 4. A single factorial design could not be used in the current study to analyze these comparisons collectively due to small (or no) sample size found in some cells. For instance, there were no male civilian employees from one of the police organizations in the present study. Given the number of multiple comparisons that were performed, a more conservative alpha level of .01 was used to evaluate significant results.

A majority of these ANOVA and MANOVA analyses were not statistically significant, with the exception of employee status and study format. Results from these one-way ANOVAs indicated a significant difference in traumatic work stressor volume as a function of employee status, $F(1, 115) = 11.66, p = .001, \eta_p^2 = .10$, such that police officers reported more work-related stressors ($M = 4.23, SD = 3.06$) than civilian employees ($M = 2.07, SD = 2.79$). Furthermore, there were statistically significant differences in resilience as a function of study format, $F(1, 116) = 8.18, p = .005, \eta_p^2 = .10$, such that law enforcement employees who completed the survey on paper reported a higher level of resilience ($M = 80.76, SD = 11.03$) than those who completed the

survey online ($M = 70.27$, $SD = 15.98$), though both formats reflected high resilience levels. Consequently, variance associated with both format and employee status was statistically controlled in subsequent inferential analyses.

Results from one-way MANOVAs with the CERQ subscales and the ORQ subscales, respectively, yielded largely non-significant results. Gender, however, had a significant effect on coping strategies (*Pillai's Trace* = .21), $F(9, 108) = 3.01$, $p = .002$, $\eta_p^2 = .10$, with male participants scoring significantly higher on CERQ catastrophizing ($M = 56.25$, $SD = 10.01$) relative to female participants ($M = 51.24$, $SD = 8.33$). Given that a majority of police officers identified as male (73.6%), and a majority of civilian employees identified as female (90%), additional analyses were conducted to determine whether the aforementioned statistically significant gender difference was due to gender or employee status. A 2 (gender) x 2 (employee status) factorial ANOVA was conducted using CERQ catastrophizing coping strategy as the dependent variable. Results from this ANOVA indicated that neither employee status, $F(1, 113) = .24$, $p = .63$, nor gender had a significant main effect, $F(1, 113) = 2.17$, $p = .14$. In addition, there was no significant interaction between both variables, $F(1, 113) = .08$, $p = .78$. Nevertheless, to maintain consistency across subsequent inferential analyses, gender and employee status were statistically controlled in analyses involving the CERQ coping strategies.

3.22 Preliminary Correlational Analyses. A series of Pearson's correlations were performed to better understand the relations among all the variables used in subsequent inferential analyses. Variables included participant characteristics (i.e., age, gender, employee status, years of employment), stress variables (6 ORQ subscales, SEC

work stressor volume, and PCL-5 PTSD), and personal protective factors (OSI-R-SS social support, CD-RISC-25 resilience, and 9 CERQ coping subscales). It was essential to understand the degree of relatedness among variables in each category (i.e., participant characteristics, stress variables, and personal protective factors), because doing so allowed for increased parsimony in subsequent statistical analyses. In addition, before performing subsequent inferential analyses, it was necessary to evaluate the bivariate relations among all independent measures of interest (i.e., ORQ, SEC, OSI-R-SS, CD-RISC-25, and CERQ) and the major dependent variable in the current study (PCL-5 PTSD). This process facilitated the understanding of the subsequent predictors of PTSD that later emerged.

First, correlations among participant characteristics were conducted. The results from these correlations were largely non-significant, with the exception of age (see Table 5). Participants' age was positively correlated with "employment years" ($r = .69$; $p < .001$), such that being older was associated with being employed longer. Therefore, "employment years" variable was not included in later inferential analyses to minimize multicollinearity.

Second, correlations were conducted among participant characteristics and stress variables. Statistically significant correlations emerged in the expected directions (see Table 6). Specifically, higher scores on ORQ *role ambiguity* was significantly related to being younger ($r = -.21$, $p = .04$). Similarly, higher scores on ORQ *responsibility* was significantly related to being younger ($r = -.23$, $p = .02$), and with being male ($r = -.23$, $p = .02$). Finally, higher scores on ORQ *physical environment* was significantly related to being of younger age ($r = -.26$, $p = .008$), with being male ($r = -.25$, $p = .01$), and having

the employee status of a police officer ($r = -.37, p < .001$). Furthermore, higher scores on the SEC work stressor volume was significantly associated with being male ($r = -.20, p = .04$), and having the employee status of a police officer ($r = -.34, p < .001$).

Third, results from correlations conducted among participant characteristics and personal protective factors yielded largely non-significant findings with some exceptions. Higher scores on the CERQ catastrophizing coping strategy was significantly related to being male ($r = -.25, p = .001$), and having the employee status of police officer ($r = -.21, p = .026$). In addition, higher scores on the CERQ other blame coping strategy was significantly associated with being male ($r = -.19, p = .045$; see Table 6).

Fourth, correlations among the personal protective factors including CD-RISC-25 resilience, CERQ coping subscales and OSI-R-SS social support yielded fairly robust findings. As expected, higher scores on CD-RISC-25 resilience was significantly correlated with higher scores on OSI-R-SS social support ($r = .59, p < .001$). Similarly, higher scores on CD-RISC-25 resilience was significantly correlated with higher scores with the use of CERQ adaptive strategies, particularly *refocus on planning* ($r = .38, p < .001$) and *positive reappraisal* ($r = .44, p < .001$). On the other hand, higher scores on CD-RISC-25 resilience was most strongly correlated with the use of less CERQ maladaptive strategies including *self-blame* ($r = -.38, p < .001$), *rumination* ($r = -.40, p = .001$), and *catastrophizing* ($r = -.29, p = .001$; see Table 6). In sum, two CERQ adaptive coping strategies (refocus on planning and positive reappraisal) and three CERQ maladaptive coping strategies (self-blame, rumination, and catastrophizing; see Table 7) emerged as most strongly and differentially associated with CD-RISC-25 resilience.

Fifth, bivariate correlations among stress variables (i.e., ORQ occupational, PCL-5 PTSD, and SEC traumatic stressor volume) were also conducted. The magnitudes of these relations indicated a variety of interrelatedness between these stress variables, ranging from non-significant relationships (e.g., ORQ *physical environment* and PCL-5 PTSD; $r = .14, p = .14$) to fairly robust associations (e.g., ORQ *role ambiguity* and ORQ *role boundary*; $r = .65, p < .001$; see Table 8). Regardless of the degree of relatedness between these variables, all correlations were in the expected directions. In particular, PTSD symptom severity was most strongly associated with greater levels of ORQ *role insufficiency* ($r = .46, p < .001$), ORQ *role ambiguity* ($r = .34, p < .001$), and ORQ *role boundary* ($r = .42, p < .001$; see Table 8).

Finally, Pearson's correlations were conducted to address Hypothesis 2 which stated that higher levels of social support, resilience, "adaptive" coping styles, and lower levels of "maladaptive" coping styles, would be independently and significantly related to the experience of less severe PTSD symptoms. To test this hypothesis, correlations were conducted between the dependent variable PCL-5 total scores as an index of PTSD symptom severity, resilience (CD-RISC-25) total score, coping strategies (CERQ) subscale scores, and social support (OSI-R-SS) total score. The majority of correlational findings proceeded in the expected direction. Specifically, higher scores on CD-RISC-25 resilience ($r = -.64, p < .001$) and on the OSI-R-SS social support ($r = -.54, p < .001$) were significantly related to higher scores on PCL-5 PTSD symptom severity. As predicted, higher scores on all four CERQ maladaptive coping strategies were significantly negatively associated with higher scores on PCL-5 PTSD symptom severity (r 's $\geq .41, p < .001$; see Table 9). In particular, CERQ *other blame* coping

strategy had the weakest associations with PCL-5 PTSD symptom severity ($r = .24$ $p = .008$). Finally, three of the five CERQ adaptive coping strategy were significantly associated PCL-5 PTSD symptom severity. In particular, higher scores on CERQ *refocus on planning* ($r = -.19$ $p = .04$) and on CERQ *positive reappraisal* ($r = -.28$, $p = .002$) were both significantly associated with higher scores on PCL-5 PTSD symptom severity. Contrary to the predicted direction, higher scores on CERQ *acceptance* was significantly correlated with higher scores on PCL-5 PTSD symptom severity ($r = .21$, $p = .03$; see Table 9).

In summary, the current study investigated a number of correlational relationships among stress and personal protective factor variables. A few stress and personal protective factor variables emerged as having strong associations with other variables investigated in the current study (i.e., with age, gender, employee status, PCL-5 PTSD symptom severity, SEC work stressor volume, ORQ occupational stressor subscales, OSI-R-SS social support, CD-RISC-25 resilience, and CERQ coping subscales). These stress and personal protective variables include: three of six ORQ subscales (i.e., ORQ *role insufficiency*, ORQ *role ambiguity*, and ORQ *role boundary*), CD-RISC-25 resilience, OSI-R-SS social support, two of five CERQ adaptive coping subscales (i.e., CERQ *refocus on planning*, and CERQ *positive reappraisal*), and two of four CERQ maladaptive coping subscales (i.e., CERQ *rumination* and CERQ *catastrophizing*). These aforementioned stress and protective variables will be further analyzed in subsequent inferential analyses.

3.3 Major Analyses

A series of hierarchical regression analyses were conducted to evaluate hypotheses 1, 3, 4, 5, 6, and 7. In each of these regression models, age, gender, study format, and employee status were statistically controlled in Step 1. By adding these covariates in the first step, subsequent variables could be assessed for their unique contributions to the overall model. It is important to note that only one regression analysis was performed to address each hypothesis. As such, an alpha level of $p \leq .05$ was adequate to test for significance at both the omnibus test level and for each individual step.

3.31 Hypothesis 1. It was hypothesized that greater levels of occupational stress (i.e., organizational and operational stressors; 6 ORQ subscales) would predict more severe PTSD symptom (i.e., total PCL-5 scores). ORQ subscales (i.e., *Role Overload*, *Role Insufficiency*, *Role Ambiguity*, *Role Boundary*, *Responsibility*, and *Physical Environment*) were entered in Step 2 of the regression model. Results indicated that the omnibus model was statistically significant, predicting 18% of the variance in PTSD symptom severity, $R^2_{adj} = .18$, $F(10, 96) = 3.3$, $p = .001$ (see Table 10). This significance was not due to Step 1 of the model, $F(10, 96) = .69$, $p = .60$, but, the addition of occupational stressors in Step 2 significantly ($\Delta R^2 = .23$), $\Delta F(6, 96) = 5.00$, $p < .001$, explained additional variance over Step 1. The only occupational variable, however, to significantly contribute to PTSD symptom severity in Step 2 was ORQ *role insufficiency* ($\beta = .31$, $t = 2.45$, $p = .02$). Specifically, higher scores on the ORQ *role insufficiency* subscale were predictive of higher PTSD symptom severity.

3.32 Hypothesis 3. It was hypothesized that lower levels of “maladaptive” CERQ coping strategies and greater levels of “adaptive” CERQ coping strategies would predict

reduced PTSD symptom severity above and beyond the effects of social support (after first controlling for age, gender, study format, and employee status). Thus, a hierarchical regression model was tested in which PTSD symptom severity (PCL-5 total scores) was predicted by participant characteristics in Step 1. Social support (OSI-R-SS total) was entered in Step 2, and the 9 CERQ coping strategies entered in Step 3 of this model. The overall model was statistically significant, $R^2_{adj} = .54$, $F(14, 92) = 10.0$, $p < .001$, accounting for 54% of the variance in PTSD symptom severity (see Table 11). At Step 2, social support uniquely accounted for 31% of the variance in the current model, such that higher scores on the OSI-R-SS social support predicted lower scores on the PCL-5 PTSD symptom severity, ($\Delta R^2 = .31$), $\Delta F(1, 101) = 46.80$, $p < .001$. In addition, Step 3 with the CERQ statistically contributed additional information to the variance explained in PTSD symptom severity. Both CERQ adaptive and CERQ maladaptive coping strategies significantly explained an additional 27% of the variance in PTSD symptom severity, $\Delta R^2 = .27$, $\Delta F(9, 92) = 6.97$, $p < .001$, above and beyond the influences of social support. In particular, lower scores on CERQ *positive reappraisal* ($\beta = -.22$, $t = -2.05$, $p = .04$), higher scores on CERQ *rumination* ($\beta = .25$, $t = 2.38$, $p = .02$), and higher scores on CERQ *catastrophizing* ($\beta = .32$, $t = 3.49$, $p < .001$) predicted more severe PTSD symptoms. Therefore, hypothesis 3 was partially supported, with one of the CERQ adaptive coping and two of the CERQ maladaptive coping strategies predicting variability in PTSD symptom severity.

3.33 Hypothesis 4. It was expected that greater levels of resilience would predict reduced PTSD symptom severity above and beyond the effects of social support (after first controlling for participant characteristics of age, gender, format, and employee

status). In order to address Hypothesis 4, a hierarchical regression predicting PTSD symptom severity (PCL-5) was run in the following manner: participant characteristics entered into Step 1, social support (OSI-R-SS) entered into Step 2, and resilience (CD-RISC-25) entered into Step 3. The omnibus regression model was still statistically significant, $R^2_{adj} = .50$, $F(4, 102) = 18.66$, $p < .001$, accounting for 50% of the variance in PTSD symptom severity (see Table 12). As expected, Step 2 was still statistically significant, ($\Delta R^2 = .31$), $\Delta F(1, 101) = 46.97$, $p < .001$. Despite controlling for variance associated with social support, resilience uniquely explained an additional 19% of the variance in PTSD symptom severity, ($\Delta R^2 = .19$), $\Delta F(1, 100) = 40.87$, $p < .001$. Specifically, lower scores on CD-RISC-25 resilience predicted higher scores on PCL-5 PTSD symptom severity ($\beta = -.56$, $t = -6.39$, $p < .001$). Therefore, hypothesis 4 was fully supported.

3.34 Hypothesis 5. In order to further understand the type of coping strategies that more resilient law enforcement employees were endorsing, the following variables were entered to predict resilience (CD-RISC-25 total score): participant characteristics were controlled in Step 1, and the nine CERQ coping strategies were entered into Step 2. As expected, Step 2 contributed significantly to the overall model, ($\Delta R^2 = .45$), $\Delta F(9, 93) = 9.63$, $p < .001$ (see Table 13). Higher scores on CD-RISC-25 resilience was predicted by higher scores on two CERQ adaptive strategies including *refocus on planning* ($\beta = .25$, $t = 2.29$, $p = .02$), and *positive reappraisal* ($\beta = .27$, $t = 2.38$, $p = .02$), whereas higher scores on CD-RISC-25 resilience was predicted by lower scores on one CERQ maladaptive coping strategy, particularly, *ruminating* ($\beta = -.25$, $t = -2.21$, $p = .03$). Thus, hypothesis five was partially supported with greater use of two adaptive coping

strategies, and less reliance on one maladaptive strategy predicting stronger resilience in the sample.

3.35 Moderation Analysis. In order for a third variable (M; i.e., resilience) to moderate the relationship between an independent variable (X; i.e., frequency of stressful experiences) and an outcome variable (Y; i.e., PTSD symptom severity), X must exert a main effect on Y. According to Hayes (2018), however, this is not necessarily the case. Evidence of an association between X and Y is not required in order for X to be moderated by M. Consequently, even though it is not necessary for hypothesis 6 (i.e., greater work stressor volume would significantly predict more severe current post-traumatic symptoms) to be supported, it was still placed in Step 2 of the final moderation model.

It was hypothesized resilience would moderate the relationship between work stressor volume and PTSD symptom severity (i.e., PCL-5). For hypothesis 7, the statistical program STATA was used to conduct a series of regressions assessing for moderation, with Step 1 including the same control variables as entered previously. Variables were entered in the following manner: work stressor volume (i.e., SEC) and resilience (CD-RISC-25) were both entered into Step 2. Next, CD-RISC-25 was multiplied by SEC to create a moderation variable which was then transformed (i.e., mean-centered), and added into Step 3 of the hierarchical regression model. Results indicated that the omnibus test was significant, accounting for 55% of the variability in PTSD symptom severity, $R^2_{adj} = .55$, $F(14, 92) = 19.86$, $p < .001$. Unsurprisingly, both resilience and traumatic work stressors contributed to the prediction of PTSD symptom severity in Step 2 of the final model, ($\Delta R^2 = .53$), $F(2, 100) = 60.64$, $p < .001$.

Particularly, lower scores on the CD-RISC-25 resilience scores, and higher number of SEC traumatic work stressor volume significantly predicted higher scores on the PCL-5 (PTSD symptom severity). Finally, the moderation variable entered in Step 3 explained a small but statistically significant portion of variance in PCL-5 PTSD symptom severity above and beyond these individual variables, ($\Delta R^2 = .02$), $F(1, 99) = 5.74$, $p = .02$ (see Table 14).

To further understand how the relationship between traumatic work stressors and PTSD symptom severity changed as a function of resilience, group comparisons were performed. The focus of these comparisons was to determine whether high levels of resilience were associated with lower levels of PTSD symptom severity at varying levels of stressor volume. Given that these comparisons were unplanned, group differences were explored using Scheffe's pairwise comparisons. This procedure is particularly conservative since it controls the overall statistical significance while conducting all possible comparisons, thereby controlling for type 1 error (Day & Quinn, 1989). Both CD-RISC-25 resilience and SEC work stressor volume were standardized (i.e., their $M = 0$ and their $SD = 1$) for the purposes of this exploration. Participants' levels of resilience ($-1 SD$, M , $+1 SD$) were compared across each level of work stressor volume ($-1 SD$, M , $+1 SD$). Relevant results from Scheffe's pairwise comparisons are reported in Table 15 and shown graphically in Figure 1.

At low volume of stressors, low resilience ($-1 SD$) was compared to moderate resilience (M), and moderate mean differences were found between these two groups ($d = .55$, $t = -5.85$, $p < .001$). Similarly, at low volume of stressors, participants who endorsed low levels of resilience ($-1 SD$) were compared to those who endorsed high

levels of resilience (+1 *SD*). Results from these comparisons also indicated large mean differences between these two groups ($d = -1.1, t = -5.85, p < .001$).

At high volume of stressors, low resilience (-1 *SD*) was compared to moderate resilience (*M*), and large mean differences were found between these two groups ($d = .84, t = -9.8, p < .001$). In addition, at high volume of stressors, low resilience (-1 *SD*) was compared to high resilience (+1 *SD*) where very large mean differences between these two groups emerged ($d = 1.7, t = -9.8, p < .001$).

When examining across high resilience levels (+1 *SD*), there were no significant mean differences among participants for the low stress volume versus moderate stress volume level comparisons ($d = .16, t = 1.81, p = .91$). Similarly, there were no significant differences between low stress and high stressor volume groups ($d = .32, t = 1.81, p = .91$) when examined across high resilience levels. In contrast, however, when examining across low resilience levels, there were significant but small mean differences between participants in the low stressor volume versus those in the moderate stressor volume groups ($d = .45, t = 4.63, p = .01$). Furthermore, there were large significant mean differences between the low stress and high stress volume groups ($d = .89, t = 4.6, p = .01$) when inspecting across low resilience groups.

In sum, these above noted group comparisons further assess the moderating effect of resilience and indicate that the relationship between work stressor volume and PTSD changed as a result of the influence of resilience. This complex relationship was in the expected direction, such that resilience was important for predicting less severe PTSD symptoms at varying levels of work stressor volume. Furthermore, regardless of the level of work stressor volume, participants who endorsed high levels of resilience had

less severe PTSD symptoms. In contrast, stressor volume did matter for participants who endorsed low or moderate levels of resilience. In particular, participants reported more severe PTSD symptoms when exposed to more stressors, especially if these participants also endorsed low or moderate levels of resilience.

4.0 Discussion

Law enforcement personnel are exposed to numerous potentially traumatic incidents as a function of their work, which can have adverse effects on the mental health functioning of these employees (Chopko et al. 2013). According to a study by Chopko, Palmieri, and Adams (2015), police officers are exposed to an average of 188.5 critical incidents over the course of their careers. Furthermore, civilian personnel employed by police organizations, such as dispatch/911 operators and administrative staff members, are exposed to potentially traumatic stressors because of their job responsibilities. Some of these stressors include direct dealings with the public through dangerous situations over phone lines (i.e., dispatch/911 operators), managing forensic evidence (i.e., civilian clerks), and working in victim services (i.e., civilian support staff); thus, work-related stressors and mental health functioning are important areas to study among all law enforcement personnel. In policing contexts, previous research has focused heavily on risk factors predicting PTSD symptom severity particularly among law enforcement employees (e.g., Maguen et al., 2009; Marchand et al., 2015). Insufficient focus, however, has been given to the influence of personal protective factors on PTSD symptom severity in this workforce. Although researchers have thoroughly examined the influence of protective factors like social support on PTSD symptom severity (Ellrich & Baier, 2017; Prati and Pietrantonio, 2010), there is a need to

better characterize the influence of other protective factors (i.e., coping strategies and resilience) on PTSD symptom severity among law enforcement employees.

Consequently, the present study investigated individual differences in coping strategies and resilience on concurrent PTSD symptom severity in a sample of police and civilian law enforcement employees. In addition, these protective factors were examined in a comprehensive model that included the robust associations of social support. It was anticipated that resilience would have a moderating role on the association between volume of traumatic work stressors and current PTSD symptom severity. It was further expected that the types of coping strategies utilized by law enforcement employees would help differentiate resilient law enforcement employees from those who are less resilient. To situate the major findings from the current study, and to provide a context to facilitate the interpretation of these findings, it is important to first discuss the stress levels, PTSD symptom severity, and level of personal protective factors endorsed by participants in the current study.

4.1 Stress Experiences in Law Enforcement Personnel

The current sample consisted of employees from two Atlantic Canadian municipal police organizations. Expectedly, employees were primarily represented by police officers (74.4%), with the rank of Constable (68.5%), whereas 10.2% were dispatch/911 operators, and 15.2% were other civilian support staff members or civilian supervisors or managers. Participants reported experiencing an average of four critical incidents related to their work in the past two year, with police officers reporting more traumatic work stressors when compared to civilian employees. In particular, some of the top-rated recent traumatic stressors for police officers included responding to a challenging

situation involving contact with an emotionally distressed person (66.7%), responding to a violent situation with threat to self or others (54%), and responding to an incident involving child abuse or child neglect (49.4%). On the other hand, the top-rated recent stressors for civilian employees included stressful interactions with co-workers (43.3%) and supervisors (33.3%) and witnessing someone physically injure or kill themselves in person or over the phone (26.7%). Thus, both police officers and civilian employees reported recent potentially traumatic stressors as a function of their work responsibilities. These frequent critical incidents reported in the current study also have emerged from other studies that have examined the frequency of critical incidents among law enforcement employees (Chopko et al., 2015; Weiss et al., 2010). Specifically, incidents involving harm to self or others, incidents involving harm to children, and problematic supervisory relationships are themes that have emerged consistently (Chopko et al., 2015; Violanti & Aron, 1995; Weiss et al., 2010). Although police officers reported exposure to a higher volume of potentially traumatic critical incident stressors, there were no significant differences in the severity of their experience of organizational stressors when compared to civilian employees (as measured by the ORQ). Therefore, although there are nuances as to specific stressor exposure, the experience of these stressors in the police work environment was similar for both police officers and civilian support staff members. These experiences were also similar to that of other public safety employees based on normative comparisons on the OSI-R.

Consistent with the literature on prevalence of PTSD among law enforcement personnel, the majority of employees in the current sample were not experiencing

clinically elevated symptoms of the disorder. There were, however, a minority (approximately 14%) of employees who met criteria for a provisional diagnosis of PTSD. This rate was within the range estimates for PTSD prevalence for law enforcement employees (5% to 19%; Berger et al., 2012; Maia et al., 2007; Martin et al., 2009; Pietrzak et al., 2012). Furthermore, there were no differences in PTSD symptom severity as a function of an employee's gender (male vs. female) or an employee's job status (police officer vs. civilian support staff), thereby suggesting that both genders and both job positions may be similarly affected.

Although a number of researchers have reported that policewomen are similarly affected by PTSD symptoms when compared to policemen (Darensburg et al., 2006; Perrin et al., 2007), limited studies have examined the status of PTSD symptom prevalence among civilian employees working within police organizations. Indeed, civilian support staff are sometimes excluded from policing research, which limits our understanding of research conducted within these policing organizations. Therefore, it was crucial to include civilian support staff members within the research goals of the current study. The current data provided support alongside the results of Carleton et al. (2017), who found that civilian employees were just as likely as sworn police officers to develop PTSD. Nevertheless, given that only a minority of the current mixed sample had symptoms that met criteria for a provisional diagnosis of PTSD, it can be concluded that, as a whole, the current merged sample of law enforcement employees was fairly resilient. In fact, the overall CD-RISC-25 resilience scale scores were consistent with this interpretation.

Despite the resilient nature of the current sample, law enforcement employees who met criteria for PTSD were also more likely than those who did not meet these criteria to use maladaptive coping strategies, endorse lower resilience, and have less social support. In particular, these employees were more likely to ruminate and engage in catastrophic thinking in response to occupational stressors. In addition, employees who suffered from more severe PTSD symptoms were more prone to blame themselves or blame others as the source of their stressors. Law enforcement employees who had more severe PTSD symptoms were also less likely to utilize adaptive coping strategies in response to their stressful experiences. Specifically, they were less likely to engage in thought processes that reassigned positive meaning to traumatic events (i.e., positive reappraisal) and they had difficulty refocusing on steps necessary to tackle a negative event (i.e., refocus on planning).

Interestingly, law enforcement personnel who met criteria for PTSD were more likely to utilize acceptance as a coping strategy. This was an unexpected finding given that acceptance is commonly classified as an adaptive coping strategy (Garnefski et al., 2002). For instance, Barberis and colleagues (2017) found that use of acceptance as a coping strategy positively predicted general mental health functioning. Acceptance as a coping strategy is typically utilized in Acceptance and Commitment Therapy (ACT). ACT encourages clients to accept their situation when it cannot be changed easily, and make a commitment to living a value-driven life despite the adverse situation (Kangas & McDonald, 2011). This form of therapy appears to be effective for a range of personal conditions, including chronic pain and acquired brain injury (Kangas & McDonald, 2011). Although personal stressors were not evaluated in the current study, law

enforcement employees do face a range of personal (e.g., divorce, McCoy & Aamodt, 2010) and health stressors (e.g., elevated cardiovascular risk factors; Wright, Barbosa-Leiker & Hoekstra, 2011) that may interact with their experience of occupational stressors. Thus, acceptance strategies appear to be important for both personal and occupational stressors, but this effect may depend on the appropriate use of acceptance.

Admittedly, the finding of greater use of acceptance strategies being associated with more severe PTSD symptoms was contrary to the generated hypothesis; however, this finding is not unique. According to findings from other studies, greater use of acceptance as a coping strategy has been related to greater depressive symptoms (Lei et al., 2014; Martin & Dahlen, 2005). The disparity in the use of acceptance coping may be better understood by examining the items that make up the acceptance cognitive strategy. For instance, strongly agreeing with items such as “I think that I have to accept that this has happened”, or “I think that I cannot change anything about it” may indicate learned helplessness, and rigidity in cognitive processes. Thus, the use of acceptance coping strategy is ambiguous. Despite the adaptive value of acceptance as a coping strategy (Barberis et al., 2017; Kangas & McDonald, 2011; i.e., when the stressor cannot be changed or solved), premature acceptance may become maladaptive. For law enforcement employees in particular, resigning to stressful work situations may be maladaptive when something can be done about the situation (i.e., fail to problem solve solutions or resolve the stressor). As such, the adaptive quality of acceptance as a coping strategy may depend on how it is used (e.g., premature acceptance) and on the solvability of the situation to which it is applied. An alternative hypothesis to understanding the disparity in the use of acceptance coping may lie in its original

definition. According to Garnefski et al. (2002), *acceptance* exemplifies thoughts of resigning oneself to what has happened, and this definition does not line up to the description of *acceptance* as used in ACT. Therefore, *acceptance* according to Garnefski et al. (2002) should be appropriately redefined as “resignation” and reclassified as a maladaptive coping strategy. Additional research is necessary to validate these aforementioned hypotheses.

4.2 Personal Protective Factors

The use of personal protective factors like resilience, social support, and coping strategies can influence an individual’s experience of stress. Overall, law enforcement personnel endorsed average levels of resilience, and these levels were comparable to other first responders (e.g., firefighters; Lee et al., 2014) and to the general population (Connor & Davidson, 2003). Thus, first responders are no more protected from the negative impact of stress than other people when it comes to resilience but do fairly well overall. Indeed, only a minority (13.6%) of law enforcement personnel reported below average scores on the resilience scale. Furthermore, resilient employees were less likely to report feeling underutilized in their job roles, and were less likely to struggle with managing conflicting work demands. These resilient employees were also more likely to report having at least one person at home or at work who provided social support for them.

Nine distinct coping strategies that people typically use when faced with critical incidents and stressful situations were explored in the current study. Findings indicated that, when compared to the general population (Garnefski et al., 2002) and other police samples (Young, Hennington, & Eggleston, 2018), the current sample utilized similar

levels of adaptive and maladaptive coping strategies. Furthermore, the use of adaptive coping strategies were associated with greater levels of resilience and social support, and largely disassociated with maladaptive coping strategies. For example, the use of the adaptive coping strategy “*putting into perspective*” was weakly associated with the use of blame-based coping strategies (i.e., *self-blame* and *other blame*). Thus, findings suggest that use of one personal protective factor (e.g., adaptive coping strategies) is largely associated with the use of other protective factors (i.e., resilience and social support).

In line with studies that have examined CERQ coping strategies among law enforcement employees (Grubb, Hall, & Brown, 2015), male and female employees in the current sample were similar in their use of these nine coping strategies. Interestingly, some studies using non-policing samples have reported gender differences in these cognitive coping strategies. In particular, these studies reported that women were more likely to catastrophize and ruminate in response to negative situations (Garnefski, Teerds, Kraaij, Legerstee, & Kommer, 2004; Zlomke & Hahn, 2010). However, there seems to be a distinct gender-based pattern of results emerging in policing versus non-policing samples with coping, as has been found with PTSD. Recall that studies consistently implicate gender as a risk factor in the development of PTSD in general clinical populations (e.g., Tolin & Foa, 2006), but not in law enforcement samples (Darensburg et al., 2006; Perrin et al., 2007). Specifically, when compared to male civilians from the general population, female civilians are more likely to develop PTSD, whereas both male and female law enforcement employees have similar rates of PTSD. Likewise, studies also indicate that gender influences the use of coping strategies in

traumatic situations in the general population (Garnefski et al., 2004; Zlomke & Hahn, 2010), but not in law enforcement samples as indicated by the current study and by Grubb et al. (2015). Therefore, there is preliminary evidence to suggest that women working in police organizations may become socialized to resemble their male counterparts. Future research would need to investigate this perspective further.

4.3 Predictors of PTSD Symptom Severity

Recovering from traumatic stress exposure depends on a mix of risk and protective factors. Risk factors are related to the development and maintenance of post-traumatic symptoms, whereas protective factors can prevent or reduce symptomatology or promote recovery (King et al., 2004). The current study largely focused on the protective factors influencing PTSD symptom severity; however, to situate subsequent findings and to provide a context to better understand the current findings, the relationship between work-related stressors and PTSD symptom severity were first examined.

4.31 Occupational factors. There are several risk factors that contribute to a law enforcement personnel's experience of PTSD; however, there is some debate surrounding which occupational factors are most associated with PTSD symptoms among police officers. Some studies highlight the role of operational incidents on the development of PTSD (Lieberman et al., 2002), whereas others identify organizational or routine work stressors (e.g., non-supportive work environment) as more important than critical incidents in the development and maintenance of psychological distress among law enforcement officers (Haisch & Myers, 2004; Maguen et al., 2009). Given this debate surrounding types of stressors, the present study specifically focused on the type

of stressors (operational vs. organizational stress) as a risk factor for PTSD development and maintenance. As such, it was anticipated that several routine work organizational stressors would predict more severe PTSD symptoms. Indeed, findings replicated the position that organizational stressors are a more prevalent source of stress when compared to critical incident stressors (Maguen et al., 2009). Law enforcement employees in the current sample experienced average levels of organizational stressors in all of the six domains of the ORQ. In addition, having trouble in one ORQ domain (e.g., role insufficiency) was associated with difficulties in the other five domains (i.e., role boundary, role ambiguity, role boundary, responsibility, and physical environment). Although law enforcement employees in the current sample experienced average levels of occupational stressors in the ORQ domains, the role insufficiency domain had the strongest impact on PTSD symptom severity. Law enforcement personnel who perceived being overlooked and/or who felt that their skills did not match their current position experienced more severe PTSD symptoms. On the other hand, the PTSD symptoms may have exacerbated these organizational stressors experienced by participants.

Even though some of the other ORQ domains did not predict PTSD symptom severity directly, it is still important to consider the influence of two domains in particular – role ambiguity and role boundary. The most robust associations among the six ORQ domains were found between role insufficiency and role boundary, role insufficiency and role ambiguity, and role ambiguity and role boundary. Individuals who felt underutilized (i.e., role insufficiency) were also more likely to report having an unclear sense of work expectations (i.e., role ambiguity), and/or report feeling caught

between conflicting supervisory demands (i.e., role boundary). Interestingly, individuals experiencing more severe PTSD symptoms were also more likely to report higher scores in the domains of role insufficiency, role ambiguity, and role boundary (but not in the domains of role overload, responsibility, and physical environment). Thus, an employee with more severe PTSD may find it harder to perform their job responsibilities, which can in turn increase their occupational stress. Items on the domains of role insufficiency, role ambiguity, and role boundary seem to be most related to the work environment, including interactions with co-workers and supervisors. Therefore, it is not surprising to find that these particular work stressors were associated with an employee's experience of PTSD, especially considering that the police organization sets the backdrop from which critical incidents are interpreted and processed (Patton, 2006). Given that law enforcement employees have little control over exposure to potentially traumatic critical incidents, an encouraging work environment may offer protective benefits to employees' overall mental health functioning.

Studies that have examined PTSD symptom severity in first responder samples focus heavily on risk factors; when they do examine mitigating factors, this research places emphasis on different types of social support (personal vs. work; Ellrich & Baier, 2017; negative vs. positive support; Marchand et al., 2015). The current study sought to extend existing research and provide a fulsome understanding of PTSD symptom severity by examining other protective factors, particularly cognitive coping and resilience. These positive protective factors were further examined in a comprehensive model that included the effects of social support. It was important to study the potential effects of these protective factors in a comprehensive model, because doing so allowed

for the determination of their relative strength of influence on PTSD symptom severity. Specifically, one goal of the current thesis was to determine whether coping strategies would predict PTSD symptom severity beyond the robust effects of social support.

4.32 Social Support. Unsurprisingly, the current study replicated previous findings of social support as offering robust protection from PTSD symptom severity (Ozer et al., 2003). As with the current study, previous research has found that quality social support has moderating effects on the development and/or severity of PTSD symptoms (Martin et al., 2009). In particular, individuals who have better quality relationships tend to be those who are more resilient later in their lives (Collishaw et al., 2016). Thus, a supportive work environment and personal supports are likely important for law enforcement employees to help them buffer from organizational and critical incident stressors on the job and personal stressors they experience outside of it (Prati & Pietrantoni, 2010).

4.33 Cognitive coping strategies. In order to achieve a thorough understanding of the value of coping strategies in mitigating PTSD symptom severity, a comprehensive model that included social support and adaptive/maladaptive coping strategies was employed. This is the first known study examining CERQ cognitive emotion coping strategies in relation to PTSD symptom severity among law enforcement employees. Therefore, the current study contributes uniquely to the body of literature on PTSD symptom severity in policing contexts.

Although seven coping strategies emerged as having significant bivariate associations with PTSD symptom severity, only a few of these materialized as most relevant in predicting PTSD symptom severity in regression models. Consistent with the

generated hypotheses, cognitive coping strategies uniquely contributed to PTSD symptom severity over the positive effects of social support. Specifically, two maladaptive coping strategies and one adaptive coping strategy were the most relevant coping predictors of PTSD symptom severity. Being preoccupied with feelings and thoughts associated with the stressful event (i.e., *rumination coping strategy*), and reoccurring thoughts that emphasize the worst-case scenario of the stressful experience (i.e., *catastrophizing*) each predicted more severe PTSD symptoms. In contrast, engaging in thought processes that reassigns positive meaning to stressful events (i.e., *positive reappraisal*) predicted less severe PTSD symptoms. These findings are consistent with other studies that have examined the influence of cognitive coping strategies on overall mental health (e.g., Barberis et al., 2017). Interestingly, all three aforementioned coping predictors (i.e., higher rumination, higher catastrophizing, and lower positive reappraisal) have been found to predict the degree of overall mental health issues (Barberis et al., 2017), depression (Martin & Dahlen, 2005), and PTSD symptoms in non-policing samples (Jenness et al., 2018). Given that these three cognitive coping predictors have emerged consistently across studies, the current findings support the significance of addressing catastrophic and ruminating thinking among law enforcement employees in order to manage the experience of PTSD. Catastrophizing or preoccupation with negative thoughts and feelings about stressors in one's life (i.e., ruminating) may indicate deficits in one's cognitive coping strategies. Such individuals may lack the ability to attenuate their arousal to negative events. This perspective aligns with Jenness et al. (2018), who wrote of the necessity to appropriately characterize the cognitive contents of one's traumatic events (in relation to PTSD).

Fortunately, these cognitive strategies can be unlearned, and replaced by more positive adaptive coping strategies (Berking, Meier, & Wupperman, 2010). The current study further suggests that cognitively reframing a negative event in a positive manner (i.e., positive reframing) has a moderating effect on the experience of PTSD. Interestingly, positive reappraisal is one cognitive strategy that is frequently utilized in cognitive-behavioural therapies (Beck, Emery, & Greenberg, 2005) and the literature generally supports the utility of cognitive-behavioural therapy for treating PTSD (Cohen & Mannarino, 2008).

Cognitive coping strategies are important to the mental wellness of law enforcement employees given that the ability to identify and evaluate one's emotional reaction to a stressful event may have important consequences for how one experiences PTSD (peri-traumatic dissociations). Although cognitive coping strategies play a role in a variety of psychopathologies (e.g., eating disorder, Kelly, Lydecker, & Mazzeo, 2012; depression, Kraaij et al., 2003), it may be particularly important to consider these strategies in PTSD symptom severity due to the subjective experience of peri-traumatic dissociations. Indeed, studies indicate that individual differences in peri-traumatic cognitions and emotions are predictive of subsequent PTSD diagnosis among police officers (Hodgins et al., 2001). In addition, given that coping strategies are more dynamic in nature than they are stable, they may be vulnerable to situational changes (Nielsen & Knardahl, 2014). As such, it may be that constant trauma exposure does not allow an individual to recover and replenish their cognitive coping stores sufficiently before a new exposure. Thus, their use as a protective factor in cumulative trauma situations may be negatively impacted. If this line of reasoning is plausible, then

cumulative trauma exposure may deplete one's reservoir of adaptive cognitive strategies and potentially increase the use of maladaptive ones; therefore, increasing the risk of PTSD. Additional research is needed to further tease apart these scenarios.

4.34 Police resilience. Although resilience has been studied among first responder groups (Blackburn & Owens, 2016; Fyhn et al., 2016), it was necessary to evaluate the role resilience plays in a comprehensive model of protective factors in relation to PTSD. It was anticipated that greater levels of resilience would predict reduced PTSD symptom severity above and beyond the effects of social support (and confounding variables of age, gender). Results supported the stated hypotheses, such that resilience contributed significantly to less severe PTSD symptom severity, above and beyond the robust effects of social support. More importantly though, is the finding that the positive relationship between work stressor volume and PTSD symptom severity changed as a result of the influence of resilience (based on moderation analyses). This complex relationship was in the expected direction, in that resilience predicted more (or less) severe PTSD symptoms at various levels of work stressor volume. At low levels of work stressor volume, law enforcement employees in general reported less severe PTSD symptoms. Indeed, at such low levels of stressor volume, one could not differentiate between more resilient or less resilient law enforcement employees. When stressor volume increased, however, resilience became more important, such that more resilient employees reported less severe PTSD symptoms. The experiences of PTSD for these resilient employees may have been mitigated by the protective qualities of resilience. Furthermore, regardless of the level of work stressor volume, law enforcement employees who endorsed high levels of resilience had less severe PTSD symptoms,

further indicating stability in these resilient law enforcement employees. Moreover, the protective effect of resilience did not dissipate as the frequency of stressful experiences increased, whereas stress level substantially impacted the experience of PTSD for less resilient law enforcement employees. The more stressor volume that participants experienced, the more severe PTSD symptoms they reported. These results are consistent with previous studies examining the relationship between resilience and mental health functioning (Wu et al., 2015; Ying et al., 2014). Indeed, resilience has been shown to impact the relationship between stress and substance-use difficulties in the military (Austin-Ketch et al., 2012), as well as stress and depression in the general population (Wingo et al., 2010). Thus, there is a clear role for resilience as a factor that decreases the severity of PTSD, and perhaps vulnerability to its development, but much remains to be understood about the construct of resilience.

4.4 Resilience as a Multidimensional Concept

There is much confusion in the literature concerning the conceptualization of psychological resilience, and no universal definition exists. The manner in which resilience is conceptualized has implications for prevention and treatment of PTSD. For instance, if resilience is better conceptualized as a trait, then it may be necessary to include resilience tools in prescreening procedures for law enforcement employees, whereas, if it is a skill, then it could be enhanced with training once hired. The concept of resilience has been defined in many different ways, with a majority of these definitions falling into one of three categories: trait, process, and outcome (Luthar et al., 2000; Masten, 2007). Early descriptions of resilience classified it as a personality trait or a personal capacity inherent in the individual (e.g., hardiness, Kobasa, 1979). Over time

however, researchers came to realize that resilience could be malleable, especially as resilient individuals interacted with their environment (resilience from a process perspective; Olsson et al., 2003). From this process standpoint, resilience is defined as a dynamic mechanism that changes over time, and may also include protective processes like skills and competencies (Olsson et al., 2003; Luthar et al., 2000). For example, an individual may react favorably to adverse situations in one moment, but may not react in such a positive manner later to a similar situation (Luthar et al., 2000). Finally, from an outcome perspective, resilience is defined as successful adaptation to chronic stressors, with a focus on maintaining psychological functionality (Masten, 2007; Olsson et al., 2003). Consequently, subsequent resilience research allowed for a definition of resilience that was expansive and came to include non-trait skills (e.g., active problem-solving skills; White et al., 2008) that may be improved upon with training. Despite these advanced perspectives, in policing contexts, researchers have generally supported a conceptualization of resilience as a trait, reflecting an individual's personal capacity cope with stressful experiences (e.g., hardiness, Fyhn et al., 2016). It is conceivable that part of the misunderstanding in the literature regarding resilience is a result of researchers forcing the concept of resilience into one dimension. Although a unidimensional conceptualization may be easier to understand, such a myopic view oversimplifies the construct of resilience and undoubtedly limits a comprehensive understanding of the construct.

The current evidence is not sufficient to characterize resilience as just one dimension, but rather suggests that resilience encompasses both stable (i.e., traits) and dynamic aspects (e.g., process and outcomes). Indeed, an examination of items on the

well-validated CD-RISC-25 measure of resilience used in the current study further echoes that resilience likely encompasses both stable and dynamic aspects. Items such as “I am able to adapt when changes occur”, and “under pressure, I stay focused and think clearly”, indicate characteristics inherent in the individual. However, items such as “I have at least one close and secure relationship that helps me when I am stressed”, and “having to cope with stress can make me stronger,” indicate situational influences (support) and cognitive reappraisals on resilience. Furthermore, the CD-RISC-25 measurement of resilience does statistically distinguish several factors within its instrument, suggesting that a multidimensional approach may be best for measuring resilience. There is, however, no definitive consensus as to the number of factors that make up the CD-RISC-25. Connor and Davidson (2003) described five factors, whereas Pietrzak et al. (2011) described four factors. A redefinition of the construct of resilience from a multidimensional perspective might assist researchers in reaching a consensus on relevant factors underlying resilience. Taken together, resilience is likely best captured as a multidimensional construct that includes relatively stable aspects like temperament (Tugade & Fredrickson, 2004) and malleable aspects like active problem-solving skills (White et al., 2008).

If resilience is more than just a personality trait, then there must be other malleable factors, that when targeted, may indirectly influence an individual’s resilience levels. The current study explored the relationship between coping strategies and resilience levels. Consistent with the current study’s predictions, greater use of adaptive coping strategies predicted greater levels of resilience, whereas less use of maladaptive coping strategies predicted greater levels of resilience. In particular, *refocus on*

planning, positive reappraisal, and ruminating emerged as the primary coping predictors of resilience. Consequently, there is evidence to suggest that a focus on utilizing adaptive coping strategies, while reducing the use of maladaptive strategies would increase an individual's psychological resilience. It is important to note that, although resilience and coping strategies are related, they are likely not the same constructs. As expected, correlational analyses from the current study found small to moderate ($r = .18$ to $.44$) associations between resilience and CERQ coping strategies, with a few exceptions. In particular, the associations between resilience and CERQ acceptance ($r = -.08, p = .38$), and between resilience and CERQ other blame ($r = .16, p = .07$) were not statistically significant. According to Tabachnick and Fidell (2007), multicollinearity (i.e., when two variables are highly correlated), occurs when $r > .90$. Given that there were only small to moderate associations between resilience and CERQ coping strategies, it can be concluded that these constructs are distinct. Thus, resilience seems to include adaptive coping strategies, particularly refocus on planning and positive reappraisal, but is not limited to the use of these adaptive coping strategies.

Interestingly, the emergence of *refocus on planning, positive reappraisal, and ruminating* coping strategies as tied to resilience is not surprising given that these are the same strategies that predicted PTSD symptom severity in the current study. With these adaptive coping skills, resilient law enforcement employees are able to assign positive meaning to stressful events and could engage in thoughts that encourage planning for effective coping with an anticipated or management of the experienced event. These resilient law enforcement employees are also less likely to magnify or

become preoccupied with negative thoughts and emotions surrounding their traumatic experiences.

4.5 Implications

Considering the continuous occurrences of stressful experiences encountered by law enforcement personnel, as well as the prevalence of mental health difficulties within this population (Carleton et al., 2017), studies that examine protective factors as it relates to this population are vital. The information gathered from the current study helped to estimate the prevalence of municipal law enforcement employees most at risk for developing PTSD. Findings indicated that cognitive coping strategies influenced an employee's development and/or maintenance of PTSD symptoms. In particular, the current study emphasized the importance of responding appropriately to potentially traumatic incidents by utilizing adaptive coping and minimizing the use of maladaptive coping strategies. Specifically, adaptive coping strategies of positive reappraisal and refocus on planning, and maladaptive coping strategies of rumination and catastrophizing were highlighted as having the greatest influence on both PTSD symptom severity and resilience. In addition, the current study found that law enforcement employees used similar levels of adaptive and maladaptive coping strategies when compared to the general population. Given the frequency of potentially traumatic incidents that law enforcement employees are exposed to over time (e.g., 188.5 incidents; Chopko et al., 2015), there may be a need to increase the utilization of adaptive coping strategies and reduce the utilization of maladaptive strategies (including alcohol use) more so than on what lay people rely. Therefore, there is a need to train law enforcement employees on the use of effective coping strategies that may help to

promote their resilience. Specifically, police organizations should seize opportunities to train employees in mandatory sessions and/or in informal settings (e.g., during debriefings). Mandatory training ensures that all employees have the opportunity to receive or refresh their understanding on adaptive coping strategies, and may provide them with a space for self-reflection. In addition, training in an informal setting may address barriers to seeking mental health services (e.g., fear of stigmatization, personal weakness; Wester, Arndt, Sedivy, & Arndt, 2010), which is prevalent in first responder organizations (e.g., military; Hoge et al., 2004).

The current study underscored the importance of higher levels of resilience in not only predicting lower PTSD symptoms, but also in moderating PTSD symptoms. Endorsing higher levels of resilience appeared critical when law enforcement employees were exposed to a greater volume of stressors. Thus, the present study contributed to the growing literature that supports psychological resilience's positive influences on specific aspect of mental health functioning (e.g., depression, Wingo et al., 2010). In light of this finding, training law enforcement employees on resilience skills may be a viable strategy to promote mental health wellness within the police organization. Indeed, preliminary studies by Swedish and Dutch researchers who have examined the effect of resilience training programs on police employee wellness have shown promising short-term effects (Arnetz, Nevedal, Lumley, Backman, & Lublin, 2009; van der Meulen, Bosmans, Lens, Lahlah, & van der Velden, 2017). For instance, Arnetz and colleagues (2009) administered an author-developed simulation program to 75 Swedish police officers who had approximately one year of work experience. The training (administered by trained police officers) included 10 weekly 2-hour sessions consisting

of relaxation techniques viewing police-relevant imagery simulations. These imagery scenarios were developed by interviewing police officers (with longer employment experience), and included critical incidents frequently encountered in the policing line of work (e.g., such as another fellow officer's life in danger, or responding to a domestic violence call that involved children). After viewing these simulations, participants were then presented with effective coping techniques (e.g., emotions surrounding the scenario and weapon management). Participants viewed the imagery scenarios in pairs and their blood samples and heart rates were measured during these scenarios. Results from this resilience training indicated that, when compared to police officers in the control group ($n = 9$), police officers in the experimental group (i.e., viewing police-relevant scenarios and practicing effective coping skills; $n = 9$), reported less negative moods and performed better during exposure to critical incident simulation tests (Arnetz et al., 2009). Although the sample size in the aforementioned study was small, and researchers failed to measure baseline mental health functioning of police officers, results provide preliminary findings for the potential benefits of training resilience. In addition to implementing resilience training among municipal law enforcement employees, it may be necessary to include resilience instruments in prescreening procedures for law enforcement hiring candidates. Assessing resilience may help recruit into the police force individuals who have higher levels baseline resilience.

4.6 Strengths and Limitations

The majority of studies on PTSD conducted on law enforcement personnel focus on larger police organizations (e.g., Montreal, Martin et al., 2007; New York City, Pietrzak et al., 2012). There may be differences in how employees experience stress due

to the size of the police organizations in which they work. For instance, larger police organizations tend to be more bureaucratic than smaller organizations (Brooks & Piquero, 1998), and this characteristic may contribute to an employee's experience of stressors (Comam & Evans, 1991). Thus, it is necessary to evaluate stressors and the influence of such stressors in smaller-sized police organizations. In addition, much of the relevant research identifying key variables related to PTSD symptom severity typically focus attention on sworn police officers. As such, the current study addressed both of these limitations by actively recruiting civilian service and support staff members as well as 911 dispatch communicators in addition to sworn police officers from smaller-sized organizations. Civilian employees made up approximately 26% of the total current sample, with an overrepresentation of 911 dispatch operators (10.2% in the current study vs. 4%; Greenland & Alam, 2017). However, this proportion of civilian employees is similar to the civilian employees' representation found in Canadian national estimates of public safety organizations (30%; Connor, 2018). Drawing participants from two police organizations allowed for a more diversified sample in terms of gender (43% female) and age (23-62 years old), and these representations were also typical of Canadian national estimates of police organizations (Greenland & Alam, 2017). Thus, the current findings are likely generalizable to police organizations of similar characteristics, but may be less relevant to ethnically diverse and/or larger cities.

In policing contexts, previous research has focused heavily on risk factors influencing PTSD symptom severity, and insufficient focus has been given to the impact of personal protective features (Maguen et al., 2009; Marchand et al., 2015). Thus, the

current study addressed this limitation by utilizing a comprehensive model to investigate the influence of a variety of personal protective factors in relation to PTSD symptom severity. Using a comprehensive model of protective factors that included social support, adaptive coping strategies, maladaptive coping strategies, and resilience, allowed for researchers to examine the unique contributions of each factor.

Finally, studies that have examined coping in police populations typically classify these skills as task-oriented, emotion-oriented or avoidant-oriented (Endler & Parker, 1994). Such a classification system made it difficult to properly understand the role of specific cognitive coping skills in mitigating PTSD symptom severity. Thus, it was important for the current study to examine the nine unique cognitive coping strategies that individuals use when dealing with stressors. To our knowledge, this was the first study to examine the relationship between these specific CERQ skills and PTSD symptom severity among law enforcement employees.

Despite these aforementioned strengths, the current findings should be interpreted in light of several limitations. Due to the nature of community research, the current study fell short of the desired sample size ($N = 139$) suggested by a priori power analyses. Undoubtedly, a smaller sample size reduces statistical power and limits reproducibility; however, the majority of the present study hypotheses were adequately powered given that these hypotheses required fewer variables in their regression models than the larger one in which the a priori power analyses were calculated. Although statistical analyses involving the nine coping strategies (H3 and H5) were underpowered, there is confidence in the findings testing H3 and H5 because these

hypotheses were still statistically significant in their modified and adequately powered formats.

Recruitment efforts may have been limited due to over-sampling from the same population. A study on mental wellness in Police Organization B was conducted in the Fall of 2015. Given this previous study, law enforcement employees may have been “tapped out” and uninterested in a second study, despite differences between the two studies. This possibility is exemplified in the drop of participants from $N = 121$ in 2015 to $N = 87$ in the current Organization B. Furthermore, the nature of the current study may have limited participant involvement. Confidentiality concerns of participants, coupled with stigma traditionally surrounding mental health conversations in first responder organizations (Hoge et al., 2004), may have deterred participation. Despite best efforts to clarify data collection procedures protecting personal information, and due to the smaller size of these municipal police organizations, participants may have been apprehensive to provide information on sensitive topics such as work place stressors and PTSD symptoms. Nonetheless, studies like the current one may serve to break down the stigma surrounding mental health conversations within police organizations. Response rate at Organization A was fairly good for police organization surveys.

As is typical of cross-sectional studies, causality cannot be established given the absence of temporal precedence. It is difficult to determine whether maladaptive coping strategies (and low levels of resilience) cause more severe PTSD symptoms, or whether the reverse is accurate. For example, one of the current study’s findings indicated that lower levels of resilience were significantly associated with more reports of traumatic

incidents, whereas Park and colleagues (2018) found the reverse to be true; traumatic events affected resilience levels. Thus, perhaps, the constructs of resilience and traumatic incidents may be linked in a reciprocal relationship.

The current study relied on self-report measurements as the primary means of data collection; as such, the true prevalence rates of PTSD symptom severity and potential for diagnosis might be inaccurately represented relative to more objective methods of assessment. Given that the current sample was self-selected, it is possible that participants affected by work place stressors or more severe PTSD symptoms were motivated to engage in the current study, thereby inflating PTSD prevalence rates. On the contrary, given that there is still some stigma surrounding conversations on mental health in police organizations (Stuart, 2017), it is also likely that some individuals struggling with PTSD symptoms may have avoided participating in the current study altogether, or if they did participate, then they may have under-reported their symptoms. Therefore, research of this nature with more formal assessment of PTSD is warranted.

It was difficult to determine whether the frequency of critical incidents among police organizations in the current study was comparable to other police organizations in light of variations in how these incidents were measured. The current study found that police officers reported experiencing an average of seven broad critical incident types (yes or no), which is not comparable to the critical incidents reported in other studies. In contrast, Chopko et al. (2015) found that police officers from their small to medium-size organizations experienced an average of about 188.5 lifetime critical incidents.

Likewise, Weiss et al. (2010) found that police officers from a ¹large organization reported an average of 168.5 lifetime critical incidents. Accordingly, the police organizations from which the current data was drawn would be considered small-medium size. Both Chopko et al. (2015) and Weiss et al. (2010) measured critical incidents using a 34-item *Critical Incident History Questionnaire* (Weiss et al., 2010) that measured both frequency and severity of critical incident occurrences. To facilitate lifetime frequency calculations, their respondents were instructed to indicate or select an actual frequency category (e.g., 1-9 times). Thus, the total frequency of an item on the *Critical Incident History Questionnaire* is calculated by taking into account all the frequency categories for that particular item. In contrast, the current study measured critical incidents with the 12-item *Stressful Experiences Checklist*, designed for use by members at the Center for Criminal Justice Studies at the University of New Brunswick. For the *Stressful Experiences Checklist*, the frequency of each item is only counted once for each participant. Hence, it follows that resulting frequency analyses from the *Critical Incident History Questionnaire* yield significantly higher rates when compared to the analyses from the current study. Thus, it was not possible to directly compare the frequency of critical incidents across studies.

Finally, the current study failed to collect data on participant's ethnicity. As a result of the smaller size of the police organizations from which data was drawn, efforts were made to protect participants' privacy and limit the collection of identifiable materials. Regrettably, ethnicity was omitted from the demographics questionnaire.

¹ According to Brooks and Piquero (1998), small-sized police organizations are made up of less than 50 police officers, medium-sized organizations range from 50-550 police officers, and large organizations have more than 600 employed police officers (Brooks & Piquero, 1998).

Therefore, it was not possible to determine whether ethnicity had a significant effect on the relationships of interest for the current sample. However, according to a 2013 survey conducted by the New Brunswick Police Human Resources, 9.8% of members of the Royal Canadian Mounted identified as non-white, with no available data on ethnicity for the municipal police organizations from which the current data was drawn (New Brunswick Police Human Resources, 2013). However, it is likely that the majority of law enforcement employees from the current study also identified as Caucasian given that both organizations came from the same province (New Brunswick).

4.7 Future Directions for Research

The current study was the first to examine the relationship between CERQ coping strategies and PTSD symptom severity among law enforcement employees; however, it was limited by participant recruitment. As such, it is necessary to replicate these primary findings, and to do so with a larger sample of law enforcement employees. The current study found that police officers reported more work-related stressors when compared to civilian employees. Given that all civilian support members (i.e., 911 dispatch operators, managers, and administrative clerks) were combined into one category due to low numbers in each civilian sub-category, it is unclear whether there are differences in stress experiences among various roles within civilian employees. Therefore, a larger sample would allow for more informative comparisons between police officers and civilian staff, and among different types of civilian staff. Although there were no significant differences in the overall amount of stress experienced, there may be differences in quality of stressors or support experienced as a result of employee status.

Interestingly, the current study unexpectedly found that the use of CERQ acceptance coping strategy, previously defined as adaptive, was associated with more severe PTSD symptoms. This finding was supported by most studies (albeit a small number) that have examined the relationship between the CERQ and negative mental health outcomes (e.g., depression; Kraaij et al., 2003). Therefore, future research should examine when the use of acceptance is adaptive and determine whether acceptance should be classified as an adaptive coping strategy.

As a result of the cross-sectional nature of the current study, directionality and causation cannot be established. On the other hand, longitudinal studies may not always be plausible due to time costs, financial costs, and attrition rates (Caruana, Roman, Hernandez-Sanchez, & Solli, 2015). An alternative approach would be to run a mediational analysis. Such an alternative assists with directionality inferences as they inform whether stressors lead to an increased use of personal protective factors (i.e., CERQ coping strategies and resilience), or whether lower levels of these personal protective factors lead to a perception of greater volume of stressors. In addition, given that coping strategies are more dynamic in nature than they are stable, they may be vulnerable to situational changes (Nielsen & Knardahl, 2014). As such, it may be likely that constant trauma exposure will affect the use of cognitive coping. Thus, additional research is needed to determine the impact of cumulative trauma exposure on the use and quality of coping over time.

Researchers have begun to recognize the importance of psychological resilience on the mental health of first responders (Blackburn & Owens, 2016; Lee et al., 2014; McCanlies et al., 2014). Psychological resilience was found to moderate the relationship

between stressor volume and PTSD symptoms in the present research. In addition, other studies have reported the moderating effect of resilience on stress and substance-use difficulties (Austin-Ketch et al., 2012) and on stress and depression (Wingo et al., 2010). Consequently, there is need for a rigorous meta-analytic study of resilience that combines these primary cross-sectional studies to determine the clinical utility of psychological resilience among first responders.

The current study examined a common deleterious outcome of potentially traumatic events – PTSD symptom severity; however, traumatic events also can lead to positive outcomes such as Post-Traumatic Growth (PTG). PTG includes finding positive meaning in response to traumatic events (Linley & Joseph, 2004), and it often involves growth in interpersonal relationships, self-perceptions and one's view of the world (Tedeschi & Calhoun, 2004). PTG is different from resilience, as resilience involves prevention and/or attenuation of psychological disturbance after traumatic exposure. In addition, resilience typically involves a return to pre-trauma ability levels (Davydov et al., 2010), whereas PTG involves growth in several aspects of an individual's life. Given this view, it is important to explore the effects of protective factors like social support, coping and resilience on the relationship between occupational stressors and PTG among law enforcement employees.

4.8 Conclusions

The current study investigated several mitigating factors of PTSD symptom severity in a sample that included police officers and the often excluded representations of civilian law enforcement employees. In addition, the current research focused on less well-examined CERQ coping strategies and psychological resilience, and did so in a

comprehensive model that included the robust effects of social support on PTSD. Based on the examined literature review on risk and protective factors of PTSD symptom severity, it was hypothesized that individual differences in nine CERQ coping strategies would predict concurrent post-traumatic stress symptom severity. Furthermore, it was hypothesized that psychological resilience would moderate the relationship between volume of work stressors and PTSD symptom severity. Findings highlighted three of the nine CERQ coping strategies as being most relevant to PTSD symptom severity. In particular, greater use of rumination and catastrophizing, and lesser use of positive reappraisal, uniquely predicted more severe PTSD symptoms above the influence of the quality of social support. In addition, endorsing higher levels of resilience not only predicted less severe PTSD symptoms, but also moderated the relationship between volume of stressors and PTSD symptoms. The current study largely focused on protective factors in relation to PTSD symptom severity, but sources of stressors were also examined, due to the debate surrounding which sources of stressors are most importance for PTSD symptom severity (organizational vs. operational sources). Findings gave credence to the side of the debate that emphasized the role of police work environment in one's vulnerability to PTSD; thus reinforcing the importance of having a supportive work-place environment for law enforcement employees. Given these aforementioned findings, the current study supports the use of resilience and coping strategies to inform preventative efforts to promote mental health wellness among law enforcement employees.

Table 1

Descriptive Characteristics of Study Measures Stratified by Gender and Police Organization

Variable	Gender		Police Organization	
	Men (<i>n</i> = 67) <i>M</i> (<i>SD</i>)	Women (<i>n</i> = 51) <i>M</i> (<i>SD</i>)	A (<i>n</i> = 31) <i>M</i> (<i>SD</i>)	B (<i>n</i> = 87) <i>M</i> (<i>SD</i>)
Resilience (CD-RISC-25)	74.3(13.9)	69.3(17.6)	71.2(12.5)	72.5(16.7)
PTSD (PCL-5)	12.3(15.8)	15.1(16.6)	15.1(15.0)	12.9(16.6)
Social support (OSI-R-SS)	50.6(10.0)	51.2(9.5)	50.8(9.8)	50.9(9.8)
Maladaptive coping styles				
CERQ Self-blame	47.8(9.3)	50.2(9.7)	48.0(9.0)	49.1(9.7)
CERQ Rumination	45.7(9.4)	45.9(9.0)	46.2(8.1)	45.6(9.6)
CERQ Catastrophizing	56.3(10.1)^a	51.2(8.3)^b	56.3(8.3)	53.3(10.0)
CERQ Other blame	55.0(8.2)	51.9(8.1)	53.2(8.5)	53.8(8.2)
Adaptive coping styles				
CERQ Acceptance	52.8(8.5)	50.6(8.9)	49.1(8.1)	52.9(8.7)
CERQ Positive refocusing	51.8(8.7)	52.6(9.7)	48.9(7.4)	53.3(9.4)
CERQ Refocus on planning	48.5(8.8)	49.2(8.6)	45.3(5.9)	50.0(9.2)
CERQ Positive reappraisal	52.0(8.8)	50.7(6.9)	50.4(6.1)	51.8(8.7)
CERQ Putting into perspective	52.6(9.6)	52.8(9.1)	50.2(8.8)	53.6(9.5)
SEC Work stressor volume	4.2(9.6)	3.0(3.2)	3.7(2.5)	3.7(3.3)
Occupational stressors				
ORQ Role overload	51.5(11.1)	49.9(8.5)	49.2(8.8)	51.3(10.4)
ORQ Role insufficiency	53.8(10.8)	53.6(11.2)	52.8(9.9)	54.0(11.3)
ORQ Role ambiguity	53.1(9.6)	52.0(10.4)	53.0(9.5)	52.5(10.2)
ORQ Role boundary	51.0(10.1)	50.0(8.4)	50.0(9.6)	50.8(9.3)
ORQ Responsibility	51.4(11.0)	47.0(10.3)	51.0(10.9)	49.0(10.9)
ORQ Physical environment	44.7(7.5)	41.3(6.2)	42.2(6.4)	43.7(7.4)

Note. *N* = 118.

^a & ^b superscripted letters denote a statically significant difference between group based on a MANOVA analysis at *p* < .01. CD-RISC-25 = Connor Davidson Resilience Scale – 25; PCL-5 = PTSD Checklist for DSM-5; OSI-R- SS = Occupational Stress Inventory – Revised – Social Support; CERQ = Cognitive Emotion Regulation Questionnaire; SEC = Stressful Experiences Checklist; ORQ = Occupational Role Questionnaire

Table 2

Participant Characteristics by Gender and for Overall Sample

Variable	Full sample (<i>N</i> = 117)	Men (<i>n</i> = 67)	Women (<i>n</i> = 51)	<i>p</i> – value ^a
Age (in years); Mean (<i>SD</i>)	41.74 (9.56)	42.28 (10.82)	41.12 (7.91)	.53
Marital status; <i>n</i> (%)				.12
Single or never married	12 (10.3%)	6 (9.1%)	6 (11.8%)	
Partnered	90 (76.9%)	55 (83.3%)	35 (68.6%)	
Other ^a	15 (12.8%)	5 (7.6%)	10 (19.6%)	
Employee status; <i>n</i> (%)				<.001
Uniformed officer	87 (74.4%)	64 (73.5%)	23 (26.4%)	
Civilian employee	30 (25.6%)	3 (1%)	27 (90%)	
Employment years; Mean (<i>SD</i>)	14.97 (9.16)	16.16 (9.56)	13.54 (8.53)	.13
Police organization; <i>n</i> (%)				.31
Organization A	31 (26.3%)	20 (64.5%)	11 (35.5%)	
Organization B	87 (73.7%)	47 (54%)	40 (46%)	

Note. *N* = 118.

^a *p*-values pertain to statistical analyses for gender comparisons for each variable. These were Chi-square analyses for categorical variables and independent t-test for continuous variables.

Table 3

Descriptive Characteristics of Study Measures for Overall Sample

Variable	Mean (SD)	Cronbach α	Likert Scale	Possible Range	Actual Range
Resilience (CD-RISC-25)	72.14 (15.7)	.95	0-4	0-100	25-100
PTSD (PCL-5)	13.49 (16.17)	.96	0-4	0-80	0-72
Social support (OSI-R-SS)	50.86 (9.76)	.90	1-5	10-50	16-50
Maladaptive coping styles					
CERQ Self-blame	48.80 (9.5)	.83	1-5	4-20	4-17
CERQ Rumination	45.77 (9.17)	.81	1-5	4-20	4-20
CERQ Catastrophizing	54.08 (9.65)	.75	1-5	4-20	4-17
CERQ Other blame	53.64 (8.27)	.83	1-5	4-20	4-16
Adaptive coping styles					
CERQ Acceptance	51.86 (8.68)	.77	1-5	4-20	4-19
CERQ Positive refocusing	52.15 (9.10)	.84	1-5	4-20	4-20
CERQ Refocus on planning	48.79 (8.70)	.81	1-5	4-20	4-20
CERQ Positive reappraisal	51.42 (8.07)	.78	1-5	4-20	5-20
CERQ Putting into perspective	52.71 (9.38)	.81	1-5	4-20	4-20
SEC Work stressor volume (overall)	6.02 (3.73)	.81	-- ^a	0-12	0-12
SEC Work stressor volume (recent)	3.66 (3.11)	.81	-- ^a	0-12	0-12
Occupational stressors					
ORQ Role overload	50.77 (10.00)	.77	1-5	10-50	11-42
ORQ Role insufficiency	53.69 (10.93)	.85	1-5	10-50	10-49
ORQ Role ambiguity	52.64 (9.95)	.82	1-5	10-50	10-39
ORQ Role boundary	50.56 (9.37)	.71	1-5	10-50	10-37
ORQ Responsibility	49.51 (10.88)	.77	1-5	10-50	14-41
ORQ Physical environment	43.26 (7.13)	.83	1-5	10-50	10-46

Note. $N = 118$

^a Not applicable. CD-RISC-25 = Connor Davidson Resilience Scale – 25; PCL-5 = PTSD Checklist for *DSM-5*; OSI-R-SS = Occupational Stress Inventory – Revised – Social Support; CERQ = Cognitive Emotion Regulation Questionnaire; SEC = Stressful Experiences Checklist; ORQ = Occupational Role Questionnaire.

Table 4

Descriptive Characteristics of Study Measures Stratified by Study Format and Employee Status

Variable	Study Format		Employee Status	
	Paper (<i>n</i> = 21) <i>M</i> (<i>SD</i>)	Online (<i>n</i> = 97) <i>M</i> (<i>SD</i>)	Officer (<i>n</i> = 87) <i>M</i> (<i>SD</i>)	Civilian (<i>n</i> = 30) <i>M</i> (<i>SD</i>)
Resilience (CD-RISC-25)	80.8(11.3)^a	70.3(16.0)^b	73.9(14.6)	67.8(17.7)
PTSD (PCL-5)	12.9(17.7)	13.6(15.9)	13.7(17.2)	12.4(13.1)
Social support (OSI-R-SS)	54.9(5.3)	50.0(10.3)	51.6(9.8)	48.7(9.6)
Maladaptive coping styles				
CERQ Self-blame	48.8(8.0)	48.8(9.8)	48.2(9.2)	50.0(10.1)
CERQ Rumination	46.2(7.0)	45.7(9.6)	45.8(9.2)	45.8(9.5)
CERQ Catastrophizing	57.0(9.5)	53.5(9.6)	55.3(10.0)	50.8(8.0)
CERQ Other blame	54.1(5.7)	53.6(8.7)	53.9(8.5)	52.6(7.7)
Adaptive coping styles				
CERQ Acceptance	50.7(7.0)	52.1(9.0)	52.2(8.8)	51.1(8.5)
CERQ Positive refocusing	50.0(5.4)	52.6(9.7)	52.4(9.0)	51.5(9.7)
CERQ Refocus on planning	46.6(5.9)	49.3(9.2)	48.7(8.2)	48.9(10.2)
CERQ Positive reappraisal	51.7(7.8)	51.4(8.2)	52.0(8.2)	49.6(7.8)
CERQ Putting into perspective	52.6(10.0)	52.7(9.3)	52.4(9.3)	53.3(9.6)
SEC Work stressor volume	4.7(3.1)	3.4(3.1)	4.2(3.1)^a	2.1(2.8)^b
Occupational stressors				
ORQ Role overload	50.3(10.7)	50.9(10.0)	51.0(10.1)	49.7(9.9)
ORQ Role insufficiency	51.1(9.0)	54.3(11.3)	54.0(10.7)	52.1(11.1)
ORQ Role ambiguity	51.9(7.9)	52.8(10.4)	53.4(10.0)	49.9(9.2)
ORQ Role boundary	50.0(10.0)	50.7(9.3)	51.1(9.5)	48.7(8.9)
ORQ Responsibility	50.1(9.1)	49.4(11.3)	50.1(10.4)	48.3(12.3)
ORQ Physical environment	47.2(8.1)	42.4(6.6)	44.7(7.2)	39.2(5.2)

Note. *N* = 118.

^a & ^b superscripted letters denote a statically significant difference between groups on an ANOVA test at *p* < .01. CD-RISC-25 = Connor Davidson Resilience Scale – 25; PCL-5 = PTSD Checklist for DSM-5; OSI-R- SS = Occupational Stress Inventory – Revised – Social Support; CERQ = Cognitive Emotion Regulation Questionnaire; SEC = Stressful Experiences Checklist; ORQ = Occupational Role Questionnaire.

Table 5

Correlations between Participant Characteristics

Variable	Age	Gender	Employee status	Employee years
Age	—	-.072	-.001	.69**
Gender		—	.56**	-.14
Employee status			—	-.16
Employee years				—

Note. Gender was coded 1 = men and 2 = women; employee status was coded 1 = police officer and 2 = civilian employee.

** $p \leq .01$

Table 6

Correlations between Participant Characteristics and Stress Variables

Variable	Age	Gender	Employee status
Occupational stressors			
ORQ Role overload	-.05	-.12	-.07
ORQ Role insufficiency	-.16	-.07	-.12
ORQ Role ambiguity	-.21*	-.08	-.16
ORQ Role boundary	-.12	-.05	-.12
ORQ Responsibility	-.23*	-.23*	-.09
ORQ Physical environment	-.26**	-.25**	-.37**
SEC Work stress volume	-.09	-.20*	-.34**
PTSD (PCL-5)	.08	.07	-.05
Resilience (CD-RISC-25)	.06	-.16	-.17
Social support (OSI-R-SS)	-.05	.03	-.13
Maladaptive coping styles			
CERQ Self-blame	-.07	.13	.08
CERQ Rumination	-.12	.01	.004
CERQ Catastrophizing	.08	-.23**	-.21*
CERQ Other blame	-.14	-.19*	-.07
Adaptive coping styles			
CERQ Acceptance	-.10	-.13	-.05
CERQ Positive refocusing	.01	.04	-.04
CERQ Refocus on planning	-.05	.04	.008
CERQ Positive reappraisal	.04	-.08	-.13
CERQ Putting into perspective	-.02	.01	.05

Note. Gender was coded 1 = men and 2 = women; employee status was coded 1 = police officer and 2 = civilian employee. ORQ = Occupational Role Questionnaire SEC = Stressful Experiences Checklist; PCL-5 = PTSD Checklist for *DSM-5*; CD-RISC-25 = Connor Davidson Resilience Scale – 25; OSI-R- SS = Occupational Stress Inventory – Revised – Social Support; CERQ = Cognitive Emotion Regulation Questionnaire.

* $p \leq .05$. ** $p \leq .01$.

Table 7

Correlations between Personal Protective Factors (Resilience, Social Support and Coping Strategies)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Resilience (CD-RISC-25)	—	.59**	-.38**	-.40**	-.29**	-.16	-.08	.18*	.38**	.44**	.20*
2. Social support (OSI-R-SS)		—	-.21*	-.30**	-.32**	-.16	-.17	.25**	.32**	.36**	.25**
Maladaptive coping styles											
3. CERQ Self-blame			—	.64**	.32**	.30**	.38**	-.01	.10	.09	.19*
4. CERQ Rumination				—	.52**	.40**	.36**	.06	.04	.07	.02
5. CERQ Catastrophizing					—	.36**	.28**	.06	-.09	-.08	-.14
6. CERQ Other blame						—	.12	.08	.09	.11	.24**
Adaptive coping styles											
7. CERQ Acceptance							—	.24**	.31**	.27**	.36**
8. CERQ Positive refocusing								—	.40**	.37**	.22*
9. CERQ Refocus on planning									—	.72**	.52**
10. CERQ Positive reappraisal										—	.59**
11. CERQ Putting into perspective											—

Note. CD-RISC-25 = Connor Davidson Resilience Scale – 25; OSI-R- SS = Occupational Stress Inventory – Revised – Social Support; CERQ = Cognitive Emotion Regulation Questionnaire.

* $p \leq .05$. ** $p \leq .01$.

Table 8

Correlations between Indices of Stress

Variable	1	2	3	4	5	6	7	8
1. ORQ Role overload	—	.23*	.35**	.49**	.40**	.38**	.17	.28**
2. ORQ Role insufficiency		—	.64**	.63**	.02	.19*	.46**	.23*
3. ORQ Role ambiguity			—	.65**	.04	.25**	.34**	.25**
4. ORQ Role boundary				—	.25**	.33**	.42**	.39**
5. ORQ Responsibility					—	.34**	.13	.37**
6. ORQ Physical environment						—	.14	.59**
7. PTSD (PCL-5)							—	.24**
8. SEC Work stress volume								—

Note. $N = 118$. ORQ = Occupational Role Questionnaire; PCL-5 = PTSD Checklist for DSM-5; SEC = Stressful Experiences Checklist.

* $p \leq .05$. ** $p \leq .01$.

Table 9

Hypothesis 2. Correlations between Personal Protective Factors and PTSD

Variable	PTSD
Resilience (CD-RISC-25)	-.64**
Social support (OSI-R-SS)	-.54**
Maladaptive coping	
CERQ Self-blame	.41**
CERQ Rumination	.53**
CERQ Catastrophizing	.56**
CERQ Other blame	.24**
Adaptive coping	
CERQ Acceptance	.21*
CERQ Positive refocusing	-.12
CERQ Refocus on planning	-.19*
CERQ Positive reappraisal	-.28**
CERQ Putting into perspective	-.16

Note. CD-RISC-25 = Connor Davidson Resilience Scale – 25; OSI-R- SS = Occupational Stress Inventory – Revised – Social Support; CERQ = Cognitive Emotion Regulation Questionnaire.

$N = 118$; * $p \leq .05$. ** $p \leq .01$.

Table 10

Hypothesis 1. Hierarchical Multiple Regression Predicting PTSD from Occupational Stressors

Model variable	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	ΔR^2	ΔF	<i>p</i>
Step 1	.18	.17	.10	1.03	.31	.03	.69	.60
Age	4.78	3.85	.15	1.24	.22			
Gender	-2.71	4.55	-.06	-.60	.55			
Study format	-4.18	4.32	-.11	-.97	.34			
Employee status	.18	.17	.10	1.03	.31			
Step 2						.23	5.00	.001
ORQ Role overload	-.08	.18	-.05	-.44	.66			
ORQ Role insufficiency	.49	.20	.31	2.45	.02			
ORQ Role ambiguity	.10	.21	.06	.47	.64			
ORQ Role boundary	.30	.24	.17	1.25	.21			
ORQ Responsibility	.13	.17	.09	.77	.44			
ORQ Physical environment	.13	.27	.06	.50	.62			

Note. *N* = 107.

Gender was coded 1 = men and 2 = women; employee status was coded 1 = police officer and 2 = civilian employee. ORQ = Occupational Role Questionnaire. Overall model was significant, predicting 18% of the variability in PTSD (*multiple R*² = .26, *R*²_{adj} = .18, *F*_[10,96] = 3.3, *p* = .001).

Table 11

Hypothesis 3. Hierarchical Multiple Regression Predicting PTSD from Social Support and Coping Strategies

Model variable	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	ΔR^2	ΔF	<i>p</i>
Step 1						.03	.69	.60
Age	.18	.17	.10	1.03	.31			
Gender	4.78	3.85	.15	1.24	.22			
Study format	-2.71	4.55	-.06	-.60	.55			
Employee status	-4.18	4.32	-.11	-.97	.34			
Step 2						.31	46.8	< .001
OSI-R-SS Social Support	-1.23	.18	-.57	-6.84	< .001			
Step 3						.27	7.0	< .001
Maladaptive Coping								
CERQ Self-blame	.08	.17	.05	.45	.65			
CERQ Ruminat	.43	.18	.25	2.38	.02			
CERQ Catastrophizing	.54	.15	.32	3.49	< .001			
CERQ Other blame	.08	.16	.04	.47	.64			
Adaptive Coping								
CERQ Acceptance	.12	.17	.06	.69	.49			
CERQ Positive refocusing	-.06	.14	-.03	-.44	.66			
CERQ Refocus on planning	.10	.19	.06	.54	.59			
CERQ Positive reappraisal	-.46	.23	-.22	-2.05	.04			
CERQ Putting into perspective	.09	.16	.05	.54	.59			

Note. *N* = 107.

Gender was coded 1 = men and 2 = women; employee status was coded 1 = police officer and 2 = civilian employee. OSI-R = Occupational Stress Inventory – Revised; CERQ = Cognitive Emotion Regulation Questionnaire. Overall model was significant, predicting 54 % of the variability in PTSD (*multiple R*² = .60, *R*²_{adj} = .54, *F*_[14,92] = 10.0, *p* < .001).

Table 12

Hypothesis 4. Hierarchical Multiple Regression Predicting PTSD from Social Support and Resilience

Model variable	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	ΔR^2	ΔF	<i>p</i>
Step 1						.03	.69	.60
Age	.18	.17	.10	1.03	.31			
Gender	4.78	3.85	.15	1.24	.22			
Study format	-2.71	4.55	-.06	-.60	.55			
Employee status	-4.18	4.32	-.11	-.97	.34			
Step 2						.31	46.97	< .001
OSI-R-SS Social Support	-1.01	.15	-.57	-6.85	< .001			
Step 3						.19	40.87	< .001
CD-RISC-25 Resilience	-.59	.09	-.56	-6.39	< .001			

Note. *N* = 107.

Gender was coded 1= men and 2 = women; employee status was coded 1= police officer and 2 = civilian employee. OSI-R-SS = Occupational Stress Inventory – Revised – Social Support; CD-RISC-25 = Connor Davidson Resilience Scale. Overall model was significant, predicting 60 % of the variability in PTSD (*multiple R*² = .53, *R*²_{adj} = .50, *F*_[4,102] = 18.66, *p* < .001).

Table 13

Hypothesis 5. Hierarchical Multiple Regression Predicting Resilience from Coping Strategies

Model variable	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	ΔR^2	ΔF	<i>p</i>
Step 1						.07	2.0	.11
Age	.13	.16	.08	.86	.39			
Gender	-1.23	3.55	-.04	-.35	.73			
Study format	-8.25	4.19	-.19	-1.97	.05			
Employee status	-3.88	3.98	-.11	-.97	.33			
Step 2						.45	9.63	< .001
Maladaptive Coping								
CERQ Self-blame	-.27	.18	-.17	-1.54	.13			
CERQ Rumination	-.41	.19	-.25	-2.21	.03			
CERQ Catastrophizing	-.28	.16	-.18	-1.78	.08			
CERQ Other blame	.04	.16	.02	.22	.83			
Adaptive Coping								
CERQ Acceptance	-.05	.17	-.03	-.30	.76			
CERQ Positive refocusing	.08	.14	.05	.60	.55			
CERQ Refocus on planning	.46	.20	.25	2.29	.02			
CERQ Positive reappraisal	.55	.23	.27	2.38	.02			
CERQ Putting into perspective	-.16	.17	-.10	-1.0	.33			

Note. *N* = 107.

Gender was coded 1 = men and 2 = women; employee status was coded 1 = police officer and 2 = civilian employee. CERQ = Cognitive Emotion Regulation Questionnaire.

Overall model was significant, predicting 52 % of the variability in PTSD (*multiple* $R^2 = .52$, $R^2_{adj} = .45$, $F_{[9,93]} = 7.7$, $p < .001$).

Table 14

Hypothesis 6 and 7. Hierarchical Multiple Regression Model for PTSD Symptom Severity Moderation Hypothesis

Predictor variables	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	ΔR^2	ΔF	<i>p</i>
Step 1						.03	.69	.60
Age	.18	.17	.10	1.03	.31			
Gender	4.78	3.85	.15	1.24	.22			
Study format	-2.71	4.55	-.06	-.60	.55			
Employee status	-4.18	4.32	-.11	-.97	.34			
Step 2						.53	60.64	< .001
CD-RISC-25								
Resilience	-.75	.07	-.71	-10.32	<.00			
SEC Work stressor volume	1.51	.38	.29	4.02	<.00			
Step 3						.02	5.74	.02
Moderation-term	-.05	.02	-.73	-2.40	.02			

Note. $N = 107$.

Gender was coded 1= men and 2 = women; employee status was coded 1= police officer and 2 = civilian employee. CD-RISC-25 = Connor Davidson Resilience Scale; SEC = Stressful Experiences Checklist. Moderation term = CD-RISC Resilience multiplied by SEC work stressor volume. Overall model was significant, predicting 55 % of the variability in PTSD (*multiple* $R^2 = .58$, $R^2_{adj} = .55$, $F_{[1, 99]} = 19.86$, $p < .001$).

Table 15

Relevant Scheffe's Pairwise Multiple Comparisons for Varying levels of Work Stressor Volume and Resilience

Comparison groups	<i>d</i>	<i>t(SE)</i>	<i>p</i>
Group 1 vs. group 2	.55	-5.85(.09)	< .001
Group 1 vs. group 3	1.1	-5.85(.19)	< .001
Group 1 vs. group 4	.45	4.63(.10)	.01
Group 1 vs. group 7	.89	4.63(.19)	.01
Group 2 vs. group 5	.30	4.32(.07)	.03
Group 2 vs. group 8	.61	4.32(.14)	.03
Group 3 vs. group 6	.16	1.81(.09)	.91
Group 3 vs. group 9	.32	1.81(.18)	.91
Group 4 vs. group 5	.70	-10.30(.07)	< .001
Group 4 vs. group 6	1.4	-10.30(.14)	< .001
Group 7 vs. group 8	.84	-9.76(.09)	< .001
Group 7 vs. group 9	1.7	-9.76(.17)	< .001

Note. Group 1 = low stress, low resilience; Group 2 = low stress, moderate resilience; Group 3 = low stress, high resilience; Group 4 = moderate stress, low resilience; Group 5 = moderate stress, moderate resilience; Group 6 = moderate stress, high resilience; Group 7 = high stress, low resilience; Group 8 = high stress, moderate resilience; Group 9 = high stress, high resilience.

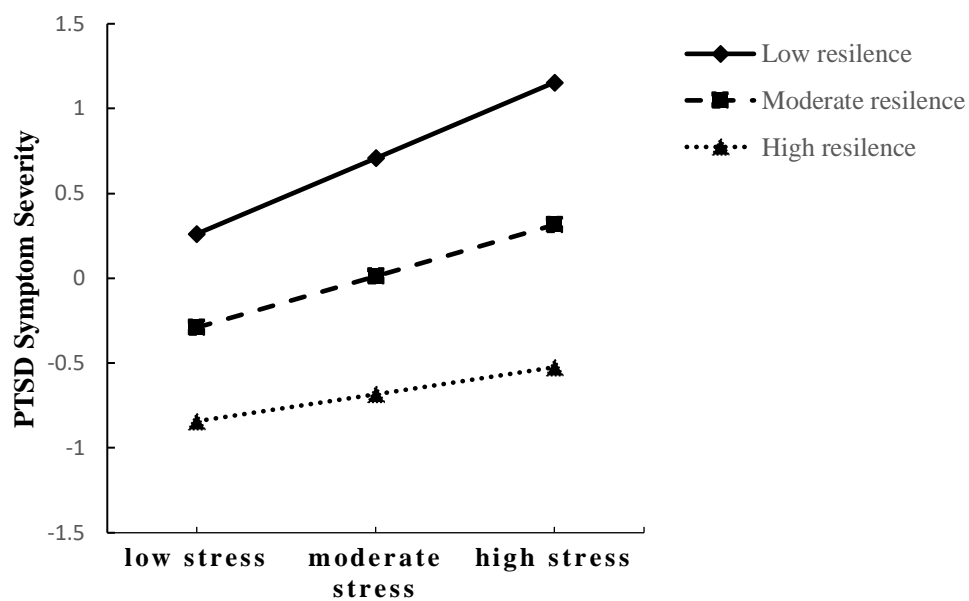


Figure 1. Graph showing the moderated relationship between three levels of work stressor volume and PTSD symptom severity. Low resilience was measured at -1 *SD*, moderate resilience was measured at M and high resilience was measured at $+1$ *SD*. Low stress measured at -1 *SD*, moderate stress measured at M and high stress measured at $+1$ *SD*.

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Appendix A (Demographic and Employment Information Form)

Demographic and Employment Information Form

Instructions: *In order to describe the participants of our study as a group so we have a general context from which to understand our findings, please answer the following questions about yourself. You may skip any question that you do not feel comfortable answering here, or throughout the survey.*

1. Which police organization do you work for?
 - Kennebecasis Police Force
 - Saint John Police Force

2. How long have you been employed with your Police Force as an organization (which in this study includes the Public Safety Communication Centre)?
 - _____ years

3. What is your current rank (police officers) or job title (civilian employees) within your police organization (if in an Acting role, select the “Other” option and include the Acting rank)?

For Police Officers:

- | | |
|--------------------------------------|---|
| <input type="radio"/> Constable | <input type="radio"/> Inspector / Deputy Chief / Superintendent / Chief |
| <input type="radio"/> Corporal | <input type="radio"/> Other (please specify): _____ |
| <input type="radio"/> Sergeant | |
| <input type="radio"/> Staff Sergeant | |

For Civilian Employees:

- Dispatch/Communication Centre Operator
- Office administrator/secretary/clerk
- Supervisor, Director or Manager
- Other (please specify): _____

4. What is your age in years? _____

5. What is your gender?
 - Female
 - Male
 - Other

6. What is your current marital status?

<input type="radio"/> Single – never been married	<input type="radio"/> Widowed
<input type="radio"/> In a relationship, but not cohabiting	<input type="radio"/> Other: _____
<input type="radio"/> Married/Common-law (cohabitating with intimate partner)	
<input type="radio"/> Separated/Divorced	

Appendix B (PTSD Checklist-5 – PCL-5)

(Weathers et al., 2013)

PTSD Checklist-5 (PCL-5)

Instructions: Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem **in the past month**.

In the past month, how much were you bothered by:	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?	0	1	2	3	4

In the past month, how much were you bothered by:	Not at all	A little bit	Moderately	Quite a bit	Extremely
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being “superalert” or watchful or on guard?	0	1	2	3	4

In the past month, how much were you bothered by:	Not at all	A little bit	Moderately	Quite a bit	Extremely
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

Appendix C (Stressful Experiences Checklist – SEC)

Stressful Experiences Checklist (SEC)
(Developed for the purpose of the current study)

<i>Instructions: In the course of your work or in your life in general, please indicate whether any of the following experiences have ever happened to you. In addition, tick the box next to you answer if this experience occurred within the last 2 years.</i>	Circle Yes or No		Did this Happen to you within the past 2 years?	
1. Responded to an incident involving the death of a child or infant.	Yes	No	Yes	No
2. Responded to an incident involving violence of a sufficient degree that you felt your life, or the life of others, was at risk.	Yes	No	Yes	No
3. Responded to an accident involving significant injury to one or more parties at the scene for whom you were required to provide first aid assistance or support.	Yes	No	Yes	No
4. Responded to an incident in which you had close and prolonged contact with a person who was significantly injured.	Yes	No	Yes	No
5. Responded to an incident involving child abuse or neglect of a child.	Yes	No	Yes	No
6. Responded to a situation in which you were threatened with violence to yourself or to those important to you.	Yes	No	Yes	No
7. Responded to a situation involving an emotionally disturbed person who engaged in challenging, risky, or non-compliant behaviour.	Yes	No	Yes	No
8. Witnessed someone physically injure themselves or commit suicide, either over the phone or in-person.	Yes	No	Yes	No
9. Had regular stressful interaction(s) with a coworker.	Yes	No	Yes	No
10. Had a stressful professional relationship with a supervisor.	Yes	No	Yes	No
11. Felt bullied or harassed by coworkers or supervisors.	Yes	No	Yes	No
12. Had a complaint formally laid against you by a coworker, supervisor, or member of the public.	Yes	No	Yes	No
13. Experienced health difficulties (including mental health) that have significantly affected you or someone close to you.	Yes	No	Yes	No
14. Dealt with a separation or divorce in your personal life or in the life of someone close to you.	Yes	No	Yes	No
15. Struggled with significant financial strains	Yes	No	Yes	No

	Did this Happen to you within the past 2 years?	Circle Yes or No
16. Suffered from the loss of someone/something dear to you	Yes No	Yes No
17. Dealt with (or supported a loved one through) conflicting personal or family relationships.	Yes No	Yes No

<i>Please identify any other stressful experiences you have had in your personal life or in the course of your work that you think are relevant to your personal functioning. Please indicate whether any of these experiences occurred within the previous 2 years by marking Yes or No:</i>	Circle Yes or No	Did this Happen to you within the past 2 years?
a)	Yes No	Yes No
b)	Yes No	Yes No
c)	Yes No	Yes No

In the past 12 months, have you...		
1. Been concerned about the mental health or well-being of a co-worker?	Yes	No
2. Wondered whether you should seek help from a professional mental health counselor or therapist?	Yes	No
3. Accessed an Employee and Family Assistance Program	Yes	No
4. Received help from a therapist or counselor to manage issues in your personal or work life?	Yes	No

In the past 12 months, have you...		
1. Felt that you should cut down on your drinking?	Yes	No
2. Had people annoy you by criticizing your drinking?	Yes	No
3. Felt bad or guilty about your drinking?	Yes	No
4. Had a drink first thing in the morning to steady your nerves or to get rid of a hangover (eye-opener)?	Yes	No

Appendix D (Occupational Stress Inventory – Revised – OSI-R)

(Osipow, 1998)

Occupational Stress Inventory – Revised (OSI-R)

The OSI-R is a copyrighted instrument therefore, a description instead of the measure is described below.

The OSI-R measures three domains of occupational adjustment – occupational stress, psychological strain and coping resources and it is a widely used instrument. Data norms exist for a number of occupational groups including public service and safety samples.

The Occupational stress measured by the Occupational Role Questionnaire (ORQ), psychological strain, captured by the personal Strain Questionnaire (PSQ) and coping resources measured by the Personal Resources Questionnaire (PRQ).

ORQ has 60 items and is further divided into six subscales:

- Role Overload (RO)
- Role Insufficiency (RI)
- Role Ambiguity (RA)
- Role Boundary (RB)
- Responsibility (R)
- Physical Environment (PE)

PSQ consists of 40 items distributed into four subscales:

- Vocational Stress (VS)
- Psychological Strain (PSY)
- Interpersonal Strain (IS)
- Physical Strain (PHS)

PRQ is made up of 40 items which includes four subscales:

- Recreation (RE)

- Self-Care (SC)
- Social Support (SS)
- Rational/Cognitive Coping (RC)

Permission to modify OSI-R for online and paper formats has been granted from the test publisher, who requires that we include the following note on the paper and online versions of the OSI-R to indicate that we have permission to modify its format for the purposes of our study: “Adapted and reproduced by special permission of the Publisher, Psychological Assessment Resources, Inc, (PAR), 16204 North Florida Avenue, Lutz, Florida 33549, from Occupational Stress Inventory-Revised by Samuel H. Osipow, Ph.D. Copyright, 1981, 1983, 1987, 1998, by PAR. Further reproduction is prohibited without permission from PAR.”

Appendix E (Connor-Davidson Resilience Scale 25 – CD-RISC-25)

(Connor & Davidson, 2003)

Connor-Davidson Resilience Scale 25 (CD-RISC-25)

For each statement, please rate **how often you have felt this way in the past month** by circling the number (0, 1, 2, 3, or 4) which best applies to you. There is no right or wrong answer, as they reflect your own experiences. Please respond to **ALL** questions.

<i>Not true at all</i>	<i>Rarely true</i>	<i>Sometimes true</i>	<i>Often true</i>	<i>True nearly all of the time</i>
0	1	2	3	4

1. I am able to adapt when changes occur.	0	1	2	3	4
2. I have at least one close and secure relationship that helps me when I am stressed.	0	1	2	3	4
3. When there are no clear solutions to my problems, sometimes fate or God can help.	0	1	2	3	4
4. I can deal with whatever comes my way.	0	1	2	3	4
5. Past successes give me confidence in dealing with new challenges and difficulties.	0	1	2	3	4
6. I try to see the humorous side of things when I am faced with problems.	0	1	2	3	4
7. Having to cope with stress can make me stronger.	0	1	2	3	4
8. I tend to bounce back after illness, injury, or other hardships	0	1	2	3	4
9. Good or bad, I believe that most things happen for a reason.	0	1	2	3	4
10. I give my best effort no matter what the outcome may be	0	1	2	3	4
11. I believe I can achieve my goals, even if there are obstacles	0	1	2	3	4
12. Even when things look hopeless, I don't give up	0	1	2	3	4
13. During times of stress/crisis, I know where to turn for help.	0	1	2	3	4

<i>Not true at all the time</i>	<i>Rarely true</i>	<i>Sometimes true</i>	<i>Often true</i>	<i>True nearly all of the time</i>	
0	1	2	3	4	
14. Under pressure, I stay focused and think clearly.	0	1	2	3	4
15. I prefer to take the lead in solving problems rather than letting others make all the decisions.	0	1	2	3	4
16. I am not easily discouraged by failure.	0	1	2	3	4
17. I think of myself as a strong person when dealing with life's challenges and difficulties.	0	1	2	3	4
18. I can make unpopular or difficult decisions that affect other people, if it is necessary.	0	1	2	3	4
19. I am able to handle unpleasant or painful feelings like sadness, fear, and anger.	0	1	2	3	4
20. In dealing with life's problems, sometimes you have to act on a hunch without knowing why.	0	1	2	3	4
21. I have a strong sense of purpose in life.	0	1	2	3	4
22. I feel in control of my life.	0	1	2	3	4
23. I like challenges.	0	1	2	3	4
24. I work to attain my goals no matter what roadblocks I encounter along the way.	0	1	2	3	4
25. I take pride in my achievements.	0	1	2	3	4

Appendix F (Cognitive Emotional Regulation Questionnaire – CERQ)

(Garnefski et al., 2002)

Cognitive Emotional Regulation Questionnaire (CERQ)

Instructions: How do you cope with events?

Everyone gets confronted with negative or unpleasant events now and then and everyone responds to them in his or her own way. By the following questions you are asked to indicate what you generally think, when you experience negative or unpleasant events.

	(almost) never	some- times	regularly	often	(almost) always
1. I feel that I am the one to blame for it	1	2	3	4	5
2. I think that I have to accept that this has happened	1	2	3	4	5
3. I often think about how I feel about what I have experienced	1	2	3	4	5
4. I think of nicer things than what I have experienced	1	2	3	4	5
5. I think of what I can do best	1	2	3	4	5
6. I think I can learn something from the situation	1	2	3	4	5
7. I think that it all could have been much worse	1	2	3	4	5
8. I often think that what I have experienced is much worse than what others have experienced	1	2	3	4	5
9. I feel that others are to blame for it	1	2	3	4	5
10. I feel that I am the one who is responsible for what has happened	1	2	3	4	5
11. I think that I have to accept the situation	1	2	3	4	5
12. I am preoccupied with what I think and feel about what I have experienced	1	2	3	4	5
13. I think of pleasant things that have nothing to do with it	1	2	3	4	5

	(almost) never	some- times	regularly	often	(almost) always
14. I think about how I can best cope with the situation	1	2	3	4	5
15. I think that I can become a stronger person as a result of what has happened	1	2	3	4	5
16. I think that other people go through much worse experiences	1	2	3	4	5
17. I keep thinking about how terrible it is what I have experienced	1	2	3	4	5
18. I feel that others are responsible for what has happened	1	2	3	4	5
19. I think about the mistakes I have made in this matter	1	2	3	4	5
20. I think that I cannot change anything about it	1	2	3	4	5
21. I want to understand why I feel the way I do about what I have experienced	1	2	3	4	5
22. I think of something nice instead of what has happened	1	2	3	4	5
23. I think about how to change the situation	1	2	3	4	5
24. I think that the situation also has its positive sides	1	2	3	4	5
25. I think that it hasn't been too bad compared to other things	1	2	3	4	5
26. I often think that what I have experienced is the worst that can happen to a person	1	2	3	4	5
27. I think about the mistakes others have made in this matter	1	2	3	4	5

	(almost) never	some- times	regularly	often	(almost) always
28. I think that basically the cause must lie within myself	1	2	3	4	5
29. I think that I must learn to live with it	1	2	3	4	5
30. I dwell upon the feelings the situation has evoked in me	1	2	3	4	5
31. I think about pleasant experiences	1	2	3	4	5
32. I think about a plan of what I can do best	1	2	3	4	5
33. I look for the positive sides to the matter	1	2	3	4	5
34. I tell myself that there are worse things in life	1	2	3	4	5
35. I continually think how horrible the situation has been	1	2	3	4	5
36. I feel that basically the cause lies with others	1	2	3	4	5

Appendix G (Informed Consent – For Kennebecasis Regional Police Force)



Informed Consent Form

*Centre for Criminal Justice Studies & Department of
Psychology, University of New Brunswick Saint John*

**Examination of Stressful Experiences, protective factors,
and mental wellness in law enforcement personnel**

Primary Researcher: Dr. Mary Ann Campbell

Co-Investigators: Dr. Caroline Brunelle, Laurett Nwaonumah and Jenna Meagher

Researchers at the Centre for Criminal Justice Studies is conducting a study on mental wellness, and would like to survey the members of [insert name of specific police organization]. The information gathered from this research can be used to develop strategic plans and supports that will promote mental wellness and well-being among employees. This survey will also ask you for your ideas about what might be helpful for yourself or your colleagues to promote and support employee mental wellness within your organization. We are interested in hearing from everyone within the organization, including sworn and auxiliary police officers, all levels of administration, civilian staff, and employees working with the Public Safety Communication Centre staff. This survey will ask you questions about your feelings, personality, thoughts, behaviors, and work-related experiences. We are interested in responses from people who have identified mental health concerns, who suspect they have mental health concerns, and people who have no known mental health concerns. The more people who fill out this survey, the better the study findings will be representative of the mental wellness within the organization and better inform the strategic planning.

Your decision to participate in this study is completely voluntary. You may refuse to participate or withdraw your information from this study at any time without penalty. You also may decide not to answer any questions within the survey that you are uncomfortable answering. The survey takes approximately 20-30 minutes to complete, and you can complete it during work time as confirmed by [insert Chief's name].

No information will be shared with your employer as to who did or did not participate, and individual survey responses will not be shared with your employer, supervisor or managers of any kind. We will respect the confidentiality of the information that each person shares with us. As such, we will not ask you to provide your name or specific details about your employment on the survey that might identify you. Only members of the research team named above will have access to your answers, and these responses will be shared publically and with management only as summaries of responses across participants. We will also send a summary of these findings via email to all employees once the study is complete.

There are two ways to complete this survey. **The first way to participate** is via an **online survey** which can be accessed through the link _____. The online system used to host this survey (Qualtrics™) meets secure data standards for

most research needs. Your name and contact information will only be requested for the purposes of the amazon.ca gift card draw, and will be via a separate link at the end of the study and cannot be connected to the information you provide on the survey. Your IP addresses will not be stored once the data is downloaded for analysis. **The second way to participate** in this study is by completing a **paper version** of the same survey that can be obtained directly from the researchers or by picking one up from the office of [insert name]. This individual is a trusted staff member, and will not share information with colleagues or management as to who did or did not pick up the survey. If you chose the paper option, a sealed drop box is available in the office of [insert staff member's name]. This box will be checked by the researchers on a daily basis for the next 4 weeks to pick up completed surveys.

Regardless of whether you complete the survey in the paper or online format, all data will be merged into one database that will only contain de-identified data (no names or other identifying information will be retained). Completed paper versions of the survey will be securely stored in locked cabinets and the online and merged data file will be stored securely on encrypted/password protected electronic storage devices in the Centre for Criminal Justice Studies at the University of New Brunswick. Only the research team as described above will have access to this data. Consent forms (for the paper version of the survey) will be stored separately from your responses to the survey, so that there is no way to link your responses to you name.

There are no foreseeable or reasonable personal risks in the participation of this study. The findings from this research will benefit the [insert specific name of the police organization] as an organization as it will inform strategic planning with regard to mental health and wellness supports/resources within the organization.

This research study is being led by Dr. Mary Ann Campbell, Professor in the Department of Psychology and Director of the Centre for Criminal Justice Studies at the University of New Brunswick in Saint John, and includes three co-investigators: Dr. Caroline Brunelle, Associate Professor in the Department of Psychology at the University of New Brunswick in Saint John, Ms. Laurett Nwaonumah, B.Sc., Masters Student in this same department working under the supervision of Dr. Mary Ann Campbell and Ms. Jenna Meagher, B.A., honour student, also under the supervision of Dr. Mary Ann Campbell. If you have questions about this project, please contact Dr. Campbell at (506) 648-5969 or mcampbel@unb.ca. If you have concerns with about your rights as a research participant or have concerns with this project, please contact the Research Ethics Board at UNB Saint John Campus by email at reb@unb.ca or by phone at 506.648. 5908. This project has been successfully reviewed by this research ethics board.

[if viewing the consent form online, the respondent will see the following]

By clicking the “consent button”, I am agreeing that this research project has been explained to me, and that all of my questions regarding this project have been answered. I understand that my participation in this study is completely voluntary, and that the possible risk and benefits of participating in this study have been explained. I

understand that I may refuse to participate without consequence, and that I have a choice of not answering any specific questions. I have been informed that I am free now, and in the future, to ask any questions about the study. I have been told that my personal information will be kept confidential, and that no personnel at the Saint John Police Force will have access to my individual responses.

[if viewing the paper version of the survey, the respondent will see the following]

I agree that this research project has been explained to me, and that all of my questions regarding this project have been answered. I understand that my participation in this study is completely voluntary, and that the possible risk and benefits of participating in this study have been explained. I understand that I may refuse to participate without consequence, and that I have a choice of not answering any specific questions. I have been informed that I am free now, and in the future, to ask any questions about the study. I have been told that my personal information will be kept confidential, and that no personnel at the [insert the name of the specific police organization] will have access to my individual responses.

I _____ [print name] voluntarily consent to participate in the above named study.

Signature:

Please separate this form from your survey results prior to dropping the survey into the box in [insert staff member's name]. A separate slot is provided in the box for your signed consent form.

Appendix H (Informed Consent Form – for Saint John Regional Police Force)



Informed Consent Form
*Centre for Criminal Justice Studies & Department of
 Psychology, University of New Brunswick Saint John*

**Examination of Stressful Experiences, protective factors,
 and mental wellness in law enforcement personnel**

Primary Researcher: Dr. Mary Ann Campbell

Co-Investigators: Dr. Caroline Brunelle, Laurett Nwaonumah and Jenna Meagher

Researchers at the Centre for Criminal Justice Studies have been asked by the Saint John Police Force to conduct a second survey of its employees about their mental wellness. This information will be used to understand the impact of previous strategies that were introduced since the first survey in December 2015, and to develop additional strategies that will promote mental wellness and well-being among employees. This survey will also ask you for your ideas of what implemented programs were helpful, as well as what might be helpful for yourself or your colleagues to promote and support employee mental wellness within your organization. We are interested in hearing from everyone within the organization, including sworn and auxiliary police officers, all levels of administration, civilian staff, and employees working with the Public Safety Communication Centre staff. This survey will ask you questions about your feelings, thoughts, behaviors, and work-related experiences. We are interested in responses from people who have identified mental health concerns, who suspect they have mental health concerns, and people who have no known mental health concerns. The more people who fill out this survey, the better the study findings will be representative of the mental wellness within the organization and better inform the strategic planning.

Your decision to participate in this study is completely voluntary. You may refuse to participate or withdraw your information from this study at any time without penalty. You also may decide not to answer any questions within the survey that you are uncomfortable answering. The survey takes approximately 30 minutes to complete, and you can complete it during work time as confirmed by Chief Bates. Employees who fill out this survey will have a chance to win one of 10 \$20 amazon.ca gift cards.

No information will be shared with your employer as to who did or did not participate, and individual survey responses will not be shared with your employer, supervisor or managers of any kind. We will respect the confidentiality of the information that each person shares with us. As such, we will not ask you to provide specific details about your employment on the survey that might identify you. Only members of the research team named above will have access to your answers, and these responses will be shared publically and with management only as summaries of responses across participants. We will also send a summary of these findings via email to all employees once the study is complete.

There are two ways to complete this survey. **The first way to participate** is via an **online survey** which be accessed via electronic and mobile devices (e.g., smart phones, tablets, and computers). Web link: [*insert link*]. The online system used to host this survey (Qualtrics™) meets secure data standards of confidentiality. Your name and contact information will only be requested for the purposes of the amazon.ca gift card draw, and will be via a separate link at the end of the study and cannot be connected to the information you provide on the survey. Your IP addresses will not be stored once the data is downloaded for analysis. **The second way to participate** in this study is by completing a **paper version** of the same survey that can be obtained directly from the researchers or by picking one up from the office of Angela Totten, Crime Analyst, Saint John Police Force. Mrs. Totten will not share information with colleagues or management as to who did or did not pick up the survey. If you chose the paper option, a sealed drop box is available in Mrs. Totten's office. This box will be checked by the researchers frequently for the next 4 weeks to pick up completed surveys.

Regardless of whether you complete the survey in the paper or online format, all data will be merged into one database that will only contain de-identified data (no names or other identifying information will be retained). Completed paper versions of the survey will be securely stored in locked cabinets and the online and merged data file will be stored securely on encrypted/password protected electronic storage devices in the Centre for Criminal Justice Studies at the University of New Brunswick. Only the research team as described above will have access to this data. Consent forms (for the paper version of the survey) will be stored separately from your responses to the survey, so that there is no way to link your responses to you name.

There are **no** foreseeable or reasonable personal risks in the participation of this study. The findings from this research will benefit the Saint John Police Force as an organization as it will inform strategic planning with regard to mental health and wellness supports/resources within the organization.

This research study is being led by Dr. Mary Ann Campbell, Professor in the Department of Psychology and Director of the Centre for Criminal Justice Studies at the University of New Brunswick in Saint John, and includes three co-investigators: Dr. Caroline Brunelle, Associate Professor in the Department of Psychology at the University of New Brunswick in Saint John, Ms. Laurett Nwaonumah, B.Sc., Masters Student in this same department working under the supervision of Dr. Mary Ann Campbell and Ms. Jenna Meagher, B.A., honour student, also under the supervision of Dr. Mary Ann Campbell. If you have questions about this project, please contact Dr. Campbell at (506) 648-5969 or mcampbel@unb.ca. If you have concerns with about your rights as a research participant or have concerns with this project, please contact the Research Ethics Board at UNB Saint John Campus by email at reb@unb.ca or by phone at 506.648. 5908. This project has been successfully reviewed by this research ethics board.

[if viewing the consent form online, the respondent will see the following]

By clicking the “consent button”, I am agreeing that this research project has been explained to me, and that all of my questions regarding this project have been answered. I understand that my participation in this study is completely voluntary, and that the possible risk and benefits of participating in this study have been explained. I understand that I may refuse to participate without consequence, and that I have a choice of not answering any specific questions. I have been informed that I am free now, and in the future, to ask any questions about the study. I have been told that my personal information will be kept confidential, and that no personnel at the Saint John Police Force will have access to my individual responses.

[if viewing the paper version of the survey, the respondent will see the following]

I agree that this research project has been explained to me, and that all of my questions regarding this project have been answered. I understand that my participation in this study is completely voluntary, and that the possible risk and benefits of participating in this study have been explained. I understand that I may refuse to participate without consequence, and that I have a choice of not answering any specific questions. I have been informed that I am free now, and in the future, to ask any questions about the study. I have been told that my personal information will be kept confidential, and that no personnel at the Saint John Police Force will have access to my individual responses.

I _____ [print name] voluntarily consent to participate in the above named study.

Signature:

Please separate this form from your survey results prior to dropping the survey into the box in Mrs. Totten’s office. A separate slot is provided in the box for your signed consent form.

Appendix I (Information Sheet for Mental Health Service Resources)

Information Sheet for Mental Health Service Resources

FREE SUPPORTS AND SERVICES	CONTACT INFORMATION
Addiction and Mental Health Services – a no fee service to residents in New Brunswick	Phone: 506-658-3737 to make a referral (you don't need a doctor's referral)
CHIMO Helpline, accessible 24 hours/day, 7 days a week to all residents in New Brunswick	Phone: 1-800-667-5005 http://www.chimohelpline.ca
Mobile Mental Health Crisis Services	Phone: 1-888-811-3664
Ridgewood Addiction Services	
Sophia Recovery Centre for substance abuse issues (for women only)	Phone: 506-633-8783 http://sophiarecoverycentre.com/index.html
Gambling Help Line	Phone: 1-800-461-1234
Capital District Mental Health Program Services Halifax Nova Scotia (publicly funded and needs a referral)	Website: http://ourhealthyminds.com/family-handbook/appendix-capital-district-mental-health-program-services.html
Mental Health Crisis Line (Nova Scotia)	Phone: 1-888-429-8167 (toll-free)

Fee for Service Mental Health and Addictions Organizations	CONTACT INFORMATION
Gentle Path Counseling Services	Phone: 1-506-652-7284 Ext. "0", or 1-888-394-4022 (Toll Free) Email: path@nbnet.nb.ca Website: http://www.gentlepathsj.com/
Family Plus/Life Solutions	Phone: 506-634-8295 or 1-800-360-3327 (toll free) Website: http://www.familyplus.ca
SJ Psychology Centre	Phone: (506) 632-3110 Email: info@sjpsychology.ca Website: http://www.thesjpsychologycentre.ca/index.html
Family Matters Counselling Services	Phone: 506-849-2777 Website: http://www.familymatterssj.com/
KV Psychology and Counselling Clinic	Phone: 506-847-7792 Email: info@kvpsychology.ca Website: http://www.kvpsychology.ca/
Other Private Therapists can be found in the phone book under "Counselors", "Psychologists".	Go to http://cpnb.ca/definitions/finding-a-psychologist/ Or http://apns.ca/search-psychologist/ to search for psychologists in your area, language preferences, and type of problem.

CURRICULUM VITAE

Candidate's full name: Laurett N. Nwaonumah

Universities attended:

B.Sc. (Hons.), Biology-Psychology, University of New Brunswick, Saint John, 2013

Publications: None

Conference Presentations:

Nwaonumah, L. N., Proctor, C., Flood, K., & Best, L. (2018, June). *The role of psychological flexibility and loneliness in predicting satisfaction with life (SWL) in a sample of college students.* Poster presentation at the Canadian Psychological Association Annual Convention, Montreal, Canada.

Nwaonumah, L. N., Canales, D. D., Campbell, M.A., & Brunelle, C. (2018, March). *The relationship between resiliency, organizational commitment, and burnout in a sample of law enforcement personnel.* Oral presentation at the American Psychology Law Society, Memphis, TN, United States of America.

Nwaonumah, L. N., Wershler, J., McDonough, M., & Campbell, M.A. (2017, June). *The role of impulsivity in the association between psychopathic traits and substance use.* Oral presentation at the Canadian Psychological Association Annual Convention, Toronto, Canada.

Nwaonumah, L. N., McDougall, A., & Campbell, M.A. (2016, May). *Individual differences in case compliance of justice involved persons with and without mental health needs.* Oral presentation at the Atlantic Criminal Justice Conference, Saint John, Canada.

Nwaonumah, L. N., McDougall, A., & Campbell, M.A. (2016, May). *Criminogenic need profile of justice involved persons with and without mental health needs in New Brunswick*. Poster presentation at the interprofessional Health Research Day, Saint John, Canada.