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Traumatic Stress, World Assumptions, and Law Enforcement Officers

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TRAUMATIC STRESS, WORLD ASSUMPTIONS, AND LAW ENFORCEMENT OFFICERS

by

DOUGLAS GREEN

A dissertation submitted to the Graduate Faculty in Criminal Justice in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

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Douglas Green

This manuscript has been read and accepted for the Graduate Faculty in Criminal Justice in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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ABSTRACT

Traumatic Stress, World Assumptions, and Law Enforcement Officers

by

Douglas Green

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The present study examined the presence of traumatic stress reaction symptoms among active law enforcement officers, and the relationship between potentially traumatic work related experiences, officers' cognitive views of the world, and the expression of those symptoms. The range of police roles and responsibilities arguably subjects officers to a greater variety of potentially traumatizing experiences than any other population, and the literature reflects that police officers express traumatic stress related symptoms at a greater rate than the general population. This study differs from previous work in that it utilizes snowball sampling to anonymously identify officers willing to participate without involving their employing agencies in any way; participating officers were asked to forward the study's survey instrument along to other potential participants. This methodology virtually eliminates any concerns on the part of officers that reporting psychological symptoms will lead to negative career ramifications such as work reassignment, employment termination, or stigma from the command structure or colleagues.

The study addressed the relationship between the number of critical incidents that an officer has experienced and his or her current expression of the symptoms of post-traumatic stress disorder, and the relationship between exposure to potential traumas, symptom expression, and officers' assumptions regarding the benevolence of the world, the meaningfulness of the world, and the worthiness of the self. The non-random international sample consisted of 879 active duty police officers and federal agents; this group included a convenience sample as well as those referred to the study by other participating officers. Officers' expression of traumatic stress reaction symptoms, exposure to law enforcement related critical incidents, and world assumptions were measured using an online questionnaire. Of the officers studied, 9.8% reported a level of symptom expression that would merit a diagnosis of post-traumatic stress disorder (PTSD), and an additional 9.7% of officers reported a level of psychological distress consistent with subthreshold PTSD.

Findings indicate that officers' levels of psychological distress were directly related to the number and variety of critical incidents experienced in the course of their careers and to the strength of certain world assumptions, specifically those assumptions described by Janoff-Bulman (1989, 1992) relating to self-controllability and the randomness of the world. Those world assumptions also served to mediate the relationship between an officer's exposure to traumatic incidents and the expression of PTSD symptomatology. In comparison with their colleagues officers with symptom expression levels sufficient to qualify for a diagnosis of PTSD displayed significantly weaker assumptions of the benevolence and meaningfulness of the world and the worthiness of the self as gauged by Janoff-Bulman's World Assumptions Scale (1989). Those officers that experienced more potentially traumatic events experience the world as a more dangerous place, and perceive less meaning and order in the outcomes of their actions.

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This project is dedicated to all of the officers who head off to work every day even while accumulating scars big and small on their bodies and their minds.

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INTRODUCTION

Post-Traumatic Stress Disorder

Traumatic life experiences have long been recognized as having a potentially negative effect on a victim's psychological well-being (Trimble, 1985). Traumatic events are cited as potential predictors for a variety of psychological disorders, including Adjustment Disorder, Acute Stress Disorder, Brief Psychotic Disorder, and Major Depressive Disorder (American Psychiatric Association, 2000). One disorder with a clear and direct connection to psychological trauma is Post-Traumatic Stress Disorder (PTSD). The disorder first made a formal appearance in the third edition of the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (DSM) (1980), primarily in response to the flood of psychopathology presented by veterans returning from service in the Vietnam War. As the understanding of PTSD evolved through subsequent editions of the DSM, the disorder has become recognized as resulting from a much wider range of traumatic events than the examples of combat and natural disasters that have been the paradigmatic experiences understood to lead to the development of PTSD. The criteria which lead to a diagnosis of PTSD extend beyond the simple experiencing of a stressor; those with PTSD suffer at least one symptom of intrusion, in which memories, dreams or reminders of the event present themselves despite efforts to avoid memories, thoughts, or reminders of the experience. A diagnosis of PTSD also requires that the person dealing with the disorder experiences two changes in the way they think or feel on a daily basis, such as feelings of detachment, experiencing diminished interest in things he or she had participated in before the

trauma was experienced, or negative feelings or cognitions about themselves, the world, or the event itself. Finally, at least two changes to a person's arousal or reactivity associated with the event must occur, such as irritable or angry behavior, reckless behavior, hypervigilance, or disturbances in concentration or sleep patterns. In order for a patient to be diagnosed with PTSD these symptoms must carry on for more than one month (American Psychiatric Association, 2013).

The variety of traumatic stressors accepted as potential causes of PTSD has grown to include a broad range of experiences, and the nature of the experience has evolved with the DSM. While in the third edition the DSM required an experience "outside the range of usual human experience" (American Psychiatric Association, 1987, p. 247), consideration shifted to the manner in which the patient experienced the traumatic stressor in the fourth edition of the DSM, with requirements of both a threat to the person involving either death or physical injury, and a peritraumatic requirement that the person's response include fear, helplessness, or horror (American Psychiatric Association, 1994). The introduction of the DSM-5 removed that peritraumatic element of the trauma criterion, but redefined the possible event as having to involve actual or threatened death, injury, or sexual violence, that is either directly experienced or witnessed, learning of the traumatic death or injury of a family member or friend, or being repeatedly exposed to the unpleasant details of the event (American Psychiatric Association, 2013). Experiences which can directly lead to the development of PTSD include:

Exposure to war as a combatant or civilian, threatened or actual physical assault (e.g. physical attack, robbery, mugging, childhood physical abuse), threatened or actual sexual violence (e.g. forced sexual penetration, alcohol/drug-facilitated sexual penetration, abusive sexual contact, noncontact sexual abuse, sexual trafficking), being kidnapped, being taken hostage, terrorist attack, torture, incarceration as a prisoner of war, natural or human-made disasters, and severe motor vehicle accidents... Witnessed events include, but are not limited to observing threatened or serious injury, unnatural death, physical or sexual abuse of another

person due to violent assault, domestic violence, accident, war or disaster, or a medical catastrophe in one's child (e.g., a life threatening hemorrhage). Indirect exposure through learning about an event is limited to experiences affecting close relatives or friends and experiences that are violent or accidental (e.g., death due to natural causes does not qualify). Such events include violent personal assault, suicide, serious accident, and serious injury. The disorder may be especially severe or long-lasting when the stressor is interpersonal and intentional (American Psychiatric Association, 2013, p. 274).

For most people, exposure to traumatic stressors like those described above is a thankfully infrequent occurrence. Certain stressors, however, are more commonly experienced by specific segments of the population. In one obvious example, military veterans are much more likely to have experienced armed combat than the average civilian. The deleterious psychological effects of participation in combat have been long recognized, and presented the original paradigm of the negative effects of traumatic stressors. In World War I, "shell shock" was attributed to the physical blow to the nervous system caused by proximity to exploding artillery shells. Traumatic stress reactions appearing in the combatants of World War II was referred to as "combat fatigue," or "combat exhaustion," and psychiatrists were kept nearby to combat troops to facilitate the soldiers' return to combat duties. (Hendin and Haas, 1984, Keane, Wolfe, and Taylor, 1987, Figley, 1983).

The Vietnam War differed from earlier conflicts in several ways including the backgrounds of the combatants, inability of the American combatants to easily distinguish ally, civilian, and foe, prevailing American domestic attitudes, and the public reaction veterans encountered upon their return (Hendin and Haas, 1984). The high incidence of PTSD among combat veterans of Vietnam has been in part attributed to these differences, and more than ten years after the end of the war an investigation showed that 20 percent of wounded Vietnam

veterans suffered from PTSD, compared with 1 percent of the total population, and 3.5 percent of unwounded Vietnam veterans (Helzer, Robins, and McEvoy, 1987).

Potentially Traumatic Events and Law Enforcement Officers

It certainly is not surprising that combat veterans would be more likely to show the effects of traumatic stress reactions, particularly those that have been injured. Common sense further dictates that certain civilian professions would find their members more likely to experience stressors such as those described by the DSM. Firefighters (Corneil et al, 1999, Fullerton, McCarroll, Ursano, and Wright, 1992), paramedics (Streb, Hälller, and Michael, 2014, Weiss, Marmar, Metzler, and Ronfeldt. 1995, Genest, Levine, Ramsen, and Swanson, 1990), 911 communications operators (Lilly and Pierce, 2012), and emergency room personnel (Laposa and Alden, 2001) suffer the psychological consequences of witnessing the aftereffects of accidents, disasters, interpersonal violence, and the damage that can be wreaked on innocent victims. Mental health professionals can experience secondary traumatization while attempting to aid those who experience traumatic events (Figley and Kleber, 1995, Motta, Kefer, Hertz, and Hafeez, 1999, Creamer and Liddle, 2005). Medical examiners, mortuary workers, and those that assist with body recovery are regularly required to deal with death and extreme disfigurement due to the nature of their professional roles, and as a result can experience related negative psychological consequences (Jones, 1985, Linley and Joseph, 2005, Keller and Bobo, 2004).

Of all of the professions that are more likely to encounter potentially traumatic events, law enforcement work seems to expose individuals to the widest variability of potential traumata.

Officers serve as the domestic peacetime equivalent of soldiers (Rothberg and Wright, 1999, Williams, 1987). Many officers are military veterans, and consider their law enforcement careers to be a continuation of their military careers; it has been noted that there are many similarities between the cultures of military personnel and law enforcement officers (Miller, 2006). Various authors have generally observed the percentage of active duty officers that report having served in the military to be between approximately 25% and 40% (Bishop, 2013, Colwell, 2005, Pole, 2006). In their role as the enforcement agents of the state, law enforcement officers are placed in the unique position of having to physically impose the will of the government on another person. As a result "a stressor which is unique to police work is the requirement to use force, including deadly force, to accomplish a mission" (Nielsen, 1981, p. 22). The taking of another's life in the line of duty provides the only common instance beyond that of the military in which homicide is sanctioned by the state. The combat experience of police officers is different than the high level of sustained stress experienced by soldiers in combat; police officers instead experience "repeated episodes of stress over a prolonged period of time, contrasted with periods of boredom" (McCafferty, Domingo, and McCafferty, 1989, 22). Nonetheless, the law enforcement profession provides the closest peacetime parallel to the paradigmatic traumatic stressor of interpersonal combat. Unfortunately research has indicated that combat-related post-traumatic stress disorder is associated with more severe symptoms than PTSD that derives from other types of traumatic experiences (Brinker, Westermeyer, Thuras, and Canive, 2007), and the responsibility of taking the life of another is associated with chronic PTSD and other associated psychological reactions in veterans and civilians (Grossman, 1996).

In addition to dealing with stressors relating to direct personal violence, officers are required to handle the direct suffering of others who have been victimized. Like firefighters and

emergency medical service workers, police officers respond to the needs of victims of violence, accidents, and disasters, as well as the families of those victims. In their investigative roles law enforcement officers are required to work extensively with victims of crimes and accidents as well as their families, placing officers at risk for vicarious victimization through extensive exposure to other people's traumatic experiences (Figley, 1999). Secondary traumatization that can result from extensive work with victims has been found to result in traumatic stress reactions nearly at the same level as experienced by the individuals that experienced the primary victimization (Creamer and Liddle, 2005, Johnson, Eid, Lovstad, and Michelson, 1997), and the fifth edition of the DSM added exposure to details of a traumatic event as a possible mechanism of exposure to a trauma which could result in the development of PTSD (American Psychiatric Association, 2013). Not only are law enforcement officers exposed to a wider variety of stressors than any other segment of the civilian population, but a number of factors also make it more difficult for officers to deal with traumatic experiences than is the norm. Officers have the potential for experiencing critical incidents throughout the course of their careers, a period often spanning several decades. The term critical incident describes a potentially traumatic experience that is considered an event that is within the realm of duty-related experiences for emergency responders and law enforcement officers.

The members of these professions are unique within the general population with respect to the frequency with which they risk exposure to traumatic events. As Violanti states, many police officers can be exposed to more traumatic events in a month than members of the general population can expect to encounter over a lifetime. It would be incorrect to assume that exposure to these events will inevitably lead to dysfunctional or pathological reactions...However, under certain circumstances, some traumatic experiences can result in the members of these professions experiencing emotional reactions that are significantly different or more intense than those prevailing in routine operating contexts and/or which prevent them from performing their role at the level they would have expected either at the time or later. Moreover, these reactions can sometimes persist for prolonged periods. Under these circumstances traumatic experiences have been defined as critical incidents (Paton, 1996, p. 3).

As a result they are more likely to have similar experiences multiple times which may have a cumulative effect over a period of years (Colwell, 2011, Marshall, 2006). With findings that the frequency of exposure to traumatic stressors contributes to the likelihood of the expression of PTSD (Frans, Ö, Rimmö, P.A., Åberg, L., and Frederikson, M., 2004), the possible ramifications of being exposed to the same types of critical incidents repeatedly become even more poignant.

Negative public opinion towards officers and law enforcement agencies can create an environment that can dampen the social support which plays an important role in the way that a victim deals with traumatic experiences, and can further provide a source of non-critical stress which can aggravate an officer's risk of experiencing a traumatic stress reaction (Blum, 2002, Lieberman et al. 2002). Public perceptions of the police are powerfully shaped by media depictions of officers, which can often "create(s) a skewed public view of police officers that either encourages hostility towards them, or denies the real and considerable dilemmas facing law enforcement today. In either case the public is denied a true analysis of the influences that shape law enforcement" (Blum, 2002, p. 15).

Officers' perceptions of a lack of support from the public can exacerbate the negative effects of traumatic experiences and make the integration of these experiences more difficult; this experience is similar to that of some veterans of the Vietnam War. These veterans often experienced greater difficulties in integrating combat experiences than did veterans of earlier wars as a result of negative public opinion, an erosion of national support for the War and its combatants, and increasing public debate regarding the "rightness" of the conflict (Smith, 1986, Horowitz, 2001, Powell and Doan, 1992). Stretch (1986) described an increase in psychiatric

casualty rate in Vietnam after the Tet Offensive, when the war was characterized by a decrease in morale and increased anti-war sentiment back in the United States. Contemporary negative public opinions (Blum, 2002) towards law enforcement create an analog of the negative public opinion towards military action in Vietnam that is considered to be one factor in the relatively high occurrence of PTSD in the veterans of that conflict.

Investigators have attributed a number of negative ramifications to traumatic stress reactions experienced by police officers. Among these consequences are health concerns such as a heightened risk of cardiovascular disease and higher than normal mortality resulting from a wide range of physical ailments (Violanti et al, 2006, Violanti, Vena, and Petralia, 1998). Elevated rates of police suicide have presented a long standing concern for law enforcement managers, and a study of subsyndromal PTSD in the general population has found a correlation between elevated levels of PTSD symptomatology, and suicidal ideation (Marshall et al., 2001, Violanti, 2004, Chae and Boyle, 2013). Additionally, the stressors of law enforcement work have been shown to potentially have a negative impact on officers' marriages (Roberts and Levenson, 2001). Simply working as a law enforcement officer has been documented as resulting in a change in personality with the effects of stress taking a toll on psychological well-being (Beutler, Nussbaum, and Meredith, 1988).

The culture and attitudes of law enforcement officers not only play an important role in the way that officers respond to potentially traumatic experiences, but also researchers' abilities to gauge the effects of these experiences and clinicians abilities to help officers deal with them. Officers are often reticent to seek help when experiencing the negative psychological sequelae of duty related traumatic experiences. Concerns over both the potential damage to their careers by possibly seeming unfit for duty and the potential stigma of other officers questioning an officers

ability to respond quickly and appropriately to critical situations significantly hamper officers ability to seek needed help or to even discuss traumatic stress reactions with their colleagues (Miller, 2006). “Chief among the concerns, which inhibit LEOs from seeking mental health assistance, is the fear that doing so will negatively impact their job. If it becomes known that they have sought mental health treatment, will their fitness for duty be questioned? Questions about their mental stability could have a negative impact on their ability to be promoted, as well as their ability to compete for special assignments, such as SWAT or training officer assignments” (Clark and White, 2003, 18-19). This reticence can not only limit officers’ likelihood of seeking treatment and assistance, but also their level of participation in research. Since virtually every study of law enforcement officers is undertaken with the understandable condition that officers’ employing agency needs to permit access to their personnel, there is the inevitable concern that participants in the study might alter their responses based on concerns that their employer might at some point have access to information which officers provide.

Given the challenges confronting law enforcement officers it would be intuitive to assume that they would experience traumatic stress reactions such as PTSD at a much higher rate than civilians. Many studies find a prevalence of PTSD only slightly higher than that found in the general population, however, and some find symptom expression to be at a lower level than other groups that are exposed to trauma (McCaslin et al., 2006). This discrepancy begs the question as to whether investigations are accurately gauging the prevalence of traumatic stress symptoms in law enforcement populations, or are other factors providing officers with the resilience needed to experience critical incidents without anticipated rates of traumatic stress reactions.

Traumatic Experiences and World Assumptions

In seeking to explain the mechanism leading to the development of PTSD, a number of cognitive theories have developed addressing the process by which victims attempt to incorporate traumatic experiences into the preexisting way in which they view themselves and the world around them (Foa, Steketee, and Rothbaum, 1989). Often cognitive theories attempt to demonstrate that physiological and psychological responses are rooted in the way that potentially traumatic events are perceived and appraised by an individual (Olf, Langeland, and Gersons, 2005). Researchers recognize that PTSD is an extremely complex disorder, and in fact “a number of pre-trauma, peri-trauma, and post-trauma individual differences likely act together to impact one’s vulnerability or resilience to developing PTSD following traumatic exposure” (Marmar, et al., 2006, p.2). One cognitive theory is offered by Janoff-Bulman (1985, 1989, 1992), and presents a model in which the way that a person thinks about his or her experience can play into the etiology of PTSD and other traumatic stress reactions. Janoff-Bulman describes a process whereby psychological reaction is caused by a conflict between traumatic experiences and the fundamental assumptions people hold about the benevolent nature of the world. Janoff-Bulman (1992) proposes that three fundamental human assumptions are that the world is benevolent, the world is meaningful, and the self is worthy. Assumptions of the benevolence of the world describe the belief that the world is by nature a good place, with positive outcomes outnumbering negative outcomes and human nature being primarily benevolent. The meaningfulness of the world describes the degree to which the world is a just place and the extent to which outcomes are assigned in a fair fashion – those that are good receive positive experiences at the hand of fate, and those that are malevolent are destined to

receive more than their share of negative outcomes. Positive assumptions of the benevolence of the world, according to the author, involve the presumption that one's experiences are integrally related to one's behavior, and proper behavior will inevitably result in positive outcomes. In addition the role of chance is minimized in those that maintain these positive assumptions, in that they believe that life's consequences result from their conscious behavior to a greater extent, and randomness, luck, and chance inevitably play very little role in their experiences.

Assumptions of self-worth describe each person's belief that they are themselves deserving of the positive outcomes which the world metes out, and which are intended to be bestowed upon those that are properly designated to receive life's largess. In their core belief systems most people feel that they are worthy of good experiences, good fortune, and the world's just ends will result in positive outcomes for them personally. Janoff-Bulman postulates that these shared assumptions of the nature of the world are universal and integral to our ability to function in society, and that traumatic stress reactions result from the collision of those assumptions with the harsh realities of life. She describes the symptoms of PTSD as the psychological effort on the part of a victim to incorporate their new experiences into the seemingly no longer valid cognitive schemas around which preexisting positive world assumptions were based. Victims attempt to deal with the shift in schemas brought about by the new traumatic experience which seemed to contradict all of the assumptions on which the victim had previously relied (Janoff-Bulman, 1992). The restoration of psychological well-being is facilitated by the incorporation of extreme experiences into the existing cognitive schemata regarding the nature of the world, as well as a rebuilding of those assumptions that had been shaken by traumatic experiences.

Since law enforcement officers are exposed to such a wide range of traumatic experiences thanks to the nature of their work, measuring officers' world assumptions should provide an interesting insight into the validity and workings of Janoff-Bulman's theory (Janoff-Bulman, 1985, Janoff-Bulman, 1992). Officers should be expected to not only experience a greater than normal rate of PTSD and other traumatic stress reactions, but if Janoff-Bulman's theory is supported the assumptive worlds of officers should prove to be weaker than those of most people. Over the course of a career an officer is exposed to an ever increasing number of critical incidents, and this would certainly lead to the expectation that the way that they look at the world should change over time accordingly. There is extensive discussion of police cynicism in the literature (Osborne, 2014, Hickman, 2008, Chandler & Jones, 1979) and this pattern of thinking certainly seems a potential manifestation of weakening assumptions of the benevolence, meaningfulness, and justice of the world. The fact that many officers do not suffer from posttraumatic stress reactions is in keeping with Janoff-Bulman's theory, in that it can be explained by realignment of cognitive schemas after a traumatic event, and an integration of the traumatic experience into the way that officers think about the world. Other authors have described this realignment of world outlook as posttraumatic growth, and it is often described as a positive outcome of traumatic experiences (Tedeschi and Callhoun, 2003).

Police culture also plays a role in altering the way that officers look at the world, even changing the way they look at the world in a fashion that shifts their own assumptions about the world, its controllability, and their safety operating within it. "From the very first day in the police academy, recruit officers are told that they are someone unique, far different from the average citizen, and certainly beyond harm" (Violanti, 2003, p. 67). Younger officers in particular have been described as maintaining a sense of invulnerability in dealing with the

challenges of their positions (Geiger and Reiser, 1984). These attitudes can prove instrumental in helping officers engage in behaviors that involve substantial risk-taking and hazardous activities that are normally best avoided, but for which officers may be called upon to engage in as part of their daily function.

There are some substantial difficulties involved with studying members of the law enforcement community, making it a hard to reach population. As a rule, officers deal with psychological professionals with a great degree of reticence. Many officers perceive that experiencing any type of psychopathology would result in their being determined to be unfit for duty or need to be reassigned to a different work function. The strong interdependence that officers experience also results in officers being concerned that they will be perceived as being unable to support their colleagues in critical situations, and unable to function at an acceptable level of performance in stressful situations (Miller, 2006). The need to seek psychological assistance also seems to conflict with the cultural feelings of invulnerability described above. Officers' career roles see them defined as providers of help, and that sense of being beyond harm would seem to extend beyond physical dangers and into the realm of psychological threats as well.

LITERATURE REVIEW

The Expression of PTSD and Subthreshold PTSD

Observations of the incidence of PTSD in different populations have drawn a picture of great variability in both the rate in which people are negatively affected by traumatic experiences, and the ways in which they can seem to be shielded from the psychological consequences of these experiences. Much of the variability in whether a traumatized individual develops PTSD and the confusion regarding theoretical models of traumatic stress reaction likely result from the observation that PTSD appears to be an extreme on the normal continuum of reactions to extreme events; the disorder appears to represent an extreme in a normal stress reaction (Ruscio, Ruscio, and Keane, 2002).

With the evolution of the DSM the range of stressors considered to have the potential to lead to the development of PTSD has increased, and there has been a greater focus on the prevalence of the disorder outside of the military. The National Comorbidity Survey in 1995 found the lifetime prevalence of the disorder in the United States to be 7.8%, (Kessler, Sonnega, Bromet, Hughes, and Nelson, 1995), and the 2005 National Comorbidity Survey replication found twelve-month prevalence to be 3.5% (Kessler, Chiu, Demler, Merikangas, and Walters, 2005). A community survey conducted in a mid-sized mid-western Canadian city indicated that the prevalence of PTSD among men and women was 1.2% and 2.7%, with 0.3% of men and 3.4% of women exhibiting the symptoms of subthreshold PTSD (Stein, Walker, Hazen, and Ford, 1997). In a review discussing the epidemiology of PTSD across a number of studies

Breslau (2009) found lifetime prevalence of PTSD to range between 1.3% and 12.2%, and the incidence of PTSD in the preceding twelve months to range between zero and 3.5%.

Many studies describe victims of traumatic experiences as expressing subsyndromal, or subthreshold PTSD; these terms describe individuals that experience many of the symptoms of PTSD without their discomfort rising to the level permitting a full diagnosis of PTSD. Subthreshold PTSD sufferers display serious symptoms of one or more of the symptom clusters related to the disorder, but only some of the symptoms belonging to other symptoms clusters. Much as the emergence of PTSD as a unique disorder in the DSM-III in 1980 resulted from the treatment of veterans returning from the Vietnam conflict in the United States, the notion of subsyndromal PTSD began with a focus on Vietnam veterans in the early 1990's. Weiss et al. (1992) examined Vietnam veterans that participated in the National Vietnam Veteran's Readjustment Survey and found that while the lifetime prevalence of PTSD among veterans that served within the Vietnam theater of operations was 30.9% for males and 26.9% for females, an additional 22.5% of male veterans and 21.2% of female veterans experienced clinically significant yet subthreshold levels of PTSD symptoms. The authors suggest a model of PTSD which is more qualitative and describes a range of symptoms of traumatic stress response that can have clinically significant results while still lying below the threshold at which the full PTSD diagnosis would be merited. These findings have been consistently corroborated; those suffering with subsyndromal PTSD deal with heightened level of discomfort and diminished level of function across different aspects of their lives, and realize the risk of their symptoms worsening to the point of meeting the full diagnostic criteria for the disorder (Stein et al, 1997, Mylle and Maes, 2004, Franklin, Piazza, Chelminski, and Zimmerman, 2015).

In examining a population of 669 military veterans Grubaugh et al. (2005) found that 11.7% of their sample met the DSM-IV criterion for PTSD, and 4.6% were experiencing subthreshold PTSD as defined by Blanchard (1996a). While those veterans experiencing subthreshold PTSD did not exhibit lower levels of physical health functioning than the non-PTSD control group in the study, subjects did describe increasingly descending levels of psychological function when comparisons were made between the non-PTSD, subthreshold PTSD, and full PTSD groups identified by the authors. Blanchard and his colleagues defined a patient as having subthreshold PTSD when they met the DSM-III-R diagnostic criteria for the re-experiencing cluster of symptoms as well as the criterion for either the avoidance and psychic numbing cluster, or the hyper arousal cluster, but not both. This method has been recognized as one of the more conservative methods of gauging the subsyndromal expression of the disorder (Grubaugh et al., 2005, Cukor et al, 2010).

It makes sense that exposure to potentially traumatic experiences leads to elevated expression of PTSD symptoms, and the literature generally supports this notion. The prevalence of PTSD among emergency room workers has been measured at 12%, with 20% of workers meeting the symptom criteria (Laposa and Alden, 2001), firefighters at 12.5% to 22.2% (McFarlane and Papay, 1992, Corneil, 1999), emergency medical ambulance personnel have been reported to express PTSD with an incidence of 4.3%, with a prevalence rate of partial PTSD of 9.6% (Streb, Hällner, and Michael, 2014), and in another study a third of the sample reported general psychological distress (Alexander and Klein, 1991). A review of 28 studies of emergency rescue workers worldwide resulted in then estimate of the current prevalence of PTSD among that population to be 10% (Berger et al., 2011).

Cukor, Wyka, Jayasinghe, and Difede (2010) examined the expression of subthreshold PTSD among workers at the World Trade Center recovery site following the September 11th terrorist attacks in the United States. At the authors' first evaluation of their participants 8.2% met criteria for a full diagnosis of PTSD, and 9.7% more reported symptoms at a level consistent with subthreshold PTSD. In subsequent measurements a year after their initial testing, Cukor et al. focused on their subthreshold PTSD group and found that 14.8% still suffered from subthreshold PTSD, and 14.1% had seen their symptom levels worsen to merit categorization as suffering with full PTSD. Two years after the initial assessment 13.9% of the subthreshold group continued to meet criteria for subthreshold PTSD, and 10.6% of the group met criteria for full PTSD. PTSD sufferers reported 30% greater impairment when compared to the subthreshold PTSD group, but the subthreshold group reported a level of impairment approximately four times greater than those not classified as suffering with any traumatic stress reaction. The authors regard the implications of their findings as highlighting the relevant impact of subsyndromal PTSD despite the fact that sufferers could not be easily categorized into a clear diagnostic group. Subthreshold PTSD appears to have as profound, if not as pronounced, an impact as the full disorder. The subthreshold expression of the disorder has been found to play as great a role as the expression of full PTSD in determining attribution of suicidal ideation in depressed patients. Additionally, even in subthreshold patients, an increase in psychological impairment and the likelihood of comorbidity with other psychiatric disorders increased in conjunction with an increase in the number of traumatic stress symptoms reported by subjects (Marshall et al., 2001).

While 31% of serious burn patients being treated in a metropolitan hospital's burn unit met the diagnostic criteria for PTSD, an additional 29% displayed subclinical traumatic stress

reactions (Bryant, 1996). In reviewing the National Comorbidity Survey for the relationship between eating disorders and PTSD, Mitchell, Mazzeo, Schlesinger, Brewerton, and Smith (2012) noted that in the general population while 9.71% of women and 3.59% of men reported suffering from PTSD, an additional 23.10% of women and 9.81% of men reported suffering from sub-threshold PTSD.

Some research has suggested that segments of the population that would intuitively seem to be exposed to more traumatic experiences don't necessarily experience PTSD symptoms. Pyevich, Newman, and Daleiden (2003) found that while the more than 900 journalists that they examined reported exposure to an average of almost eight work related traumatic events in their careers, only 4.3 percent of the journalists reported a sufficient level of PTSD symptom expression to be considered as possibly experiencing the disorder. Only 3.5% of emergency telecommunication personnel reported experiences symptoms at a severity to be considered possibly suffering from PTSD, although the authors acknowledge that affected personnel may have declined to participate in the study, thereby affecting the results (Pierce and Lilly, 2012). Other work conducted with firefighters found that their world assumptions were not different than those of a control group, and appear to have remained unchanged despite working in a profession with a high exposure to potential traumatic stressors. (Wagner, McPhee, and Martin, 2009).

World Assumptions and PTSD

Janoff-Bulman's (1985, 1989, 1992) theoretical perspective of the effects of traumatic stress describes the interaction between the cognitive schema that people maintain regarding the nature of the world and their relationship with it and the profoundly negative experiences that can lead to traumatic stress reactions. World Assumptions Theory is built around the notion that people maintain basic assumptions about the world as a safe and benevolent place, the world as a meaningful place, and the self as being worthy. When these assumptions are shattered by experiencing a traumatic experience which by nature contradicts with these basic assumptions, the resulting psychological distress contributes to the development of the symptoms of traumatic stress reactions. Healing from traumatic experiences involves integrating the newly realized experience into the victim's extant cognitive schemata regarding the nature of the world, and finding meaning in the traumatic experience within the context of the person's own life and experiences. Further when these experiences are believed to be meaningful and important victims often display hardiness to the experiences they undergo, and are somewhat inured to the detrimental effects of exposure to potentially traumatic events (Janoff-Bulman and McPherson-Franz, 1997, Janoff-Bulman and Berg, 1998).

Janoff-Bulman's work expanded on that of Epstein (1985, 1991), in which he holds that traumatic experiences lead to the shift in four commonly held beliefs: the understanding that the world is benign, the world has meaning, the self is worthy, and that others are trustworthy. She also builds on Lerner's (1978) notion of a just world, and the negative psychological ramifications of the conflicting realities of experiencing traumatic events and the core beliefs described by Lerner in which the world is a fair and just place in which people get what they

deserve. Janoff-Bulman's model describes three general world assumptions that are universally held, each of which consists of several component assumptions. The first assumption, that of the benevolence of the world, includes two components: the world itself is by nature benevolent, and other people are themselves generally well-meaning in their interactions with others. The second assumption, that of the meaningfulness of the world, consists of three main factors. These are beliefs of justice, or that individuals receive fair treatment from life in response to the behavior that they themselves exhibit, controllability, or the notion that people can positively affect life's outcome through the proper behavior on their part, and randomness, or the concept that fate or chance is responsible for why certain people receive certain outcomes (Janoff-Bulman, 1989).

The third general assumption she describes is that of the worthiness of the self, and includes components of self-worth, or implications that the individual is by nature good and deserving of good outcomes in life, self-controllability, which describes a person's belief that they actively take the proper steps to secure positive outcomes in life, and luck, or the notion that they receive positive outcomes based on chance directly and positively influencing their life experiences (Janoff-Bulman, 1989).

Other theorists have explored similar themes of cognitive change after traumatic experience with slightly different direction. Foa and her colleagues view the cognitive change of victims as a genesis of new maladaptive patterns of thinking, as opposed to resulting from the new experience conflicting with previously held thought patterns. They hold that PTSD results when victims develop the maladaptive belief structure that the world is a completely unsafe place and that they themselves are completely incompetent, and those new ways of thinking can mediate the development of traumatic stress reactions (Foa, Clark, Tolin, and Orsillo, 1999). Similarly Ehlers has forwarded a theory describing PTSD resulting from the way that the

experiences are perceived and integrated when they occur. In the model described by Ehlers and Clark, when the traumatic experience is appreciated as limited in time and scope and not necessarily something that will overpower the future, victims are less likely to suffer long term effects of traumatic stress reaction; those that suffer psychopathology are more likely to negatively appraise the traumatic events and its aftermath (Ehlers and Clark, 2000).

Janoff-Bulman developed the World Assumptions Scale (WAS) in order to measure the eight component elements which make up the three core world assumptions. In her own work testing World Assumptions Theory and designing and validating the WAS, Janoff-Bulman found that each of the eight four item subscales in her instruments had alpha coefficients between .67 and .78 when tested with a sample of 254 participants. In further testing of the WAS which examined 338 undergraduate students, Janoff-Bulman found that students that reported having experienced personal tragedies or had been victimized reported perceiving the world as a less benevolent place, and also were found to have weaker assumptions of their own self-worth.

Amir et al. (1997) found that a subject's use of the defense mechanism of suppression after exposure to traumatic events is correlated with the development of PTSD, supporting elements of Janoff-Bulman's theory, and the literature demonstrates that victims with stronger world assumptions experience lessened symptoms of traumatic stress reactions and generally apply more active coping styles in dealing with their traumatic experiences (Goldenberg and Matheson, 2005). The WAS has been applied to a number of different populations, with results supporting Janoff-Bulman's postulate that world assumptions worsen as a populations' exposure to trauma and expression of traumatic stress reactions increase. In a study of seventy-nine female subjects that reported childhood sexual abuse, Owens and Chard (2001) examined study participants for symptoms of traumatic stress reactions, and gauged their world assumptions.

The authors noted a significant negative relationship between the WAS's Worthiness of Self Scale and the severity of PTSD symptoms. All three of the subscales of that scale, self-worth, luck, and self-controllability shared the same correlation as the scale as a whole. Ullman (1997) found a significant negative relationship between the degree to which a victims was sexually abused as a child and that participant's assumptions of their self-worth on the World Assumption Scale. Magwaza (1999) observed changing WAS scores in a population of PTSD sufferers among South African citizens traumatized by violence on the part of governmental officials, with traumatic experience being significantly associated with lower assumptions regarding the meaningfulness and benevolence of the world. World assumptions of college students that had lost a parent proved to be significantly different than that of a control group (Schwartzberg and Janoff-Bulman, 1991). Pole Neylan, Best, Orr, and Marmar (2003) found support for a negative correlation between severity of PTSD symptoms and degree to which the world was perceived as a benevolent place. While examining survivors of a tragic bus and train collision that had occurred more than a decade prior, Solomon, Iancu, and Tyano (1997) found that those directly involved in the accident still reported holding lower assumptions of the benevolence of the world, their luck, and the justice of the world. The strength of those assumptions as measured by the WAS were inversely related to the victims level of psychological function as were the victims' feelings of self-worth. Exposure to the traumatic event accounted for changes in victims' cognitive framework, and changes in the way that victims looked at the world appeared to play a role in their psychological outlook. The authors note that weaker world assumptions were not only associated with symptoms of PTSD, but other types of psychological distress measured as well, including depression and anxiety.

In examining combat veterans' world assumptions, Dekel, Solomon, Elklit, and Ginzburg, (2004) found that Israeli veterans that had experienced PTSD in the past had significantly weakened assumptions of the benevolence of people, and greatly weakened assumptions of the benevolence of the world and the randomness of events. Current PTSD sufferers demonstrated weaker self-worth and felt that events demonstrated greater randomness than was reported by non-PTSD sufferers.

While often perceived as being exposed to a qualitatively different type of stressor, Mikkelsen and Einarsen (2002) measured the symptoms of PTSD and the world assumptions of victims of bullying in the workplace. Using self-report measures the authors found that 29% of those that reported being victimized by workplace bullying met all of the DSM-IV-TR criteria for PTSD. The authors found significant group differences between those that reported being the victim of bullying and those that did not across six of the eight subscales of the WAS, excepting only the scales for randomness and self-controllability, with victims experiencing more negative assumptions about the world.

A person's world assumptions have also been shown to impact the negative psychological consequences of traumatic experiences. Weakened world assumptions have been shown to mediate the relationship between exposure to trauma and the severity of depressive symptoms in survivors of intimate partner violence (Lilly, Valdez, and Graham-Bermann, 2011). In victims of an Icelandic earthquake, stronger assumptions of the benevolence of the world, self-worth, and luck appeared to act as a buffer against experiencing the symptoms of PTSD (Bödvarsdóttir and Elklit, 2004). Holocaust survivors with more observant religious backgrounds were found to have both stronger world assumptions, and higher level of psychological functioning. One of the suggested reasons behind this relationship was the

possibility that stronger faith provided a potentially stronger cognitive framework for the nature of the world that proved more resilient to change in the face of traumatic experiences (Palgi, Shira, and Ben-Ezra, 2011).

Contrary to much of the work utilizing the WAS, Foa et al. (1999) found the WAS to be highly internally consistent but found that none of its subscales strongly correlated with PTSD symptom expression. The authors attribute this observation to the WAS being designed to measure cognitions relating to the experiencing of traumatic events, and not with the expression of chronic PTSD. She and her colleagues concluded that the WAS has limited clinical utility, but other findings in the literature belie that concern. Further examination of the makeup of the WAS by Elklit et al. found a stronger correlation between five subscales of the WAS and trauma symptom expression, specifically the items relating to self-worth, luck, benevolence of people, benevolence of the world, and randomness. Although the authors cede that weakness in the WAS or the theoretical perspective might explain the variability in the linkage between the WAS and trauma symptoms, they also described the possibility that the specific type of trauma experienced might explain the variation in observed changes in victims' world assumptions, meriting further examination of the measure (Elklit, Shevlin, Solomon, and Dekel, 2007). The nature of the traumatic stressor seems to play a great role in the likelihood that a victim's world assumptions will be negatively affected. Experiences that result from human malice or interaction seem to come into the greatest conflict with assumptions of a benevolent and just world, while tragedies that involve natural disasters or accidents appear to have a lesser impact (Bödvarsdóttir and Elklit, 2004, Wickie and Marwit, 2001, Ginzburg, 2004).

An interaction has been demonstrated between peritraumatic distress and the diminishing of a person's assumptions of the benevolence in the world in predicting traumatic stress

symptoms and depression among emergency telecommunication operators. Those operators that showed weaker world assumptions appeared to suffer greater distress after undergoing a powerful emotive dissociative experience at the time of their handling of a disturbing emergency call. Specifically, research participants saw weaker assumptions of the benevolence of the world and of self-worth serve as a moderating factor in the effects that peritraumatic dissociation had on the expression of depressive symptoms (Lilly and Pierce, 2012).

Several authors have examined the world assumptions of police officers, and aspects of social cognitive theories appear to be well suited to exploring the way in which officers respond to many of their duty-related experiences (MacLeod and Paton, 1999). Carlier, Lamberts, and Gersons (2000) found that officers suffering from PTSD had notably different cognitive schemata relating to notions of vulnerability and personal integrity; they report this as being consistent with weakened assumptions of the officers safety akin to the assumptions described by Janoff-Bulman. Colwell, Lyons, and Garner (2012) examined the difference between the world assumptions of police cadets and police officers, particularly in relation to traumatic experiences that they experienced in their jobs and the result of those experiences. The authors found that the number of traumatic experiences that officers reported on duty were related to a change in their assumptions of the benevolence of the world, but not the meaningfulness of the world or the worthiness of the self. Officers that reported greater assumptions of the meaningfulness of the world as police cadets reported experiencing a greater impact as a result of traumatic experiences they underwent in the following year, and there was a significant relationship between the number of years of experience an officer had and his or her assumptions about the benevolence of the world. Officers' world assumptions were found to be even stronger than those of new recruits, appearing to lend credence to the notion that an optimistic cognitive appraisal of certain

aspects of critical incidents contribute greatly to resilience and hardiness, but the very low rate of officers completing the follow up component of the study lead the authors to interpret their results with some degree of caution.

Yuan et al. (2011) found that officers' assumptions of the benevolence of the world while they were still in training before beginning their careers were negatively associated with the severity of their PTSD symptoms after two years of law enforcement service. Those officers that had stronger world assumptions experienced less severe psychological distress. The officers studied had been exposed to a variety of critical incidents in that twenty-four month period, but only one of the participants in the study expressed the symptoms of PTSD at a high enough level to be described as actually suffering from the disorder. Interestingly, in their examination the authors did not find that traumatic experiences that occurred prior to police service played a significant role in the expression of PTSD symptoms that the officers were experiencing after two years of service. This lends towards the notion that positive world assumptions can actually play a role in strengthening officers' resilience when confronted with critical incidents. The authors recognize one of the limitations of their study to be the possibility that officers minimized the degree to which they experienced the symptoms of traumatic stress, and that the prevalence of those symptoms were underreported in their study sample.

Other work has found that belief in a just world made it less likely that male officers would experience psychological ramifications of the operational aspects of police work. However, female officers did not demonstrate the same relationships between their assumptions of a just world and experiencing psychological distress (Brown, Fielding, and Grover, 1999).

Law Enforcement Officers and Traumatic Stress

In a summary of police stress research in the literature, Abdollahi (2002) found that work in the field could be grouped into four overarching categories: inter/intrapersonal stressors, occupational stressors, organizational stressors, and the health consequences of police work. The occupational stressors that she describes involve critical incidents, and are the only stressors that qualify as contributing to post-traumatic stress disorder. However, the other types of stress that officers experience have profound effects on their psychological well-being, and can even interact with critical incidents to have an effect on traumatic stress reactions that an officer might experience. Officers generally report that more routine stress has a more profound effect on their psychological well-being than experiencing critical incidents (Storch and Panzarella, 1996, Malach-Pines and Keinan, 2007, Coman and Evans, 1991, Collins and Gibbs, 2003), and levels of general work-related stress was also strongly correlated with the expression of the symptoms of traumatic stress (Lieberman, et al., 2002, Haisch and Meyers, 2004). These results are consistent with findings that the non-traumatic stress that officers experience in their careers serve to heighten their risk of experiencing traumatic stress reactions after undergoing a critical incident (Pole, Kulkarni, Bernstein, and Kaufmann, 2006). Violanti and Aron (1995) found that supervisory and investigative officers have reported that organization and administrative stressors had a greater impact on them than operational stressors, with the opposite circumstances reported by patrol officers.

Officers expressing PTSD symptoms have been found to report an average of 15-19 traumatic stressors in the course of performing their duties, while they report experiencing an average of only three stressors occurring in their life outside of employment (Gersons, Carlier, Lamberts, and van der Kolk, 2000). Carlier (1999) found that officers experienced a wider

range of potential traumatic stressors, including violence, accidents, and exposure to victims, than even members of other professions that are considered at a high risk for exposure to trauma.

Authors have documented a correlation between officers' traumatic experience and alcohol abuse and suicidal ideation (Violanti, 2004, Violanti, Marshall, and Howe, 1985), and an association between the number of traumatic stress symptoms an officer expresses and an increase in their risk of cardiovascular disease (Violanti, Andres, Burchfiel, Dorn, Hartley, and Miller, 2006). Stephens and Long (1999) cite an unpublished New Zealand report that attributes approximately 70% of police attrition to psychological factors (Miller, 1996). Stephens and Long describe a correlation between officer trauma and PTSD expression, and further correlation between the length of law enforcement service and both the number of traumatic experiences an officer has encountered and that officer's likelihood of expressing PTSD.

Accordingly, research has generally demonstrated that PTSD is experienced by law enforcement officers at a greater than normal rate. Estimates of PTSD prevalence in different police populations have ranged between 7% and 35% (Stephens and Long, 1999, Pole, 2008, Ménard and Arter, 2014), with much of the variability in the estimate resulting from whether the focus of the investigation was a general police population or a group of officers that have dealt with a specific stressor or large scale potentially traumatic event. Robinson, Sigman, and Wilson (1997) found that 13% of their sample of 100 officers recruited in suburban Ohio met the DSM-IV criteria for PTSD. Participants were identified through the Chiefs of Police of their respective departments, and the majority of the officers completed the anonymous written questionnaires on-duty immediately after their roll call briefing. Regardless of this fact the authors conclude that concerns about the officers answering the questions honestly and frankly were unfounded, based on the 85% completion rate that they received from prospective participants. Despite an

initial hypothesis that PTSD symptoms would be linearly related to the number of years of police service, the authors found that officers with 11 or less years of experience actually reported more traumatic stress symptoms. A study of an elite unit of Brazilian officers resulted in findings that 8.9% of officers were classified as suffering from PTSD, and 16% characterized as expressing “partial”, or subsyndromal PTSD, and not surprisingly officers in the “full PTSD” group demonstrated a much greater likelihood of being divorced and of reporting medical complaints when compared to the group of officers that were classified as “no PTSD” (Maia et al., 2007). Of the one hundred officers randomly selected from a mid-sized department, Violanti and Gehrke (2004) found that 43% of their sample was at high risk for expressing PTSD, a prevalence even higher than that reported for most studies involving officers that were selected because of their known exposure to a traumatic critical incident.

Other work has focused on officers that would seem to be at higher risk of experiencing a traumatic stress reaction, either based on their recent work experiences or in their specific duty assignment. In examining 262 Dutch officers that volunteered to participate after being exposed to a critical incident, Carlier, Lamberts, and Gersons (1997) found that seven percent of the officers were suffering from PTSD, and 34 percent were experiencing subsyndromal PTSD symptoms. In their study of Irish officers that had experienced a critical incident, Wilson, Poola, and Trew (1997) found that five percent met the criteria for PTSD, and twenty-five percent of officers could be characterized as experiencing at least mild to moderate depression; at least half of the variance in the number of reported PTSD symptoms was accounted for by officers’ level of depression, whether they were injured, and their perceived level of support by others.

Komarovskaya et al. (2011) found a significant relationship between the likelihood of PTSD symptom expression and an officer reporting either exposure of threat to their own life, or

being forced to kill or seriously injure another person in the line of duty. Nearly 70% of officers reported perceiving a direct threat to their own lives in the first three years of their law enforcement career, and almost 10% of officers reported that they had been forced to kill or seriously injure another person. This reported level of incident exposure takes on added import in light of findings that exposure to violence has been linked to higher levels of PTSD expression in the general population (Breslau, 1999), and being forced to kill another in the line of duty has repeatedly been reported by officers as the most traumatic critical incident which officers experience, followed by witnessing the death of a fellow officer (Violanti and Aron, 1995). In a study of 37 Dutch police officers that had been involved in shooting incidents, Gerson (1989) found that only three officers were free of the symptoms of PTSD. Seventeen of the officers suffered from traumatic stress symptoms, and seventeen officers met the full DSM-III diagnostic criteria for PTSD, with a prevalence rate of 46%. The author found that seven of the officers continued to actively suffer from PTSD at the time of their interview and could be classified as suffering from chronic PTSD.

The types of stressors that are most likely to lead to distress among officers are those that presented a perceived personally relevant threat – either to the direct safety and well-being of the officer, or to someone with whom the officer has a close relationship (McCaslin et al, 2006). Martin, Marchand, Blanchard, and Martin (2009) found that 7.6 percent of the officers that they studied experienced PTSD subsequent to experiencing a critical incident at work; an additional 6.8% of their study participants experienced partial, or subthreshold PTSD. In a British study, Wright, Borrill, Teers, and Cassidy (2006) found that 36% of their population of corrections officers that had been exposed to inmate suicides were suffering from PTSD; in discussing the limitations of their study the authors express that the actual rate of suffering in that population

might be even higher. In studying officers and their experiences being directly exposed to the suffering of victims, Martin, Mckean, and Veltkamp (1986) reported that 26% of officers were experiencing symptoms that met the criteria of PTSD; nearly a third of officers that they studied had experienced three or more of the potentially traumatic stressors that they considered, and they found a tendency for traumatic stress symptoms to increase with the number of stressors that an officer reported having ever experienced. Kopel and Friedman (1997) found that nearly half of the South African police officers studied appeared to meet the diagnostic criteria for PTSD. The authors attribute that finding to the extended exposure of the officers studied to high levels of violence ongoing at the time in the South African townships, and concluded that the higher rates of PTSD and a concurrent increase in the rate of officer suicides likely were rooted in the relatively long-term cumulative heightened levels of exposure to interpersonal violence, and found that the risk of subthreshold PTSD was significant among officers.

In dealing with disasters both natural and manmade, officers serve as the first responders to crises, and are forced to impose order in scenarios devoid of order. Of officers servicing the communities affected by Hurricane Katrina, 19% were found to have symptoms consistent with PTSD, and 26% of officers displayed the symptoms of depression. Factors most strongly associated with PTSD were having been involved with the recovery of bodies, crowd control, assault, and injury to an officer's family member (Westet al., 2008).

While specifically focusing on PTSD symptoms deriving directly from exposure to the September 11th terrorist attack on the World Trade Center, Pietrzak et al. (2012) found that four years after the attack 5.4% of male New York City Police officers exposed to the attack and recovery efforts met the criteria for PTSD diagnosis, and 15.3% described experiencing symptoms at a subsyndromal level. Female officers were found to be experiencing symptoms at

a slightly higher rate, 6.0% and 15.7% for PTSD and subsyndromal PTSD respectively. The authors found that officers experiencing PTSD and subsyndromal PTSD were more likely to be dealing with comorbid conditions including depression, panic disorders, alcohol abuse, and suicidal ideation, and these officers were more likely to report a perceived need for mental healthcare services. The authors highlight the need for consideration of subclinical expression of PTSD symptoms in law enforcement populations, particularly considering their findings of comorbid psychological difficulties, somatic concerns, difficulties in functioning, and reported perception of need for psychological care.

The September 11th terrorist attacks in the United States have been the subject of significant study, given the large number of victims, including both emergency responders and civilians. In the study of a peer support program for New York Police officers exposed to the 9/11 attacks Dowling, Moynihan, Genet, and Lewis (2006) collected data from officers for several years after the attack itself. The authors found that nearly a quarter of officers reported at least one cognitive symptom relating to the events of September 11th, and more than 68 percent reported at least one symptom relating to the attacks that still persisted between 15 months and 27 months after the attack. More than 20% of the officers participating in the study reported that their symptoms were serious enough that they had been advised to seek further psychological assistance. Other work with civilians' reactions to the attacks further illustrate the risk to officers given their repeated exposure to critical incidents, as well as their multiple roles in dealing with these events. Civilians' resilience against developing symptoms of PTSD was found to be greatly diminished when they found themselves exposed to multiple dimensions of exposure to the trauma. Those who actually witnessed the attack and also were involved in the rescue and recovery efforts were 10% less resilient to PTSD than those who simply were involved in the

rescue effort (Bonanno, Galea, Bucciarelli, and Vlahov 2006). Since officers are required to witness violence, respond to it in kind, and deal with the aftermath--often in the same incident--one would expect a commiserate reduction in their resilience as well.

A number of researchers have focused on the effects of long term exposure to repeated traumatic stressors, as is often the case with police officers, as opposed to the traditional model of a person experiencing one traumatic event that leads directly to a traumatic stress reaction (Brunet et al., 2001, Hodgins, Creamer, and Bell. 2001, Norris, 1992, Davidson, Fleming, and Baum, 1986). Traumatic stress reactions resulting from a string of events are often considered more insidious and more difficult to treat (Herman, 1992). Stretch's (1986) work with a variety of Vietnam veterans found that not only did combat experience directly correlate with the expression of PTSD, but also "simply being in a combat zone with its corresponding elements of perceived danger and exposure to the violent aftermath of combat activities can be just as traumatic as direct participation in combat" (p. 188). These findings are easily generalized to law enforcement officers, whose job requirements often require them to operate in the long term in an environment of violence, and necessitate continued exposure to the direct results of violence and suffering. Carlson (1997) describes the shortcoming of research addressing combat experiences and the failure of many authors to recognize the chronicity of many combat experiences, an important factor in the likelihood of a victim experiencing long-term psychological consequences as a result of their traumatic experiences. Again, a parallel can be drawn between the long-term exposure to traumatic stressors and the career-long exposure to a wide variety of stressors that can be experienced by police officers. Carlson (1997) further acknowledges that researchers are more frequently abandoning the notion of attempting to correlate traumatic stress reactions with a single stressor, and accepting the model that a

collection of stressors might interact in producing the hallmark symptoms of PTSD in a victim. Pole (2008) determined that even subclinical levels of distress reported by police officers resulted in negative effects to the job performance and the psychological well-being of officers, and Regehr and Bober (2005) found that all of the officers considered in their study of emergency service workers had experienced emotional distress as a result of an experience in the line of duty.

As a result of their roles as first responders to events involving tragedy and violence as well as the investigators of this type of event, law enforcement officers find themselves exposed to the suffering of victims of disasters and violent crimes, and are often negatively affected by their closeness to the victims and firsthand knowledge of their suffering. Officers find themselves in the somewhat unique role of encountering, dealing with, and investigating any death which occurs outside of the purview of the medical profession (Henry, 2004). Traumatic stress reactions relating to this type of exposure has been recognized as leading to a similar set of psychological symptoms, and has been recognized and characterized in the literature as secondary PTSD, vicarious PTSD, and compassion fatigue (Herman, 1992, Figley, 1995, Figley, 1999 McCann and Pearlman, 1990, Pearlman and McIan, 1995).

With changes to the fifth edition of the DSM (American Psychiatric Association, 2013), a number of exposures that would have not previously qualified as traumatic stressors are included as having the potential of leading to the development of PTSD. In particular “experiencing repeated or extreme exposure to aversive details of the traumatic events(s) (e.g. first responders collecting human remains; police officers repeatedly exposed to details of child abuse)” (p. 247). now qualifies as a Criterion A traumatic exposure in the diagnostic criteria for PTSD. There is a specific exception for those exposed through media, television, or electronic media, except for

those for whom the exposure is work-related, such as criminal investigators. With this addition a number of critical incidents and traumatic experiences which resulted in traumatic stress reactions other than PTSD now are considered to potentially lead to the full expression of the disorder. Experiences common to law enforcement officers such as body recovery, exposure to victims of violent crime, and witnessing offenses though to course of their investigative duties are even more directly classified as traumatic stressors. Follete, Polusny, and Milbeck (1994) found that PTSD occurred more frequently among sex crime investigators than among mental health professionals who dealt with the victims of sex crimes.

The review of video depicting acts of violence and other criminal activity is integral to many criminal investigations, and child exploitation investigations require investigators to review video and images of the active sexual assault of children. In their study of computer forensics investigators that are required to review video and image files that depict the sexual exploitation of children, Perez, Jones, and Englert (2010) point out that this actual witnessing of the victimization is categorically different than the experience of many other professions that can be affected by secondary traumatic stress. Forensic interviewers, social workers, and others that work with the victims of child exploitation rarely actually find themselves required to repeatedly watch the abuse of child victims; law enforcement officers that work in this realm of investigations are indeed required to do so, and the authors found that exposure to child exploitation materials had a significant relationship with psychological distress.

The heightened distress associated with exposure to materials relating to child exploitation would seem to stem from the overall pronounced effect of dealing with victimized children which has been reported in both first responders, criminal investigators, and disaster recovery workers (North et al., 2002, Van Patten and Burke, 2001). Investigators required to

review materials depicting child exploitation are often profoundly affected by their duties, and for the tenure of their duty assignment are intentionally and repeatedly exposed to the same stressors (Burns, Bradshaw, Morley, and Domene, 2008, Krause, 2009).

The law enforcement sub-culture is not receptive to help-seeking and psychological intervention, and may actually serve to make it more difficult for officers to deal with their exposure to traumatic stressors (Reiser and Geiger, 1984, Violante, 1999, Reiser, 1973). Even in the highly traumatized South African police force, with a suicide rate ten times that of U.S. police officers in 1996, psychological services were not often used because of “the stigma attached to social workers, psychologists, and counseling, and the shame of seeking help” (Kopel and Friedman, 1999, p. 100). Officers’ tendencies to avoid seeking treatment and to dismiss their psychological discomfort may often lead to their symptoms worsening. Pasillas et al. (2006) found that the use of avoidant coping strategies among law enforcement officers was a predictor of psychological distress. In their study of PTSD patients, Amir et al. (1997) found that patients that made use of a coping style that depended on suppression, or avoiding thinking about unpleasant memories, were more likely to suffer from symptoms tied to certain PTSD symptom clusters. The officers studied by Robinson et al (1997) reported a lack of trust in the programs set in place by the department to help them with duty related psychological issues, and the authors identify this distrust as being based in previous personal experiences of the officers, as well as beliefs that supervisory personnel failed to understand the stress related concerns that arise among officers.

Officers’ reticence in seeking treatment is often based in their perception that the recognition of psychological difficulties will result in the determination that they are unfit for duty, as well as the potential stigma to their daily working relationships with their peers (Miller,

2006). It follows that these concerns might well have also played a role in interfering with research on officers and traumatic stress reactions. In order to most successfully sample from law enforcement populations, investigators typically engage the cooperation of law enforcement agencies in identifying and recruiting research participants. While this mechanism of locating participants is a necessity when endeavoring to generate a random sample of a law enforcement population, the extent to which officers may elect to not participate in the research because of concerns relating to a perceived involvement of an officer's chain-of-command in collection of data involving sensitive psychological information is unknown. Some insights into the difficulties typical data collection might engender are illustrated by the difficulties other researchers have found in eliciting follow up responses from law enforcement subjects.

In studying the effects of an earthquake related freeway collapse on emergency responders, Marmar et al. (1999) found that while police officers made up 26.1% of the 322 participants that responded to a follow-up component of their study, officers made up 55.6% of the 117 individuals that failed to follow-up with the study, a statistically significant difference when compared to the nonresponse rates of 8.6%, 16.2%, and 19.7% among firefighters, emergency medical personnel, and transportation workers respectively. A number of investigations involving law enforcement officers highlight difficulties in working with this hard to reach population. In studying the cognitive appraisals of police officers including their world assumptions, Colwell (2005) administered the WAS to a population of police officers and her findings were that police officers scores are not significantly different than that of the general population. Officers were administered the instrument at the behest of their commanding officers, however, and the second part of Colwell's data collection, which required that officers return mailings on their own, only experienced a response rate of 10.1%.

This difficulty in obtaining a thorough response from law enforcement research participants was also evinced in the work of Martin, Marchand, Boyer, and Martin (2009). While finding that 7.6% of the French Canadian police officers studied had developed PTSD and an additional 6.8 percent of the officers were expressing partial PTSD, only 169 of the 1,600 randomly selected police officers identified by the Montreal Police Department's Human Resources offices agreed to participate in the research. The authors further acknowledge that "police culture may promote more socially desirable answers, leading to an underreporting of PTSD symptoms" (p. 464) recognizing that this cultural factor might have played a role in what they perceived to be a lower than expected expression of PTSD among the officers they studied. Police culture may well have played a significant role in the relatively low response rate that the authors experienced, particularly since they needed to identify officers with the assistance of those officers' employing agencies.

As well as failing to seek treatment and psychological support, there is also evidence of officers suppressing their emotional response to many of the incidents that they encounter in their work (Bonafacio, 1991, Miller, 2006, Greene, 2001). While officers do express greater rates of PTSD than the general populace, this rate seems to be in no way proportional to their greater exposure to critical incidents. Lilly et al (2009) found that female officers experienced lower levels of PTSD symptom expression than a matched group of civilian counterparts even though they reported a greater frequency of traumatic experiences. The authors found a direct relationship between peritraumatic emotionality and psychological symptom expression, and that response was reported to be lesser among the police officers that were studied than among the civilians. This difference is explained as a result of female officers adhering to the male dominated police culture and having adjusted to a lessened emotional display and a muting of

their emotional response. In examining a group of police officers responsible for body recovery and mortuary duty after a disaster involving mass casualties, Alexander and Wells (1991) noted that despite higher levels of PTSD symptomatology experienced by officers involved with body handling, there was no difference in psychiatric morbidity or number of sick days taken between officers with high exposure to body handling duties, and those with lesser exposure. The investigators concluded that this resulted from hardiness and effective coping on the part of the officers, as opposed to officers trying to place themselves in a more favorable light.

Other research findings would indicate that law enforcement officers are particularly susceptible to a shattering of world assumptions as described by Janoff-Bulman (1992). Violanti (1996) describes several ways that officers' world assumptions can come into conflict with the reality of their working environment. Among these is reality conflicting with the illusion of personal invulnerability, a component of the assumption of the benevolence of the world (Janoff-Bulman, 1985, Janoff-Bulman and McPherson-Franz, 1997). Often this illusory perception of invulnerability is perpetuated by the police culture and instilled into officers by their training and subculture (Violanti, 1996, Greene, 2001).

There is certainly evidence that multiple potentially traumatic experiences can have a cumulative effect, often resulting in an increased likelihood that the next trauma to which an individual is exposed will result in a pathological response; the particular concerns of officers being repeatedly exposed to the same types of stressors over the course of a career have been recognized (Marshall, 1996). Breslau et al. (1999) found that exposure to events involving interpersonal assault resulted in a greatly increased chance of a person experiencing post-traumatic stress symptoms after having subsequent exposure to traumatic experiences. With an eye towards the cumulative effects of repeated exposure to critical incidents, the importance of

gauging overall PTSD symptom levels and studying officers that display symptoms at a subsyndromal level becomes apparent. Pole et al. (2003) found that there was a direct correlation between the strength of an officer's physical startle response and the overall severity of PTSD symptom expression that an officer reported, even in those officers that didn't meet the DSM diagnostic criterion for the disorder. It has been posited that much of the hypervigilance associated with officers suffering from PTSD is explained by the fact that officers must continue to function on a daily basis in the same environment and in the same roles that lead to the critical incident associated with their discomfort (Martin, McKean, and Veltkamp, 1986)

While officers certainly experience a wider range and greater frequency of potentially traumatic stressors than most other populations, their reactions to these experiences seem to differ from the general population. A study of recovery workers at the site of the World Trade Center attack found while 12.4 percent of the entire population of their respondents were suffering from PTSD, only 6.2 percent of the law enforcement officers they studied were so affected. They found that construction workers, engineering workers, and unaffiliated volunteers (at a prevalence rate of over 21 percent) were more likely to be affected by their work to the extent that their distress rose to the level of PTSD.

A number of factors have been identified which account for the fact that only some officers develop PTSD. Considerations such as the cognitive reaction that the officer experiences at the time the critical incident occurs, as well as the way that officers cope with problems have been identified as playing a role in the development of PTSD, as has the general level of work-related stress that an officer experiences and the degree to which they receive social support from others (Marmar et al., 2006). Pre-trauma personality has long been recognized as a factor in the likelihood of the development of chronic PTSD (Schnurr, Friedman,

and Rosenberg, 1993) and the perceptions and thought processes that officers bring to their career with them can play in the way that they experience, process, and integrate their operational experiences in law enforcement.

While the effects of PTSD certainly take a toll on officers' well-being and on resources required to help officers that are suffering, there is evidence that there is not a direct effect on officers' job performance. LeBlanc, Regehr, Jelley, and Barath (2007) found that when police recruits (many of whom had backgrounds in policing or in other emergency services) were observed and rated in their performance when dealing with a stressful simulated critical incident in a training environment, recruits with a history of traumatic experiences and those that expressed symptoms of traumatic stress did not suffer any impairment in judgment or performance.

RESEARCH QUESTIONS

There are two primary questions addressed by this research: a) what are the effects of law enforcement service and the potentially traumatic experiences an officer has been exposed to on the expression of traumatic stress symptoms, and b) what are the effects of law enforcement service and critical incidents on the world assumptions of officers?

The first hypothesis being tested is that that officers will experience symptoms of PTSD at a rate greater than that of the general population. While there are some dissenting findings in the literature as to whether officers experience a higher than normal rate of PTSD, there is a general consensus that it is higher than that of the general population. In an environment absent any need for officers to minimize psychological symptoms it is expected that this differential will be clear. The second hypothesis is that as the number of potentially traumatic experiences reported by an officer increases, his or her level of PTSD symptomatology will also increase. While some authors have argued for an inoculation effect in which repeated exposure to traumatic stressors will serve to inure officers to the ill effect of dealing with critical incidents, it is expected that increased exposure over the course of a career will be clearly linked with increased symptom expression. This link is also expected to be clearer than in other investigations due to the fact that the mechanism of data collection should lead to fewer officers underreporting their exposure to critical incidents.

Third, it is hypothesized that there will be a negative correlation between an officer's exposure to traumatic incidents and the strength of that officer's world assumptions. It is expected that greater exposure to critical incidents will correspond with weaker assumptions about the benevolence and meaningfulness of the world, and assumptions of the worthiness of

the self. The fourth hypothesis to be tested is that officers that are experiencing symptoms at a level that would permit the diagnosis of PTSD will describe weaker world assumptions than officers that are not experiencing the same levels of psychological distress. It is posited that as a group officers expressing levels of distress as high as patients that have been formally diagnosed with PTSD will hold weaker world assumptions than their colleagues.

Finally it is hypothesized that an officer's world assumptions will have a mediating effect on the relationship between that officer's exposure to potential traumatic stressors, and his or her expression of traumatic stress symptoms. The literature has demonstrated that world assumptions can serve to mediate the effects of traumatic experiences on the expression of the symptoms of depression, but the mediating effect of world assumptions on PTSD symptom expression has not been illustrated. It is expected that a mediating effect of weakened world assumptions on the relationship between critical incidents exposure and trauma reactions will be demonstrable.

METHOD

Research participants were identified and recruited using several mechanisms. First, the link to an Internet based questionnaire was forwarded by way of e-mail to a non-random convenience sample of 79 law-enforcement officers personally acquainted with the author. The link was contained within a solicitation e-mail that requested the voluntary participation of the officer along with a further request that the officer forward the e-mail along to any other law enforcement officers that he or she might know that would consider participating in the study. The text of the recruitment e-mail that was utilized to identify officers willing to participate in the study is attached as Appendix A.

In addition to the convenience sample, permission was obtained to forward the solicitation e-mail to several e-mail distribution lists that are used to foster communication between law enforcement officers. The e-mail was voluntarily distributed by way of the POLICE-L e-mail listserve, the International Association of Computer Investigative Specialists (IACIS) mailing list, the Delaware Valley Chapter of the High-Tech Crime Investigation Association (HTCIA) mailing list, and a mass mailing by South Jersey Lodge 56 of the Fraternal Order of Police (FOP). These e-mail distributions took place after permission for each mailing received by each of those organizations' Presidents or list administrators. The POLICE-L Listserve is an e-mail list designed to facilitate communication between law enforcement officers in different jurisdictions and roles, and is vetted to ensure that its members are active law enforcement officers at the time of their inclusion in the list. The HTCIA and IACIS are international organizations that include a large number of law enforcement investigators that conduct computer related investigations, including many investigators that are involved in child

exploitation investigations. The FOP is a national fraternal organization in the United States that provides labor representation and legal assistance to many local police officers, and its rolls also include a number of state and federal officers.

This method of locating potential participants was chosen in order to minimize any association with officers' employing agencies. By distributing the request e-mail without enlisting the aid of officers' employing organizations it was hoped that any potential concerns of officers that their responses to the survey could in any way affect their employment status could be minimized. Through the course of the study new respondents continued to complete the online survey through the use of snowball sampling as officers that received the solicitation e-mail complied with the request to forward the e-mail to other officers who might also be willing to participate in the research. 879 active law enforcement officers completed the survey. Of those officers that completed the survey 213 chose to not provide the State in which they were employed, but information that was collected would indicate that the distribution of the survey instrument was fairly widespread. The 666 officers that supplied their state of employment reported being employed in every state of the United States with the exception of the State of Rhode Island, and responses were also received from District of Columbia,. 28 officers indicated that they worked outside of the United States, including 25 Canadian officers, and one officer each from Brazil, Ireland, and Yemen. The fact that nearly one in four officers failed to report the state in which they are employed (yet continued on to complete the survey instrument) is noteworthy, and might serve as further indication that officers still maintained a high level of concern regarding the preservation of their anonymity. There was no mechanism by which the number of officers that received the solicitation e-mail could be gauged, and as such there was no way to measure the number of officers that failed to complete the survey after being invited to

do so. The distribution of officers that reported their state in which they were employed is illustrated below in Table 1.

Table 1: Distribution of Officers in the United States by State

	Frequency	Percent
Alabama	7	.8
Alaska	2	.2
Arizona	22	2.5
Arkansas	4	.5
California	53	6.0
Colorado	22	2.5
Connecticut	7	.8
Delaware	1	.1
District of Columbia	9	1.0
Florida	27	3.1
Georgia	18	2.0
Hawaii	2	.2
Idaho	4	.5
Illinois	57	6.5
Indiana	11	1.3
Iowa	17	1.9
Kansas	44	5.0
Kentucky	3	.3
Louisiana	2	.2
Maine	1	.1
Maryland	5	.6
Massachusetts	14	1.6
Michigan	15	1.7
Minnesota	23	2.6
Mississippi	1	.1
Missouri	12	1.4
Montana	2	.2
Nebraska	6	.7
Nevada	7	.8
New Hampshire	2	.2
New Jersey	8	.9
New Mexico	8	.9
New York	30	3.4
North Carolina	5	.6
North Dakota	1	.1
Ohio	25	2.8
Oklahoma	10	1.1
Oregon	13	1.5
Pennsylvania	37	4.2
South Carolina	3	.3
South Dakota	3	.3
Tennessee	5	.6
Texas	48	5.5
Utah	6	.7
Vermont	3	.3

	Frequency	Percent
Virginia	16	1.8
Washington	18	2.0
West Virginia	2	.2
Wisconsin	19	2.2
Wyoming	6	.7
Total	666	75.8
No Response	213	24.2
Total	879	100.0

An online data collection mechanism was optimal for this study in that it permitted the greatest degree of actual and perceived anonymity for the research participants, and permitted the simplest method by which participating officers could forward the study information along to other officers. Online instruments have been proven an effective and private tool in assessing traumatic stress symptoms (Read, Farrow, Jaanimagi, & Ouimette, 2009). The online survey was hosted on the Qualtrics World-Wide Web site (www.qualtrics.com); upon clicking the e-mailed link for the survey instrument, participants were redirected to the Qualtrics web site which is accessed using an Internet browsing application on computers or mobile devices. Upon initiating the survey, officers were presented with a statement of informed consent (attached as Appendix B), and were only able to continue on to the remainder of the survey after acknowledging that they had read and understood that statement. The instrument itself, attached in Appendix E, consisted of a demographic component, the Critical Incident History Questionnaire (CIHQ, Weiss et al., 2010), the PTSD Checklist (PCL, Weathers, Litz, Huska, and Keane 1991), the Mississippi Scale for Combat-Related Posttraumatic Stress Disorder (Keane, Caddell, and Taylor, 1988), and the World Assumptions Scale (WAS, Janoff-Bulman, 1989). Permission to utilize the CIHQ and the WAS were obtained directly from their authors; ownership of the PCL and the Mississippi Scale lie in the public domain as they were developed by the United States Veteran's Administration.

The demographic component of the survey assessed basic information about each officer including gender, age, marital status, military veteran status, military combat experience, as well as his or her current employment status. If not currently serving as an officer the reason for departure from law enforcement service was ascertained. Information about each officer's law enforcement experience was gathered, including length of service, their current law enforcement role, their length of experience in different law enforcement roles and the type of environment in which they have performed their law enforcement duties. Officers were queried as to their experience in specialized enforcement functions that have been associated with different types of potential traumatic stressors, including having served as homicide investigators, crime scene processors, child exploitation investigators, computer forensic examiners, narcotics investigators, and having served in tactical units.

The CIHQ is an instrument designed to assess the exposure of police officers to job-related incidents that can be considered traumatic stressors. Officers identify the number of times that they've experienced each of the 34 listed incidents with either a number between zero and nine, or through selecting a range of 10-20, 21-50, or 51+. The instrument also permits officers to identify how difficult each experience should be for the average officer to cope with on a five point Likert scale designed to measure the severity of the exposure that each individual type of experience presents. This investigation applied two of the indices that the CIHQ's authors applied in their design of the measure. Officers' cumulative exposure to critical incidents was captured in the method described by the CIHQ's creators as "actual frequency", by using the reported actual number of incidents, or the midpoint of the number range if a range was selected by the officer. Critical incident exposure was also captured using the mechanism described as "variety" by the CIHQ's authors, in which the total number of different types of

stressors which an officer has experienced at least one time in their career is captured. The actual frequency method described by Weiss et al. was reported by the authors as having a very high level of internal consistency ($\alpha=.87$) and a test-retest correlation of .63, while the variety method of scoring the CIHQ also saw strong internal consistency ($\alpha=.75$) with a test-retest correlation of .66 (Weiss et al, 2010).

Levels of PTSD symptomatology were gauged using both the PCL-C (Civilian) and the Civilian Mississippi Scale for PTSD. The PCL is a 17-item instrument that allows participants to endorse the degree to which they are experiencing the various symptoms comprising the diagnostic criteria for PTSD as described by the DSM-IV. A report of “Moderately”, “Quite a bit”, or “Extremely” (three, four, and five respectively on the five-point Likert type scale which measures each response) is considered a positive endorsement of the presence of the symptom, and the instrument can be scored either through determining the numbers of symptoms that a participant reports, or through calculating a total score of all endorsed items. The PCL has been repeatedly determined to be a valid and reliable instrument to gauge traumatic stress symptomatology (Ruggiero, Del Ben, Scotti, and Rabilais, 2003, Orsilio, 2001), with a diagnostic correlation with the interview based Clinician Administered PTSD Scale of 0.93 (Blanchard, Jones-Alexander, Buckley, and Forneris, 1996)

For the purposes of this study a participant was classified as possibly suffering PTSD using the mechanism described by the authors of the PCL: reporting of at least a moderate level of at least one re-experiencing symptom, three avoidance symptoms, and two arousal symptoms. Officers were considered as expressing sub-threshold PTSD in the relatively conservative fashion defined by Blanchard et al. (1996b) and utilized by Cukor et al. (2010) in a law enforcement population; this method requires a participant to report at least one re-experiencing

symptom, and either at least three avoidance symptoms or two arousal symptoms. Blanchard et al.'s mechanism is the most commonly applied definition of subthreshold PTSD utilized in psychological research (Franklin, Sheeran, and Zimmerman 2002), and considered one of the more conservative estimates. It is worthy of note that the PCL applies the diagnostic criteria used by the fourth revision of the DSM (text revision), as opposed to the criteria introduced in 2013 with the release of the DSM-5. Despite the changes in the DSM, however, the PCL was employed in that it is a long-standing robust tool measuring PTSD symptomology, and some authors have noted a strong concordance with the DSM-5 diagnosis (Calhoun et al. 2012).

The Civilian Mississippi Scale for PTSD was also administered to each participant; this instrument is a 35-item measure employing a Likert scale allowing participants to report the degree to which they are experiencing psychological distress across a range of symptoms. The civilian version of the Mississippi Scale is derived from the Mississippi Scale for Combat Related PTSD, a measure that has demonstrated very high levels of validity and reliability (Keane, Caddell, and Taylor, 1988). Despite slightly lower precision in identifying PTSD, the civilian version of the measure has still proven effective (Norris and Perilla, 1996). Some authors have argued that it has the potential of returning elevated scores as a result of other types of psychological distress (Vreven, Gudanowski, and King, 1995), particularly when administered to subjects suffering depression and anxiety (Lauterbach, Vrana, King,, and King, 1997). Nonetheless, the scale remains one of the more commonly used and tested instruments in measuring PTSD symptomatology in civilian populations (Orsillo, 2001).

The WAS was also included in the survey instrument in order to capture the strength of each participants world assumptions. A 32-item instrument designed by Janoff-Bulman (1989) in order to operationalize the world assumptions her theory describes, the WAS has been found

to be a reliable measure, has been reported as having strong correlations with trauma severity, and found to have sufficiently strong psychometric properties to serve as an appropriate measure in research (Elklit, Shevlin, Solomon, and Dekel, 2007). The 32 questions of the WAS are divided into eight subscales, each of which gauges the strength of a respondent's component world assumptions. The Benevolence of the World and the Benevolence of People subscales were designed by Janoff-Bulman to measure elements of assumptions relating to the benevolence of the world. Factor analysis conducted by the author while developing the scale indicated that these two subscales were actually capturing the same information; both subscales were included in this study to maintain the WAS's original form and content, with the understanding that those eight questions served to capture information about the same component assumption. Janoff-Bulman's factor analysis confirmed that the remaining six subscales served to measure independent information, with three each measuring elements of the two remaining basic world assumptions. The assumption of the meaningfulness of the world is gauged by the subscales for Justice, Controllability, and Randomness; the basic assumption relating to the worthiness of the self is captured by the subscales relating to Self-Worth, Self-Controllability, and Luck. (Janoff-Bulman, 1989).

The literature illustrates two general mechanisms used by investigators to apply the WAS to field research. Some studies make observations based on the three world assumptions described by Janoff-Bulman by combining the component assumptions measured by the WAS. Other researchers utilize the eight subscales individually, as Janoff-Bulman did herself in her original work developing the scale. In order to provide a more granular observation of officers' world assumptions this study applied the latter methodology, and for the purposes of analysis each of the eight subscales described by Janoff-Bulman were examined.

The survey instrument concluded with an open ended question in which officers were asked if there was anything that they would like to add about their experiences in law enforcement, or how those experiences had affected them. No next limit was placed on this data field, and officers were afforded the opportunity to add any information which they felt relevant for the review of the principal investigator.

RESULTS

The online instrument was accessed by 1,571 participants during the 100 days of active data collection; of those participants 1,098 officers, or 70%, actually completed the instrument. It is noteworthy that several participants e-mailed the principal investigator while the study was underway to inform him that they had attempted to complete the online survey, but were unsuccessful in doing so because of their Internet web browser becoming unresponsive during completion of the instrument. As such it is likely that some of the incomplete instruments were the result of technical difficulties with the Internet site on which the survey was hosted, but it is unknown which participants chose to not complete the instrument, and which found themselves unable to do so. Only completed instruments were included in the data analysis. All data was exported from the Qualtrics web site in a format accessible to the SPSS Statistical package, and all analysis was conducted using SPSS version 22.0.

Of the 1,098 officers that completed the survey, 879 reported that they were actively working in the field of law enforcement at the time of their participation, and investigation was focused on these actively serving officers. Most of the officers were male (90.4%), and the majority reported that they were married (80.8%). 27.1% of respondents reported prior military service, and of those veterans 31.2% reported having experiencing combat while in the military. Tables 2, 3, and 4 demonstrate the demographic makeup of participating officers, and their current law enforcement role and work environment.

Table 2: Demographics (n=879)

Gender		
	Male	90.4%
	Female	9.6%
Age		$M=43.9 (SD=8.6)$
Years of Experience		$M=19.31 (SD=8.6)$
Marital Status	Single	8.2%
	Married	80.9%
	Separated	1.9%
	Divorced	8.7%
	Widowed	0.3%
Military Veteran		27.1%
Combat Veteran		8.4%
Law Enforcement Role	Patrol	35.8%
	Investigator	37.8%
	Corrections	0.7%
	Administrative	17.3%
	Other	6.9%
Type of Agency	Local	71.6%
	State	8.3%
	Federal	20.0%

Table 3: Sample's Specialized Work Experience

Duty Assignment	Officers with Experience	Years of Experience
SRT/Tactical Team	39.5%	$M=3.09 (SD=5.24)$
Homicide Investigations	23.7%	$M=1.35 (SD=3.50)$
Child Exploitation Investigations	24.6%	$M=1.31 (SD=3.03)$
Computer Forensics	10.5%	$M=0.64 (SD=2.36)$
Crime Scene Response	19.1%	$M=1.58 (SD=4.29)$
Narcotics Investigations	33.4%	$M=1.57 (SD=3.43)$

Table 4: Work Environment

Work Locale	Number of Years
Rural	$M=3.13 (SD=6.16)$
Suburban	$M=7.02 (SD=9.53)$
Urban	$M=9.72 (SD=4.17)$

Of the potentially traumatic critical incidents described by the CIHQ, officers reported having experienced an average of 188.87 incidents in the course of their career ($SD=157.20$), and an average of 15.78 ($SD=6.71$) different types of the 34 kinds of critical incidents included in the

CIHQ. Of the active duty officers completing the survey, 86 (9.8%) met the criteria for PTSD as described by the PCL. An additional 85 officers, or 9.7% of officers could be described as expressing subthreshold PTSD using the standard described by Blanchard et al. (1996). By way of comparison other investigators have described the prevalence of PTSD in the general population as between 1% and 7%; active duty officers do indeed seem to express the symptoms of the disorder at a rate higher than the general population, supporting the first hypothesis.

The different rates of membership in both the PTSD and subthreshold PTSD groups for each current duty assignment and type of agency identified in the survey are illustrated below in Table 5. When examining the type of agency that officers identified themselves as working for, 9.4% of officers that identified themselves as working for local agencies met the PCL diagnosis for PTSD, as did 8.2% of state officers and 11.9% of federal officers. 10% of local officers met the criterion for inclusion in the subthreshold PTSD group, as did 12.3% of local officers and 7.4% of federal officers. Chi-square analysis was conducted in order to test for differences in PTSD prevalence rates based on type employing agency, and no significant differences were discovered at the $p < .05$ level. Officers' current duty assignment was analyzed in the same way, and similarly no significance was noted at the $p < .05$ level in the relationship between an officers current law enforcement role, and their membership in either the PTSD or subthreshold PTSD group. The number of years of experience that an officer reports at those different functions, however, does have an impact on an officer's level of exposure to potential traumatic stressors. There was similarly no significant correlation between the number of years an officer had served in any particular law enforcement role and his or her scores on the PCL or the Mississippi Scale. Job assignment did, however, impact the number of critical incidents that an officer reported

having experienced. Reported length of service in patrol assignments was strongly correlated to both the CIHQ frequency ($r=.330$, $n=879$, $p<.01$) and CIHQ variety ($r=.443$, $n=879$, $p<.01$).

Table 5: Membership in PTSD and Subthreshold PTSD Groups Based on Agency Type and Current Work Assignment

Agency Type	PTSD	Subthreshold PTSD
Local	9.4%	10.0%
State	8.2%	12.3%
Federal	11.9%	7.4%
Duty Assignment		
Patrol	11.1%	11.1%
Investigator	10.8%	6.9%
Corrections	0.0%	16.7%
Invest. Support	0.0%	7.7%
Administrative	7.2%	11.8%
Other	6.6%	11.5%

Table 6: Measures of Critical Incidents and Traumatic Stress Reactions

	Mean	Std. Deviation
CIHQTotalFrequency	188.87	157.20
CIHQVariety	15.78	6.71
PCL Total Score	28.72	10.717
Mississippi Scale Total Score	75.16	16.59

Table 7: Specific Critical Incidents

Critical Incident	Percent of Officers Experiencing	Mean Frequency of Incident	SD
Being seriously injured intentionally	25.3	1.16	4.08
Being seriously injured accidentally	34.8	1.45	4.92
Being present when a fellow officer was killed intentionally	12.5	0.16	0.50
Being present when a fellow officer was seriously injured intentionally	38.7	1.69	4.72
Being present when a fellow officer was seriously injured accidentally.	41.0	1.99	4.85
Being present when a fellow officer was killed accidentally.	4.6	0.07	0.59
Being seriously beaten	11.5	0.34	1.83
Being taken hostage	1.6	0.05	0.64
Receiving threats towards your loved ones as retaliation for your police work	66.7	1.31	2.52
Being shot at	39.1	0.96	3.29
Being threatened with a gun	54.9	3.32	6.84
Being threatened with a knife or other weapon	66.7	5.00	8.69
Being trapped in a potentially life-threatening situation	38.7	2.94	7.66
Being exposed to serious risk of AIDS or other life-threatening diseases	70.3	8.17	13.03
Having your life threatened by an aggressive and dangerous animal	51.6	3.41	7.24
Being exposed to a life-threatening toxic substance	37.5	2.69	7.33
Having to kill or seriously injure someone in the line of duty	27.0	0.82	2.95
Having to shoot at someone in the line of duty, without injuring them	7.4	0.15	0.86
Making a mistake that lead to the serious injury or death of a fellow officer	1.4	0.03	0.53
Making a mistake that lead to the serious injury or death of a bystander	1.6	0.05	0.74
Being involved in a high-speed chase where lives were in danger	81.7	10.96	13.00
Seeing someone dying	83.2	11.40	13.42
Encountering the body of someone recently dead	90.2	24.58	18.48
Encountering a decaying corpse	75.4	11.52	14.26
Encountering a mutilated body or human remains	52.0	5.73	10.88

Critical Incident	Percent of Officers Experiencing	Mean Frequency of Incident	SD
Making a death notification	74.3	11.06	14.12
Encountering a child who had been sexually assaulted	75.1	12.20	15.44
Encountering a child who had been badly beaten	60.1	6.00	10.20
Encountering an adult who had been sexually assaulted	83.6	16.97	16.46
Encountering an adult who had been badly beaten	86.2	21.78	18.44
Encountering a child who was severely neglected or in dire need of medical attention because of neglect	63.0	8.22	12.27
Seeing animals that had been severely neglected, intentionally injured, or killed	75.9	10.92	13.26
Having your life endangered in a large-scale man-made disaster	30.6	1.27	3.93
Having your life endangered in a large-scale natural disaster	13.8	0.52	2.55

There was a great degree of variability in the frequency and variety of critical incidents described in the CIHQ that officers reported having experienced. Of particular note are stressors that have been highlighted in the literature as having particular impact on officers (Violanti and Aron, 1995, Breslau, 1999, Folette et al, 1994, Van Patten and Burke, 2001) 25% of officers reported having been injured intentionally, 12.5% reported having been present when another officer was killed. 66.7% of officers reported having had their loved ones threatened, 27% have had to kill or seriously injure another in the line of duty. In dealing with child victims 75.1% of officers have encountered a child who had been sexually abused, 60.1% a child who had been seriously beaten, and 63% a child who had been badly neglected.

While both the CIHQ Variety and Frequency of critical incidents that an officer has experienced was significantly correlated with an officer's length of law enforcement service ($r=.376$ and $.309$ respectively, $n=871$, $p < .01$ for both values), neither officers' PCL scores nor Mississippi Scale scores demonstrated a significant correlation with the amount of law

enforcement experience an officer possessed. Three subscales of the WAS showed significant correlation with the length of an officer’s tenure in law enforcement: Benevolence of the World ($r=.107$, $n=871$, $p=.002$), Benevolence of People ($r=.117$, $n=871$, $p=.001$), and Luck ($r=.111$, $n=871$, $p=.001$).

As anticipated by the second hypothesis, both the number and the variety of critical incidents that an officer has experienced is significantly correlated ($p<.01$) with both their scores on the PCL and the Mississippi Scale, affirming that the degree to which an officer is exposed to potential trauma is directly related to their expression of the symptoms of PTSD. These Pearson Correlation Coefficients are shown in Table 7.

Table 8: Correlations Between Critical Incident Exposure and Traumatic Stress

		CIHQ Total Frequency	CIHQ Variety	PCL	Mississippi Scale
CIHQ Total Frequency	Pearson Correlation	--	.720**	.186**	.149**
	Sig.		.000	.000	.000
CIHQ Variety	Pearson Correlation	.720**	--	.218**	.189**
	Sig.	.000		.000	.000
PCL Total Score	Pearson Correlation	.186**	.218**	--	.789**
	Sig.	.000	.000		.000
Mississippi Scale Total Score	Pearson Correlation	.149**	.189**	.789**	--
	Sig.	.000	.000	.000	

All Pearson’s Correlation Significances are 2-tailed

Seven of the eight subscales of the WAS were found to be significantly correlated with the symptom expression as measured by both the PCL and the Mississippi Scale ($p<.01$), confirming that those experiencing the symptoms of traumatic stress reactions hold weaker

assumptions of the benevolence and meaningfulness of the world, and the worthiness of the self. The sole exception was the scale measuring the perceived controllability of the world, which despite lacking statistical significance held a weak relationship with the PCL and the Mississippi Scale, $r=-.054$, $p=.111$ and $r=-.063$, $p=.061$ respectively. Table 8 illustrates the correlations between the component world assumptions and the expression of PTSD symptoms.

When examining the correlation between critical incident exposure and weakening of officers world assumptions, three of the subscales of the WAS were significantly correlated with scores on the CIHQ. The Controllability subscale was significantly related with CIHQ Variety ($p<.01$) and CIHQ Frequency ($p<.05$), the Randomness subscale with both CIHQ Variety and CIHQ Frequency ($p<.05$), and the Self-Controllability subscale with CIHQ Variety ($p<.01$); Self-Controllability was also weakly correlated with CIHQ Variety, with a significance of $p=.064$. As such, elements of what Janoff-Bulman (1989) defines as assumptions of the Meaningfulness of the World and the Worthiness of the Self are significantly weakened with increased exposure to law enforcement critical incidents, in support of the third hypothesis.

Table 9: Correlations Between WAS Subscales, Symptom Expression, and Critical Incidents

		PCL Total Score	Mississippi Scale Total Score	CIHQ Variety	CIHQ Total Frequency
Benev. of the World Score	Pearson Correlation	-.262**	-.330**	.010	.000
	Sig.	.000	.000	.772	.994
Benev. of People Score	Pearson Correlation	-.285**	-.343**	-.043	-.049
	Sig.	.000	.000	.201	.148
Justice Score	Pearson Correlation	-.118**	-.105**	.057	.021
	Sig.	.000	.002	.091	.532
Controllability Score	Pearson Correlation	-.054	-.063	.117**	.070*
	Sig.	.111	.061	.000	.038
Randomness Score	Pearson Correlation	.104**	.117**	-.069*	-.080*
	Sig.	.002	.001	.041	.018
Self-Worth Score	Pearson Correlation	-.370**	-.434**	-.043	-.035
	Sig.	.000	.000	.203	.301
Self-Controllability Score	Pearson Correlation	-.090**	-.136**	.093**	.062
	Sig.	.008	.000	.006	.064
Luck Score	Pearson Correlation	-.094**	-.129**	.009	-.006
	Sig.	.005	.000	.801	.859

All Pearson Correlation Significances are 2-tailed

In order to evaluate the validity of the fourth hypothesis independent sample t-tests were conducted comparing the WAS subscales of officers that reported sufficient symptom expression on the PCL to merit a PTSD diagnosis with the scores of those that did not. There were significant differences at $p < .01$ for the scales measuring assumptions regarding the Benevolence of the World, the Benevolence of People, Justice, Self-Worth, and Luck. The difference was significant at $p = .017$ for Self-Controllability. The WAS scores for the two groups are shown in Table 9, and Table 10 displays the t-test results comparing the PTSD group with the non-PTSD group. Only assumptions regarding the Randomness of the World and Controllability did not differ significantly between the two groups.

Table 10: World Assumptions for PTSD and Non-PTSD Groups

	PCL Diagnosis	N	Mean	Std. Deviation	Std. Error Mean
Benevolence of the World Score	Yes	86	14.59	4.473	.482
	No	793	17.21	3.993	.142
Benevolence of People Score	Yes	86	14.31	3.820	.412
	No	793	16.98	3.469	.123
Justice Score	Yes	86	12.27	3.316	.358
	No	793	13.58	3.275	.116
Controllability Score	Yes	86	14.95	3.662	.395
	No	793	15.75	3.086	.110
Randomness Score	Yes	86	12.67	3.812	.411
	No	793	12.12	3.706	.132
Self-Worth Score	Yes	86	18.44	4.513	.487
	No	793	20.86	3.205	.114
Self-Controllability Score	Yes	86	17.88	3.201	.345
	No	793	18.65	2.784	.099
Luck Score	Yes	86	13.70	4.478	.483
	No	793	15.40	3.834	.136

Table 11: Independent Samples t-Test for PTSD vs. Non-PTSD Groups

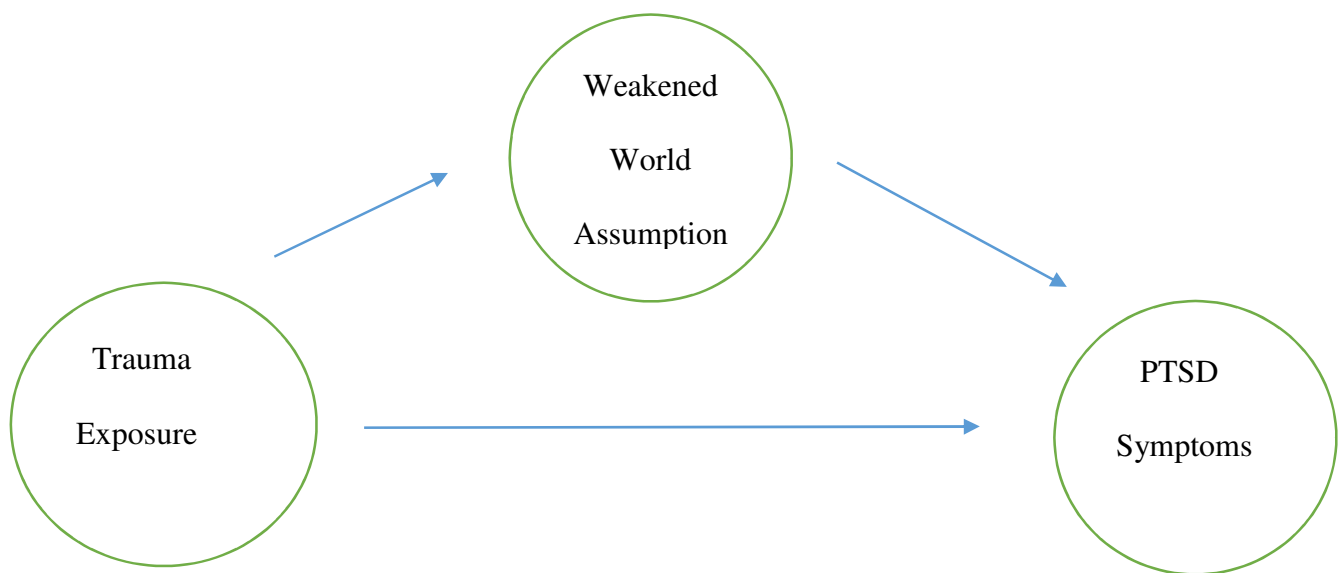
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Diff.	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Benevolence of the World Score	EA	1.448	.22	-5.698	877	.000	-2.615	.459	-3.516	-1.714
	ENA			-5.201	100.247	.000	-2.615	.503	-3.612	-1.618
Benevolence of People Score	EA	2.531	.112	-6.713	877	.000	-2.671	.398	-3.452	-1.890
	ENA			-6.212	100.797	.000	-2.671	.430	-3.524	-1.818
Justice Score	EA	.530	.467	-3.512	877	.000	-1.308	.372	-2.038	-.577
	ENA			-3.477	103.808	.001	-1.308	.376	-2.053	-.562
Controllability Score	EA	4.564	.033	-2.231	877	.026	-.797	.357	-1.498	-.096
	ENA			-1.944	98.535	.055	-.797	.410	-1.610	.016
Randomness Score	EA	.249	.618	1.305	877	.192	.551	.422	-.277	1.379
	ENA			1.276	103.210	.205	.551	.432	-.305	1.407
Self-Worth Score	EA	25.448	.000	-6.357	877	.000	-2.421	.381	-3.168	-1.673
	ENA			-4.843	94.523	.000	-2.421	.500	-3.413	-1.428
Self-Controllability Score	EA	1.716	.191	-2.386	877	.017	-.766	.321	-1.396	-.136
	ENA			-2.133	99.448	.035	-.766	.359	-1.478	-.053
Luck Score	EA	2.965	.085	-3.838	877	.000	-1.700	.443	-2.569	-.830
	ENA			-3.388	98.985	.001	-1.700	.502	-2.695	-.704

EA indicates Equal variances assumed – ENA indicates Equal variances not assumed

Further analysis was conducted in order to determine whether weakened world assumptions played a mediating role on the relationship between exposure to critical incidents and the expression of traumatic stress reactions. As demonstrated in Table 8 above, the variety of an officer’s exposure to critical incidents as captured by CIHQ-Variety predicts their weakened assumptions of Controllability, Randomness, and Self-Controllability; critical incident exposure was also demonstrated to predict the expression of PTSD symptoms among officers, demonstrated in Table 7. Weakened assumptions relating to Self-Controllability and

Randomness predicted the expression of the symptoms of PTSD as well, demonstrated in Table 8. These observations align with World Assumptions Theory and appear to describe a model in which these assumptions of the worthiness of the self (through Self-Controllability) and the meaningfulness of the world (captured by Randomness) serve as mediators in the expression of traumatic stress symptoms.

This statistical model of mediation was tested utilizing the PROCESS script in SPSS authored and described by Hayes (2013), and applying a nonparametric bootstrapping procedure considered advantageous in testing for mediation in that it doesn't rely on the assumption of a normal distribution of data (Preacher and Hayes, 2004, Hayes, 2013). Analysis confirmed that weakened assumptions of both Self-Controllability and Randomness served as mediators in the effects of increased exposure to critical incidents leading to increased expression of the symptoms of PTSD with 95% bootstrap confidence levels, with 10,000 random bootstrap samples tested for each model. The model tested in the PROCESS script for both of these mediation effects was that of classic mediation, described by Hayes as Model 4, or graphically:



The model was tested using CIHQ-Variety to operationalize trauma exposure, the Randomness and the Self-Controllability scores from the WAS to test the relevant cognitive schemata respectively, and officers' PCL scores to capture their level of PTSD symptom expression, and the results of the PROCESS script for the mediation effects of the self-controllability and randomness subscales of the WAS are displayed in Appendix C and Appendix D respectively.

DISCUSSION

PTSD Expression and Critical Incidents

This study examined the effects of critical incidents on law enforcement officers, and the relationship between those traumatic stressors, officers' basic assumptions about the nature of the world, and the expression of the symptoms of post-traumatic stress disorder. A total of 9.8% of active officers reported experiencing symptoms to the extent that they could be diagnosed with PTSD, and another 9.7% of officers reported sufficient psychological distress to be classified as expressing subthreshold PTSD. These findings are consistent with a number of studies found in the literature which describe the prevalence of PTSD among law enforcement personnel as higher than that found in the general population (Carlier et al, 1997, Robinson et al, 1997). Despite the fact that the study design was intended to reduce participant minimization of their psychological distress for fear of negative implications in the workplace, PTSD symptoms were not reported at a markedly different rate than in studies which utilized officers' employing agencies to assist in the identification of research participants. This observation speaks to the fact that despite the fact that both police culture and individual officer concerns would seem to increase the likelihood of underreporting psychological symptoms, these factors do not appear to play a role in participant response; earlier observations of the presence of traumatic stress symptoms in the population would seem to be validated. Officers do not appear to under report psychological distress or symptomatic behavior even when participating in studies that are endorsed and supported by their command structures and employing agencies.

Participating officers demonstrated a great degree of variability in both the total number and the variety of critical incidents that they reported having experienced over the course of their career via the CIHQ. While the mean number of 188.87 critical incidents officers reported having experienced in their careers was extremely high, the standard deviation of 157.2, skewness of 1.2, and kurtosis of 1.4 describe a distribution in which the majority of officers experience significantly fewer than the mean number of critical incidents. This observation could be explained by the fact that this study included investigative personnel, including many with no experience working in a patrol law enforcement function. The kind of incidents described by the CIHQ are substantially more often encountered by patrol law enforcement, and the inclusion of purely investigative personnel offers one possible explanation of the observed skew of the distribution.

Some events considered to be more significant critical incidents were experienced by a majority of officers, such as encountering a child that had been sexually abused (75.1%), assaulted (60.1%), or beaten (63%), all significant in that officers have reported that dealing with child victims is one of the more impactful elements of law enforcement work (Van Patten and Burke, 2001, North et al., 2002, Perez et al., 2010). Less common but still far from rare were the two critical incidents found to be most impactful to officers (Violanti and Aron, 1995): losing a colleague to violence in the line of duty (12.5%) and having to seriously injure or take the life of another in the course of an officer performing his or her duties (27%).

A cumulative effect of repeated exposure to critical incidents was found to be significantly related to PTSD symptom expression in concordance with the commonly held consensus in the literature (Norris, 1992, Brunet et al., 2001), and contradictory to the findings of Weis et al. (2010) in their development of the CIHQ. In their study of 719 police officers from

several different large jurisdictions around the United States those authors did not observe a cumulative effect of critical incidents, nor have some other authors in their examination of law enforcement (Hodgin et al, 2001).

Given the range of critical incidents that officers that work in a patrol capacity are exposed to, its unsurprising that the number of years that an officer has served in a patrol function was significantly related with both the frequency and variety of critical incidents that he or she report having been exposed to, and this demonstrates some concordance with the findings of Violanti and Aron (1995). Those authors found that patrol officers reported critical incidents as the most stressful component of their job, while supervisory and investigative personnel found administrative and organizational stressors to be more impactful. No relationship was found between the length of service in any particular law enforcement role and the expression of traumatic stress symptoms, however. It is extremely common for law enforcement officers to begin their career in a patrol capacity, and transition to roles such as investigation, administration, or support; these later functions often include a more stable working environment and employment schedule. This path is demonstrated by the fact that 88% of the officers studied reported having spent at least one year serving in a patrol capacity during their law enforcement career. There is certainly an indication that cumulative exposure to critical incidents play a significant role in an officer's expression of the symptoms of PTSD. Officers currently serving in a patrol capacity were not more likely to be classified in the PTSD group, but exposure to a greater number of critical incidents over an officer's career was related to PTSD symptom expression.

Officers' World Assumptions

With increased exposure to a greater number and variety of different types of traumatic stressors, officers saw significant changes in the cognitive schemata describing their assumptive worlds. The assumption of the meaningfulness of the world was shown to be affected through a diminishing of the belief that officers can control the world around them, and that outcomes are not distributed randomly; the generally held assumptions that things happen to people according to their due is affected as a result of officers experiences. Officers' assumptions of self-worth are also weakened as a result of their work-related operational experiences, as is evinced by the decrease in their self-controllability subscale of the WAS, a measure of the belief that they are the "type of people who engage in appropriate, precautionary behaviors" (Janoff-Bulman, 1989, p. 120).

The notion that the type of stressor that a person experiences can dictate specific changes to assumptive worlds (Elkit et al, 2007) would seem to mesh with the observed changes to officers' world assumptions, particularly considering their career roles and identities, and the nature of their repeated exposure to critical incidents. Officers are expected to deal with unsavory situations and serve as the emissary of the state in righting wrongs, helping those that are in need, and preventing harm from coming to law abiding civilians; the role identity imposed by the police culture provides an illusion of control and invulnerability (Violanti, 1996). It stands to reason that repeated exposure to incidents in which officers deal with suffering and in which they are unable to effect safe and consistent positive change in those they encounter would lead to shifts in their cognitive schema regarding their ability to control the world around them, their efficacy in making the right choices to effect that control, and the role of randomness in

providing outcome to civilians and other officers that are injured, killed, and otherwise victimized.

The cognitive framework of officers was not only affected by their exposure to critical incidents, but their assumptions about the world also played a role in their expression of the symptoms of PTSD. The strength of officers world assumptions as measured by the WAS was negatively correlated with their psychological discomfort – six of the eight WAS subscales were significantly correlated at $p < .05$, excepting the Controllability subscale which still demonstrated a strong correlation ($p = .06$). Previous findings that stronger world assumptions buffered victims from the negative ramifications of traumatic exposure (Goldenburg and Matheson, 2005) are confirmed by this work, and further support is lent to the interactional model in which traumatic experiences affect the cognitive schema of victims, which in turn impact the victims' future coping mechanisms and perception of other potentially traumatic events.

Limitations of the Study

One limitation of this investigation involves a reliance on self-report instruments in identifying levels of PTSD symptom expression, as well as requiring participants to attempt to recall what may have been a large number of events which have occurred over the course of lengthy careers. There have been indications that even the most validated self-report instruments designed to measure the symptoms of PTSD capture other forms of psychological distress, or even normal daily stress reactions (Shapinsky, Rapport, Henderson, and Axelrod, 2005), but

unfortunately no other form of measuring PTSD symptomatology would have been in keeping with the anonymous online format which was the intent of this project.

Another limitation of the study is its dependence on a single instrument to suggest the possible diagnosis of PTSD. Despite its extensive use, the PCL has been criticized for its application in PTSD research, and some authors have questioned its ability to diagnose the disorder with specificity, particularly at the relatively low cutoff scores some projects apply in determining a diagnosis of PTSD (McDonald and Calhoun, 2010). Critical analysis of the instrument has suggested the success of a score of three on each item to identify the presence of a symptom in a participant, and a total cutoff score of 50 for the use of the combat version of the PCL with veterans (Forbes, Creamer, and Biddle, 2001). Given the questions regarding the less conservative mechanism of applying total scores in using the PCL to diagnose possible PTSD, this study adhered to the practice of depending on symptom endorsement of “moderate” or greater in interpreting PCL results; nonetheless, the present work lacks the ability to definitively affirm that those officers classified as expressing PTSD are indeed suffering from the disorder, and that they are not suffering from other related psychopathology and expressing symptoms which might parallel those of PTSD. While the inclusion of the Mississippi Scale as a corroborating measure serve to allay some of these concerns, that since that instrument scale has itself raised concerns that it lack specificity for the disorder, it fails to eliminate those concerns altogether.

Beyond the issue of only using one tool to classify an officer in the PTSD group, a further limitation of the study was the inability to affirmatively diagnose the disorder using a simple report of symptoms. The measures used to classify participants into the PTSD and subsyndromal PTSD groups in this study are not tools that permit the affirmative diagnosis of the disorder. A

more focused study that would include a more intensive and accurate interview of each participant by trained psychological professionals would allow for a more definitive classification as to whether an officer is suffering from current PTSD. No attempt was made in this study to confirm that symptoms had gone on for more than one month's time, that officers were significantly distressed or impaired in their ability to function by their symptoms, or that the symptoms were not resulting from other medical conditions or from the effects of a controlled substance. These criteria are also required in the DSM-5 (APA, 2013) for a patient to be diagnosed with PTSD, and as such it is important to note that officers that are classified in the PTSD group are so assigned simply on the basis of symptom expression, not on a diagnosis by a psychological professional. Future studies that employ extended interviews with trained administrators would eliminate that discrepancy, and would provide a much more accurate understanding of the presence of PTSD in a population of law enforcement officers.

While intended to provide insights into difficulties in collecting data involving officer self-reports when their employing agency is involved in research subject identification, the mechanism of sampling utilized imposes limitations on the generalizability of findings to the population of law enforcement officers as a whole. There may well be significant differences between officers that self-select to participate in research of this type, and research participation was certainly limited to those officers that were part of the convenience sample, those that were contacted by colleagues, and those that participated in the mailing lists to which the survey request was distributed. These threats to the external validity of the study were accepted in order to study this hard to reach population by minimizing the threat to internal validity presented by officers possible reticence in answering sensitive psychological questions.

These concerns that other studies have suffered threats to their internal validity through the confounding of officer privacy concerns in such a manner appear to be unfounded, at least insofar as general rates of PTSD symptom expression appear to be consistent between this project, and other work in the literature in which officers are studied with the cooperation of their employers. Further work is indicated in which two groups of officers are studied, one sampled randomly from a closed population with the cooperation of their employer, and one identified in a mechanism similar to the one employed in this research. Similar results in the two groups would certainly answer concerns about the threats to the internal validity and external validity of each method of subject selection respectively.

Implications for Future Research and Policy

The differences between changes in officers' assumptive worlds and the world assumptions of other populations studied in the literature would seem to indicate the need for further examination of the experiences of law enforcement officers. A more detailed examination of officers that were profoundly affected by specific types of traumatic stressors, and ways that different world assumptions have been affected seems to be warranted. Law enforcement officers are a unique group in that they are exposed to such a wide range of different potentially traumatic events, and that risk of exposure can continue over decades through the course of an officer's career. Given the fact that different types of critical incidents seem to impact different elements of officers' assumptive worlds, a more granular review of experiences and their effects would contribute greatly to an understanding of the interplay

between the traumatic event and the way an officer thinks about the world, and the effects both have on their psychological well-being.

Though not a new notion in the literature, one of the most poignant findings of this study is that nearly 20% of active law enforcement officers are expressing psychological distress at a level meeting the full symptomatic diagnostic criteria of PTSD, or at a level qualified as subthreshold PTSD even when considered using very conservative standards. Numerous authors have remarked at the challenges presented to those suffering PTSD and subthreshold PTSD, including (as described in summary by Cukor et al., 2010) associated risk of suicide, increased alcohol use, social withdrawal, issues with anger and aggression, and increased use of the healthcare system and absence from the workplace. At a humanistic level these observations demonstrate traumatic stress reactions to be a major issue in the law enforcement community. Officers are exposed to critical incidents at the behest of their governments, employing agencies, and the populaces they serve, yet entertain a significant risk of associated damage to their psychological well-being. Nearly by definition, the critical incidents described by the CIHQ are experiences that risk damage to the physical or psychological well-being of officers. These exposures occur because their roles define them as the representatives of the people they serve in facing these experiences so that civilians don't have to. The officers' levels of psychological discomfort captured by this study make it clear that current mechanisms in place to assist officers in dealing with the stressors they endure in their jobs are insufficient. There is no other way to interpret the fact that nearly one-fifth of active officers are suffering the negative ramifications of their experiences.

From a public health and economic policy perspective, these figures are equally important. Those that experience both PTSD and subsyndromal PTSD are at increased risk of a

wide range of other physical and psychological ailments. Although there's no comprehensive resource that documents the total number of state, federal, and local officers currently serving in the United States, the National Law Enforcement Officers Memorial Fund indicates that there are over 900,000 active law enforcement officers in the United States (National Law Enforcement Officers Memorial Fund, 2016). With such a large number of officers at risk of suffering with traumatic stress reactions, there is a substantial potential cost to their employing agencies and the healthcare system tasked with caring for them.

The different types of stressors that are most powerful for officers are very different in their nature, and different officer roles can certainly lead to variable rates of exposure to these critical incidents. Further analysis of specific stressors, such as exposure to child victims, more intense exposure to interpersonal violence, and those officers that have been subject to having to kill another person, would also be enlightening. Additional research regarding the differences in the way that different critical incidents may impact different world assumptions could provide valuable insights into specific shifts in those cognitive schema.

This investigation did not attempt to identify how many officers were in treatment for traumatic stress reactions, or engaged in any services provided to officers in support of their psychological health. Insights into the efficacy of formal mechanisms such as peer support programs, employee assistance programs, and programs to monitor the psychological well-being of officers seems to be even more important given the extent to which officers are at risk for experiencing traumatic stress reactions nationwide.

APPENDIX A

Solicitation E-mail

As those of you that know me are probably aware, I've been studying at the City University of New York pursuing a doctoral degree in criminal justice. The topic that I'm currently researching involves the effects of stressful experiences on law enforcement officers, and the way that those experiences affect the way that officers think and feel. The study is being conducted at the John Jay College of Criminal Justice, and I'm hoping that you will consider completing a questionnaire as part of this study.

For those of you that don't know me, I'm a full time law enforcement officer with over twenty years of service, and that has affected the way that I've chosen to find officers that might be willing to complete my survey.

Most studies involving officers are conducted with the cooperation of law enforcement agencies and police departments. It's hard for me to believe that officers and agents would feel comfortable answering questions about their experiences if the research is coordinated through the agencies in which they serve. With that in mind, this study is being conducted through referrals from one officer to another. If you are a current or former law enforcement officer, I need your help, and your participation would be greatly appreciated. My hope is that by as many officers as possible completing this survey I might be able to add to the understanding of how a career in law enforcement affects officers, and work towards identifying ways in which officers who have been negatively affected might be able to be helped.

If you're willing to participate, please click the link below and read a brief description of the research. If you know any other current or former state, federal, or local officers who might be willing to participate, I would greatly appreciate you forwarding this message along to them—I'm depending on the assistance of other officers in passing my questionnaire along to make the study a success.

Thanks,

Doug Green

APPENDIX B

Statement of Informed Consent

CITY UNIVERSITY OF NEW YORK
John Jay College of Criminal Justice
Department of Criminal Justice

CONSENT TO PARTICPATE IN A RESEARCH PROJECT

Project Title: Stress, World Assumptions, and Law Enforcement Officers

Principal Investigator: *Douglas Green*

Doctoral Candidate

John Jay College of Criminal Justice

Department of Criminal Justice

524 West 59th Street

New York, NY 10019

Faculty Advisor: *Louis Schlesinger*

Professor

John Jay College of Criminal Justice

Department of Criminal Justice

524 West 59th Street

New York, NY 10019

Site where study is to be conducted: On the Internet at www.qualtrics.com.

Introduction/Purpose: You are invited to participate in a research study of how law enforcement work affects officers and the way that they look at the world. The study is conducted under the direction of Douglas Green, a graduate student at the John Jay College of Criminal Justice. The purpose of this research study is to gather information about what officers experience in the course of their careers, and the effects that these experiences have on the way officers think and feel. The results of this study may help officers that are experiencing psychological consequences of stressful job experiences, and allow a better understanding of all people that suffer negative effects after experiencing stressful events.

Procedures: Approximately 1,000 individuals are expected to participate in this study. Each subject will participate in one online survey. The time commitment of each participant is expected to be approximately 30 minutes. You will be guided through a series of web pages that ask you questions about your law enforcement career, what you have experienced, and some of your feelings about the nature of the world, and about yourself. After you have completed this survey your participation in the project is complete.

Possible Discomforts and Risks: This questionnaire will ask about a number of events that are unpleasant or can be considered critical incidents, and will ask you how you feel about these experiences or how they have affected you. If you are suffering ill effects after having had a stressful experience there is the chance that completing this questionnaire might make you feel anxious or uncomfortable. If you experience discomfort and would rather stop taking the survey, you can stop at any time. The last page of this survey contains resources which can provide you more information about reactions to critical incidents, and how you can receive help if you need it.

Benefits: By completing the questionnaire you don't stand to receive any direct benefits, but the information gained through the study can be used in the long run to help other officers that are experiencing psychological consequences of stressful job experiences, help agencies determine the best ways to train and prepare new officers for the stresses of their jobs, and even help others who aren't involved with law enforcement who are dealing with the effects of serious life stresses.

Voluntary Participation: Your participation in this study is voluntary, and you may decide not to participate without prejudice, penalty, or loss of benefits to which you are otherwise entitled. You have the right to withdraw from participation in the study after you've begun, or to choose to not respond to specific questions.

Confidentiality: The data obtained from you will be collected using an Internet based survey. The collected data will be accessible to the principal investigator, faculty of the John Jay Criminal Justice's Criminal Justice Program, and members of the City University of New York Human Research Protection Program. The researcher will protect your confidentiality through the fact that no personally identifying information about you will be collected, and no efforts will be made to attempt to determine your identify. No question in the survey asks you your name, where you live, or any personal information about you. The collected anonymous data will be stored on the www.qualtrics.com web site, on the computer systems of the City University of New York, and on the computer systems of the researcher.

Contact Questions/Persons: If you have any questions about the research now or in the future, you should contact the Principal Investigator, Douglas Green, at dogreen@jjay.cuny.edu or (267) 714-8004. If you have any questions concerning your rights as a participant in this study, you may contact the John Jay College Human Research Protection Program Coordinator, Carina Quintian, at jj-irb@jjay.cuny.edu or (212) 237-8961.

Statement of Consent:

"I have read the above description of this research and I understand it. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction.

Furthermore, I have been assured that any future questions that I may have will also be answered by the principal investigator of the research study. I voluntarily agree to participate in this study.

APPENDIX C

PROCESS Results Measuring Mediation of Randomness Score on the Effect of CIHQ

Variety on PCL Score

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.13 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2013). www.guilford.com/p/hayes3

Model = 4

Y = PCLScore

X = CIHQVrty

M = SControl

Sample size

879

Outcome: SControl

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	.0934	.0087	7.9742	7.7148	1.0000	877.0000	.0056

Model

	coeff	se	t	p	LLCI	ULCI
constant	17.9523	.2434	73.7502	.0000	17.4746	18.4301
CIHQVrty	.0394	.0142	2.7776	.0056	.0116	.0673

Outcome: PCLScore

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	.2446	.0598	108.2316	27.8624	2.0000	876.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	30.7794	2.4067	12.7892	.0000	26.0559	35.5029
SControl	-.4208	.1244	-3.3822	.0008	-.6649	-.1766
CIHQVrty	.3647	.0525	6.9415	.0000	.2616	.4678

***** TOTAL EFFECT MODEL

Outcome: PCLScore

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2180	.0475	109.5199	43.7643	1.0000	877.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	23.2258	.9021	25.7460	.0000	21.4552	24.9963
CIHQVrty	.3481	.0526	6.6155	.0000	.2448	.4513

***** TOTAL, DIRECT, AND INDIRECT EFFECTS

Total effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.3481	.0526	6.6155	.0000	.2448	.4513

Direct effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.3647	.0525	6.9415	.0000	.2616	.4678

Indirect effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
SControl	-.0166	.0083	-.0383	-.0042

Partially standardized indirect effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
SControl	-.0015	.0008	-.0036	-.0004

Completely standardized indirect effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
SControl	-.0104	.0052	-.0241	-.0027

Ratio of indirect to total effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
SControl	-.0477	.0265	-.1192	-.0115

Ratio of indirect to direct effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
SControl	-.0455	.0236	-.1065	-.0113

R-squared mediation effect size (R-sq_med)

	Effect	Boot SE	BootLLCI	BootULCI
SControl	-.0042	.0022	-.0102	-.0011

Preacher and Kelley (2011) Kappa-squared

	Effect	Boot SE	BootLLCI	BootULCI
SControl	.0111	.0056	.0029	.0260

***** ANALYSIS NOTES AND WARNINGS

Number of bootstrap samples for bias corrected bootstrap confidence intervals:

10000

Level of confidence for all confidence intervals in output:

95.00

----- END MATRIX -----

APPENDIX D

PROCESS Results Measuring Mediation of Self-Controllability Score on the Self

Controllability Effect on PCL Score

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.13 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2013). www.guilford.com/p/hayes3

Model = 4

Y = PCLScore

X = CIHQVrty

M = Random

Sample size

879

Outcome: Random

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	.0690	.0048	13.7749	4.1919	1.0000	877.0000	.0409

Model

	coeff	se	t	p	LLCI	ULCI
constant	12.7803	.3199	39.9468	.0000	12.1524	13.4082
CIHQVrty	-.0382	.0187	-2.0474	.0409	-.0748	-.0016

Outcome: PCLScore

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	.2484	.0617	108.0111	28.8131	2.0000	876.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	18.8268	1.5043	12.5152	.0000	15.8744	21.7793
Random	.3442	.0946	3.6401	.0003	.1586	.5298
CIHQVrty	.3612	.0524	6.8967	.0000	.2584	.4640

***** TOTAL EFFECT MODEL *****

Outcome: PCLScore

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2180	.0475	109.5199	43.7643	1.0000	877.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	23.2258	.9021	25.7460	.0000	21.4552	24.9963
CIHQVrty	.3481	.0526	6.6155	.0000	.2448	.4513

***** TOTAL, DIRECT, AND INDIRECT EFFECTS *****

Total effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.3481	.0526	6.6155	.0000	.2448	.4513

Direct effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.3612	.0524	6.8967	.0000	.2584	.4640

Indirect effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
Random	-.0132	.0070	-.0312	-.0026

Partially standardized indirect effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
Random	-.0012	.0007	-.0029	-.0002

Completely standardized indirect effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
Random	-.0082	.0044	-.0194	-.0016

Ratio of indirect to total effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
Random	-.0378	.0231	-.1009	-.0065

Ratio of indirect to direct effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
Random	-.0364	.0210	-.0916	-.0064

R-squared mediation effect size (R-sq_med)

	Effect	Boot SE	BootLLCI	BootULCI
Random	-.0034	.0018	-.0083	-.0008

Preacher and Kelley (2011) Kappa-squared

	Effect	Boot SE	BootLLCI	BootULCI
Random	.0089	.0047	.0019	.0211

***** ANALYSIS NOTES AND WARNINGS *****

Number of bootstrap samples for bias corrected bootstrap confidence intervals:

10000

Level of confidence for all confidence intervals in output:

95.00

----- END MATRIX -----

APPENDIX E -- Instrument

Labels in italics are for identification purposes, and will not be included

This is a survey for current and former law enforcement officers if you have never been employed as an officer please do not complete it.

Please answer the below questions. If you prefer not to answer a question you may leave it blank, but please attempt to answer them all.

Demographic Instrument

How old are you?

How many years of law enforcement experience do you have?

What is your gender (Male/Female)?

What is your marital status (Single/Married/Separated/Divorced/Widowed)?

Are you military veteran? (Yes/No)

If you are a veteran, did you experience combat? (Yes/No)

Are you currently employed as a law enforcement officer? (Yes/No)

If you are no longer an active officer, why did you leave law enforcement?

(Retired/Disabled/Change of Career)

If you are no longer an active officer how many years has it been since you've been one?

Which category of work best describes your current assignment? If you're not currently

an officer, please list your last assignment.(Patrol/Investigator/Corrections

Officer/Investigative Support/Administrative/Not an active officer/Other)

How many years have you been in your most recent position (if less than one, please enter 1)?

Do you work in the United States?

If so, what state do you work in (Two Letter Postal Code)?

If not, what country do you work in?

What type of agency do you work for? (Local/State/Federal)

Approximately how many years have you spent in each of the following roles:

Patrol?

Corrections Officer?

Investigator?

Offender Monitoring (Probation/Parole/Removal)?

How many years of your career have you spent in a supervisory position?

If you have ever served in any of the following specialized roles, please enter the number of years you've done so:

Special Response Team/SWAT Team?

Homicide investigations?

Child Exploitation Investigations?

Computer forensics?

Crime scene?

Narcotics Investigations?

Please enter the number of years of your career that you've worked in the following type of localities:

Rural?

Suburban?

Urban?

Critical Incident History Questionnaire (Weiss et al.)

Below is a list of critical incidents to which police officer may be exposed at sometime during their career. Please read each item and in the left-hand column, give your best estimate of the number of times that you have personally experienced that incident *in the line of duty*. Next, in the right-hand column, 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.

Please indicate how many times you have experienced each incident in the line of duty by writing in the box the number if it is between 0 and 9, OR if it is more than 10, by circling the appropriate numeric range.

In your opinion, how difficult would it be for police officers to cope with this type of incident?

	Not at all	A little bit	Mod-erately	Quite a bit	Extre-mely
1. Being seriously injured intentionally.	0	1	2	3	4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

2. Being seriously injured accidentally.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

3. Being present when a fellow officer was killed intentionally.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

4. Being present when a fellow officer was seriously injured intentionally.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

5. Being present when a fellow officer was seriously injured accidentally.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

6. Being present when a fellow officer was killed accidentally.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

7. Being seriously beaten.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

8. Being taken hostage.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

9. Receiving threats towards your loved ones as retaliation for your police work.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

10. Being shot at.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

11. Being threatened with a gun.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

12. Being threatened with a knife or other weapon.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

13. Being trapped in a potentially life-threatening situation.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

14. Being exposed to serious risk of AIDS or other life-threatening diseases.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

15. Having your life threatened by an aggressive and dangerous animal.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

16. Being exposed to a life-threatening toxic substance.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

17. Having to kill or seriously injure someone in the line of duty.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

18. Having to shoot at someone in the line of duty, without injuring them.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

19. Making a mistake that lead to the serious injury or death of a fellow officer.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

20. Making a mistake that lead to the serious injury or death of a bystander.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

21. Being involved in a high-speed chase where lives were in danger.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

22. Seeing someone dying.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

23. Encountering the body of someone recently dead.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

24. Encountering a decaying corpse.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

25. Encountering a mutilated body or human remains.

Write in if
from 0 - 9 10 - 20 21 - 50 51+

0 1 2 3 4

26. Making a death notification.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

27. Encountering a child who had been sexually assaulted.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

28. Encountering a child who had been badly beaten.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

29. Encountering an adult who had been sexually assaulted.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

30. Encountering an adult who had been badly beaten.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

31. Encountering a child who was severely neglected or in dire need of medical attention because of neglect.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

32. Seeing animals that had been severely neglected, intentionally injured, or killed.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

33. Having your life endangered in a large-scale man-made disaster.

0 1 2 3 4

Write in if
from 0 - 9 10 - 20 21 - 50 51+

34. Having your life endangered in a large-scale natural disaster.

Write in if
from 0 - 9 10 – 20 21 – 50 51+ ⋮

World Assumptions Scale (Janoff-Bulman)

Use the scale below to indicate your response to Questions 1 to 32 listed below.

- | | |
|-------------------------|----------------------|
| 1 – Strongly Disagree | 4 – Slightly Agree |
| 2 – Moderately Disagree | 5 – Moderately Agree |
| 3 – Slightly Disagree | 6 – Strongly Agree |

- | | | | | | | |
|---|---|---|---|---|---|---|
| 1. Misfortune is least likely to strike worthy, decent people. | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. People are naturally unfriendly and unkind. | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. Bad events are distributed to people at random. | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. Human nature is basically good. | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. The good things that happen in this world far outnumber the bad. | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. The course of our lives is largely determined by chance. | 1 | 2 | 3 | 4 | 5 | 6 |
| 7. Generally, people deserve what they get in this world. | 1 | 2 | 3 | 4 | 5 | 6 |
| 8. I often think I am no good at all. | 1 | 2 | 3 | 4 | 5 | 6 |
| 9. There is more good than evil in the world. | 1 | 2 | 3 | 4 | 5 | 6 |
| 10. I am basically a lucky person. | 1 | 2 | 3 | 4 | 5 | 6 |
| 11. People’s misfortunes result from mistakes they have made. | 1 | 2 | 3 | 4 | 5 | 6 |
| 12. People don’t really care what happens to the next person | 1 | 2 | 3 | 4 | 5 | 6 |

13. I usually behave in ways that are likely to maximize good results for me.	1	2	3	4	5	6
14. People will experience good fortune if they themselves are good.	1	2	3	4	5	6
15. Life is too full of uncertainties that are determined by chance.	1	2	3	4	5	6
16. When I think about it, I consider myself to be very lucky.	1	2	3	4	5	6
17. I almost always make an effort to prevent bad things from happening to me.	1	2	3	4	5	6
18. I have a low opinion of myself.	1	2	3	4	5	6
19. By and large, good people get what they deserve in this world.	1	2	3	4	5	6
20. Through our actions we can prevent bad things from happening to us.	1	2	3	4	5	6
21. Looking at my life, I realize that chance events have worked out well for me.	1	2	3	4	5	6
22. If people took preventative actions, most misfortune could be avoided.	1	2	3	4	5	6
23. I take the actions necessary to protect myself against misfortune.	1	2	3	4	5	6
24. In general, life is mostly a gamble.	1	2	3	4	5	6
25. The world is a good place.	1	2	3	4	5	6
26. People are basically kind and helpful.	1	2	3	4	5	6
27. I usually behave so as to bring about the greatest good for me.	1	2	3	4	5	6
28. I am usually very satisfied with the kind of person I am.	1	2	3	4	5	6
29. When bad things happen, it's because people haven't	1	2	3	4	5	6

taken the necessary actions to protect themselves.

30. If you look closely enough, you will see that the world is full of goodness.

1 2 3 4 5 6

31. I have reason to be ashamed of my personal character.

1 2 3 4 5 6

32. I am luckier than most people.

1 2 3 4 5 6

Post-Traumatic Stress Disorder Checklist (Weathers)

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

	Not at all	A Little Bit	Moderately	Quite a Bit	Extremely
Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?	1	2	3	4	5
Repeated, disturbing <i>dreams</i> of a stressful experience from the past?	1	2	3	4	5
Suddenly <i>acting or feeling</i> as if a stressful experience from the past <i>were happening again</i> (as if you were reliving it)?	1	2	3	4	5
Feeling <i>very upset</i> when <i>something reminded you</i> of a stressful experience from the past?	1	2	3	4	5
Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, sweating) when <i>something reminded you</i> of a stressful experience from the past?	1	2	3	4	5
Avoiding <i>thinking about or talking about</i> a stressful experience from the past or avoiding <i>having feelings</i> related to it?	1	2	3	4	5
Avoiding <i>activities or situations</i> because they <i>reminded you</i> of a stressful experience from the past?	1	2	3	4	5
Trouble <i>remember important parts</i> of a stressful experience from the past?	1	2	3	4	5
<i>Loss of interest</i> in activities that you used to enjoy?	1	2	3	4	5
Feeling <i>distant or cut off</i> from other people?					

Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?	1	2	3	4	5
Feeling as if your <i>future</i> somehow will be cut <i>short</i> ?	1	2	3	4	5
Trouble <i>falling</i> or <i>staying asleep</i> ?	1	2	3	4	5
Feeling <i>irritable</i> or having <i>angry outbursts</i> ?	1	2	3	4	5
Having <i>difficulty concentrating</i> ?	1	2	3	4	5
Being “ <i>super-alert</i> ” or watchful or on guard?	1	2	3	4	5
Feeling <i>jumpy</i> or easily startled?	1	2	3	4	5

Mississippi Scale for Combat Related Post-Traumatic Stress Disorder (Keane et al.)

Please select the choice that best describes how you feel about each statement.

1. In the past, I had more close friends than I have now.

1 2 3 4 5

Not at all True Slightly True Somewhat True Very True Extremely True

2. I do not feel guilt over things that I did in the past.

1 2 3 4 5

Never True Rarely True Sometimes True Usually True Always True

3. If someone pushes me too far, I am likely to become violent.

1 2 3 4 5

Very Unlikely Unlikely Somewhat Unlikely Very Likely Extremely Likely

4. If something happens that reminds me of the past, I become very distressed and upset.

1 2 3 4 5

Never Rarely Sometimes Frequently Very Frequently

5. The people that know me best are afraid of me.

1 2 3 4 5

Never True Rarely True Sometimes True Frequently True Very Frequently True

6. I am able to get emotionally close to others.

1 2 3 4 5

Never Rarely Sometimes Frequently Very Frequently

7. I have nightmares of experiences in my past that really happened.

1 2 3 4 5

Never Rarely Sometimes Frequently Very Frequently

8. When I think of some of the things I have done in the past, I wish I were dead.

1 2 3 4 5

Never True Rarely True Sometimes True Frequently True Very Frequently True

9. It seems as if I have no feelings

1 2 3 4 5

Not at all True Rarely True Sometimes True Frequently True Very Frequently True

10. Lately, I have felt like killing myself.

1 2 3 4 5

Not at all True Slightly True Somewhat True Very True Extremely

11. I fall asleep, stay asleep and awaken only when the alarm goes off.

1 2 3 4 5

Never Rarely Sometimes Frequently Very Frequently

12. I wonder why I am still alive when others have died.

1 2 3 4 5

Never Rarely Sometimes Frequently Very Frequently

13. Being in certain situations makes me feel as though I am back in the past.

1 2 3 4 5

Never Rarely Sometimes Frequently Very Frequently

14. My dreams at night are so real that I waken in a cold sweat and force myself to stay awake.

1 2 3 4 5
Never Rarely Sometimes Frequently Very Frequently

15. I feel like I cannot go on.

1 2 3 4 5
Not at all True Rarely True Somewhat True Very True Almost Always

16. I do not laugh or cry at the same things other people do.

1 2 3 4 5
Not at all True Rarely True Somewhat True Very True Almost Always

17. I enjoy doing many things that I used to enjoy.

1 2 3 4 5
Not at all True Rarely True Somewhat True Very True Almost Always

18. Daydreams are very real and frightening.

1 2 3 4 5
Never True Rarely True Sometimes True Frequently True Very Frequently True

19. I have found it easy to keep a job.

1 2 3 4 5

Not at all True Rarely True Somewhat True Very True Almost Always

20. I have trouble concentrating on tasks.

1 2 3 4 5

Never True Rarely True Sometimes True Frequently True Very Frequently True

21. I have cried for no good reason.

1 2 3 4 5

Never Rarely Sometimes Frequently Very Frequently

22. I enjoy the company of others.

1 2 3 4 5

Never Rarely Sometimes Frequently Very Frequently

23. I am frightened by my urges.

1 2 3 4 5

Never Rarely Sometimes Frequently Very Frequently

24. I fall asleep easily at night.

1 2 3 4 5

Never Rarely Sometimes Frequently Very Frequently

25. Unexpected noises make me jump.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

26. No one understands how I feel, not even my family.

1	2	3	4	5
Not at all True	Rarely True	Somewhat True	Very True	Almost Always

27. I am an easy-going, even-tempered person.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

28. I feel there are certain things that I have done that I can never tell anyone, because no one would ever understand.

1	2	3	4	5
Not at all True	Rarely True	Somewhat True	Very True	Almost Always

29. There have been times when I used alcohol (or other drugs) to help me sleep or to make me forget about things that happened in the past.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

30. I feel comfortable when I am in a crowd.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

31. I lose my cool and explode over minor everyday things.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

32. I am afraid to go to sleep at night.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

33. I try to stay away from anything that will remind me of things which happened in the past.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

34. My memory is as good as it ever was.

1	2	3	4	5
Not at all True	Rarely True	Somewhat True	Very True	Almost Always

35. I have a hard time expressing my feelings, even to the people I care about.

1 2 3 4 5

Not at all True Rarely True Somewhat True Very True Almost Always

36. At times I suddenly act or feel as though something that happened in the past
were happening all over again.

1 2 3 4 5

Not at all True Rarely True Somewhat True Very True Almost Always

37. I am not able to remember some important things that happened in the past.

1 2 3 4 5

Not at all True Rarely True Somewhat True Very True Almost Always

38. I feel “superalert” or “on guard” much of the time.

1 2 3 4 5

Not at all True Rarely True Somewhat True Very True Almost Always

39. If something happens that reminds me of the past, I get so anxious or panicky that
my heart pounds hard; I have trouble getting my breath, I sweat, tremble or shake;
or feel dizzy, tingly, or faint.

1 2 3 4 5

Never Rarely Sometimes Frequently Very Frequently

Is there anything that you would like to add about the experiences that you've had on the job and the way that they have affected you?

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