

**The Relationship between Critical Incidents, Hostility and PTSD Symptoms in  
Police Officers**

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**DEDICATION**

To all of the police officers who protect and serve their communities

Thank You

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**Abstract****The Relationship between Critical Incidents, Hostility, and PTSD Symptoms in Police Officers**

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Research indicates that 12-35% of police officers in the United States suffer from Posttraumatic Stress Disorder (PTSD). To experience PTSD symptoms, an individual must be exposed to a traumatic event, which is referred to in the police literature as a critical incident. Some research suggests that the more critical incidents to which an individual is exposed, the more intense PTSD symptoms they are likely to experience. However, not everyone who experiences numerous critical incidents develops more intense PTSD symptoms indicating that other variables may influence this relationship. The current study examined the relationship between frequency of critical incidents, organizational stressors, coping appraisal, hostility negative life events, and intensity of PTSD symptoms in a sample of police officers. The results suggest that although frequency of critical incidents predicted intensity of PTSD symptoms in a simple regression analysis, when all of the independent variables were simultaneously entered into a multiple regression analysis, only coping appraisal and negative life events emerged as significant predictors of intensity of PTSD symptoms. Coping appraisal and hostility did not moderate the relationship as hypothesized. Clinical and research implications are discussed.



## CHAPTER 1: INTRODUCTION

Police work is commonly recognized as one of the most stressful occupations in the world (Carrier, Lamberts, & Gersons, 1997; Kop & Euwema, 2001; Norvell & Belles, 1993; Selye, 1978). Police officers are at risk for experiencing stress due to the various threats, or stressors, inherent in their profession. One type of stressor unique to police officers is the level and intensity of danger they are exposed to on a daily basis (Territo & Vetter, 1981). Although extreme and rare incidents such as shootings and riots are innately dangerous, common tasks such routine car stops and calls regarding domestic violence can also have dangerous and even deadly consequences for police officers. In the life of a police officer, life and death situations can occur on a daily basis, without warning (Coman & Evans, 1991).

Unlike most emergency responders, police officers are often not well received by the community. Many times, the very tasks they engage in to protect the community are met with hostility and anger from the residents (Doctor, Curtis, & Isaacs, 1994). Furthermore, when a police officer is involved in an incident involving a member of the community, his/her actions are frequently scrutinized by the residents, the media, and his/her own Internal Affairs unit. Moreover, criminals are increasingly filing civil lawsuits against police officers, even when their wounds are a result of the commission of a crime (Violanti, 1996b).

Similar too many occupations, job related stressors, often referred to as organizational stressors, are reported to be a significant source of stress for police officers (Violanti & Aron, 1995). Most police departments employ rotating shifts so the work schedule changes monthly or weekly for nearly all police officers. In addition to rotating

shifts resulting in inadequate sleep, other duties such as testifying in court also frequently disrupt the “normal” shift that an officer is scheduled to work. The criminal justice system itself is also reported as a source of stress for police officers. Police officers often perceive the judicial process as being too sympathetic and lenient on criminals and conversely, too insensitive to police concerns (Stratton, 1986). Brown and Campbell (1994) indicated the ten most frequently reported organizational stressors of British police officers as staff and manpower shortages, shift work, working with civilians, time pressures, lack of consultation/communication, managing and supervising people, long hours, work overload, inadequate resources and demands of work impinging on home.

Despite all of these potential stressors, the law enforcement culture does not encourage police officers to discuss any emotions they may experience. Instead, they are encouraged through the macho “John Wayne syndrome” to deny the normal feelings that accompany such trauma (Reiser, 1974). The John Wayne syndrome is characterized by the “expectation of an authoritarian and tough outlook on life and a constant pressure to appear efficient” (Doctor et al., 1994, p. 152). Not only is the syndrome reinforced through the police system, it is also reinforced by the community they serve. Controlling one’s emotions is considered essential not only by fellow colleagues, but also by the residents of the community (Brown, Fielding, & Grover, 1999).

As a result of the combination of various sources of stress and the denial of normal human emotion, many psychological and physical symptoms manifest in police officers. In 1978, Blackmore conducted a study of 2,300 police officers in 29 departments and found that 36% had serious health problems, 23% had serious alcohol problems, and 37 % had serious marital problems. In one year, 1,500 New York City

police officers required psychiatric care for problems related to stress (Maslach, 1976). Another study reported that police compensation claims were six times the rate of other professions with fifty percent of those claims related to high blood pressure and thirty percent related to psychological problems (Jacobi, 1976). High rates of heart disease, cancer, and stomach disorders are some of the health related outcomes related to the poor coping skills of police officers (Lord, Gray, & Pond, 1991; Violanti, Vena, & Marshall, 1986).

Negative psychological outcomes are also prevalent in police officers. The common belief is that the most likely way for an officer to die is from homicide, however, Guralnick (1963) reported that police suicides (94 per one hundred thousand), outnumbered police homicides (54 per one hundred thousand). More recent statistics indicate that police officers are three to eight times more likely to die by suicide than by homicide (Chamberlin, 2000). Additionally, police officers' suicide rate is three times higher than the general population (Violanti et al., 1986). In New York City from 1984-1994, the suicide rate for police officers was 31% higher than the national average (Loh, 2000). In 1999 alone, fourteen NYC police officers committed suicide (Lewis, 2000). Divorce rates are also high in this profession as are the rates of alcoholism (Violanti, Marshall, & Howe, 1985; Kroes, 1986).

Also of concern is the high percentage of police officers that experience psychopathology, specifically Posttraumatic Stress Disorder (PTSD). Numerous studies have found that police officers are at a significant risk for developing this disorder (Carlier et al. 1997; Follette, Polusny, & Millbeck, 1994; Gersons, 1989; Harvey-Lintz & Tidwell). According to Mann and Neece (1990), approximately 12-35% of police

officers suffer from Post Traumatic Stress Disorder. Although a significant proportion of police officers develop PTSD symptoms, there are other police officers that do not. Thus, it is important to investigate other variables such as hostility, coping appraisal, negative life events, and organizational stressors that may impact the development of PTSD symptoms in police officers.

Given the empirical literature, it appears imperative that the scientific community investigate the stressors involved in police work, the possible consequences of these stressors, and any moderating factors that may increase or decrease the likelihood of the development of PTSD symptoms. Thus, the current study investigated the relationship between frequency of critical incidents and intensity of PTSD symptoms and the possible effects of hostility, coping appraisal, negative life events, and organizational stressors.

## **CHAPTER 2: LITERATURE REVIEW**

### **Critical Incidents**

The term critical incident is commonly used in the empirical literature when referring to traumatic events that involve the potential for severe injury, death and/or devastation. Critical incidents have been defined in several ways. Blak (1990) reported, “It would appear that certain tragic events are so dramatic, shocking, and disturbing to our collective psyches that we agree that they are ‘stressful’ and therefore ‘critical incidents’” (p.40). Gentz (1991) stated, “A critical incident may be defined as an event requiring an extraordinary degree of adaptation by the individual who experiences it” (p.119). The most widely accepted definition of a critical incident, and the operational definition used in the current study, is “an incident that causes a person to have unusually

strong emotional reactions that have the potential to interfere with his or her ability to function either at the scene or later” (Garrison, 1991, p. 45 ).

Some types of critical incidents occur somewhat frequently, while other types rarely, if ever occur. For example, critical incidents that police officers respond to countless times throughout their careers include arriving to the scene of a vehicular homicide, arriving as the first responder to a successful suicide attempt, and investigating the abuse of a child. Discharging a firearm is a more rare type of critical incident that is not experienced by most police officers during the course of their career (Trapasso, 1996). However, when shootings do occur, they are often traumatic for police officers. Approximately 35% of police officers leave their department within one year following a shooting (Violanti, 1996a). Conroy (1990) reported that nearly 90% of police officers will be affected by a critical incident during their career.

Carlier and Gersons (1994) categorized critical incidents into two distinct groups. The first category, extremely violent incidents, includes incidents whereby the individual is an active participant in the event such as shootings, hostage situations, and riots. The second category, extremely depressing incidents, includes incidents whereby the individual is not present for the actual event but arrives to encounter the aftermath of the event. Examples of this type of incident include confrontations with seriously or mortally wounded accident victims and victims of abuse.

Emergency personnel, such as police officers, fire fighters, and emergency relief workers, frequently experience critical incidents and are often considered as one homogenous group. However, fire fighters and emergency relief workers typically encounter the consequence of the event hence they are usually only confronted with very



depressing incidents (Carlier et al.,1997). Police officers, on the other hand, not only respond after a tragedy occurs, they are often part of the violent incidents that precipitate the tragedies. Thus, police officers often experience both types of critical incidents throughout their careers (Carlier et al.,1997).

Although police officers are usually identified with emergency responders, the context in which police officers experience critical incidents is similar to situations experienced by military veterans. Violanti (1996a) identified six areas of police work that are comparable to the experiences of those that served in the Vietnam War: guerilla warfare at home, the identity of the enemy, a continual sense of insecurity, lack of support, witnessing abusive violence, and depersonalization. The first area, guerilla warfare, is similar to the current plight of many police officers. Violanti (1996a) describes police officers as serving in “peacetime combat.” The critical incidents that police officers experience occur while they are protecting and serving their communities, often on hostile enemy grounds. Similar to guerilla warfare, there is no “off duty” for many police officers as they are vigilant twenty four hours a day, seven days a week.

Like soldiers, police officers involved in a critical incident often do not know until it is too late, the identity of the enemy. An encounter with a seemingly innocent adult or child could turn deadly. Routine car stops are one of the most dangerous of all encounters for police officers since they do not know the identity of the person(s) inside the vehicle. The individual(s) may be law abiding citizens or they could be felons carrying concealed weapons (Violanti, 1996a).

During war, soldiers report frequently feeling insecure about their safety, and thus constantly being in a state of vigilance. Many police officers have the same chronic

sense of uncertainty (Violanti, 1996a). In 1968, Skolnick stated, “Suspiciousness is an evident trait of the police officer’s working personality.” This could not be truer today. Police officers often become suspicious as a way to handle the unknown dangers that could quickly turn into a critical incident (Violanti, 1996a).

Another similarity between police officers and veterans of the Vietnam War is their lack of support from those for whom they are fighting. Hostile responses from the community are not uncommon. Even when a police officer responds to a critical incident appropriately, the community, media, and police department sometimes fail to support the officer (Violanti, 1996a).

Not only do police officers and veterans experience similar violent critical incidents, they also experience similar depressing incidents. Like veterans, police officers experience horrific atrocities in the form of homicides, suicides, rapes, and abuse. The continual exposure to violence and death leads to the final commonality among police officers and veterans, the depersonalization of human emotions. According to Violanti (1996a), “Bodies become mere objects and feelings harden” (p. 118). One police officer related his experience, “You can’t cry. You see two kids burned to death in a car accident and the mother clinging to a third child just begging it to breath. You’re in charge of the scene, you can’t cry even though you’re trembling inside” (p.118).

The literature review indicates that police officers are extremely vulnerable to the exposure of multiple critical incidents throughout their careers. These violent and depressing incidents can be difficult for a person to fully process. For police officers, the police culture makes the processing of critical incidents even more difficult.

## **Police Culture**

The average American citizen does not witness in their lifetime what many police officers witness in one month (Violanti, 1996b). Although the exposure to trauma is great, there are many factors that make it difficult for a police officer to admit that a trauma has affected him/her in any way. One of the primary factors that make it difficult is the police culture itself. The socialization to deny human emotions and vulnerability begins in the police academy. Police recruits are taught self-defense and street survival skills in addition to being well trained in fire-arms. Along with these skills, Violanti (1996b) reports that a sense of “superhuman emotional and survival strength” (p.92) is promoted. By the time they graduate from the academy they are well trained but may have, as described by Janoff-Bulman (1985) an “illusion of invulnerability.”

This sense of invulnerability is perpetuated in the field training an officer receives once he begins working in his respective department. New recruits learn from senior officers that police work requires the inhibition of affective responses. When an officer arrives to the scene of a fatality, they are required to remain emotionless. Even when confronted with a death of a child, they are expected to push aside any emotional response and immediately take control of the scene and provide order and a sense of safety to the community. In law enforcement, learning to “protect” himself/herself from emotional responses is just as important as learning how to protect himself/herself from physical harm (Violanti, 1996b). Although this type of “protection” from emotional harm may have long-term psychological consequences, it is an occupational necessity. Violence, death, and trauma may be routinely experienced by police officers, however,

professional conduct dictates that officers remain calm and in control regardless of how gruesome or horrific the scene may be.

This “illusion of invulnerability” is constantly reinforced, however, according to Perloff (1983), individuals who feel the most invulnerable prior to a trauma, often experience the most distress after an incident. According to Janoff-Bulman the “illusion of invulnerability” (p. 19) is shattered along with the assumption that the world is a safe and just place. Cognitive dissonance may occur when this armor of invulnerability is penetrated by a traumatic event. Subsequent feelings of shame, fear, and a heightened sense of arousal may be experienced by the individual after the trauma (Violanti, 1996b).

Although these feelings are difficult for any individual to experience, the climate of the police culture makes it even more difficult for police officers to acknowledge any distress. The combination of exposure to critical incidents and the suppression of normal human emotions make police officers vulnerable to the development of PTSD symptoms. The process between the traumatic experience, the interpretation of the experience, and the resulting sequelae of PTSD will be more fully elaborated upon when the theoretical models of PTSD are discussed.

### **Posttraumatic Stress Disorder**

Wilson (2004) describes PTSD as a “psychobiological syndrome that comprises an interrelated set of symptoms that cohere to form a prolonged stress reaction to trauma” (p.11). After an individual experiences a trauma, new psychological, physiological and behavioral patterns of reactivity may develop that were not present prior to the trauma (Wilson, 2004). The trauma may result in an individual challenging previously held belief systems and cognitive schemas. As a response to perceived threat or danger,

physiological consequences may occur in the release of neurohormones and the activation of the “fight or flight” response. Normally, once the perceived threat of danger decreases, sympathetic nervous system (SNS) returns to homeostasis, or baseline functioning. However, an individual experiencing PTSD symptoms may continue in this state of hyperarousal. Thus, the body does not return to homeostasis and instead the SNS continues to function as if it is a state of emergency well after the threat has ceased. Behaviorally, irritability and aggression may result as part of the prolonged stress response. Bremner (2002) has found that the basal ganglia area of the limbic system appear to remain in a state of kindling which may result in an individual responding to minimal provocation in irritable or aggressive manner.

The DSM-IV defines Post Traumatic Stress Disorder (PTSD) as a disorder that develops after an individual is exposed to a traumatic event and subsequently experiences psychological distress for at least one month after the incident. Events that may result in PTSD include assault, rape, combat, severe accidents, hostage situations, shootings, natural and man-made disasters, torture, and the diagnosis of a life threatening illness. All of these events involve either death, the threat of death, serious injury, or threat to one’s physical integrity (American Psychiatric Association, 2000) (refer to Table 1 for a complete description of Criterion A).

According to the Diagnostic and Statistical Manual for Mental Disorders (DSM IV-TR; American Psychiatric Association, 2000), there are three sets of symptom clusters related to PTSD. The first symptom cluster, re-experiencing the event, may occur in several ways. The individual may have re-occurring nightmares about the event, may experience intrusive and re-occurring thoughts about the event, may feel as though the

event is re-occurring, and/or may experience psychological and/or physical reactions to stimuli associated with the event. The second symptom cluster, avoidance of stimuli associated with the event and numbing of general responsiveness, occurs when the individual avoids thoughts and feelings associated with the event as well as avoids other stimuli such as people, places, and activities associated with the event. The avoidance symptom cluster is also characterized by difficulty remembering important aspects of the event, diminished enjoyment in pleasurable activities, feelings of detachment, a restricted range of affect, and a sense of a foreshortened future. The last symptom cluster, increased arousal, is indicated by difficulty staying or falling asleep, anger and irritability, hypervigilance, difficulty concentrating, and an exaggerated startle response (American Psychiatric Association, 2000).

When a person experiences a traumatic event, it is common and natural for them to experience some of these symptoms in the immediate aftermath. When these symptoms persist after two weeks, a diagnosis of Acute Stress Disorder (ASD) may be appropriate; however, when the duration of the symptoms persists for more than one month, a diagnosis of PTSD may be warranted (American Psychiatric Association, 2000). The diagnostic criteria for PTSD, as defined by the DSM IV-TR (2000), are provided in Table 1.

According to the DSM IV-TR (2000), PTSD symptoms typically develop within the first three months after the incident, however, there may be a delay of months or even years before the symptoms of PTSD emerge. The sequelae of PTSD also varies with approximately 50% of the cases completely recovering within three months while other cases may have symptoms that persist for longer than one year while yet others may

experience waxing and waning of symptoms. Additionally, symptoms of PTSD may become reactivated in response to reminders of the traumatic event, exposure to a new traumatic event, or life stressors.

According to the National Comorbidity Survey, (Kessler et al., 1994), the estimated lifetime prevalence rate of PTSD is 7.8%. Women have a higher lifetime prevalence rate (10.4%) than men (5.0 %). Lifetime prevalence rates also differ according to marital status. Females who are divorced, widowed, or separated have higher rates of PTSD than married females. Lifetime prevalence rates were higher among married men as compared to single men. Among people with PTSD, the most commonly associated trauma for men with PTSD was combat while for women with PTSD the most commonly associated event was rape (Kessler et al., 1994).

Since 60.7% of the men and 51.2% of the women interviewed in the NCS (Kessler et al., 1994) reported an exposure to at least one traumatic event, it is apparent that not everyone exposed to a traumatic event develops PTSD. There are several factors that influence the development of PTSD. Factors related to the traumatic event that are associated with increased risk for PTSD are the severity of the trauma, the duration of the trauma, the proximity of the individual's exposure to the event, and the perceived threat of death (Leahy & Holland, 2001). Premorbid factors that are predictors of the development of PTSD include family history of mental illness, childhood abuse, poverty, limited education, separation from parents, parental abuse, misconduct in childhood, prior trauma, personality variables, and preexisting mental disorders (Leahy & Holland, 2001).

PTSD does not often occur in isolation from other disorders. Estimates regarding the comorbidity of PTSD with other Axis I disorders range between 60%-100% (Litz,

Penk, Geradi, & Keane, 1992). Major Depression and substance abuse disorders are the most common comorbid Axis I disorders while common Axis II disorders include borderline, schizoid, antisocial, obsessive-compulsive, and paranoid personality disorders (Leahy & Holland, 2001).

As with many psychological disorders, there are various theoretical perspectives from which the development of PTSD can be explained. The more commonly accepted theories from a cognitive behavioral orientation will be summarized below.

### **Theoretical Models of PTSD**

One of the first theories applied to PTSD was postulated by Mowrer in 1947 (Resick and Calhoun, 2001). Mowrer (1947) proposed a two-factor learning theory consisting of classical conditioning and operant conditioning. This theory was later used to explain the posttrauma symptoms experienced by rape and combat victims.

According to this theory, when a person experiences a traumatic event (unconditioned stimulus (US)), the subsequent feelings such as fear and anxiety are naturally occurring responses (unconditioned responses (UR)). Classical conditioning occurs when the sights, sounds, and other sensations experienced during the traumatic event become linked to the trauma in the mind of the victim. The sensations experienced during the event then serve as conditioned stimuli (CS) and result in conditioned responses (CR) similar to the responses experienced in the original trauma. Classical conditioning helps explain the extreme distress often found in trauma victims; however, the avoidance of the stimuli associated with the event is not accounted for through classical conditioning. The second factor of the theory, operant conditioning is used to explain avoidance symptoms. However, unlike typical operant conditioning situations, the unconditioned stimulus, the



traumatic event, does not reoccur. Instead, the sensations and memories of the trauma serve as the conditioned stimuli. These stimuli elicit fear and anxiety and to reduce these symptoms, the conditioned stimuli (memories of the trauma) are avoided. As a result, the avoidance of the stimuli is negatively reinforced preventing the extinction of the link between the traumatic event and anxiety and fear.

This theory accounts for the maintenance of the fear and avoidance in the development in PTSD; however, it does not account for the intrusive symptoms, the persistent hyperarousal, or the cognitive alteration in the sense of meaning that is present in PTSD. To explain these symptoms, Lang developed an information processing theory (Lang, 1977). A more recent theory based on Lang's initial work was developed by Foa, Steketee, and Rothbaum (1989). Foa and colleagues' cognitive processing model incorporates the foundations of the learning theory model while focusing on the process in which the information regarding the trauma is encoded, stored into memory, and later recalled. According to this model, a fear structure is developed in the memory of the individual who experienced the traumatic event. Within this fear structure, the sensations from the event, or the stimuli, are present as well as the psychological and physiological responses. Similar to the learning theory model, Foa and colleagues believe that once this fear structure is activated, the individual will engage in avoidance to disengage from experiencing the sensations and responses. The fear structure is thought to be generalizable and stable which allows it to be easily activated. As a result, traumatized individuals misinterpret harmless events as potentially dangerous.

The cognitive processing theory also describes how the alteration in an individual's understanding or belief about themselves or their environment occurs (Foa et

al., 1989; Resick & Schnicke, 1992). Cognitive schemas such as “the world is safe” and “bad things do not happen to good people” are challenged. When this challenge occurs, people try to make sense of the experience that challenges the schemas. However, if the meanings associated with the trauma can not be assimilated into existing schemas, a process known as accommodation will need to occur and the existing schemas will be revised. When one engages in avoidance, however, this prevents the process of assimilation and accommodation. The person vacillates between attempting to assimilate the meaning (and thus re-experiencing the event) and avoiding the negative emotions related to the trauma. Therefore, the person is in flux between trying to find meaning and avoiding the negative emotions, thus creating a persistent state of hyperarousal.

Many cognitive processing theories focus on fear, but some researchers have suggested that PTSD is not limited to fear (Resick and Schnicke, 1992; 1993). Other emotions such as anger, shame, or sadness may also occur after a traumatic event. Resick and colleagues differentiate emotions into primary and secondary emotions. Primary emotions are those emotions that are the direct result of the trauma. The danger and sense of loss that is experienced leads to these emotions. These emotions are identified as primary emotions as they are the direct result of the trauma. Often when a person experiences a trauma, faulty interpretations about the trauma are made such as blaming oneself. Emotions such as shame or embarrassment are considered secondary or manufactured emotions. These emotions are considered manufactured since they do not result directly from the trauma but rather from the “manufactured” interpretations. In this model, for the trauma to be fully processed, the primary emotions are initially accessed. Once the naturally occurring emotions are targeted, the individual then works

to accommodate the memory of the trauma with prior beliefs. The secondary emotions will dissipate once the faulty beliefs about the traumatic event and the overgeneralized beliefs about the world and oneself are successfully challenged (Resick & Calhoun, 2001).

Janoff-Bulman (1985; 1992) postulates a constructivist theory regarding PTSD symptomatology. This theory is also based on cognitions and information processing and focuses on the assumptions one makes about the world and oneself. According to Janoff-Bulman, a person creates his or her own interpretation of oneself and the world. When a trauma occurs, a person's global beliefs are altered and his or her assumptions are shattered. To recover from a trauma, these global, fundamental beliefs need to be reconstructed and a sense of equilibrium regained. This theory suggests that this is accomplished by closing the distance from people's previous interpretations of themselves and the world and their current interpretation after the trauma.

### **PTSD and Police Officers**

Considering the various, and often repeated critical incidents for which police officers are exposed, it is not surprising that a relatively high percentage of police officers experience PTSD symptoms. As reported earlier, 12-35% of United States police officers suffer from PTSD (Mann & Neece, 1990). Similarly, Stephens, Long, & Flett (1999) reported on an unpublished study by Miller (1996) of New Zealand police officers who retired early. Sixty-nine percent of the police officers retired due to psychological factors and 43% of the officers reported trauma as their reason for early retirement. Furthermore, 17% of the officers were experiencing posttraumatic stress symptoms.

As part of a longitudinal project, Critical Incidents in Police Work, Carlier et al. (1997) assessed 262 Dutch police officers for PTSD symptoms. The officers were assessed two weeks after the critical incident, 3 months after the incident, and 12 months after the incident. Seven percent of the police officers met criteria for PTSD. Six percent manifested PTSD symptoms three months post-trauma while 1% manifested symptoms between the three month and twelve month assessment. Additionally, 34% had partial or subthreshold PTSD at some point during the study. PTSD was not related to the type of critical incident experienced (e.g., depressing or violent critical incident).

Gersons (1989) conducted a study of thirty-seven police officers in Amsterdam involved in shootings between 1977 and 1984. Seventeen police officers (46%) met full criteria for PTSD and 46% had posttraumatic symptoms either at the time of the interview or prior to it. Only three of the police officers did not have any symptoms. “Recurrent and intrusive recollection of the event” was the most prevalent symptom, present in 75% of the sample. For police officers meeting PTSD criteria, 100% of the police officers reported recurrent and intrusive recollection of the event while 94% reported hyperarousal. Despite these symptoms, none of the police officers sought treatment from doctors, psychologists, or social workers from within the police department. One hypothesis proposed by the author is, “As most police officers admit, the PTSD profile is in sharp contrast with current police self-identity and police culture” (p.252).

Harvey-Lintz and Tidwell (1997) conducted an investigation of 141 police officers assigned to the two South Central Los Angeles police precincts during the Los Angeles civil disturbances in April/May 1992. Subjects were assessed in November and

December 1993, approximately 19 months after the civil disturbance. Seventeen percent of the police officers had PTSD symptoms. Additionally, there was a significant relationship between avoidance and PTSD symptomatology with results indicating that police officers with PTSD symptomatology used twice as many avoidance coping strategies as the police officers without PTSD.

Follette, Polusny, and Milbeck (1994) conducted a study of 558 mental health professionals and law enforcement professionals (164 licensed psychologists, 307 marriage and family therapists, and 87 investigative police officers) to assess the impact of providing services to child sexual abuse survivors. The results indicated that despite having similar levels of personal stress, police officers reported significantly higher levels of trauma symptoms, more general psychological distress, and more PTSD symptoms than mental health professionals. One hypothesis for the differences between these professions was the use of therapy. While 59% of the mental health professionals endorsed participating in therapy, only 15.6% of the law enforcement professionals utilized such services.

Most police officers are exposed to more than one critical incident during their career. There is a body of literature that indicates that a police officer is likely to experience more PTSD symptoms if he or she is exposed to more than one critical incident (Martin, McKean, & Veltkamp, 1986; Mitchell, 1999; Neylan et al., 2002a; Stephens & Miller, 1998). This is an important area of research since it is commonly assumed that repeated exposure to critical incidents makes one “immune” to the psychological effects.

### **Cumulative Effects of Exposure to Critical Incidents**

Learning theory suggests that when an individual is exposed to a repeated stimulus, the person either habituates to the stimuli or becomes sensitized to it. When habituation occurs, the individual reduces their responsiveness to the stimuli while sensitization increases and heightens an individual's responsiveness. Both behaviors are normal responses but how one reacts to a repetitive stimulus often depends on the intensity of the stimulus. A high intensity stimulus generally tends to sensitize a person to the stimulus while habituation occurs when a person is repeatedly exposed to low to moderate stimuli (Barker, 2001).

It is commonly assumed that individuals that encounter traumatic stressors frequently (e.g., police officers, firefighters) habituate to the stimuli, and therefore they are more resistant to the psychological effects of traumatic incidents. However, the opposing view, that the cumulative effect of critical incidents results in more posttraumatic stress symptoms, has become more empirically supported in recent years (Violanti, 1996b). These findings are congruent with the theories of learning since police officers experience high intensity stimuli on a routine basis thus becoming sensitized, not habituated, to the stimuli.

Several studies have investigated the cumulative effect of critical incidents and the development of PTSD symptoms. For example, Stephens and Miller (1998) conducted a study of 527 New Zealand police officers and found a positive relationship between the number of traumatic events and more PTSD symptoms. Trauma experienced prior to joining the police force was not related to PTSD symptoms while trauma experienced after joining the police force was related to more PTSD symptoms.

Martin et al. (1986) reported that 26% of the 56 police officers attending a sensitive crime seminar met criteria for PTSD. Moreover, the authors found PTSD was related to the number of incidents experienced by the officers. The most frequently endorsed symptom “Recurrent and intrusive recollection of the event” was endorsed by 47 % of the police officers. Martin et al. (1986) indicated it is not surprising that this symptom was endorsed most frequently since police officers continually place themselves in situations similar to previous traumatic incidents and have little opportunity to distance themselves from the incident. Likewise, only 11% of the officers reported in engaging in active avoidance of activities. Moreover, sensitization to the repetitive trauma appeared to occur for these police officers as evidenced by the frequent endorsement of hyperarousal and exaggerated startle response.

Mitchell (1999) reported on the qualitative descriptions of 426 officers above the rank of probationer in the United Kingdom. The officers were asked to describe the most memorable critical incident they experienced during their police career. Almost 75% of the descriptions involved death, and almost 33% of the deaths described involved traffic accidents. Although the Lockerbie Disaster and the crash of the RAF Chinook helicopter were frequently reported, traffic accidents were the largest category of memorable critical incidents described. Different occupational groups within the police department participated, however, 60% of the traffic incidents described as memorable and distressing were reported by current members of the traffic division. Thus, it appears that these officers did not habituate to the incidents in which they were commonly exposed, but instead became sensitized to such incidents. Additionally, the length of time since the

accident ranged from two weeks to 25 years with a mean of 5.6 years, indicating that time did ameliorate the impact of critical incidents in this sample.

Neylan et al. (2002) investigated the impact of critical incident exposure on the quality of sleep in 747 police officers from New York, New York, and Oakland and San Jose, California. The investigators found that cumulative critical incident exposure was associated with nightmares, a symptom of PTSD. Furthermore, sleep disturbances were strongly related to PTSD symptomatology and general psychopathology.

The literature that has been reviewed thus far indicates that police officers are at risk for developing PTSD symptoms. Moreover, the more critical incidents in which a police officer is exposed, the more intense PTSD symptoms they are likely to experience. However, this is not true for every police officer indicating that there may be moderating variables that influence the development of PTSD symptoms. Two variables that have been related to the development of PTSD symptoms is hostility and coping appraisal.

### **Hostility**

Although anger, hostility, and aggression are often used synonymously, they are related but distinctively separate constructs (Miller, Smith, Turner, Guijarro, Hallet, & 1996; Smith, 1992). Anger is an emotion that encompasses a wide spectrum from mild irritation to intense rage that is often the result of perceived provocation or mistreatment (Miller et al., 1996; Smith, 1992). Hostility has been defined as a “set of negative attitudes, beliefs, and appraisals concerning others” (Smith, 1992). According to Chaplin (1982), hostile individuals have the desire to cause harm to others or have intense anger towards others. Anger and hostility differ in such that anger can be considered both a state (transitory) emotion as well as a personality trait while hostility is considered a



personality trait (Miller et al., 1996; Smith, 1992). Aggression is the act of overt harmful and hurtful behaviors such as verbal and physical attacks and property destruction.

Barefoot (1992) suggests that since hostility is often comprised of affect, cognition, and behaviors (Barefoot, 1992; Beckham, Calhoun, Glenn, & Barefoot, 2002; Chemtob, Novaco, Hamada, Gross, & Smith, 1997), each of these constructs should be assessed separately. According to Barefoot's conceptualization, emotions such as resentment, annoyance, anger, and contempt comprise the affective component. The behavioral component includes not only aggression but subtle forms of antagonism, insult, and uncooperativeness. Negative beliefs about people in general such as cynicism and mistrust describe the cognitive components of hostility. Cynicism is typically referred to as the belief that "others are motivated by selfish concerns" (Miller et al., 1996, p.323) and is often accompanied by a mistrust of others. As a result of their mistrust, hostile individuals often scan their environment looking for indications that someone may cause them harm. They may be more on guard and spend an excessive amount of time in a state of vigilance (Miller et al., 1996).

The relationship between hostility and coronary heart disease (CHD) has been well established in the literature (Barefoot et al., 1983; Shekelle, Gale, Ostfield, & Paul, 1983). A more recent meta-analysis indicates that this relationship exists even after traditional CHD risk factors have been controlled (Miller, 1996). CHD has been reported as a common health problem for police officers (Anshel, 2000; Crank & Caldero, 1991; Territo & Vetter, 1981). Territo and Vetter (1981) reported that studies have found that 75% of the heart attacks experienced by police officers are due to job-related stress. Moreover, courts have ruled that workman's compensation is an entitlement available to

police officers who experience a heart attack while off duty (Washington Crime News Service, 1975).

The link between hostility and CHD, and the high prevalence of CHD within the police population suggests that hostility may be a trait in some police officers.

### **Police Officers and Hostility**

There is a paucity of research regarding hostility and police officers. One study conducted in 1977 investigated stress and hostility. This study divided a group of 90 police officers into three stress group levels: low, medium, and high. These divisions were based on the police officers history of on-duty physical stress. The high stress group reported higher levels of hostility, paranoia, and interpersonal sensitivity (Singleton, 1977). A more recent study was conducted on 254 Singaporean male police officers (Why et al., 2003). The study investigated the cardiovascular reactivity of the police officers as a function of task, ethnicity, and hostility. A behavioral measure of hostility, the Interpersonal Hostility Inventory (IHAT) was used and found that hostile behaviors were related to systolic blood pressure reactivity during an anger recall task for Malays police officers but not Indian or Chinese police officers. Across all three behavior tasks, Indian police officers high in hostility behaviors appeared to be cardiac reactors; however, this reactivity pattern was not differentiated for Malays or Chinese police officers.

Before reviewing the relevant literature on PTSD and hostility, the theoretical relationship between these two variables must first be explained.

### **Relationship between Hostility and PTSD**

Aggression and irritability are two common symptoms that indicate increased arousal in individuals with PTSD. According to the information processing models described earlier, when an individual experiences a traumatic event, a fear structure is developed in the memory of the individual (Foa et al., 1989). This fear structure is easily activated and when this activation occurs, it is likely that the individual will have difficulty regulating their psychophysiological arousal thus making them more likely to respond in an aggressive or irritable manner (Chemtob et al., 1997). They may also experience a behavioral control deficit and consequently have difficulty inhibiting aggressive behaviors when they feel threatened (Beckham, Barefoot, Fairbank, Vrana, Feldman, & Moore, 2002).

Aggression can also be a component of hostility, thus individuals who are high in trait hostility may already be predisposed to react in such a manner. This predisposition, added to the effects of a traumatic event, may exacerbate these symptoms of increased physiological arousal and subsequent aggression. Several studies on combat veterans have shown a relationship between hostility and PTSD. Since the relationship between hostility and PTSD in police officers has not been investigated, the relevant literature regarding hostility and PTSD in combat veterans will be summarized below.

### **Hostility and PTSD in Combat Veterans**

Several studies have found that Vietnam veterans with PTSD score higher on measures of hostility than veterans without a diagnosis of PTSD (Blanchard, Kolb, Pfallmeyer, & Gerardi, 1982; Kulka et al., 1990). More recent studies have reported similar findings. Kubany, Gino, Denny, & Torigoe (1994) conducted two studies on

veterans. In the first study, the authors' analyzed data from the Minnesota Multiphasic Personality Inventory (MMPI) administered to veterans between January 1986 and September 1991 at the Honolulu Department of Veterans Affairs Outpatient Clinic. The total sample consisted of 1,293 subjects. Six hundred thirty five subjects were on active duty during the Vietnam era while six hundred fifty eight veterans were on active duty during other eras, either before or after Vietnam. The Cook-Medley Ho scale (Cook, & Medley, 1954) was used to measure the overall level of hostility. In addition to the total Ho scores, the six subscales (hostile attributions, social avoidance, hostile affect, cynicism, aggressive responding, and other) and their correlation to PTSD was also investigated. Four hundred eight subjects meet PTSD criteria, and the results found a high correlation (.70) between the total Ho scores and PTSD scores. Moreover, the MMPI PTSD scale (Keane, Malloy, & Fairbank, 1984) was significantly correlated with all six Ho scale subsets. Additionally, the Vietnam era veterans obtained significantly higher total hostility scores and significantly higher PTSD scores than non-Vietnam era veterans. Furthermore, those individuals that obtained a score of thirty or greater on the PTSD measure (indicating PTSD symptomatology), scored almost one standard deviation higher than the mean for the entire sample on the measure of hostility. These findings suggest that combat veterans with PTSD are high in the trait of hostility.

In the second study, Kubany et al. (1994) compared Ho scores of Vietnam veterans with a PTSD disability rating from the Department of Veterans Affairs with scores of Vietnam veterans without a PTSD disability rating. The total sample included 213 veterans. Results indicated that Vietnam veterans with a PTSD disability ratings had significantly higher scores of hostility and PTSD as compared to Vietnam era veteran

without a PTSD disability ratings. Moreover, HO scores were highly correlated with PTSD scores with Vietnam veterans with PTSD disability ratings.

A recent study conducted by Beckham et al. (2002) compared the cardiovascular response of one hundred eighteen male Vietnam veterans with a PTSD diagnosis (n=62 subjects) to Vietnam veterans without a PTSD diagnosis (n=56) on a relived anger task that did not involve trauma. The results from the study found that the veterans with PTSD experienced anger more quickly, had greater diastolic blood pressure (DBP) response, had greater anxiety and anger, and had greater magnitude DBP response during anger recovery. Additionally, the veterans with PTSD also reported greater trait covert hostility, and these scores were more predictive of DBP response, reported anger, and DBP and SBP (systolic blood pressure) recovery. According to the investigators, these results suggest “covert hostility may affect reactivity in a different way among individuals with PTSD” (p.232). Furthermore, the authors hypothesized that individuals with PTSD may have intensified negative emotion as it “may be encoded as part of a trauma memory structure” (p. 232). Another hypothesis posited by the authors is that individuals with PTSD may have difficulty regulating negative emotional responses.

Lasko et al. (1994) investigated aggression, hostility and anger in a sample of forty-two male Vietnam combat veterans. Twenty- seven of the subjects had a diagnosis of PTSD while fifteen subjects did not meet criteria for PTSD. The investigation found significant group differences between Vietnam veterans with PTSD and Vietnam veterans without PTSD, specifically, on the Buss Durkee Hostility Inventory scales of assault, irritability, resentment, suspicion, and total scales (Buss & Durkee, 1957). The Vietnam veterans with PTSD had higher scores on each of these subscales as well as the

overall total score. The authors indicated that these individuals appear to have chronic hostility and negative interpretations of people and events.

Beckham et al. (1996) investigated hostility among combat veterans with a PTSD diagnosis (n=50 subjects), combat veterans without a PTSD diagnosis (n=20 subjects), and a comparison group of volunteers (n=60). The volunteers were participants in a longitudinal hostility and aging study (Barefoot, Beckham, Haney, Siegler, & Lipkus, 1993). Due to significant differences on socioeconomic status (SES) between the two combat veteran groups, the volunteers were separated into two groups based on SES. The Cook-Medley Hostility Scale was used as a self-report measure of hostility and the Interpersonal Hostility Assessment Technique (IHAT) was used as a measure of behavioral hostility. The results indicated that Vietnam veterans with a PTSD diagnosis reported significantly higher levels of self report hostility as well as demonstrated significantly higher levels of interpersonal hostility as compared to the comparison groups and Vietnam veterans without a PTSD diagnosis. Specifically, combat veterans with PTSD had significantly higher paraverbal IHAT scores as compared to veterans without PTSD and the comparison groups. There were no differences found between the community samples and Vietnam veterans without PTSD. The results from this study indicate that veterans with PTSD may subtly express hostility during interpersonal interactions.

Castillo, Fallon, C'De Baca, Conforti, and Qualls (2002) investigated hostility in male veterans with PTSD (n=85), male veterans with other psychiatric diagnoses (n=95), and females with sexual-trauma related PTSD (n=21). Results from the Buss Durke Hostility Inventory revealed that veterans with a PTSD diagnosis scored significantly

higher than veterans with other psychiatric diagnoses on the Assault, Irritability, Negativism, and Verbal Hostility and significantly higher than women with a PTSD diagnosis on the Assault, Indirect Hostility, Irritability, and Verbal Hostility scales. Veterans with PTSD were one standard deviation above the mean on the Assault and Irritability scales, and both men and women with PTSD were 1.5 standard deviations above the mean on the Resentment and Suspiciousness scales.

The literature review indicates a strong relationship between hostility and PTSD in combat veterans. Although hostility has not yet been identified as a vulnerability factor for police officers, it is likely that this relationship will also exist in police officers given the similar experiences of the two professions. Another potential influencing factor in the development of PTSD symptoms in police officers is coping appraisal.

### **Stress, Coping Appraisal, and Coping**

Hans Selye was one of the first researchers to acknowledge the deleterious effects of stress and defined stress as “the nonspecific response of the body to any demand made on the person” (Van Patten & Burke, 2001, p.132). According to Selye (1974), the body responds to stress in three stages (alarm stage, resistance stage, and exhaustion stage) as part of the general adaptation syndrome (GAS). Since his initial conceptualization of stress, more sophisticated theories have developed. Folkman and Lazarus developed a transactional model of stress that recognized that the individual and their environment are involved in a “dynamic, mutually reciprocal, bidirectional relationship” (Folkman, Lazarus, Gruen, & DeLongis, 1986, p.572). This approach focuses on the relational meaning that an individual derives from the person-environment interaction (Lazarus, 2000). Within this conceptual framework, stress results when the person-environment

relationship is appraised as exceeding or taxing one's resources and endangering one's well-being (Folkman et al., 1986). In this model two processes are identified, coping appraisal and coping.

Coping appraisal refers to the meaning an individual gives to a potentially stressful situation. For example, two individuals may experience the same event, however depending on how each person appraises the situation may influence whether or not they perceive the event as stressful. This first process, referred to as primary appraisal, includes an evaluation of the event regarding its threat potential, meaningfulness, predictability and controllability. Secondary appraisal is the process in which an individual evaluates how to cope with the event. The cognitive and behavioral efforts used by the individual to reduce the effects of the stressful situation is referred to as coping.

Two distinct categories of coping are discussed in the literature, problem-focused coping and emotion-focused coping. Problem-focused coping involves recognizing, modifying, and/or eliminating the impact of the stressor. This type of coping includes actively and directly engaging in behaviors to solve problems related to the stressor. Emotion-focused coping includes efforts to regulate the emotional distress related to the stressor. Exercising, meditating and seeking social support are emotion focused strategies that aim to alleviate one's distress regarding the event but does not include active attempts to change or alter the source of the stress. Problem-focused coping is more often used with problems that are appraised as changeable and controllable. Emotion-focused coping is more likely to be used with stressors that are appraised as uncontrollable or unchangeable. Although problem-focused coping and emotion-focused



coping are two different styles, these styles are interdependent and work together in the overall coping process (Lazarus, 2000). Effective coping requires both types of coping, however, it is important to accurately appraise what type of coping is required in a given situation (Nezu, 2004).

A problem-solving model of stress is another model that acknowledges the reciprocal and dynamic relationship among four stress related variables, major negative life events, daily problems, negative emotional states, and problem-solving coping. (Nezu and D’Zurilla, 1989). Each of these variables can influence each other, ultimately either escalating the stress process and producing psychological distress or reducing the stress process thus preventing long term negative effects. For example, major negative life events and daily problems can influence each other in such that daily problems can lead to a negative life event which can further lead to additional daily problems. Effective problem-solving attempts of negative life events and daily problems can reduce psychological distress while ineffective problem solving attempts can lead to more daily problems and negative life events consequently resulting in psychological distress (Nezu, Wilkins, & Nezu, 2004).

### **Coping Appraisal and PTSD**

Cognitive models of trauma suggest that the ongoing perception of events as threatening significantly impacts on the development and maintenance of PTSD symptomatology (Echlers and Steil, 1995; Foa et al., 1989). In fact, the appraisal of events as threatening may be as important as trauma severity and pre-trauma experiences in PTSD symptomatology (Foa et al., 1989; Janoff-Bulman, 1985). Appraising situations as threatening facilitates the use of maladaptive coping strategies such as avoidance

which ultimately hinders recovery and maintains PTSD symptoms (Olf, Langeland, Gersons, 2005).

Epidemiological studies have shown that subjective predictors such as appraisal of events are more predictive of chronic PTSD than objective characteristics of the events (Ozer, Best, Lipsey & Weiss, 2003). Several studies among accident victims have found that perceived threat predicted persistence (Mayou, Ehlers, & Bryant, 2002) and chronicity of PTSD (Ehlers, Mayou, & Bryant, 1998). Some researchers have suggested that perceived controllability may play a pivotal role in the development of PTSD symptoms (Foa., et al., 1989). Fairbank, Fitterling, and Hansen (1991) reported that veterans from World War II with chronic PTSD described their memories of WWII as being more uncontrollable as compared to a group of veterans from WWII without PTSD. However, both groups were equivalent in their appraisal of predictability of their WWII memories.

Thus far, the literature regarding critical incidents, PTSD, hostility and coping appraisal has been reviewed. Negative life events is another variable that may influence PTSD symptomatology in police officers.

### **Negative Life Events**

As mentioned in the problem-solving model of stress, negative life events has a reciprocal and dynamic relationship with daily problems, negative emotional states, and problem-solving coping. Ineffective coping of these variables can lead to psychological distress (Nezu et al., 2004). Several studies in different populations have found a significant relationship between negative life events and PTSD symptomatology. In a recent study of 102 HIV-positive women, three predictors of PTSD symptomatology,

total impact of negative life events, total stigma score, and total number of present symptoms were investigated (Katz and Nevid, 2005). The Life Experiences Survey was used in this study to measure life changes and negative life events emerged as a significant predictor of PTSD symptoms.

Solomon, Mikulincer, and Flum (1988), examined the relationship of negative life events, coping responses and PTSD symptoms in 225 Israeli soldiers after the Lebanon War. Negative life events were assessed via a checklist of 36 events created for the study. The domains assessed included: family, work, health, education, personal and social life. The participants indicated if they experienced the event in the past year and if it was appraised as a positive or negative event. The results indicated that negative life events predicted PTSD symptoms. Furthermore, the deleterious effects of negative life events on PTSD symptoms were strongest among the participants who used emotion-focused coping strategies.

In the follow-up study, Benyamini and Solomon (2005) examined the association of combat stress reaction, chronic PTSD and cumulative life events on the physical health of 504 Israeli veterans 20 years after the Lebanon war. Cumulative life events over the past 20 years were assessed via a checklist of 20 life events in the domains of family, work and personal. They endorsed whether or not they experienced the event since the war and if so whether they appraised the event as positive or negative. Participants with PTSD reported significantly more negative life events than participants without PTSD, however, negative life events had a weaker effect on health among participants with PTSD as compared to participants without PTSD.

King, King, Fairbank, Keane and Adams (1998) used a structural equation modeling procedure to examine the relationship among several war zone stressor dimensions, resilience-recovery factors, and PTSD in a sample of 1, 632 Vietnam veterans. Stressful life events were comprised of four sources of information: a stressor index of life events that occurred during the past year; a traumatic stressor index that included extraordinary stressors that occurred anytime after the war; the number of marital disruptions after returning from war; the number of deaths of children in postwar years. Strong mediation effects were found for both genders for hardiness, social support and negative life events in the postwar period.

More relevant to the current study was a study conducted by Renck, Weisaeth, and Skarbo (2002) of 41 Swedish police officers 18 months after a fire rescue operation at a youth center. The study investigated subjective well-being, general distress, and social functioning via the General Health Questionnaire and PTSD symptoms via the IES-R. Life events was a demographic question that simply asked participants to endorse whether or not they had experienced one or more life events after the fire. Participants who had experienced personal life events reported more PTSD symptoms.

The last variable investigated in the current study that may influence intensity of PTSD symptoms is organizational stressors.

### **Organizational Stressors**

Although counterintuitive, several studies have found that organizational stressors are more stressful for police officers as compared to routine police duties, including critical incidents. (Kroes et al., 1974; Crank & Caldero, 1991; Kop & Euwema, 2001). There is a significant amount of research supporting his finding, however, the difficulty

with this body of literature is the inconsistencies in the operational definitions of what constitutes organizational stressors and police related stressors. Some studies eliminate critical incidents from both categories stating that critical incidents are unique and rare and should therefore constitute a third category. However, these studies may include more common critical incidents such as responding to a fatal vehicle accident in their assessment of police stressors.

One of the early studies on police stress was conducted by Kroes et al., (1974). The investigators asked 100 male Cincinnati police officers to identify major stressors in their occupation. They asked the police officers an open-ended question inquiring about what they considered bothersome about their job. Another question provided the officers with specific stressors and asked if they found any of the stressors bothersome. The officers reported the courts, administration, inadequate equipment, community relations, and changing shift routine as the most bothersome aspects of their job in the open-ended questions. Only one police officer spontaneously mentioned a crisis situation as a major stressor. However, when provided a list of potential stressors, crisis situations were the second most commonly reported stressor, only after administration.

Brown and Campbell (1990) conducted a study that investigated organizational/management stressors and police operational stressors with 954 English constables. Critical incidents were excluded from the study, and the results indicated in a ratio of 4 to 1, the subjects reported organizational/management stressors more often than police operational stressors. Staff shortages, shift work, time pressures and deadlines, lack of consultation, and communication comprised more than half of the organizational/management stressors reported by the subjects.

Biggam, Power, MacDonald, Carcary, and Moodie (1997) also investigated organizational/management stressors and operational stressors in a Scottish police force. Six hundred and ninety-nine police officers participated in the study. Similar to Brown and Campbell (1990), they did not include critical incidents in their analysis of police stressors stating that they occur too infrequently and warrant separate attention. Yet, similar to Brown and Campbell, items such as “informing relative of a death” and “dealing with sudden death” were included in the questionnaire. Their findings were also comparable to Brown and Campbell (1990). Organizational stressors, specifically staff shortages, inadequate resources, time pressures, work overload, and lack of communication were reported as the primary source of perceived personal stress.

Evans and Coman (1993) adapted the Critical Life Events Scale to measure police specific stressors in Australian police departments. One of the revisions included adding frequency data enabling the frequency of an event occurring in the past 12 months to be measured. The results were categorized into job content stressors and job context stressors. Job content stressors included the work related duties of policing while job context stressors included perceived difficulties in the work environment. The most stressful job content events included violent death of a partner, participating in an act of police corruption, shooting someone in the line of duty, attending to a non-accidental death of a child, attending to an accidental death of a child, confronting a person with a gun, and receiving a duty related violent injury. These events, although reported as the most stressful, did not frequently occur. The most frequently occurring job content events were giving evidence in court, shift work, having to take command, facing a situation with the possibility of physical injury, and facing an unpredictable situation.

Similarly, the most frequently occurring job context events were not reported as the most stressful. The most frequent events included long hours, job overload, change in supervisors, negative community attitudes, changing shifts, and duty under a poor supervisor; however, the most stressful context events reported were failing a police training course, failing a promotional examination, an unsatisfactory personnel evaluation, and being passed over for a promotion.

As part of an assessment of stressors prior to entering voluntary group counseling, Doctor et al. (1994), surveyed 61 police officers from the United Kingdom. Internal organizational stressors such as the effects of transfers, shift rotations, and leave cancellations were reported as the primary sources of stress. During the group treatment, intrinsic organizational factors such as the hierarchical organizational structure, the lack of support within the organization, and the promotional practices employed were some of the main topics of discussion.

Crank and Caldero (1991) surveyed eight medium sized municipal police departments in Illinois. One hundred and sixty-seven police officers were asked to write about their greatest source of stress and why it is such a great source of stress. The results were categorized into five primary sources of stress: the organization, the task environment, the judiciary, personal or family concerns, and city government. The organization was reported by more than 68% of the police officers as their principal source of stress. Upper-management personnel were identified as the greatest single source of stress within the organizational domain. Task environment was only reported by 16% of the officers as their primary source of stress with citizen contact the most often cited source of stress within this domain. One officer stated, "The stress caused by the

work on the street is nothing compared to the stress caused by the administration in this department” (p.346).

Violanti and Aron (1995) investigated police stress in a sample of 103 police officers from a large police department in New York. Using the Police Stress Survey, the two major stress components for police officers, organizational and administrative factors and inherent police stressors were examined. Each item was scored on a scale of 0-100, 0 indicating no stress and 100 indicating the maximum amount of stress. For expediency in completing the 60 item measure, frequency of occurrence was not included. The top five reported police stressors were: killing someone in the line of duty, fellow officer being killed, physical attack, battered child, and high speed chases. The highest ranking organizational stressor was shift work. Years of police experience, rank, age, race and gender were also investigated. Those with 6-10 years of police experience reported the highest levels of both organizational and inherent police stressors. Congruent with years of experience, police officers in the age range of 31-35 also reported the highest levels of organizational and inherent police stressors. Similarly, police officers who have the rank of desk sergeant, are Caucasian, and are male reported the highest levels of both organizational and inherent police stressors in their respective categories. Interestingly, there were not any differences in those who were experiencing organizational stressors versus those experiencing inherent police stressors. The subcategories that reported the highest level of organizational stressors also reported the highest levels of inherent police stressors. Thus, it appears that the individuals in these categories are experiencing the highest level of overall stressors.



Kop & Euwema (2001) conducted an investigation with 358 Dutch police officers from middle size cities. One area of investigation was work stressors. They were asked to report “two demanding aspects of police work.” From a list of 736 reported aspects, two categories were developed: the organizational aspects and the nature of police work. Dutch police officers mentioned organizational aspects of the police environment more often as sources of stressors than the nature of police work.

As a result of the inconsistent measurement of organizational stressors and critical incidents, two new measures were developed to separately assess these constructs (Lieberman, Fagan, Weiss, & Marmar, (2002); Weiss et al., 2004). Critical incidents, as described by these investigators, are the more traumatic and dangerous incidents encountered in police work. Some examples of critical incidents include being shot at, encountering a dead body, being present when a fellow officer is killed, and being threatened by dangerous and aggressive animal. These incidents, while they may not occur on a daily basis, occur frequently throughout the career of a police officer. To accurately measure critical incidents and their impact on police officers, Lieberman et al, (2002) developed the Critical Incidents History Questionnaire (CIHQ). This measure asks the police officer the frequency of exposure to thirty-four identified police related critical incidents throughout one’s career. To measure the routine occupations stressors, such as organizational and administrative stressors, experienced by police officers, this research team also created the Work Environment Inventory (WEI) (Weiss et al., 2002). Duty related critical incidents were not included in this measure. Findings from their investigation indicate that exposure to routine occupational stressors are a stronger

predictor of distress than cumulative exposure to critical incidents. The results suggest that routine occupation stress may be a risk factor for traumatic stress symptoms.

### **Summary and Purpose of the Present Study**

It is very likely that throughout one's career in law enforcement, a police officer will experience multiple critical incidents. Some research suggests that more frequent exposure to such critical incidents impacts on intensity of PTSD symptoms experienced by police officers. However, some officers who experience multiple critical incidents do not develop PTSD symptomatology, thus suggesting it may not only be the number of critical incidents but other variables that also impacts the development of PTSD symptoms. The literature indicates that one variable, an individual's level of trait hostility, impacts the development of PTSD symptoms in combat veterans. Although this relationship has not been investigated in police officers, the similarities between police officers and combat veterans described in the literature review suggest that this relationship is also likely to exist in police officers, and thus this relationship was investigated in the current study.

Another potential variable that may influence PTSD symptomatology is coping appraisal. How one appraises a situation influences if the individual perceives the situation as stressful. The dual process of coping appraisal (primary appraisal and secondary appraisal) has been found in other populations such as accident victims and World War II veterans, to be predictive of PTSD symptoms. It was hypothesized in the current study that a relationship would exist between coping appraisal and intensity of PTSD symptoms.

Furthermore, the impact of negative life events on intensity of PTSD symptoms was also investigated. The reciprocal and dynamic relationship that negative life events has with daily problems, negative emotional states, and problem-solving coping can influence psychological distress (Nezu, et al., 2004). Several studies in different populations have found a significant relationship between negative life events and PTSD symptomatology. As a result, it was posited in the current study that this relationship would also exist for police officers.

Organizational stressors appear to be a significant source of stress for almost all police officers. Although the amount of organizational stressors experienced may vary among police officers, it appears that almost all police officers endorse organizational factors as one of the most distressful aspect of their job. Some research has found organizational stressors to be more predictive of PTSD symptoms than critical incidents. Consequently, the current study investigated the impact of organizational stressors on intensity of PTSD symptoms.

Based on the previous literature review, several specific hypotheses were posited for the current study.

### **Hypotheses for the Current Study**

- 1) As a foundation for the study, the main hypothesis posited that a higher frequency of critical incidents would predict more intense PTSD symptoms in police officers.
- 2) The second hypothesis posited that in addition to critical incidents, organizational stressors, coping appraisal, hostility and negative life events would predict intensity of PTSD symptoms in police officers.

- 3) The third hypothesis posited that coping appraisal would moderate the relationship between critical incidents and the intensity of PTSD symptoms experienced in police officers.
- 4) The fourth hypothesis posited that hostility would moderate the relationship between critical incidents and the intensity of PTSD symptoms in police officers.

### **CHAPTER 3: METHOD**

#### **Participants**

Participants in the study included police officers who were members of a Police Benevolent Association (PBA) in the southeastern region of the United States. The inclusion criteria for the current study stated that the police officer 1) must be currently employed as a police officer (i.e., not retired), 2) must be employed as a police officer for at least two years, and 3) must be twenty years of age or older. Police officers were excluded from the study if they were no longer employed as a police officer, had not been employed as a police officer for two years, or were not at least twenty years of age.

One hundred twenty-eight police officers from eleven states (VA, WVA, NC, SC, AL, GA, TN, MS LA, and AK) in the southeastern region of the United States participated in the study. An overwhelming percentage of police officers were male (86%, n=110), Caucasian (94%, n=120) and married (74%, n=95). Forty-four percent (n=56) of the participants were in the 25-34 years of age range and thirty-three percent (n=42) had been a police officer for six to ten years. Forty-four percent (n=56) of the police officers were high school graduates while the remaining officers (n=56) completed formal higher education. Municipal police officers represented over half of the sample (59%, n=75), and of the eleven states represented, twenty four percent (n=31) of the

participants were from North Carolina. Forty-three percent (n=55) of the police officers participated in some type of psychological debriefing during their career. Thirty-four percent (n=43) were currently or were previously in the armed forces and almost half of the participants (47%, n=60) were in a specialized unit in their police department. Only twenty-three percent (n=30) reported smoking cigarettes while forty-one percent (n=52) consumed alcohol one to two times per month, and 30 % (n=38) reported never consuming alcohol (refer to Table 2).

### **Procedure**

An electronic mail message briefly describing the study was sent to the members of the PBA via the PBA's electronic mail system. The message invited the police officers to participate in an on-line survey that would take approximately 30-45 minutes to complete. The message indicated the survey was investigating the psychological impact of critical incidents on police officers. The message warned that questions regarding potentially sensitive incidents may be asked and that referral lists and hotline numbers were provided at the end of the survey. Confidentiality and anonymity of the survey were emphasized, and the inclusion criteria were stated. Information regarding the security and location of the website, psychdata.com was provided. If a police officer chose to participate in the study, he/she clicked on the hyperlink provided in the message. Once the officer arrived at the website, he/she provided informed consent. The consent form included the following statement: "If you press the "Continue" button, you will be authorizing Drexel University and its researchers to perform research studies on you....Do not press the "Continue" button unless you are comfortable in participating in this study." After the participant read the survey, he/she had to answer the question, "Do

you wish to participate in this study?” If the participant answered “no” they were forwarded to the end of the survey. If the participant answered ‘yes’ they were forwarded to the following statement: “Please fill in your name. Please be aware that your name CAN NOT be linked due to the page break after this question-ALL OF YOUR ANSWERS WILL BE CONFIDENTIAL. We simply need your name as a “signature” for the consent form.” After providing a “signature”, the participants were asked the following inclusion criteria questions: “Are you currently employed as a police officer?”, “Have you been employed as a police officer for at least two years?”, “Are you twenty years of age or older?” If the participant answered “yes” to all three questions, they proceeded to the survey. If they answered “no” to any of the questions, they were forwarded to the end of the survey and informed they were ineligible to participate in the survey.

### **Measures**

Participants completed a demographic questionnaire that provided information regarding: age, ethnicity, marital status, education, type of police department, state in which they are a police officer, length of service, rank, current unit, previous participation in a psychological debriefing, previous military experience, alcohol consumption and cigarette usage.

In the current study, the Impact of Events Scale-Revised (IES-R) was used to measure the dependent variable, PTSD symptoms. This measure was developed by Weiss and Marmar (1997) to parallel the changes in the DSM-IV criteria for PTSD. The original IES, developed in 1979 by Horowitz, Wilner, and Alvarez, was one of the primary tools used to assess PTSD symptoms; however, it only assessed intrusion and

avoidance symptoms thereby excluding the hyperarousal cluster of symptoms now included in the DSM-IV-TR. The IES-R is a 22 items self-report measure. Six items have been added to the original IES to include hyperarousal symptoms and one new intrusion item that assesses dissociative symptoms when experiencing a flashback. The new seven items were interspersed randomly throughout the existing measure. One item was bifurcated. “I had trouble falling asleep or staying asleep” was divided into “I had trouble falling asleep” (hyperarousal scale), and “I had trouble staying asleep” (retained in intrusion subscale). Participants were asked to rate how distressing each item has been for them during the past seven days. Participants endorsed items according to the following likert scale: 0 (not at all), 1 (a little bit), 2 (moderately), 3 (quite a bit), and 4 (extremely).

Weiss and Marmar (1997) reported on the psychometric properties of the IES-R in a study of four different sample populations. The internal consistency of the three subscales was high with coefficient alphas ranging from .87 to .92 for the intrusion scale, .84 to .86 for the avoidance scale, and .79 to .90 for the hyperarousal scale. The correlation coefficients for the test-retest reliability ranged from .57 to .94 for the intrusion scale, .51 to .89 for the avoidance scale, and .59 to .92 for the hyperarousal scale.

Weiss and Marmar (1997) reported that the hyperarousal scale has good predictive validity related to trauma as does the original IES components, avoidance and intrusion. Construct validity indicated that nineteen items showed a higher correlation with their assigned subscale as compared to the other subscales. One item, “I had trouble falling asleep” had a higher correlation with the intrusion subscale (.79) as compared to

its assigned subscale, hyperarousal (.71). Two items showed an equal correlation with their assigned subscale and another subscale. The item “I had trouble staying asleep” was equally correlated with the intrusion and hyperarousal subscales. The item “I avoided letting myself get upset when I thought about it or was reminded of it” was equally correlated with the avoidance and intrusion subscales.

In 1957, Buss and Durkee created one of the first instruments developed to assess hostility, the Buss Durkee Hostility Inventory. In 1992, Buss and Perry developed a new version of the measure, the Aggression Questionnaire. The Aggression Questionnaire has four factors: Verbal Aggression, Physical Aggression, Anger, and Hostility. Recently, a new eight-item version, the New Buss, was developed to provide clinicians with a brief yet comprehensive instrument to assess hostility in medical and clinical settings (Gidron, Davidson, and Ilia, 2001). In the current study under investigation, the New Buss will be used to measure the independent variable of hostility. The New Buss was comprised of two items from each of the subscales of the Aggression Questionnaire. The two items that were selected from each of the subscales were the items that were the most strongly correlated with the total subscale scores. Participants endorsed items according to the following likert scale: 1 (not at all), 2 (a little like me), 3 (somewhat like me), 4 (very much like me) and 5 (completely like me).

In the first study of 95 undergraduate Israeli students, the internal reliability for the New Buss was reported as moderate (Cronbach’s  $\alpha=.69$ ) (Gidron, et al., 2001). Scores on the New Buss and the Aggression Questionnaire were strongly and significantly correlated ( $r=.92$ ,  $p<.001$ ). The second study by Gidron and colleagues replicated the initial findings with 271 American undergraduates. The internal reliability



was satisfactory (Cronbach's  $\alpha=.81$ ), and the results again indicated a strong and significant correlation with the Aggression Questionnaire ( $r=.94, <.001$ ). Furthermore, the New Buss was found to be significantly and positively correlated with other measures of hostility and anger such as Barefoot's Ho scale (Barefoot, 1992), Spielberger's Anger-out scale and Anger-In scale and Neuroticism scale and negatively correlated with the Personality factor of Agreeableness scale (Spielberger, Johnson, Russel, Crane, Jacobs, and Worden, 1985). Convergent and discriminate reliability were examined and scores on the New Buss were more highly significantly correlated with scores on Anger- Out than with scores on Anger- In and was also more highly correlated with scores on the personality dimension of Agreeableness-Antagonism than on Stability-Neuroticism (Gidron et al., 2001).

The last study investigated the reliability and criterion validity in a cardiac population in the United States. Again, the internal reliability was satisfactory (Cronbach's  $\alpha=.66$ ). Scores on the New Buss were significantly and negatively correlated with age and were unrelated to patient education. In the overall cardiac sample, the New Buss scores were unrelated to CHD severity, aorta diastolic blood pressure (DBP), and aorta systolic blood pressure (SBP). However, in men under the age of 60, scores on the New Buss were significantly positively related with CHD severity. Scores on the New Buss were unrelated to CHD severity in men over the age of 60 or women in either age category. Lastly, New Buss scores were significantly positively related with aorta DBP.

To evaluate the independent variable, organizational stressors, the Work Environment Inventory (WEI) was used. This measure was recently developed by

Liberman et al. (2002) to isolate the organizational stressors experienced by police officers from critical incidents experienced by police officers. Prior to the development of this measure, several other measures were used to evaluate critical incidents and organizational stressors; however, the definitions of each were broadly defined and inconsistently measured (Weiss et al., in press). The WEI has been used in several recent studies (Liberman et al., 2002; Neylan et al., 2002). In addition to police specific organizational stressors, the measure also includes stressors that are experienced routinely by most occupations. The sixty-eight-item inventory includes 15 police specific stressors such as “My experiences in court are generally an enjoyable part of my job.” The remaining 53 items are generic occupational stressors such as “I do not have good relationships with my supervisors.” A likert scale was used to measure responses as strongly disagree (-2), moderately disagree (-1), neither disagree nor agree (0), moderately agree (+1), or strongly agree (+2). For 39 items, higher stress was indicated by agreement to the statement. For the remaining 29 items, higher stress was indicated by disagreement. To score the WEI, the scoring was changed to range from 1 to 5 with 5 indicating the greatest amount of stress. Also, the positively worded items were reverse scored so that high scores indicated more stress.

Liberman et al. (2002) reported that the police specific scores were correlated with the general occupational stressors ( $r=.68$ ). A factor analysis revealed three factors: equipment and safety items, social component items, and unequal treatment. The WEI was found to be modestly correlated with the CIHQ ( $r = .12, p < .01$ ) and more strongly related to social support ( $r = -.37, p < .001$ ). Gender, minority status, education, and years of police service were not significantly related to the WEI, however, higher income was

related to lower WEI scores ( $r = -.15$ ,  $p < .001$ ). The WEI was correlated with the IES-R, the Mississippi Combat Scale-Civilian Version (MCS-CV; Keane, Fairbank, Caddell, Zimering, Taylor, and Mora, 1989) and the Symptom Checklist-90-Revised (SCL-90-R; Derogatis & Lazarus, 1994) ( $r = .46$ ,  $p < .01$  on the SCL-90-R;  $r = .39$ ,  $p < .001$  on the MCS-CV; and  $r = .26$  to  $.30$ ,  $p < .001$  on the three subscales of the IES-R). WEI was a significant predictor of each symptom measure ( $R^2 = .33$ ,  $p < .001$  for the SCL-90-R;  $R^2 = .26$ ,  $p < .001$ , and  $R^2 = .12$  to  $.13$ ,  $p < .001$  for each of the subscales of the IES-R).

The Critical Incident History Questionnaire (CIHQ) was used to assess the independent variable, critical incidents. The measure was developed by Weiss et al. (in press) to measure the cumulative effect of exposure to traumatic duty-related incidents experienced during a police officer's career. The measure also assessed coping appraisal by asking police officers to respond to the question, "In your opinion, how difficult would it be for police officers to cope with this type of incident?" for each critical incident. Additionally, police officers were asked to provide an estimation of when the most recent incident occurred. The CIHQ yields a measure of Total Cumulative Exposure (TCE) and has been used in several recent studies (Brunet et al., 2001; Liberman et al., 2002; Mohr, Vedantham, Neylan, Metzler, Best, Marmar, 2003; Neylan et al., 2002; Pole et al., 2001). Data from 747 police officers from New York, Oakland, and San Jose were used to assess the psychometric properties of the measure. To assess content validity, expert judges (52 police psychologists) were used. The ratings included how "relevant or representative" each item is regarding critical incidents experienced by police officers while in the line of duty. The values for the two intraclass correlation coefficients estimating the reliability of the mean relevance rating was .94 and .90 for

consistency and absolute agreement, respectively. The ratings of the relevance of the items were scored in a scale of one to five with five indicating “very relevant or representative.” A mean rating of 4.20 was obtained across all items and all judges. Of the 34 items, 25 received a rating of 4.0 or better.

Correlations were conducted between the TCE and the measures of social support, social desirability, routine work stress (RWS), peritraumatic dissociation, and assorted demographics. The two largest coefficients in absolute value were years of service and age respectively. Peritraumatic dissociation, income and RWS were also slightly related to TCE.

The relationship between TCE and all symptom measures was positive, accounting for 2.25% of the variance on average. However, the magnitude of the relationship between RWS and all symptom measures was stronger, accounting for 9% of the variance. This finding raises a concern regarding the construct validity of the measure as it appears to be more strongly related to RWS than the stress specific symptoms.

The findings also indicate that there is a substantial relationship between general symptoms and stress specific symptoms ( $r=.61$  for the MCS-CV;  $r=.50$  for IES-R Intrusion, and  $r=-.50$  for IES-R Avoidance, and  $r=.57$  for IES-R). RWS accounts for almost no variance for all three of the residualized IES-R variables while TCE is a statistically significant predictor of IES-R Intrusion and Hyperarousal accounting for 1% of the variance. In a sub-sample of 55 police officers, test-retest reliability was .63. Although there are some concerns with the CIHQ, to date this is the most valid and reliable measure for assessing the cumulative effect of critical incidents in police officers.

The Life Experiences Survey (LES) is a 57 item self-report measure of life changes that have occurred over the past year. The measure has two sections: Section 1 contains 47 items with three blank spaces in which subjects can indicate other experiences not listed in the survey. Section 2 contains items limited to the experience of students, however, for the purpose of the current study, the items related to students' experiences were not used. The measure allowed respondents to indicate whether the event had a positive, negative, or no impact on their life at the time the event occurred. Participants endorsed items according to the following likert scale: extremely negative, moderately negative, somewhat negative, no impact, slightly positive, moderately positive and extremely positive. Scores were computed for negative, positive, and total stress impact. For the purpose of this study, negative stress impact was used. Subjects also indicated whether the event occurred in the past six months or the past seven to twelve months. Reliability estimates range from .63 to .88 across the scales.

### **Statistical Analyses**

Data was analyzed using the most recent version of SPSS software (13.0 version). Due to the on-line nature of the survey, demographic questions created categorical data, thus frequency statistics were conducted. Descriptive statistics were conducted on the independent and dependent variables to investigate central tendencies and variability of the data. Data transformations were performed when the assumptions of inferential statistics were violated.

Independent T-tests were conducted on dichotomous demographic variables and analyses of variance (ANOVA) were conducted on categorical variables with more than three levels to identify pertinent predictor variables. These tests were conducted a priori

in order to minimize the potential for committing Type 1 error in regression analyses. A correlation matrix was created involving the continuous independent variables and the dependent variable. The correlation matrix was used to assess for significant relationships among the independent variables indicating multicollinearity. Additionally, the matrix was used to establish significant relationships between the independent variables and the dependent variable. Multiple regression analyses were performed to determine the unique contribution of critical incidents, organizational stressors, negative life events, hostility, and coping appraisal on the intensity of PTSD symptoms. Significance levels for all analyses were established a priori at the .05 alpha level.

#### **CHAPTER 4: RESULTS**

The means and standard deviations for the independent variables and the dependent variable are presented in Table 3. The dependent variable, Impact of Events Scale-Revised (IES-R), was viewed for normality and adherence to regression assumptions. The IES-R was positively skewed and was transformed using the square root of the scores to establish normality. The independent variables, Work Environment Inventory (WEI) and the Critical Incidents History Questionnaire-Coping (CIHQ-Coping), were normally distributed. The remaining independent variables (Buss, CIHQ and LES-Negative Total), were positively skewed and were transformed using the log transformation to establish normality.

##### **Bivariate Analysis of Independent and Dependent Variables**

A correlation matrix indicated several independent variables were significantly correlated with the dependent variable. There was a significant positive correlation between the dependent variable, PTSD and the following independent variables: critical

incidents ( $r(126)=.208, p<.05$ ), negative life events ( $r(126)=.523, p<.001$ ), coping appraisal ( $r(126)=.324, p<.001$ ) and organizational stressors ( $r(126)=.328, p<.001$ ). A correlation was not yielded between PTSD and hostility. The results of the correlation matrix also assisted in determining if any of the independent variables were correlated above .70 indicating multicollinearity. Many of the independent variables were correlated but below .70 indicating the assumption of multicollinearity was not violated (refer to Table 4).

#### **Independent-Samples T-test for Gender, Ethnicity, Specialized Unit, Psychological Debriefing, Military Experience and Smoking**

Independent-samples t-tests were conducted on the following categorical demographic variables to determine if there were any significant differences between groups on the intensity of PTSD symptoms: gender, ethnicity, specialized unit, psychological debriefing, military experience, and smoking. Assumptions of t-tests were met for all of the analyses and no significant results were yielded (refer to Table 5).

#### **Analysis of Variance for Age, Marital Status, Education, Type of Police Department, Length of Time as a Police Officer and Alcohol Consumption**

One-way between groups analyses for the following categorical demographic variables were conducted to explore the impact of the demographic variable on the intensity of PTSD symptoms: age, marital status, education, type of police department, length of time as a police officers, and alcohol consumption. Assumptions of ANOVA were met for all of the analyses and no significant results were yielded (refer to Table 6).

Since no significant results were yielded when independent-samples t-tests and one-way between group analyses of variance were conducted, none of the demographic variables were used as predictor variables.

### **Relationship between Critical Incidents and PTSD Symptoms**

The first hypothesis of the study posited that a higher frequency of critical incidents would predict more intense PTSD symptoms. A simple regression was performed to assess this relationship and significance was found ( $B=.208$ ,  $t(126)=2.387$ ,  $p<.05$ ) and a significant proportion of the variance in intensity of PTSD scores was explained by the frequency of critical incidents ( $R^2=.043$ ,  $F(1,126)=5.70$ ,  $p<.05$ ). This result indicates that police officers who experience a higher frequency of critical incidents are more likely to experience more intense PTSD symptoms.

### **Relationship Between Critical Incidents, Negative Life Events, Hostility, Coping Appraisal, Organizational Stressors and PTSD Symptoms**

Critical incidents, negative life events, coping appraisal, hostility and organizational stressors were simultaneously entered into a multiple regression to predict intensity of PTSD symptoms. The overall model explained a significant proportion of the variance ( $R^2=.34$ ,  $F(122)=10.309$ ,  $p<.001$ ). However, only negative life events ( $B=.385$ ,  $t(122)=4.174$ ,  $p<.001$ ) and coping appraisal ( $B=.222$ ,  $t(122)=2.875$ ,  $p<.05$ ) significantly predicted intensity of PTSD symptoms. Critical incidents ( $B=.549$ ,  $t(122)=.282$ ,  $p>.05$ ) and organizational stressors ( $B=.087$ ,  $t(122)=.948$ ,  $p>.05$ ) did not significantly predict intensity of PTSD symptoms and the interaction between critical incidents and coping appraisal was not significant ( $B=-.096$ ,  $t(122)=-1.19$ ,  $p>.05$ ) nor was the interaction between critical incidents and hostility ( $B=.432$ ,  $t(122)=.223$ ,  $p>.05$ ) (refer to Table 7). These results indicate that although a relationship exists between critical incidents and intensity of PTSD symptoms, when coping appraisal and negative life events are entered into the equation, the relationship no longer exist.



Although organizational stressors were not a significant predictor variable in the above model, some studies suggests that organizational stressors are more predictive of PTSD symptoms than critical incidents (Lieberman et al., 2002). To asses if this relationship exists in this sample, critical incidents and organizational stressors were entered simultaneously into a multiple regression to predict intensity of PTSD symptoms. The overall model explained a significant proportion of the variance ( $R^2=.128$ ,  $F(125)=9.145$ ,  $p<.001$ ). However, only organizational stressors significantly predicted intensity of PTSD symptoms ( $B=.297$ ,  $t(125)=3.477$ ,  $p<.001$ ). The results indicate that organizational stressors are more predictive of intensity of PTSD symptoms than frequency of critical incidents.

### **Exploratory Analyses**

The cumulative results from these analyses indicate that frequency of critical incidents predicted intensity of PTSD symptoms when other variables were not considered. However, when all of the variables were simultaneously entered into the equation (critical incidents, coping appraisal, negative life events, and organizational stressors, critical incidents\*coping appraisal, critical incidents\*hostility) only coping appraisal and negative life events significantly predicted intensity of PTSD symptoms thus making the relationship between critical incidents and PTSD no longer significant. To investigate further why frequency of critical incidents no longer significantly predicted intensity of PTSD symptoms when coping appraisal and negative life events were entered into the equation, mediation analyses were performed.

A mediator variable is often conceptualized as the mechanism through which one variable, the predictor variable, influences another variable, the dependent variable

(Baron and Kenny, 1986). The results of this study suggest that negative life events and coping appraisal may be mediating the relationship between frequency of critical incidents (predictor variable) and intensity of PTSD symptoms (dependent variable). Both of these potential mediator variables, coping appraisal and negative life events, have been found to mediate the relationship between a predictor variable and the dependent variable in this study, PTSD symptoms, in other populations (King et al., 1998). Thus, it was hypothesized that mediational effects may be yielded in this study.

Mediation analyses were performed according to the guidelines set forth by Baron and Kenny (1986). The results of a Sobel test (test statistic=3.05,  $p < .05$ ) indicated that the relationship between frequency of critical incidents and intensity of PTSD symptoms was mediated by negative life events. As Figure 1 illustrates, the standardized regression coefficient between critical incidents and PTSD symptoms decreased significantly when controlling for negative life events. The other conditions for mediation were also met: critical incidents were a significant predictor of PTSD symptoms and of negative life events, and negative life events was a significant predictor of PTSD symptoms while controlling for critical incidents. However, the use of multiple regression analyses to estimate a mediational model requires the assumption that the dependent variable not cause the mediator (Baron & Kenny, 1986). According to Kenny (2006) “often it is advisable to interchange the mediator and the outcome variable and have the outcome “cause” the mediator. If the results look similar to the specified mediational pattern (i.e., the  $c$ 's and  $b$  are about the same in the two models), one would be less confident in the specified model.” To investigate if the outcome variable, intensity of PTSD symptoms predicted the mediator, negative life events, a simple regression was performed and

significance was found ( $B=.523$ ,  $t(126)=6.891$ ,  $p<.001$ ) and a significant proportion of the variance in negative life events was explained by the intensity of PTSD symptoms ( $R^2=.274$   $F(1,126)=47.49$ ,  $p<.001$ ). These results indicate a specification error due to reverse causal effects, thus the results of the mediational analysis should be interpreted with extreme caution (Baron & Kenny, 1986; Kenny, 2006).

A mediation analysis was also performed to explore if coping appraisal mediated the relationship between frequency critical incidents and intensity of PTSD symptoms. Critical incidents did not predict coping appraisal ( $R^2=.002$ ,  $F(126)=.227$ ,  $p>.05$ ), thus the conditions of mediation were not satisfied indicating that coping appraisal did not mediate the relationship between critical incidents and intensity of PTSD symptoms.

## **CHAPTER 5: DISCUSSION**

### **Summary of Findings for Demographic Variables**

Police officers comprise a unique population that routinely encounters several different types of stressors. In addition to organizational stressors and negative life events that everyone experiences at some point in their life, police officers are also exposed to potentially life threatening stressors, critical incidents. The current study investigated if frequency of critical incidents, coping appraisal, hostility, and organizational stressors predicted the intensity of PTSD symptoms experienced by a police officer. The study also hypothesized that how one appraises the critical incident would moderate the relationship between critical incidents and PTSD symptoms. Additionally, one's level of trait hostility was posited to moderate the relationship between critical incidents and PTSD symptoms.

Before evaluating the above hypotheses, the potential impact of several demographic variables was considered. Since the literature is controversial regarding the effects of psychological debriefing after experiencing a traumatic event (Sensky, 2003), participation in a psychological debriefing was assessed to see if there were any differences in the intensity of PTSD symptoms among officers who experienced a psychological debriefing and those who had not. Over 40% of the sample had experienced a psychological debriefing, however no significant differences were found between those who had experienced a psychological debriefing and those who had not. One possible reason for not finding differences between the two groups may be that the term psychological debriefing was not defined for the participants. Since the participants were from eleven different states, each individual may have had their own definition and their own experience of a psychological debriefing based on their department. For example, some may have reported having a psychological debriefing when they may have simply been debriefed after an incident. Being debriefed is different from experiencing an actual psychological debriefing but these police officers may not have been aware of the difference. Thus, the results may not be an accurate reflection of the number of participants who actually experienced a psychological debriefing.

Participation in a specialized unit was also assessed to determine if there were any differences in individuals who worked in specialized units and those who did not. One might hypothesize that working in a SWAT team or a bomb squad and potentially having experienced more critical incidents would make one vulnerable to more intense PTSD symptoms. Although a large portion of the officers worked in specialized units (47%), these officers did not significantly differ on the intensity of PTSD symptoms. In light of

the current findings that coping appraisal of critical incidents accounts for more of the variance in predicting the intensity of PTSD symptoms than the frequency of experiencing critical incidents, perhaps these officers feel they are well trained in their area of expertise and therefore do not appraise potentially life threatening situations as situations in which coping would be difficult. As a result, these officers did not experience more intense PTSD symptoms.

Other variables that are often found to be predictive of PTSD symptoms such as gender and education were not predictive in this sample (Breslau, Chilcoat, Kessler Peterson, & Lucia, 1999; Halligan, Michael, Clark, & Ehlers, 2003). There were no significant differences in the intensity of PTSD symptoms between males and females in this sample. Although community samples have found women to report more PTSD symptoms than men (Breslau et al. 1999; Kessler et al., 1995), the findings in this study were consistent with some other studies of police officers (Carlier et al., 1997; Hodgins, et al., 2001). Hodgins et al. (2001) suggests one plausible reason that gender differences exist in community samples but not in police samples is because civilian women are more likely to be exposed to interpersonal trauma. However, for police officers, critical incidents are more impersonal and exposure is not gender related thus potentially negating gender differences in intensity of PTSD symptoms in police officers. Another potential reason for this finding is the small representation of females in this sample (14%). Greater representation of women may have yielded different results. Additionally, individuals with lower education status often report more intense PTSD symptoms than those with higher education. Although 44% of the sample was high

school graduates, they did not differ from the 56% of the police officers with college degrees on intensity of PTSD symptoms.

Approximately six months prior to the study, two states, MS and LA experienced natural disasters due to hurricanes so it was assessed to determine if participants from these states experienced more intense PTSD symptoms. Seventeen percent of the police officers were from MS and LA, and these participants did not differ from the other participants on the intensity of PTSD symptoms. However, a larger representation from these two states may have resulted in different findings.

Interestingly, other findings often reported in the literature were not supported in this sample. For example, high divorce rates are often reported among police officers, however, in this sample 74% reported being married. Additionally, maladaptive coping responses such as high alcohol consumption and cigarette smoking are also frequently found in samples of police officers. However, 77% reported they do not currently smoke and 70% percent reported consuming alcohol 1-2 times per month or less. Although coping styles were not assessed in this sample, these results may suggest that this sample engages in pro-social coping skills rather than engaging in alcohol consumption or cigarette smoking as a way to alleviate stress.

One potential reason for many of these findings is the age and length of time as a police officer. Over 47% of the sample was 34 years of age or younger and over 60% were on the force for 10 years or less. Thirty eight percent of the sample was between 45-54 years of age. This was a relatively young sample that was only approximately halfway through their career (anticipating retirement after 20 years of service). An older, more experienced sample may have produced different results.

### **Summary of Findings for Hypotheses**

The results of this study revealed that frequency of critical incidents predicted intensity of PTSD symptoms when other variables were not considered. However, when coping appraisal and negative life events were entered into the equation, this relationship no longer existed. Coping appraisal accounted for more of the variance in the model suggesting that the way in which a police officer appraises a situation is more influential in the intensity of PTSD symptoms he/she may experience than the frequency of critical incidents one experiences. Perceived controllability appears to be one cognitive factor in the appraisal process that plays a pivotal role in the development of PTSD symptoms. If a person experiences an extreme or traumatic event but maintains a sense of perceived controllability, the individual may be able to adapt to the stressor without psychological distress (Fairbank, Hansen, Fitterling, 1991; Foa, et al., 1989). For police officers, perceived controllability may be of utmost importance. If they feel they are well trained and well equipped to handle various types of potentially dangerous situations, they may not appraise these situations as life threatening. Repeated exposure to these situations where a sense of controllability was maintained may reinforce the appraisal of these situations as non-threatening. On the other hand, if a police officer does not feel confident and does not have a sense of perceived controllability, he/she may appraise many potentially dangerous situations as life threatening resulting in greater psychological distress which may be manifested in more intense PTSD symptoms. As previously mentioned, this may be one reason why there may not have been any differences found between police officers in specialized units and those who were not in specialized units. Officers in specialized units may have intense training and advanced

equipment and technology providing perceived controllability in situations most civilians, and perhaps other police officers, would appraise as life threatening and uncontrollable.

Although coping appraisal predicted intensity of PTSD symptoms, it did not moderate the relationship as hypothesized. The coping appraisal measured used in this study was relevant to this population since it asked police officers to appraise the difficulty in which a police officer would have in coping with the critical incidents identified in the CIHQ. Specifically, it stated, "Please give your opinion about how difficult it would be for police officers to cope with each type of incident, *not how difficult it would be for you personally*. Please make an estimate for each incident, even if you have never been exposed to it." Thus, this measure is not directly assessing coping appraisal for the individual officer but rather how difficult the individual officer perceives coping of certain incidents may be for other officers. Depending on the officer, how difficult they perceive a given situation may be for them to cope may be different than how difficult they perceive a given situation may be for other officers to cope. For some officers, they may rate coping difficulty the same for themselves and others, but for others officers, they may rate their ability to cope with certain situations as better or worse than other officers. A measure that assesses an individual officer's own appraisal of identified critical incidents may be a more accurate reflection of coping appraisal. On the other hand, since this population may be hesitant to admit their own vulnerability for fear of looking weak and unable to handle the pressures of being a police officer, assessing their own coping appraisal directly may result in underreporting the degree of difficulty one may experience in coping with a specified incident. However, this should



not be assumed and should be investigated to assess if coping appraisal of critical incidents differs when rating oneself as compared to rating others.

Exploratory analyses indicated that negative life events mediated the relationship between frequency of critical incidents and intensity of negative life events, however, these results should be interpreted with extreme caution for several reasons. First, this relationship has not been empirically established in the literature with this population. Replication of this finding is necessary to suggest that this relationship indeed exists with police officers. Moreover, exploration of the individual responses of the LES further suggests these results should be heeded with caution. Major changes in sleeping habits and major changes in eating habits were the two most frequently endorsed items (41% and 28% respectively). These changes are possibly symptoms of PTSD and/or depression, and thus the results may be measuring psychological distress instead of negative life events. Additionally, for this population, these changes in sleeping and eating habits may be due to rotating shifts and may be more representative of organizational stressors instead of negative life events. Other frequently endorsed items may also indicate measurement of psychological distress rather than measurement of negative life events such as major changes in the closeness of family members (22%), sexual difficulties (20%), major changes in the number of arguments with spouse (19%), and major changes in the usual type and/or amount of recreation (17%). Furthermore, in this study, negative life events were measured over the past year. Studies indicate that self-report measures of life events longer than six months are likely to be inflated (Jenkins, Hurst, & Rose, 1979), thus the results in this study may not be accurate. Moreover, the moderate correlation between the IES-R and the LES in this sample

( $r=.523$ ,  $p<.001$ ) may indicate that they are measuring similar constructs. Lastly, and most importantly, intensity of PTSD symptoms predicted negative life events indicating specification error due to reverse causal effects. Kenny (2006) suggests when this occurs, one should be less confident in the proposed mediation analysis. Although there appears to be a relationship between frequency of critical incidents, negative life events, and intensity of PTSD symptoms, this relationship needs to be investigated further to identify which variable is in fact the mediator and which variable is the dependent variable (Baron and Kenny, 1986). Thus, the results of the mediational analysis should be interpreted with extreme caution.

Interestingly, an interaction between critical incidents and hostility was not found. The hypothesis that hostility would moderate the relationship between critical incidents and intensity of PTSD symptoms was based primarily on the literature of the relationship between hostility and PTSD in military veterans, and the literature suggesting that police officers and military personnel experience similar situations and thus are similar populations. However, military personnel likely experience more intense combat for a shorter duration while police officers are more likely to experience less intense situations but over the course of twenty years or more. The difference in the type of situations experienced may potentially explain the lack of support for the moderating effects of hostility in police officers. Another potential explanation is the measure that was used to assess hostility in this population. While the measure was normed on several populations and was found to have adequate psychometric properties for those populations, it may not be a valid measure of hostility for police officers.

Similar to previous findings, organizational stressors were more predictive of intensity of PTSD symptoms than critical incidents when those two variables alone were investigated (Lieberman et al., 2002). However, the current study did not find organizational stressors to be predictive of intensity of PTSD symptoms when negative life events, coping appraisal, and critical incidents were also simultaneously entered into a multiple regression. These results indicate that other variables outside of the work environment such as negative life events and coping appraisal are more predictive of intensity of PTSD symptoms and should be further investigated.

### **Clinical Implications**

These findings have several implications for police departments and psychologists who serve them. Most importantly, it is important for departments, psychologists and police officers themselves to recognize that a relationship exists between frequency of critical incidents and intensity of PTSD symptoms. As described earlier, the police culture reinforces the denial of human emotion even in the event of human loss and suffering. When experiencing psychological distress, many officers will not seek treatment for fear of looking weak and unable to handle the demands of their job. As quoted earlier, “As most police officers admit, the PTSD profile is in sharp contrast with current police self-identity and police culture (Gersons, 1989, p.252). It is the responsibility of the police departments to acknowledge that critical incidents may lead to psychological distress for some of their officers and to encourage utilization of psychological services. This includes not only making services accessible, available and confidential but also ensuring the psychologists providing treatment are not the same providers performing fitness for duty examinations.

All police departments have a screening process that potential officers must pass, however, it is unclear if departments typically evaluate coping appraisal of officers. Also, many departments do not conduct psychological evaluations on their officers once they are hired. The current findings suggest that a police officer who appraises many critical incidents as situations in which coping would be difficult may be vulnerable to developing more intense PTSD symptoms. Assessing coping appraisal prior to hiring individuals, as well as throughout their career, may help identify officers who appraise situations in which coping would be difficult, and thus more likely to develop more intense PTSD symptoms. However, it is recognized that many applicants, due to the police culture, would probably not endorse many items as situations in which coping would be difficult for fear of appearing unable to handle such situations. The current study was anonymous and not affiliated with any police departments thus possibly allowing for more truthful responses than a psychological evaluation conducted by a police department. A more practical implication may be for a treating psychologist to assess how the police officer appraises potential critical incidents and consequently, the officer's potential vulnerability for developing more intense PTSD symptoms.

Additionally, it is important for police officers and those they work with and for to be aware of the impact that negative life events may have on the lives of police officers. Although the results of the mediation analysis in the current study were inconclusive regarding the relationship between frequency of critical incidents, negative life events, and intensity of PTSD symptoms, the role of negative life events appears to be important in the lives of police officers. Although future research requires further investigation of this relationship, it appears imperative that psychologists assess not only

PTSD symptoms but also for negative life events in order to address all of the influencing variables contributing to the police officer's psychological distress.

Although organizational stressors did not significantly predict intensity of PTSD symptoms when all of the variables were simultaneously entered into the multiple regression model, they should not be ignored. Several studies have found organizational stressors to be predictive of psychological distress (Crank & Caldero, 1991; Kop & Euwema, 2001; Liberman et al., 2002). This study had similar results to Liberman et al. (2002) in regards to the most highly endorsed items on the WEI. In both studies, the five most highly endorsed items were: I am not paid enough for what I do; the demands and nature of police work and the personal problems it could cause (like alcoholism, emotional depression, and anxiety) are about the same as in most other jobs (reverse scored); the public criticizes the members of my professional unfairly; the administration/management causes pressure and job stress; and the criminal sentences given in court are about the right length and severity (reverse scored). In the Liberman study, half of the sample was drawn from New York City and one half was drawn from two departments in the San Francisco Bay area while the current study's sample included police officers from eleven states in the southeast region of the United States. Although findings from these two studies cannot generalize to all police officers in the United States, similar findings from such diverse samples may suggest that these stressors are often experienced by many police officers. Police departments need to recognize the potential impact their organization may be having on the mental health of its' police officers.

## **Limitations**

The current study had several limitations that may have impacted the outcome. One limitation is that the participants in the study may not be representative of the general population of police officers. All of the participants were from the southeastern region of the United States, thus these results may not generalize to police officers in other regions. Also, all of the participants were members of the PBA, and these officers may differ from officers who are not members. Furthermore, the sample was a convenience sample and these willing participants may differ from those individuals who choose not to participate. The email was sent to approximately 4,000 current police officers and only 128 participants responded and were eligible to participate. This small percentage of participants may not be representative of police officers in the southeast region of the United States.

Moreover, the on-line survey may have also have resulted in a unique sample. Some may have been skeptical about completing a survey on-line as evidenced by one officer who contacted the investigator to see if the survey could be completed via postal mail. Also, individuals who may not be as computer literate may not have participated in the study. Since the study was conducted on-line, the results were subject to the limitations of self-report measures.

Additionally, the participants in the study were primarily married (76%), Caucasian (94%) males (86%). Thus, the generalizability to females and individuals of color is limited as well as the generalizability to single, divorced, separated, or widowed individuals. A more heterogeneous sample may have yielded different results.

Lastly, the cross-sectional design of the study is a limitation. It is a predictive model, not causative, thus the relationships found are correlational and causality cannot be implied.

### **Future Directions**

Research should continue to examine relationship of frequency of critical incidents and intensity of PTSD symptoms and potential moderating and mediating variables. Future research should more closely investigate the relationship between frequency of critical incidents, negative life events, and intensity of PTSD symptoms to more accurately identify potential mediating variables. Additionally, another concern in the present study was the whether the frequently endorsed items of the LES were measuring symptoms of PTSD and/or depression which may have resulted in a measurement of psychological distress rather than accurately reflecting negative life events. Future studies should consider incorporating a depression measure in addition to a negative life events measure to more precisely investigate this relationship.

Coping appraisal was also found to significantly predict intensity of PTSD symptoms in this study. Future studies may want to further investigate coping appraisal in this population since coping appraisal in this study was limited to officers' ratings of how difficult they thought *other* officers would have with coping with specified critical incidents. Future studies may want to investigate officers coping appraisal of how difficult they *personally* would find coping with specified critical incidents. The awareness of which types of critical incidents are the most difficult for police officers to cope would provide police departments with the knowledge and opportunity to have appropriate protocols in place for when those critical incidents occur.

Future studies may also want to investigate utilization of coping strategies of police officers such as problem-focused coping and emotion focused coping. Although coping appraisal would provide information about the types of critical incidents in which coping would be difficult, investigations of coping strategies would provide vital information regarding the types of coping strategies that may moderate the development of psychopathology in police officers. For examples, several studies with other populations have found that individuals who use emotion-focused coping have more PTSD symptoms (Fairbank et al., 1991; Nezu and Carnevale, 1987; Solomon et al., 1988). If future studies yielded similar findings with this population, not only would it guide treatment for psychologists providing services to officers, it would also have implications for police training academies. Although police academies graduate officers that are skilled in the techniques and tasks that are required of police officers, they often neglect teaching the trainees the necessary skills in which to cope with the critical incidents they may frequently encounter. Teaching coping skills and the differences between different types of coping strategies before officers ever “hit the streets” may facilitate more adaptive coping responses in this population thus decreasing the number of police officers experiencing PTSD symptoms.

Moreover, future studies should consider the use of on-line surveys with this population. Although on-line surveys has limitations as described above, allowing police officers to complete the measures in the privacy of their own homes or offices may produce more accurate results. For a population that tends to be skeptical and suspicious, on-line surveys may result in more accurate data collection.



Although effective and empirically supported treatments exist for PTSD symptoms, the literature is replete with randomized treatment outcome studies with police officers experiencing PTSD symptoms. Future research needs to not only investigate variables that may make police officers vulnerable to PTSD but also to investigate effective treatment interventions for this population.

### **Conclusion**

The results of the current study indicate that the frequency of critical incidents is associated with intensity of PTSD symptoms in police officers; however, the relationship is more complex than just these two variables. Variables such as coping appraisal and negative life events were found to be more influential in intensity of PTSD symptoms in this sample. These findings not only have clinical implications for the psychologists that work with police officers, but they also have implications for the police departments and police academies that train these officers. The development of a more integrative approach between the psychological community and the police community needs to be established to provide the services these officers need and deserve. Together these two communities need to work together to 1) increase awareness of the potential vulnerability factors that increase PTSD symptoms 2) reduce the stigma associated with experiencing psychological distress 3) reduce the stigma associated with seeking psychological services.

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## APPENDIX A: TABLES

**Table 1. 309.81 Posttraumatic Stress Disorder**

A. The person has been exposed to a traumatic event in which both of the following were present:

- (1) the person experienced, witnessed, or was con-fronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others
- (2) the person's response involved intense fear, helplessness, or horror.

Note: In children, this may be expressed instead by disorganized or agitated behavior

B. The traumatic event is persistently re-experienced in one (or more) of the following ways:

- (1) recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions. Note: In young children, repetitive play may occur in which themes or aspects of the trauma are expressed.
- (2) recurrent distressing dreams of the event.

Note: In children, there may be frightening dreams without recognizable content.

- (3) acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated). Note: In young children, trauma-specific reenactment may occur.
- (4) intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
- (5) physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:

- (1) efforts to avoid thoughts, feelings, or conversations associated with the trauma
- (2) efforts to avoid activities, places, or people that arouse recollections of the trauma
- (3) inability to recall an important aspect of the trauma
- (4) markedly diminished interest or participation in significant activities
- (5) feeling of detachment or estrangement from others
- (6) restricted range of affect (e.g., unable to have loving feelings)
- (7) sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

**Table 1. 309.81 Posttraumatic Stress Disorder (continued)**

D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:

- (1) difficulty falling or staying asleep
- (2) irritability or outbursts of anger
- (3) difficulty concentrating
- (4) hyper vigilance
- (5) exaggerated startle response

E. Duration of the disturbance (symptoms in Criteria B, C, and D) is more than 1 month.

F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify if:

Acute: if duration of symptoms is less than 3 months

Chronic: if duration of symptoms is 3 months or more

Specify if:

With Delayed Onset: if onset of symptoms is at least 6 months after the stressor

**Table 2. Frequencies of Demographic Variables**

Age	N	Percentage
20-24	5	3.9%
25-34	56	43.8%
35-44	49	38.3%
45-54	12	9.4%
55-59	5	3.9%
60-64	1	.8%
Total	128	100.0

Gender	N	Percentage
1.00	110	85.9%
2.00	18	14.1%
Total	128	100.0%

Ethnicity	N	Percentage
African-American	5	3.9%
Caucasian	120	93.8%
Hispanic	1	.8%
Asian	1	.8%
Other	1	.8%
Total	128	100.0

Marital Status	N	Percentage
single	17	13.3%
married	95	74.2%
divorced	12	9.4%
separated	4	3.1%
Total	128	100.0%

**Table 2. Frequencies of Demographic Variables (continued)**

Education Status	N	Percentage
high school	56	43.8%
associate	29	22.7%
bachelor	37	28.9%
masters	6	4.7%
Total	128	100.0%

Type of Police Department	N	Percentage
municipal	75	58.6%
county	45	35.2%
state	8	6.3%
Total	128	100.0%

State	N	Percentage
VA	8	6.3%
WV	1	.8%
A		
NC	31	24.2%
SC	11	8.6%
AL	12	9.4%
GA	24	18.8%
TN	14	10.9%
MS	21	16.4%
LA	1	.8%
AK	5	3.9%
Total	128	100.0%



**Table 2. Frequencies of Demographic Variables (continued)**

Length of Time as a Police Officer	N	Percentage
2-5 years	35	27.3%
6-10 years	42	32.8%
11-15 years	19	14.8%
16-20 years	17	13.3%
21-25 years	7	5.5%
over 25 years	8	6.3%
Total	128	100.0%

Specialized Unit	N	Percentage
Valid yes	60	46.9%
no	68	53.1%
Total	128	100.0%

Participation in Psychological Debriefing	N	Percentage
yes	55	43.0%
no	73	57.0%
Total	128	100.0%

Experience with Military	N	Percentage
yes	43	33.6%
no	85	66.4%
Total	128	100.0%

**Table 2. Frequencies of Demographic Variables (continued)**

Smoke Cigarettes	N	Percentage
yes	30	23.4%
no	98	76.6%
Total	128	100.0%

Alcohol Consumption	N	Percentage
Never	38	29.7%
1-2 times per month	52	40.6%
1-2 times per week	20	15.6%
3-4 times per week	10	7.8%
5-7 times per week	8	6.3%
Total	128	100.0%

**Table 3. Descriptive Statistics for the Independent Variables and the Dependent Variable**

	N	Minimum	Maximum	Mean	Std. Deviation
IES-R <sup>a</sup>	128	.00	75.00	17.9994	18.63785
CIHQ <sup>b</sup>	128	3.00	947.00	185.5991	166.12956
WEI <sup>c</sup>	128	95.00	268.00	180.8941	35.09869
BUSS	128	8.00	30.00	14.9976	4.55422
CIHQ-CA <sup>d</sup>	128	14.00	123.00	80.1757	20.71770
LES-NEGATIVE LIFE EVENTS <sup>e</sup>	128	.00	24.00	4.4219	4.21024

<sup>a</sup>IES-R=Impact of Events Scale-Revised; <sup>b</sup>CIHQ=Critical Incidents History Questionnaire; <sup>c</sup>WEI=Work Environment Inventory; <sup>d</sup>CIHQ-CA=Critical Incidents History Questionnaire-Coping Appraisal; <sup>e</sup>LES-NEGATIVE LIFE EVENTS=Life Experiences Survey-Negative Life Events

**Table 4. Correlations between Variables**

		IES-R	CIHQ	WEI	BUSS	CIHQ CA	NEG LIFE EVENTS
IES-R	Pearson Correlation	1	.208(*)	.328(**)	.168	.324(**)	.523(**)
	Sig. (2-tailed)		.018	.000	.058	.000	.000
	N	128	128	128	128	128	128
CIHQ	Pearson Correlation	.208(*)	1	.211(*)	.240(**)	-.042	.296(**)
	Sig. (2-tailed)	.018		.017	.006	.635	.001
	N	128	128	128	128	128	128
WEI	Pearson Correlation	.328(**)	.211(*)	1	.417(**)	.084	.509(**)
	Sig. (2-tailed)	.000	.017		.000	.343	.000
	N	128	128	128	128	128	128
BUSS	Pearson Correlation	.168	.240(**)	.417(**)	1	-.074	.305(**)
	Sig. (2-tailed)	.058	.006	.000		.406	.000
	N	128	128	128	128	128	128
CIHQ -CA	Pearson Correlation	.324(**)	-.042	.084	-.074	1	.228
	Sig. (2-tailed)	.000	.635	.343	.406		.010
	N	128	128	128	128	128	128
LES- NEG. LIFE EVENTS	Pearson Correlation	.523(**)	.296(**)	.509(**)	.305(**)	.228(**)	1
	Sig. (2-tailed)	.000	.001	.000	.000	.010	
	N	128	128	128	128	128	128

\*Correlation is significant at the 0.05 level (2-tailed); \*\*Correlation is significant at the 0.01 level (2-tailed)

**Table 5. Independent-Sample T-test Results for Demographic Variables**

VARIABLE	T-TEST	P-VALUE (*SIG.)
Gender	t(126)=-.631	.529
Ethnicity <sup>a</sup>	t(126)=-.176	.861
Specialized Unit <sup>b</sup>	t(126)=-.833	.409
Psychological Debriefing <sup>c</sup>	t(126)=1.523	.130
Military Experience <sup>d</sup>	t(126)=-.252	.801
Smoking <sup>e</sup>	t(126)=.486	.628

Significance indicated by \*p<.05

<sup>a</sup>Ethnicity=individuals of color compared to Caucasian; <sup>b</sup>Specialized Unit=those in a specialized unit compared to those who are not in a specialized unit; <sup>c</sup>Psychological Debriefing= those who experienced a psychological debriefing compared to those who did not experience a psychological debriefing; <sup>d</sup>Military Experience= those who have past or current military experience compared to those without military experience; and <sup>e</sup>Smoking=smokers compared to non-smokers.

**Table 6. ANOVA Results for Demographic Variables**

VARIABLE	ANOVA	P-VALUE (*SIG.)
Age <sup>a</sup>	F(4, 123)=.414	.799
Marital Status <sup>b</sup>	F(4, 125)=1.170	.314
Education <sup>c</sup>	F(3, 124)=.294	.830
Type of Police Dept <sup>d</sup>	F(2, 125)=1.213	.301
Length of Time as a Police Officer <sup>e</sup>	F(5,122)=.414	.334
Alcohol Consumption <sup>f</sup>	F(4, 123)=1.155	.839

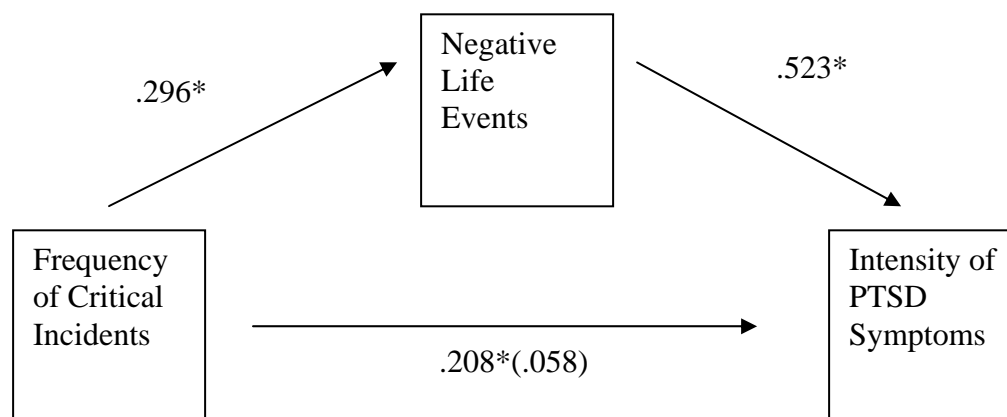
\*p<.05

<sup>a</sup>Age was divided into 20-24 years of age; 25-34 years of age; 35-44 years of age; 45-54 years of age; over 55 years of age. <sup>b</sup>Marital Status was divided into Single; Married; Divorced/Separated/Widowed. <sup>c</sup>Education was divided into high school degree; associate degree; bachelor degree; master degree. <sup>d</sup>Type of Police Department was divided into municipal; county; state. <sup>e</sup>Length of Time as a Police Officer was divided into 2-5 years; 6-10 years; 11-15 years; 16-20 years; 21-25 years; over 25 years. <sup>f</sup>Alcohol consumption was divided into never; 1-2 times per month; 1-2 times per week; 3-4 times per week; 5-7 times per week.

**Table 7. Coefficients of Regression of Intensity of PTSD Symptoms on Independent Variables Critical Incidents, Negative Life Events, Coping Appraisal, Hostility, and Organizational Stressors and PTSD**

	B	SE B	<i>B</i>
CIHQ	2.802	9.946	.549
WEI	.006	.006	.087
CIHQ-CA	.025	.009	.222
LES- NEG	2.50	.599	.385
Interaction CIHQ*CIHQ-CA	-.023	.019	-.096
Interaction CIHQ*Hostility	.161	.722	.432

## APPENDIX B: FIGURES

**Figure 1. Mediation Model**

Standardized regression coefficients for the relationship between frequency of critical incidents and intensity of PTSD symptoms as mediated by negative life events. The standardized regression coefficient between frequency of critical incidents and intensity of PTSD symptoms controlling for negative life events is in parenthesis. \* $p < .05$ .



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**PROFFESIONAL PRESENTATIONS**

---

- Nezu, C.M., Nezu, A.M., **Clair-Johnson, M.**, Fiore, A., & Greenberg, J. (2003, July-August). Provided a forty- hour training to new therapists.
- Nezu, C.M., Nezu, A.M., Klein, T., & **Clair-Johnson, M.** (2003, June). *Sex offender treatment for persons with intellectual disability*. Presented at a training seminar sponsored by the Office of Mental Health and Mental Retardation, Philadelphia, PA.
- Clair-Johnson, M.** & Klein, T. ( 2003, April ). *Case formulation and treatment of a sex offender with an intellectual disability*. Case presentation at the Clinical Practicum Seminar, Drexel University, Philadelphia, Pennsylvania.
- Clair-Johnson, M.**, Egan, A., Peacock, M.A., Nezu, A.M., Nezu, C.M. CBT for intellectually disabled sexual offenders: Evaluation of a case formulation approach. Poster presented at the 2002 annual meeting of the Association for the Advancement of Behavior Therapy, Reno, Nevada.
- Nezu, C.M., Nezu, A.M., Klein, T., **Clair-Johnson, M.**, & Lumsden, P.E. (2002, October). *Sex offender treatment for persons with intellectual disability*. Presented at a training seminar sponsored by the Office of Mental Health and Mental Retardation, Philadelphia, PA.
- Clair-Johnson, M.**, Nezu, C.M., Nezu, A.M. An evaluation of a CBT for intellectually disabled sex offenders. Poster presented at the 2002 annual meeting of the American Psychological Association, Chicago, Illinois.
- Nezu, C.M., Nezu, A.M., Peacock, M.A., & **Clair-Johnson, M.** (2002, June). *Phallometric assessment and its role in clinical treatment*. Presented at a training seminar sponsored by the Office of Mental Health and Mental Retardation, Philadelphia, PA.
- Klein, T., Nezu, C.M., Nezu, A.M., **Clair-Johnson, M.** (2001, November). *Measuring adherence of therapists for manualized treatment of sexual offenders*. Poster presented at the annual meeting of the Association for the Advancement of Behavior Therapy, Philadelphia, PA.

**PUBLICATIONS**

---

- Nezu, C.M., Nezu, A.M., Klein, T., & **Clair-Johnson, M.** (in press). Sex offending behavior. In J. W. Jacobson & J.A. Mulick (Eds.), *Handbook of Mental Retardation*. New York: Plenum Publishers.

