

## Occupational Stress and the Crime Scene Investigator

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### Abstract

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Workplace stress has long been associated with virtually all positions in the justice system, and particularly those positions related to the enforcement of law. Officers, for their own good, have traditionally been required to receive treatment or counseling when exposed to stressful or traumatic events. The justice system, however, has not always required counseling for all of their employees exposed to those same incidents based stressors, and one of the most neglected of those exposed to stress has been the Crime Scene Investigator. This research examined the relationship between exposure to critical incidents and the investigators' perceived stress. This research further examined perceived stress resulting from field factors, organizational factors, and the impact of agency efforts to mitigate Crime Scene Investigator stress.

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**Keywords:** Crime Scene Investigators, Occupational Stress, Crime Scene Investigation, Critical Incident Stress, Officer Stress, Stress Management.

### Introduction

In 1936, Hans Selye awakened the scientific community to the physical dangers associated with psychological stress. His brief treatise outlined the three stages of stress, and the physiological changes associated with each of those stages (Selye, 1936). This work concluded that the physical effects of psychological stress were substantial, and that prolonged psychological stress should not be overlooked by the medical community.

The three-stage process identified by Selye, which connected psychological stress to physical disease, became known as the General Adaptation Syndrome. The first stage of this stress response was called the Alarm reaction. In this stage, the reaction to the onset of stress is immediate, but short-term. This is where humans would exhibit a "fight or flight" reaction to this new stress. While this stage is brief, immune system suppression was still found to occur toward the end of this stage. In the second (Resistance) stage, the body is attempting to adjust to prolonged stress.

Metabolic changes occur as a result of these adaptations, and if the stress does not subside, the body eventually moves into the third, or Exhaustion, stage. In this stage, the physical resources of the body are depleted and the organ function is beginning to weaken due to the prolonged and unrelenting effect of these psychological stressors. When the individual has reached the Exhaustion stage, stress has been experienced for an extended period of time, and physical function may diminish gradually, or it may collapse quickly. The immune system may become corrupted, resulting in infections or other diseases due to reduced immunity. Heart attacks and strokes also become possible due to high blood pressure which often accompanies prolonged stress (Selye, 1936).

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While Selye's work began the process of scientifically identifying the relationship between stress and disease, the inquiry has continued to present and the associations have been further identified and refined. Selye later noted specific links between stress and cardiovascular disease (Selye, 1970), and others have also found clear and consistent evidence which connected stress to hormonal changes and ulcers, heart and kidney disease, and allergies (Friedman, McEwen, Schnurr, and Green, 2004). Although these changes were discovered across the lifespan, it has been noted that stress is less injurious for elderly subjects, and that stress could also exacerbate existing health conditions, and may place younger stressed individuals at increased risk for developing chronic illnesses and experiencing immune system suppression (Aldwin and Yancura, 2010; Cohen, Janicki-Deverts, and Miller, 2007).

Stress can be episodic and chronic, and it is not uncommon for stressed individuals to experience periods of episodic stress over a background of high chronic stress. These individuals may be at the greatest risk for physical damage resulting from stress because programs utilized to mitigate stress work best when the stress has either stabilized or has begun to diminish. For those individuals who experience high episodic stress over a background of chronic stress, mitigation programs may be less effective.

### **1.1 Measuring Stress and Calculating Causes**

In an effort to estimate the effect, certain events have on subjects' stress levels, researchers have attempted to calculate a value for the stress associated with many life events. The Life Events Inventory (Spurgeon, Jackson, and Beach, 2001) lists life events and the relative stress (for both males and females) associated with each of these events. While the order varies slightly across gender, death is overall the most powerful cause of stress, and the death of a spouse, an immediate family member, or a close friend rank among the highest stressors for both men and women.

### **1.2 Occupational Stress**

While economic and financial burdens have also been identified as primary causes of stress (American Psychological Association, 2008), research has consistently shown that occupational stressors were more strongly associated with health complaints than any other life stressor, and job related stressors eclipsed stress caused by both a foreclosure and the death of a close friend (Holmes and Rahe, 1967). Occupations, however, vary greatly in their ability to engender stress. Some occupations generate more stress than others, some job characteristics create stress rapidly, and some occupations create high levels of overall stress by combining episodic stress with chronic stressors. This area of inquiry has become so important that many occupational stress scales have been created since Selye published his essay in 1936, and some occupations have consistently and reliably scored as being among the most stressful. Air traffic controllers, stock brokers, medical professionals, law enforcement officers, firefighters, postal workers, and even librarians have all, albeit for different reasons, been singled out as having stress-inducing occupations. For example, air traffic controllers opined their occupational stressors involved their public safety responsibilities, coupled with their increased workload and administrative barriers to personal improvement and professional progress (Smallwood and Wade, 2013). Other causes of stress in public service occupations can include: work overload, job control, work relationships, job security, work-life balance, resources and communication, pays and benefits, and aspects of the job (Tytherleigh, Webb, Cooper, and Ricketts, 2005) In contrast, some librarians find their jobs stressful because of the isolation and the lack of human interaction, diverse patrons, budget and staff issues, and rapidly changing technologies (Smallwood and Wade, 2013).

Recognizing the simple fact that some occupations generate more stress than others do, and that those who occupy these positions may be at increased risk of disease due to these stressors, some fields have created guidelines and mechanisms to control or mitigate stress. Strategies utilized by stress-inducing fields have included mandatory counseling, stress mitigation training, and mandatory debriefing following stressful incidents (Horwitz, Mitchell, LaRussa-Trott, Santiago, Pearson, Skiff, and Cerulli, 2011). These mechanisms, while undoubtedly helpful, are more easily applied to certain occupations, and employment situations. For instance, police officers who witness a death in the line of duty could be mandated to participate in stress mitigation, while such a mandate would be unworkable for medical professionals who work in emergency or trauma centers. Because of the sheer frequency of stressful events in trauma centers, employees would likely be required to spend inordinate amounts of time in stress mitigation, so a more workable stress reduction strategy, possibly involving rotating duty assignments would likely be employed.

While there is a certain amount of stress related to virtually every occupation and social situation, some are clearly more stressful for some individuals than others, and some individuals are more able to diffuse that occupational stress with various mechanisms, such as humor (Vivona, 2012). If one considers the impact of chronic stress exposure, mixed with episodic high-stress events, two public service occupations immediately emerge: fire fighters and law enforcement officers. However, one occupational group which has similar levels of chronic and episodic stress as firefighters and law enforcement officers, but is not usually considered in that high-stress group, is the crime scene investigator.

### **1.3 Stress and the Crime Scene Investigator**

The organizational placement of the Crime Scene Investigator (CSI) is surprisingly inconsistent in modern law enforcement agencies. In some agencies, the CSI may be an academy trained and POST (Police Officer Standards and Training) certified sworn officer, while in other agencies the CSI may simply be a trained staff member similar to an administrative assistant. Some agencies require their CSI's to have college degrees or advanced degrees, while others only require certain specified skills and training. In some jurisdictions, CSI's are part of the same unionized bargaining unit as police officers, while other agencies treat them as staff. Consequently, it is possible that the administrative response to stressors experienced by this diverse group may be quite different across agencies, and the type and degree of stress experienced by CSI's may be exacerbated or mitigated by the investigator's status (sworn officer or non-sworn employee) as well as the agencies' response to that strain. As Dollard et al. noted, when sworn officers were compared to other non-sworn state employees, there were distinct and significant differences in their levels of stress- specifically in the areas of job satisfaction, and morale (Dollard, Dormann, Boyd, Winefield and Winefield, 2003).

Within law enforcement agencies, the CSI occupies a uniquely stressful position. In that they are the closest to the crime scene, and they occupy the physical location of the investigation for far longer than the traditional law enforcement officer. In the typical investigation sequence, a crime is reported to a law enforcement agency. Officers arrive and secure the crime scene, then call in the investigators. The CSI will then occupy the crime scene for a lengthy period of time and interact closely with all of the elements of the crime scene, including the victims and the weapons. This intimate interaction with the various components of the crime scene may engender far more stress for the CSI than that which was experienced by the officers who discovered and secured the scene. Yet, in many agencies the officers will be required to undergo therapeutic interventions, while the CSI's will not even have those interventions available to them. Along with the stress inherent in being psychologically close to a crime scene, there also exists additional and sometimes greater physical stressors resulting from the possible exposure to toxins and other residues associated with the crime (Jackson, Baker, Ridgely, Bartis, and Linn, 2004).

Wells, Colbert, and Slate (2006) argue that workplace stressors can be divided into four causal areas: 1) stress caused by factors internal to the organization; 2) stress caused by factors external to the organization; 3) the stress created by the job or task; and 4) personal stressors imported into the workplace. For the CSI, however, occupational stress is both constant and interactive, and individual factors can serve to exacerbate the effect of jobsite stressors on the CSI. For example, officer education level and type of degree received has been found to be related to job satisfaction, job effectiveness, and abuse of authority- all factors associated with occupational stress (Telep, 2011; Manis, Archbold, and Hassell, 2008). Johnson (2012) further noted that job satisfaction (and the associated issue of job related stress) was related to officer demographic characteristics, task characteristics, and the organizational environment of the workplace.

The empirical relationship between psychological/physical stressors and disease, combined with the acknowledgement that these impacts can be exacerbated or mitigated by personal, professional, and organizational factors, has resulted in a growing body of research which attempts to identify and quantify the impacts of exposure to highly stressful but possibly brief stressful environments. These so called "critical incidents" describe well the typical daily experiences of crime scene investigators. As stated above, the exposure to stress inducing situations for sworn law enforcement officers is not uncommon, but the stressful stimuli are often brief, the stressful moments are punctuated by longer periods of uneventful encounters, and these stressors are usually followed by organizationally mandated stress mitigation programming.

In contrast, the CSI may be exposed to numerically fewer stressful environments, but these environments generate greater levels of stress and are typically experienced for longer periods of time. The work done within these environments is critical to the success of the investigation and the eventual court case, further enhancing the stress inducing characteristics of the investigation. For these reasons, this research sought to gather several different types of information from crime scene investigators in order to ascertain the relationship between perceived stress and demographic factors, incident factors, and organizational practices.

There are multiple aspects and hypotheses for this study. Based on the previous research, and the stress inducing similarities between law enforcement officers and crime scene investigators, it is expected that this research will show that some criminalities personnel experience high levels of occupationally and organizationally driven stress, and that there are differences in the stress mitigation opportunities based on status. It is also anticipated that there will be differences in the perception of peer support program availability. Furthermore, it is expected that organizational demographic features as well as individual characteristics will be related to perceptions of stress for these crime scene investigators. Additionally, this research sought to identify which occupationally driven events produced the most stress for the CSI, and if these events had different interactive effects based on individual or jurisdictional demographics.

## 2.0 Methods

To gather the empirical data relevant to the focus of this research, a population of crime scene investigators was identified through the past and present membership roster, and the conference participation list of the International Association for Investigation (IAI) (the oldest and largest organization of professional forensic scientists). A comprehensive list of 2028 member e-mail addresses was compiled, and surveys were electronically distributed to all of the email addresses listed. Of the 2,028 sent, 390 emails were immediately returned as undeliverable, reducing the number of potential responses to 1,638. A reminder message was sent out 11 days after the initial email to all who had not yet responded or opted out of the survey; the survey was available for response for 22 days. From this group, a total of 337 surveys were received, resulting in a gross response rate of 20.57%. Given that it is impossible to know how many of the invitations to participate in the research were screened out and either disposed of by spam filters or relocated to a "junk" mailbox, the real response rate may have been higher than what is shown above.

Questions included in the survey centered on the issue of job related stress, including mitigation efforts and opportunities within the respondent's home organization. The survey was divided into sections dealing with the specific operations of their agency, opportunities for peer support and therapeutic diversion, the organizational and field environments, personal and professional experiences, and demographic information. Questions consisted of quantitative and qualitative questions and multi-dimensional questions designed to elicit information specific to the respondent's perception of critical incident stress, working environments, and agency support. The survey also contained open-ended questions designed to elicit more specific input from the respondent. These questions involved the respondents' perspective on how a career in forensic investigation has changed the respondent as a person, their perceived availability of support and assistance available within the respondent's home agency, and the effectiveness of those existing programs.

## 3.0 Results

**3.1 Respondent Demographics:** Of the 290 completed surveys returned, 124 were completed by males (42.76%), 148 by females (51.03%). Seventy (24.14%) of the respondents were sworn officers, 201 civilians (69.31%). Half of the sample had obtained a Bachelor's degree. For those who had pursued higher education, 86 (37.9%) had pursued a degree in Criminal Justice or Criminology and 58 (25.5%) studied Criminalities or Forensic Sciences. The age range of respondents was 24-42, with the average being 40.6. Of the responses to the question involving time in the field, the average time employed in a forensic capacity 11.97 years.

**3.2 Agency Demographics:** Average population served by the respondent's home agency ranged from a low of just over 20,000, to a high of 24,700,000, with a mean of 1,078,815 and a median of 250,000. The average number of criminalities personnel employed within each respective forensic unit ranged from 1 to 400 with an average of 18.5.

Within the criminalities field there are two forms of accreditation which are professionally recognized. The first is through the Commission on Accreditation for Law Enforcement Agencies (CALEA), and the second is offered by the American Society of Crime Lab Directors (ASCLD). CALEA accreditation considers the agency as a whole, while ASCLD focuses solely upon criminalities standards and practices. Of the 297 responses to the question of agency accreditation through CALEA, 154 (51.8%) were currently accredited. ASCLD accreditation requires the presence of an accredited criminalities laboratory, and as such would not apply to all respondents. Of the 200 specific responses to the question of ASCLD accreditation, 107 (53.5%) we reaccredited.

Regarding the questions involving the respondent's primary job assignment, 40.4% (110) of the respondents worked primarily in the field, 8.1% (22) worked mostly in the laboratory, 37.1% (101) spent equal amounts of time working in the field and in the laboratory and 14.3% (39) responded to the "other" category, indicating more administrative duties. The ratio of line personnel to supervisory staff was also considered, with the data indicating that 66.8%(169) operated in an investigatory (not supervisory) capacity, while 33.2% (84) did investigation but also supervised at least one other person. Please see Table 1 for a more complete depiction of these demographic analyses.

**Table 1: Response Frequencies and Respondent Demographics**

<i>Are you currently employed in a Criminalities capacity with a government agency?</i>	
Yes	99.7%
<i>Does your agency have a dedicated crime lab?</i>	
Yes	66.1%
<i>Is your crime lab accredited by the American Society of Crime Lab Directors (ASCLD)?</i>	
Yes	35.8%
<i>Does your agency have a Peer Support Program available for criminalities personnel?</i>	
Yes	61.1%
<i>Involvement in the Peer Support Program is:</i>	
Voluntary	50.8
Mandated	11.1
N/A	38.0
<i>Does your agency have a diversion program?</i>	
Yes	12.0%
No	66.4%
Don't Know	21.6%
<i>In your agency, the management of critical incident stress is:</i>	
Required for all personnel	7.0
Optional for Criminalities personnel	5.9
Optional for all personnel	14.6
Not Offered	53.0
Don't Know	19.5
<i>Your primary job assignment is:</i>	
In the field	40.4
In the lab	8.1
Equally in the field and the lab	37.4
Other	14.1
<i>Are you a civilian or sworn law enforcement officer?</i>	
Civilian	74.0
Sworn LEO	26.0
<i>Gender</i>	
Male	45.6
Female	54.4
<i>Higher Education Degree</i>	
None	17.0
Associates	12.6
Bachelors	53.3
Masters	16.3
Doctorate	.7

**3.3 Occupational Stressors:** Respondents were presented with multiple field scenarios and environmental circumstances, and asked if they had ever experienced a scenario similar to the one presented. If yes, they were asked how often this experience occurred, and how much stress it generated. A list of 20 field experiences and 15 organizational factors were presented. Stress responses were measured using a Likert scale where with the value of one (1) indicated no stress, and five (5) indicated extreme subjective stresses. The relationship between stress and experience was measured using bivariate correlational analyses and cross-tabulations. These analyses indicated that, among the organizational factors listed, Budget issues and Salary issues produced the greatest levels of stress, while Work Environment and Equipment issues produced the least (please see Table 2).

**Table 2: Organizational factors and the amount of stress they typically create.**

<i>Budget cuts and constraints</i>	3.87
<i>Salary and benefits</i>	3.79
<i>Lack of personnel</i>	3.66
<i>Call Out (interrupted personal time, lack of sleep)</i>	3.53
<i>Complacency of colleagues</i>	3.39
<i>Lack of support</i>	3.34
<i>Unrecognized need for continued education &amp; training</i>	3.21
<i>Lack of understanding of the need for mental &amp; emotional support</i>	3.19
<i>Resistance to change</i>	3.18
<i>If civilian - the lack of respect from officers &amp; Administration</i>	3.15
<i>Lack of leadership</i>	3.07
<i>Overtime</i>	2.95
<i>Lack of equipment and supplies</i>	2.94
<i>Work Environment</i>	2.86
<i>If sworn - the lack of respect from other officers</i>	2.79

**3.4 Field Stressors:** Following these analyses, stress scores for field experiences were calculated. Respondents indicated that the experience of investigating the Death of an Officer in the Field was most stressful (4.59), followed by Mass Fatalities (4.10). Least stressful field experiences included stress resulting from Weather Conditions (2.73) and Domestic Battery (2.50); please see Table 3 for a complete list of field stressors and stress scores.

**Table 3: Field factors and the amount of stress they typically create.**

<i>Death of an officer in the field</i>	4.59
<i>Mass fatalities</i>	4.10
<i>Officer involved shooting</i>	4.07
<i>Infant death</i>	3.84
<i>Exposure to infectious disease</i>	3.84
<i>High profile cases</i>	3.81
<i>Drowning of a child</i>	3.73
<i>Abuse and/or neglect of children</i>	3.71
<i>Exposure to hazardous materials</i>	3.67
<i>Pressure to "wrap up" a scene</i>	3.44
<i>Abuse and/or neglect of elderly</i>	3.42
<i>Known victim or suspect</i>	3.37
<i>Family members at scenes</i>	3.36
<i>Homicide-Suicide</i>	3.30
<i>Self-protection while on scene</i>	3.03
<i>Abuse and/or neglect of animals</i>	2.87
<i>Having other agencies on scene</i>	2.81
<i>Sexual Assault</i>	2.74
<i>Weather conditions</i>	2.73
<i>Domestic Battery</i>	2.50

**3.5 Stress and Experience:** In order to test the impact of cumulative stressors on perceived stress, analyses were conducted which compared the number of times a CSI had experienced specific field stressors with their subjective stress score for that specific field experience. As mentioned above, stress increased as scores increased, so a positive correlation would indicate that repeated exposures to certain critical stress events increased subjective stress. In all of the significant correlations found, the relationship was negative, indicating that repeated exposures to stressful events tended to diminish the subjective stress associated with each of these events. Significant negative relationships were found in domestic battery cases, crime scenes where there were mass fatalities, crime scenes where exposure to infectious disease was a concern, sexual assault cases, and cases where the investigator had known victim or suspect. Please see Table 4 for a complete list of the variables and the significance levels.

**Table 4: Correlations of Individual Field Experience Stress Factors and Frequency of Exposure**

<i>Officer involved shooting</i>	Correlation	.025	Sig. .696
<i>Death of an officer in the field</i>	Correlation	-.142	Sig. .131
<i>Homicide / Suicide</i>	Correlation	-.005	Sig. .935
<i>Infant death</i>	Correlation	-.015	Sig. .819
<i>Drowning of a child</i>	Correlation	.050	Sig. .527
<i>Abuse/neglect of children</i>	Correlation	-.113	Sig. .081
<i>Abuse/neglect of elderly</i>	Correlation	.047	Sig. .481
<b>Domestic Battery</b>	Correlation	-.170**	Sig. .010
<i>Family members at scenes</i>	Correlation	-.089	Sig. .185
<b>Mass fatalities</b>	Correlation	-.180*	Sig. .035
<b>Exposure to infectious disease</b>	Correlation	-.184**	Sig. .006
<i>Exposure to hazardous materials</i>	Correlation	.026	Sig. .710
<i>Weather conditions</i>	Correlation	.080	Sig. .232
<i>High profile cases</i>	Correlation	-.001	Sig. .989
<b>Sexual Assault</b>	Correlation	-.141*	Sig. .027
<i>Abuse/neglect of animals</i>	Correlation	.081	Sig. .263
<i>Pressure to "wrap up" a scene</i>	Correlation	.068	Sig. .323
<b>Known victim or suspect</b>	Correlation	-.214**	Sig. .004
<i>Having other agencies on scene</i>	Correlation	.107	Sig. .097
<i>Self-protection while on scene</i>	Correlation	-.020	Sig. .781

Following these analyses, it was recognized that these analyses were not taking into account the time the individual CSI had spent as an investigator. While it was discovered that the number of stressful events experienced lowered the subjective stress caused by that category of event, it was possible that it was not only the number of stressful events that affected stress, but also the time over which these events occurred. With that concern in mind, a series of univariate regressions were conducted to determine if the investigator's self-reported years of experience in some way mediated the stress experienced by repeated exposures to critical events. After controlling for number of years as a CSI, it was found that only four stressful events were significantly related to the number of times the CSI had been exposed to the crime scene. These four stressful events were officer involved shootings, exposure to infectious disease, high profile cases, and cases where the CSI had known the victim or the suspect. Please see Table 5 for a list of the significant and non-significant variables.

**Table 5: Univariate Regression of Individual Field Experience Stress Factors and Frequency of Exposure, Controlling for Years as a Crime Scene Investigator**

<i>Officer involved shooting</i>	.016
<i>Death of an officer in the field</i>	NS
<i>Homicide/Suicide</i>	NS
<i>Infant death</i>	NS
<i>Drowning of a child</i>	NS
<i>Abuse/neglect of children</i>	NS
<i>Abuse/neglect of elderly</i>	NS
<i>Domestic Battery</i>	NS
<i>Family members at scenes</i>	NS
<i>Mass fatalities</i>	NS
<i>Exposure to infectious disease</i>	.035
<i>Exposure to hazardous materials</i>	NS
<i>Weather conditions</i>	NS
<i>High profile cases</i>	.022
<i>Sexual Assault</i>	NS
<i>Abuse/neglect of animals</i>	NS
<i>Pressure to "wrap up" a scene</i>	NS
<i>Known victim or suspect</i>	.040
<i>Having other agencies on scene</i>	NS
<i>Self-protection while on scene</i>	NS

### 3.6 Stress and Agency Characteristics

Based on a review of the literature, it was theorized that agencies would differ in both the type and availability of stress mitigation opportunities. Given that stress mitigation programming for CSI's could be seen as an "extravagance", departments where operational resources are scarce may be the least likely to offer these opportunities. Two agency characteristics found to be related to the presence of adequate operational resources were having an "in-house crime lab", and having an "accredited crime lab". These two agency characteristics were compared to the respondents' response to the question of stress mitigation programming available to CSI's in their respective agencies. It was found that those departments where crime labs existed in-house, and these labs were accredited were significantly more likely to offer peer-support programming for stress reduction (Kendall's tau=.012), which resulted in reduced stress and significantly improved the CSI's overall view of the justice system (Kendall's tau=.038). Crime scene investigators who worked for agencies with dedicated and accredited crime labs also had significantly greater job related training opportunities (Kendall's tau=.010).

### 3.7 Occupational Characteristics and Stress Mitigation Opportunities

The single most important agency characteristic which predicted employee stress mitigation experiences was whether or not the policies and practices of the agency required CSI's to be sworn officers. Crime scene investigators who worked for agencies where the CSI's were sworn officers experienced a markedly different employment experience when compared to their non-sworn counterparts. Sworn officers were significantly more aware of stress reduction programs (Kendall's tau=.012), and were more likely to be required to participate in stress reduction programming as a result of exposure to critical incident stress (Kendall's tau=.001). Gender also added a complicating element to this situation in that 31% of the female CSI's were unaware of any stress reduction programming within their agencies, in sharp contrast to the 10% of the male CSI's who were unaware of the opportunities for stress reduction programming within their respective agencies; this difference was significant at the .006 level (please see Table 6).

**Table 6: Agency and Individual Factors Significantly Related to Occupational Stress**

<i>Presence of an In House Crime Lab, and</i>	
<i>Presence of Peer Support Stress Reduction Programs</i>	Kendall's tau =.012
<i>Efficacy of the Justice System</i>	Kendall's tau =.038
<i>Job Related Training Opportunities</i>	Kendall's tau =.010
<i>CSI's are Sworn Officers, and</i>	
<i>Awareness of Stress Reduction Programming</i>	Kendall's tau =.012
<i>Participation Required in Stress Reduction Programming</i>	Kendall's tau =.001
<i>Gender and Stress</i>	
<i>Gender Differences in Awareness of Stress Reduction Programming</i>	Sig=.006

**3.8 Combined Stress Factors and Characteristics**

Following these analyses, aggregate stress levels were calculated in order to determine which organizational and operational factors were most related to overall stress levels for the respondents. All field stress scores were combined and divided by the total number of field stress scores in order to calculate a Field Stress Mean (FSM). The same procedure was then followed using organizational stress factor scores to create an Organizational Stress Mean (OSM). FSM and OSM were then combined and averaged into Total Stress Mean (TSM), which was then used to ascertain which of the operational and demographic factors were most responsible for the creation of stress in the respondent population.

These analyses yielded three interesting findings. First, the presence of a college degree, and the level of that degree was not related to the respondents' self-reported levels of total stress. Second, respondent gender was significantly related to TSM.

Analyses of Variance were conducted to determine if TSM was related to selected organizational factors. As was noted above, most individual measures of stress were statistically unrelated to many of the previously utilized variables. However, a different picture emerged when these same variables were compared to the TSM score. These analyses indicated that respondent stress was related to their perceptions and experiences with Peer Support Programs, Stress Reduction Programs, Job Related Training, Opportunities for Promotion, and Gender. In all of these analyses, respondents who were the least satisfied with resources or opportunities experienced significantly greater levels of stress. Additionally, these analyses indicated that respondents who experienced the highest levels of stress also reported the lowest levels of job satisfaction. Please see Table 7 for a list of these significant findings and the TSM scores associated with each of the response groups.

**Table 7: Respondent Total Stress Means and Agency/Respondent Characteristics**

<i>TSM with Peer Support Program is</i>		<i>Sig=.010</i>
<i>More Available to Law Enforcement Officers (LEO)</i>	3.57	
<i>More Available to Civilians</i>	3.80	
<i>Equally Available to LEO and Civilians</i>		3.45
<i>Not Available</i>		3.31
<i>TSM with Opinion of Peer Support Programming (PSP)</i>		<i>Sig=.030</i>
<i>PSP needs Much Improvement</i>		3.64
<i>PSP needs Little Improvement</i>		3.41
<i>PSP needs No Improvement</i>	3.22	
<i>TSM with Overall Job Satisfaction</i>		<i>Sig=.003</i>
<i>Very Satisfied</i>		3.24
<i>Somewhat Satisfied</i>	3.39	
<i>Neutral</i>		3.77
<i>Somewhat Unsatisfied</i>		3.20
<i>Very Unsatisfied</i>	4.02	
<i>TSM with Satisfaction with Stress Reduction Resources Available</i>		<i>Sig=.009</i>
<i>Very Satisfied</i>		3.13
<i>Somewhat Satisfied</i>	3.29	
<i>Neutral</i>		3.31
<i>Somewhat Unsatisfied</i>		3.60
<i>Very Unsatisfied</i>	3.75	
<i>TSM with Satisfaction with Job Related Training Opportunities</i>		<i>Sig=.002</i>
<i>Very Satisfied</i>		3.12
<i>Somewhat Satisfied</i>	3.19	
<i>Neutral</i>		3.50
<i>Somewhat Unsatisfied</i>		3.50
<i>Very Unsatisfied</i>	3.72	
<i>TSM with Satisfaction with Promotability</i>		<i>Sig=.000</i>
<i>Very Satisfied</i>		2.69
<i>Somewhat Satisfied</i>	3.28	
<i>Neutral</i>		3.56
<i>Somewhat Unsatisfied</i>		3.208
<i>Very Unsatisfied</i>	5.57	
<i>TSM with Gender</i>		<i>Sig=.004</i>
<i>Male</i>		3.21
<i>Female</i>		3.52

#### 4.0 Discussion

Clearly, the Crime Scene Investigators surveyed were not all affected in the same manner by exposures to job related stress. While some individuals responded that certain crimes engendered high levels of stress, the data indicated that only a few of their occupational experiences created uniformly high levels of stress. Only Domestic Batteries, Mass Fatalities, Exposures to Infectious Diseases, Sexual Assaults, and cases where the CSI was familiar with the victim produced significantly and consistently high levels of respondent stress. Death of an Officer in the Field produced the highest level of stress, but in spite of its high level, it did not produce a significant correlation with experienced stressors due to the rarity of the event.

When the number of times the CSI had experienced each of these stress producing events was statistically controlled, only Officer Involved Shootings, Exposure to Infectious Diseases, High Profile Cases, and cases where the CSI was familiar with the victim continued to produce significantly high levels of stress. This finding appears logical in that cases involving mass fatalities are rare and the CSI's imagined level of stress would likely differ from the stress actually experienced due to the infrequent nature of these events.

Similarly, cases involving Sexual Assault are likely so common that the moderate levels of stress experienced by the CSI would be further mediated by the frequency of the event, thereby producing a lower overall average stress level.

Regarding organizational characteristics which mitigate or engender stress, two organizational factors and one individual factor seem to be strongly related to the experience of occupational stress for CSI's. Specifically, the presences of an in-house crime lab, and the frequency of CSI's who are sworn officers, were both related to the respondents' views of Peer Support, Justice System Efficacy, and Professional Training Opportunities. Additionally, respondent Gender was also linked to stress in that female CSI's were more likely to experience occupational stress than male CSI's, and were less likely to be aware of stress mediation programming available in their respective agencies.

These differences became more apparent when Total Stress Mean was calculated and compared with individual and organizational factors. Each of these analyses seemed to point to the same conclusion. Larger, better funded, and more professional agencies tended to have accredited labs and were more likely to have sworn officers as CSI's. As such, they were treated more professionally, offered more training and advancement opportunities, more peer support and critical incident stress mitigation, and consequently these CSI's experienced less stress and overall greater job satisfaction. The impact of Gender on occupational stress may have been a simple artifact of the historical practice of having male sworn officers and female unsworn employees both working as CSI's.

## **5.0 Conclusion**

Hans Selye's (1936) beliefs regarding the long term effects of stress were, to some degree, supported by these findings. Job related stress resulted from an abundance of individual field-related stressors, as well as long term exposure to organizational stressors. This "Total Stress Mean" was related to job satisfaction, but could be mitigated through the use of stress reduction training, peer support programs, and changes in the organizational structure of the agency. This research did support the findings of Dollard et al. which indicated that sworn officers experienced different types and levels of job related stressors when compared to other non-sworn state employees (Dollard, Dormann, Boyd, Winefield and Winefield, 2003). Crime Scene Investigators were high in three of the four areas of job related stress noted by Wells, Colbert, and Slate (2006). Stress caused by factors internal to the organization included training and access to stress mitigation, stress resulting from factors external to the organization included CSI gender, and many stressors resulted from the job of being a CSI. When all of these findings are taken into consideration, they make a strong case for additional and required stress reduction programs for crime scene investigators. The importance of their jobs and the relevance of their work to the effective operations of the justice system should encourage law enforcement agencies to take the problem of CSI stress seriously and to make every effort to keep their respective investigative units operating in a healthful and efficient manner.

Future research on this topic should address the methodological issues associated with sampling such a large population, such as response rates, reliability, and confidentiality. Ideally, research dealing with CSI stress should have some type of data associated with stress other than self reports and job satisfaction. Questions regarding the CSI's state of health could shed some light on the relationship between long term stress and disease, and face to face interviews and other forms of qualitative data could be helpful in assessing the level and impact of job related stressors. Data from these sources could ultimately lead to guidelines to more effectively operate these agencies and reduce employee stress while improving occupational satisfaction.

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