Post-Traumatic Stress Disorder-like Symptomatology in Pediatric Intensivists

Dina Gabriella Cuervo

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Post-Traumatic Stress Disorder-like Symptomatology in Pediatric Intensivists

by

Dina Gabriella Cuervo

A Dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of Philosophy in Clinical Psychology

September 2010
Each person whose signature appears below certifies that this dissertation in his/her opinion is adequate, in scope and quality, as a dissertation for the degree Doctorate of Philosophy.

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ABSTRACT OF THE DISSERTATION

Post-Traumatic Stress Disorder-like Symptomatology in Pediatric Intensivists

by

Dina Gabriella Cuervo

Doctor of Philosophy, Graduate Program in Clinical Psychology
Loma Linda University, September 2010
Dr. Kimberly Freeman, Chairperson

Helping professionals, such as social workers, emergency first responders and medical personnel are susceptible to traumatic stress reactions through indirect exposure to trauma via the traumatized population whom they serve. This phenomenon, known as secondary traumatic stress (STS), mimicking the symptoms of posttraumatic stress disorder, can have an impact on a provider’s work with his/her patient or have longer-term effects such as deciding to leave the profession. This study found that physicians’ level of job stress was the strongest predictor of STS and that this relationship was also influenced by resiliency, ego strength and attachment style. Individuals with higher levels of resiliency and ego strength reported less traumatic stress symptoms. Secure attachment style was not found to be associated with STS symptoms but fearful attachment and anxious-avoidant attachment, when examined separately, were significant predictors of STS but shared variability with resiliency. Future research should examine the traumatic stress beliefs to determine if this impacts the development of traumatic stress symptoms.
Introduction

Thousands of people each year are exposed directly to traumatic events that have a negative impact, resulting in lingering symptoms of varying duration known as posttraumatic stress. In the National Comorbidity Survey (2006), 9,282 people age 18 and over, were surveyed and among those who had a DSM-IV diagnosis, the lifetime prevalence of Posttraumatic Stress Disorder (PTSD) was 6.8%. Women were almost 3 times more likely than men to have PTSD (National Comorbidity Survey-Replication; NCS-R, 2005). PTSD can have an enduring and drastic effect on one’s life making the awareness of, and addressing posttraumatic stress symptoms, of extreme importance. In the NCS-R, Nock (in press) reported that among the individuals who endorsed suicidal ideation 9.8% had a diagnosis of PTSD and among those who had attempted suicide, 17% had a PTSD diagnosis one year prior to the suicidal behavior. Due to the potentially lethal or life altering outcomes of PTSD, it is necessary to be mindful of stress reactions in different settings.

Historically, research on symptoms of posttraumatic stress have focused on children who have been sexually or physically abused or exposed to violence, and adults who are survivors of sexual assault, crime victims or war veterans. Professionals who come to the aid of those who are emotionally, psychologically and physically affected by tragic events are also susceptible to the impact of the traumatic event (Keane, Ducette, and Adler, 1985; Meadors & Lamson, 2008; Bride, 2004; Figley, 1995; Marmaras, Lee, Siegel and Reich, 2003) but have been neglected in the research. For example, emergency responders to national disasters such as the terrorist acts of September 11th,
Hurricane Katrina and the 2010 Haiti Earthquake, have also been impacted by the devastation they witnessed (Regehr, 2001), their attempts to help others (Beaton et al. 1998), listening to accounts of the incidents, and making required immediate life or death decisions (Dorfman & Walker, 2007). Despite the fact that many of these responders were trained professionals, they were not impervious to the negative sequelae of exposure to trauma.

As a member of an emergency response team, one is at risk of experiencing what psychologists refer to as a traumatic incident—an incident that may involve exposure to catastrophic events, severely injured children or adults, dead bodies or body parts, or the loss of colleagues (Dorfman & Walker, 2007). This is reflective of the inherent part of several occupations in which repeated exposure to traumatic events are experienced as part of a person’s every day work (Regehr, 2001). For example, intensive care unit physicians are amongst those who are exposed to critical events in a high paced environment. Although intensive care units do not receive the same magnitude or vast destruction as disaster sites, physicians are still required to respond with a sense of urgency and are continually exposed to situations over which they have very little control. Literature has found that medical personnel have indicated a difficulty in coping with the effects of repeated exposure to trauma in the ICU indicating there is no time to recover from each individual incident (Pfifferling and Gilley, 2000). Physicians in intensive care units are exposed to strenuous circumstances, which can include the psychological difficulty associated with the persistent possibility of dealing with the
death of a patient (West, 1990). Reactions to patients and events in intensive care units vary but when a physician is personally affected by a patient’s traumatization they can begin to experience similar trauma symptoms as their patient (e.g. sleep disturbances; Figley, 1989). These experiences by providers within medical professions exposed to a traumatized population are known as primary or secondary traumatization (Figley, 1989) and are based on the details of the exposure. The factor that differentiates primary from secondary traumatization is that the trauma is experienced directly in the former or indirectly in the latter. Secondary traumatization, previously known as compassion fatigue, is a term that was developed to address the negative impact of working with traumatized populations (Figley, 1995). The idea of secondary traumatic stress (STS) emerged from research examining the effect working with trauma victims has on social workers. Figley (1999) defines secondary traumatic stress as “the natural, consequent behaviors and emotions resulting from knowledge about a traumatizing event experienced by a significant other. It is the stress resulting from helping or wanting to help a traumatized or suffering person” (p.10). The symptoms of secondary traumatic stress are almost identical to the symptoms of PTSD and acute stress (Bride, 2004), as defined in the Diagnostic and Statistical Manual of the American Psychiatric Association (APA, 2004) namely avoidance, re-experiencing of the event and hyperarousal. Bride (2007) surveyed social workers and found that 55% met one of the three diagnostic criteria for PTSD and 15% met the three symptomatic criteria for a diagnosis of PTSD.
Secondary traumatic stress has also been examined in healthcare nurses whose work is also centered on traumatized patients, albeit in a different way. Nurses and physicians unlike, social workers, deal with the physical and medical aspects of a trauma. Although they may also hear the traumatic material of a patient’s ordeal, it is not likely to be told repeatedly based on the nature of the physician’s job. However, physicians are seeing and trying to repair the physical effects of the trauma in addition to hearing the story in its raw form (temporally close to the event) and dealing with certain psychosocial factors.

Physicians who work in the pediatric and neonatal ICU have an added stressor of working with children who are chronically ill or dying and witnessing the aftermath of injustices perpetrated against children. About 15-18% of children in the United States have a chronic illness (University of Michigan Health System, 2010). In the National Hospital Ambulatory Medical Care Survey (NHAMCS, 2006), it was reported that in 2004 20.8% of all visits to emergency departments in the United States were children age 15 and younger. Among the 13.3% of individuals (children and adults) that were admitted, 1.1% was admitted to the ICU. ICU physicians are also exposed to occupational stressors that can utilize both their cognitive and emotional resources (Kraemer, 2006) thus making them more vulnerable to the effects of trauma.

Occupational stress in particular, has been associated with increased psychological disorders (Sauter et al.) and burnout (Maslach, 1982) especially in the healthcare professions. In fact, literature has found that health professionals have a higher
than expected rate of suicide (Milham, 1983). In a Swedish study on nurses, Peterson et al. (1995) found that 80% of nurses reported high or very high stress levels. Nurses’ workload is a factor that has been identified as an occupational stressor contributing to burnout, and emotional exhaustion (Garrosa, 2008). Workload, and more specifically caseload, has been associated with STS among therapists (Kassam-Adams, 1995) suggesting that occupational stressors can increase vulnerability to STS. In addition to organizational factors, individual differences increased nurses’ vulnerability to stress (Garrosa, Moreno-Jime’nez, Liang, Gonza’lez, 2008).

There are many different theories about what makes one individual more susceptible to PTSD than others, with some of them focusing on individual differences. Researchers have proposed that certain factors increase the likelihood of PTSD reactions such as premorbid psychological functioning (Foa & Rothbaum, 1998), being female (Brewin et al., 2000), low intelligence, lack of education (Bonnano, 2008), ethnic minority status, lack of social support, (Brewin et al., 2000), personality characteristics (Millon, 1969; Everly & Lating, 2004), history of anxiety (Melham, Day, Shear, Day, Reynolds, & Brent, 2003), personal trauma history (Kassam-Adams, 1995) and increased level of stress (Meadors & Lamson, 2008).

Bonnano (2008) suggests that the literature is overly focused on risk factors of PTSD and has not given enough attention to the factors that promote resiliency when exposed to an adverse event. Protective factors to trauma that have emerged in the literature have included individual differences such as emotional stability or “hardiness”
(Kobasa, 1982), ego strength (Caldwell, 1997), attachment styles (Dekel, Solomon, Ginzburg, & Neria, 2004) and coping styles (Canfield, 2005). Exposure to the same stressor can have different impacts based on appraisal of the stressor and individual differences (Clark and Cooper, 2000). The structure and organization of personality determines one’s approach to the problems encountered in life and therefore plays a role in the perception of and adjustment to stressors (Lazarus, 1961). Attachment theory (Bowlby, 1964) suggests that an individual’s personality is developed as a function of their internal working models of the self and other, which is formed based on the relationship with the primary caregiver. Forming a secure attachment serves as a protective factor to future traumas. A secure attachment style among female trauma therapists was associated with less secondary traumatic stress symptoms than their counterparts (Marmaras, Lee, Siegel and Reich, 2003). Attachment style has also been associated with an individual’s ability to self-regulate and manage emotions evoked from unpleasant situations (Slade, 2007).

Emotional stability is a characterological factor that has been shown to contribute to the way someone perceives one’s reality and in turn the manner in which one copes with stress (Kobasa, Maddi, & Kahn, 1982). Emotional stability, also referred to as ego strength (Cattel & Tatsuoka, 1970), suggests that the qualities of the self, the parts with which people most identify, are not disrupted by external or internal (e.g. nightmares) forces and events. On the other hand, individuals low on ego strength struggle to cope with challenges and internal conflicts. Ego strength and attachment style have been
implicated in the appraisal and reaction to stressful events. As such, the literature review addresses the topic of ego strength in relation to reports of stress and adult attachment styles as a factor in the development of PTSD symptomatology.

The majority of research on STS is limited to professionals in the mental health field. There is a paucity of research examining the effects that patient related trauma have on physicians in intensive care units. Since PTSD symptoms can impair an individual’s functioning, and physicians in intensive care units are required to function under dire circumstances, while also providing optimal care, it is important that they maintain good mental well being to deliver such care. Providers who do not cope with symptoms of secondary traumatization are at risk of providing less effective and lower quality of care (Collins and Long, 2003). This study will examine the impact of exposure to a traumatized population on physicians who work in pediatric and neonatal intensive care units. In light of the above, the aims of the current study are:

1. To determine the relationship between ego strength, adult attachment style and PTSD- like symptoms in physicians while taking in to account the effect of age, gender, personal trauma history, job stress, and resiliency.

2. To assess the effect attachment style, more specifically preoccupied type, has on the development of the different clusters of PTSD symptoms.

3. To assess the relationship between PTSD symptoms and ego strengths in PICU intensivists.
4. To assess the effect resiliency has on the development of PTSD-like symptoms in PICU intensivists and examine the relationship between resiliency and ego strengths.

5. To assess job stress as a risk factor for the development of PTSD-like symptoms in PICU intensivists.

6. To investigate the current prevalence of post-traumatic stress-like symptomatology among physicians in the pediatric intensive care units (ICU).

In support of these aims the following section provides a review of the literature on stress reactions to traumatic events, on emergency and critical care health professionals and an overview of attachment theory. More specifically, the relationship between trauma, attachment, and resiliency will be discussed. Additionally, the negative effects of occupational stress will be reviewed.
Review of Literature

Historical Background on Post-traumatic Stress Disorder

Posttraumatic stress disorder can result from exposure to an isolated traumatic event (e.g. robbery) or long-term exposure to a traumatic stressor (e.g. chronic child abuse). PTSD is based on the response to a traumatic stressor and is associated with disruptions in psychological processes such as memory, attention, beliefs, coping strategies, and cognitive-affective reactions (Brewin & Holmes, 2003). In the general adult population, the lifetime prevalence of PTSD in the United States has been estimated to range between 1.3% (Davidson, Hughes, & Blazer, 1991) and 9% (U.S. DHHS, 1999, p. 237). Negative psychological reactions to traumatic events have been documented for hundreds of years. Initially research on this disorder was prompted by battle stress reactions from trauma survivors predating World War I and was given different labels to describe these reactions such as, soldier’s heart (Oppenheim, 1889), war neurosis (Freud et. al, 1921), shell shock (Myers, 1940) and combat fatigue (Baker, 1980). In 1980, the term PTSD became officially recognized and the American Psychiatric Association's (APA) Committee on Nomenclature and Statistics included the classification “posttraumatic stress disorder” as a psychiatric category in the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III; American Psychiatric Association, 1980).

The following lists the DSM-IV-TR diagnostic criteria for Posttraumatic Stress Disorder. Criterion A requires that the person has been exposed to a traumatic event that is defined as an event(s) that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others and (2) the person's response involved
intense fear, helplessness, or horror. Criterion B indicates that the traumatic event is persistently re-experienced in one (or more) of the following ways: (1) recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions, (2) recurrent distressing dreams of the event, (3) acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated, (4) intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event or (5) physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event. Criterion C denotes persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following: (1) efforts to avoid thoughts, feelings, or conversations associated with the trauma, (2) efforts to avoid activities, places, or people that arouse recollections of the trauma, (3) inability to recall an important aspect of the trauma, (4) markedly diminished interest or participation in significant activities, (5) feeling of detachment or estrangement from others, (6) restricted range of affect (e.g. unable to have loving feelings), (7) sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span).

Criterion D indicates that there must be persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following: (1) difficulty falling or staying asleep, (2) irritability or outbursts of anger, (3) difficulty concentrating, (4) hypervigilance or (5) exaggerated startle response. The duration of the disturbance (symptoms in Criteria B, C, and D) must be more than one month and if it is less than one
month then it is known as Acute Stress Disorder. Lastly, the disturbance must cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Helping professionals are not immune to the effects of trauma and sometimes become victims while trying to protect or come to the aid of others. Al-Naser and Everly (1999) surveyed a random sample of Kuwaiti firefighters and found the prevalence of PTSD to be about 18%. In a study sampling 469 volunteer firefighters exposed to a severe natural disaster in Australia, 16% were found to have PTSD (McFarlane, 1988). The longevity of these symptoms vary but in studies of firefighters and rescue workers rates of PTSD, ranging from 13% to 18%, have generally been found one to four years after large-scale response events (North, Tivis, McMillen, 2002). In a sample of suburban police officers, 13% were found to meet the criteria for PTSD (Robinson, Sigman, & Wilson, 1997). Professionals who work with traumatized patients or encounter traumatic situations can have various stress responses known in the literature as vicarious traumatization, burnout, compassion fatigue and secondary traumatic stress. Although the latter term will be the focus of this study it is important to understand posttraumatic stress disorder, from which this concept is derived, and similar concepts in the field in order to have a better understanding of secondary traumatic stress. Therefore, the following will be a description about the evolution of stress constructs in the field.

**Development of stress constructs.** Professionals assisting individuals with the physical, emotional or behavioral sequelae of trauma can be a demanding, albeit rewarding, profession. Although, the aftermath of trauma exposure has been studied for decades the target population has historically been the individual that directly witnessed
or experienced a stressful event. The literature has looked at children who have been abused, neglected or a witness to domestic violence, and adults who have been sexually assaulted, suffered interpersonal violence, motor vehicle accidents and natural disasters, just to name a few. In the last decade, the field has expanded the focus to include those individuals who support people in the aftermath of trauma. Although, there are potentially negative consequences of indirect exposure to trauma, as well as negative implications for healthcare, this occurrence has not been widely examined. Several important terms, which have sometimes been used incorrectly and synonymously, are vicarious traumatization, secondary traumatic stress, compassion fatigue and burnout. These are distinct although related concepts, which are important to delineate.

Compassion fatigue (Joinson, 1992) came out of the nursing literature and is defined as a natural consequence of caring and working with clients who are in pain, traumatized, suffering or have experienced a stressful event. Professionals who deal with trauma survivors are more susceptible to a compassion stress reaction in relation to their work as a result of feeling and expressing empathy for an individual’s pain and the desire to help end their pain. Empathy is viewed as the portal to helping someone in pain, but it is also what makes someone vulnerable to compassion fatigue (Stebnicki, 2007). Rogers (1980) describes empathy in this way: “It involves being sensitive, moment by moment, to the changing felt meanings which flow in this other person...It means temporarily living in the other’s life, moving about in it delicately without making judgments” (p. 142). When compassion fatigue occurs, the professional exhibits a decreased ability to provide the same compassion that existed before exposure to the traumatized individual
and as a result provides less effective care (Sexton, 1999). Secondary traumatic stress is believed to be a result of compassion fatigue (Figley, 1995). Gentry, Baranowsky, & Dunning (2002) propose that compassion fatigue is a combination of ‘secondary traumatic stress’ and ‘burnout’ in healthcare professionals who encounter people who are suffering. However, this viewpoint does not seem to be shared by the majority of researchers. It is more commonly believed that STS emerged out of the research conducted on compassion fatigue and the construct of STS is more evolved in that it considers emotional exhaustion and focuses on the way in which this is manifested and transcends beyond the work with the patient/client. Compassion fatigue, secondary traumatic stress (Figley, 1995) and vicarious trauma (McCann & Pearlman, 1990) can all result in decreased empathy for the suffering.

Secondary traumatic stress (STS; Figley, 1995) is a phenomenon that occurs as a result of indirect exposure to trauma either through helping traumatized individuals or having knowledge of a traumatizing event of a significant other. STS arose out of the research regarding compassion fatigue and Figley has used these terms interchangeably. However, it seems that compassion fatigue is the precursor to STS and the possible model for understanding the development of PTSD. STS manifests as almost identical cognitive, emotional, behavioral, and physiological symptoms of PTSD including the three main clusters of symptoms: hyperarousal, intrusive imagery, and avoidance of reminders (Figley). Figley identified two main risk factors for the development of STS, which are history of personal trauma, and effectiveness of coping style employed to deal
with past trauma. Researchers have found that experiencing trauma makes someone more likely to be retraumatized.

Vicarious traumatization (VT; McCann & Pearlman, 1990) is based on the constructivist self-development theory, which hypothesizes that an individual constructs their reality based on their cognitive schemas. If these schemas are disrupted, the individual’s perception of reality changes. VT refers to a fundamental change in a professional’s cognitive schemas about the self, others and the world following repeated exposure to a patient’s traumatic material. The ruptures in cognitive schemas occur in the area of safety, trust, self-esteem, intimacy and control. These disruptions are pervasive and permanent (Baird & Kracen, 2006). In addition to changes in self-perception, of others, and the world, the professional’s psychological needs, sense of identity and memory systems are also affected. Therapists listen to their patients retelling of traumatic events and the meaning they attribute to these events. Therapists can be left with images described to them by patients and their own images that form as the patients tell their story. Vicarious traumatization causes someone to feel emotionally depleted, pessimistic, helpless and less affectively regulated. If vicarious trauma is ignored or goes unnoticed then the individual can suffer in their personal and professional life. Countertransference issues can erupt causing the therapist to alter their responses to the patient based on their feelings about the patient’s trauma and/or negatively impact the patient’s treatment (Herman, 1992). Vicarious traumatization differs from STS in that the main focus is on changes in cognitive schemas not on the development of PTSD symptoms as in STS.
Burnout is a more widely applicable term describing a job-related stress response that is not distinct to working with trauma survivors. Burnout (Maslach and Leiter, 1997) is a gradual wearing down of an individual due to occupational strain stemming from a lack of organizational support to fulfill one’s professional role. The three main components of burnout are cynicism related to one’s job, mental exhaustion, and decreased professional efficacy (Maslach, Schaufeli & Leiter, 2001). The interplay of organizational dynamics and occupational role evoke negative feelings such as powerlessness and frustration, which cause a change in behavior and attitude (Leiter, Harvie, Frizell, 1999). Burnout has also been defined as a “progressive loss of idealism, energy, and purpose experienced by people in the helping professions” (Edelwich & Brodsky, 1980). Burnout makes an individual more susceptible to compassion fatigue (Figley, 1995) depending on the nature of their work. Burnout, compassion fatigue, vicarious traumatization and secondary traumatic stress all, by definition, have negative consequences on the professional that if not addressed could put them at risk for more severe psychopathology, render them unable to provide the same high quality of care or worse unknowingly cause damage to a patient.

**Medical Professionals Vulnerability to Stress Reactions**

Many people, especially those in a helping profession, are witnesses to secondary trauma almost everyday. “First responders” are trained helping professionals who respond to an emergency or crisis call, including doctors and medical staff (Dorfman & Walker, 2007). For persons who work with trauma survivors, it is important to acknowledge that the severity of the work will affect them, and that PTSD from exposure
to trauma is something that directly affects some service/front line workers (Mitchell, 1985). The majority of first responders who encounter a critical incident do not develop full blown PTSD (or the classical symptoms i.e. flashbacks or nightmares) but more typically experience emotional numbing, withdrawal from social and family involvement, denial of feelings and increased use of substances (Dorfman & Walker, 2007). A critical incident is any event that has the power to overwhelm first responders’ ability to cope either immediately or in the future. Dorfman and Walker (2007) devised a list of characteristics that are considered to be important for crisis workers such as successful resolution of their own life experiences, professional skills such as assertiveness, attentiveness, analytical thinking, quick mental resources, creativity and flexibility.

As the health care system in the United States has evolved over the last 30 years, the severity of patients’ illnesses has increased thereby increasing the intensity of the hospital setting (Wicks, 2006). Physicians are faced with the dilemma of carefully balancing emotional detachment, seen as necessary for rational clinical decision making, and identification with the patient to provide empathy (Barbato, 2006). It is suggested that many medical personnel engage in denial as a survival mechanism but those who entrench themselves in this style for protecting themselves are at risk of shutting down completely (Wicks, 2006), thereby affecting their personal and/or professional life.

Physicians are exposed to a variety of stressors that can impact their effectiveness as health care providers. They are vulnerable to secondary stress, which represents the stress caused by pressures placed on them and can be viewed as having three components: chronic secondary stress (i.e. burnout and compassion fatigue), acute secondary stress (also referred to as vicarious PTSD) and unhealthy aspects of the
medical health care culture (Wicks, 2006). Shanafelt, Bradley, Wipf, and Back (2002) found that three of four medical residents suffer from “burnout.” Vicarious post-traumatic stress is a great risk for physicians because not only do they attend to medical emergencies, but also circumstances necessitate soothing a patient suffering psychic trauma stemming from a physical injury (e.g. assault, rape; Wicks, 2006). Stress derived from the healthcare culture are attributed but not limited to conflicts with peers, staff and administration, sleep deprivation, poor self care and lack of appropriate staffing (Wicks, 2006).

**Pediatric Intensive Care Unit Physicians**

Pediatric intensive care unit (PICU) physicians, also known as intensivists, routinely work in a demanding, highly technical environment where death and dying are common events (Ryan, 1996) and errors can be dangerous and even fatal (Abramson, Wald, Grenvik, Robinson, & Snyder, 2000). A pediatric intensivist is a person who went to medical school for four years, participated in a three-year pediatric care residency, and a subsequent two-three year pediatric critical care fellowship (American Academy of Pediatrics, 2002). A pediatric intensivist is a physician who is highly trained in childcare and deals with medical emergencies in which children and adolescents are acutely ill or injured (Huault, 1989). Intensivists attend to a range of emergencies from animal bites and sprains to serious or life threatening emergencies such as burns, head injuries and high, persistent fevers (American Academy of Pediatrics, 2010). PICU intensivists are responsible for diagnosing children with unstable or life threatening conditions, placement of special catheters in blood vessels and heart, management of treatment for
children with brain trauma and severe heart and lung disease (American Academy of Pediatrics, 2002).

Pediatric intensivists work in facilities that are specially equipped to provide emergency care to children and include the emergency departments of children’s hospitals, teaching hospitals, community hospitals, and pediatric urgent care centers. Many PICUs are in teaching hospitals, which then add an additional component to the intensivist’s responsibilities by teaching while providing critical care to a child. PICU’s are equipped with special equipment and high technologies to enable care for the pediatric patient. PICUs operate as a team and several health care professionals are involved in every case such as nurses, doctors, and respiratory therapists requiring collaboration for the care of the child (Kids Health, 2009). Collaboration could create added stress on the intensivist based on the organizational climate and peer relationships. While providing urgent care, PICU physicians are also encouraged to be mindful of the volume of patients that are waiting. Studies have shown that as the volume of patients increases so does the rate of premature departure from the hospital (Cross, Cammack, Calhoun, Gracely, Kim, Stevenson, & Woods, 2010). Additionally, longer wait times are associated with premature departures even in cases that are deemed emergent and urgent putting pressure on intensivists to improve flow and circulation of patients (Cross et al.). The number of pediatric intensivists, pediatric intensive care units (PICU’s), and pediatric intensive care beds in the United States have increased dramatically in recent years as the need for this specialty has risen (Collaborative Pediatric Critical Care Research Network, 2010).
PICUs vary by hospital with some offering private rooms, housing more beds, or are equipped with subspecialty clinics. The PICU at the Children’s Hospital in Colorado for instance, provides comprehensive services for children with single or multiorgan system failure, complex severe chronic illness, recovering from complex cardiac, orthopedic, neurologic and general surgeries, and patients undergoing solid organ transplantation (Children’s Hospital of Colorado, 2010). PICU is also an area for postoperative patients to be monitored. The critically ill child in the PICU requires close monitoring and intense medical and nursing care to aid the healing process. Due to the acute state of the patients in the PICU, they are often connected to ventilators, monitoring machines (i.e. heart rate and blood pressure), and intravenous fluids (Kids Health, 2009), which can be a difficult sight on a daily basis especially since the patients are vulnerable children.

Children’s stay in the PICU can range from days to weeks to months depending on their medical situations (Kids Health, 2009). A doctor providing medical care to a child overtime might form an attachment to the child or become more invested in their case, thereby causing more of an emotional strain on the physician. Intensivists have the pressures of communicating with parents effectively to work together in critical situations to make decisions about a child’s care (DeLemos, Chen, Romer, Brydon, Kastner, Benjamin, Hoehn, 2010). Additionally, admitting a child into the ICU can be a stressful experience with almost one third of parents experiencing acute stress disorder (Balluffi, Kassam-Adams, Kazak, et al, 2004). PICU physicians have the added responsibility of communicating with a parent, who is possibly experiencing high anxiety, especially
within the first 24 hours of hospitalization (Needle, O’Riordan, Smith, 2009), in addition to providing medical care for the child.

Working with children and dealing with their pain and suffering could increase PICU intensivists stress level and reactions to stress. Beaton and Murphy (1995) reported that police, firefighters, and emergency medical technicians were the most vulnerable when dealing with children. Pediatric and neonatal intensive care professionals may experience primary traumatization if a medical event is traumatizing for the professional (e.g. working with a severely burned child; Peebles-Kleiger, 2000). However, secondary traumatization seems to be more likely than primary traumatization among helping professionals. STS can occur when a physician overidentifies with the patient, his/her experience, or the coping response (Figley, 1995). Even though the children under the physician’s care are not his/her own, an emotional identification exists if the patient is similar in age, gender, or temperament to one’s own child (Meadors and Lamson, 2008).

Providing medical care for children can be more challenging because children are not always cooperative or patient, may not be able to answer medical questions or explain what is bothering them (American Academy of Pediatrics, 2002). Additionally, it is natural for any empathetic caregiver to be affected by a child in a precarious situation.

Various factors can influence the likelihood of STS or make someone more vulnerable to developing it. Proximity, severity and intensity are criteria that usually affect the stress response level to trauma exposure (American Psychiatric Association, 2002). Prolonged exposure to a patient’s suffering, unexpected nature of a patient’s case, lack of knowledge of STS, and inadequate time to process or deal with trauma on the unit are all factors that can increase susceptibility to STS (Meadors & Lamson, 2008). It has
been noted that many pediatric emergency visits are iatrogenic but are not avoided due to lack of or insufficient previous medical care (Huault, 1989). These circumstances could create more pressure or frustration for the intensivist as their job entails assisting the family in understanding the root of the problem and trying to correct that which could have been prevented.

Coping with the feelings and reactions to the patient’s trauma is an integral step in addressing primary and secondary trauma. These unresolved issues coupled with other occupational stressors would inevitably affect a physician’s ability to provide optimal care to his/her patients. In a study conducted by the Michigan Health and Safety Coalition (2004) six factors were implicated in affecting how a PICU intensivist works: patient factors (e.g. severity of illness), task factors (e.g. needed test results), provider factors (e.g. knowledge, fatigue, attitude), team factors (i.e. effective communication, supervision), ICU environmental factors (proper maintenance of equipment, workload), and institutional environmental factors (e.g. factors related to the overall structure of the hospital such as health insurance pressures). Although many factors, inherent in the role of a pediatric intensivist, can contribute to their overall stress level, it can also cause them to be more susceptible to STS. As stress levels increase, it is likely that an individual’s cognitive and emotional resources diminish, increasing the difficulty to cope effectively with the trauma of others. So in addition to the nature of the pediatric intensivist’s job laying the foundation for possible secondary traumatic stress, the added occupational stress increases the likelihood.
**Occupational Stress**

Occupational stress is a recognized problem in health care workers, and doctors especially, and they have been considered to be at risk (Firth-Cozens, 1998; Berger, 2000). Many different factors play a role in the level of stress endured by physicians. Coomber et al (2000) reported that bed allocation when the ICU is full was the most stressful factor and occurred often among intensivist respondents. Speaking with distressed relatives of patients and dealing with death were reported to be frequent occurrences but were rated as slightly to moderately stressful and mildly stressful, respectively. Coomber et al. also found that making decisions alone was more stressful than with the support of a team and was a statistically significant stressor for the depressed doctors. Among the 627 doctors surveyed by Coomber et al., 12% reported taking sleeping aids, 4% anxiolytics, and 4% antidepressants suggesting that occupational stressors were affecting their functioning.

In a national study of intensivists in the UK (N=627), it was found that 12% scored above the threshold for depression according to the Symptom Checklist Depression Subscale (SCL-D), and 3.2% of surveyed doctors reported moderate to extreme frequency of suicidal ideation in the last month (Coomber, Todd, Park, Baxter, Firth-Cozens & Shore, 2002). Coomber et al (2000) found that the level of career satisfaction in intensivists was associated with depression and distress, identified by the General Health Questionnaire (GHQ). Coomber et al. also revealed high levels of alcohol and substance use and misuse among intensivists suggesting the use of maladaptive coping strategies.
Excessive stress resulting from the work environment can be detrimental. Chronic stress can increase the risk for psychobiological consequences such as dysphoria, sleep disturbances and interpersonal difficulties making them more vulnerable to illness (Shaw, 2006). Workers who report high stress are 30 percent more likely to have accidents than those with low stress (Nursing Matters). Fortunately, job satisfaction has been found to be a protective factor against burnout and experiencing depressive symptoms and other psychiatric symptoms (Ramirez, Graham, Richards, Cull, and Gregory, 1996; Coomber et al). Medical professionals who reported greater levels of stress reported significantly more difficulty separating work from their personal life and endorsed more negative behaviors on a measure of compassion fatigue (Meadors & Lamson, 2008). In addition, individual differences, also viewed as personality traits, contribute to the range of responses to similar stressful events (Horowitz, Field, and Classen, 1993).

**Individual Differences: Ego Strength**

Erikson’s (1964) well-known theory of psychosocial development provides an explanation for the way nurturing and life experiences affect behavior and personality. Erikson’s psychosocial model is divided into eight “crisis” stages throughout the life span through which successful navigation leads to healthy development and ego strengths, or basic virtues. Each crisis stage is characterized by two opposing emotional forces or dispositions, syntonic (e.g. Trust) and dystonic (e.g. Mistrust), and a correlating developmental stage during which the crisis or internal conflict is resolved. The “positive” disposition was also seen as an Adaptive Strength. These stages are hierarchical and sequential therefore, unresolved conflicts hinder development and
acquisition of ego strengths. That being said, resolution of a crisis is not necessarily permanent or invulnerable to experiences; a resolved crisis can resurface and pose a challenge to an individual, which could result in a different outcome (negative or positive) than the initial experience with a crisis.

Erikson believed that success at each crisis was a healthy balance between the two dispositions resulting in a basic strength or virtue. "The ego strength of hope emerges from trust vs. mistrust in infancy, will emerges from autonomy vs. shame/doubt and purpose from initiative vs. guilt in early childhood, competence emerges from industry vs. inferiority during latency, fidelity emerges from identity vs. identity confusion in adolescence, love emerges from intimacy vs. isolation in young adulthood, care emerges from generativity vs. stagnation in adulthood, and wisdom emerges from integrity vs. despair in later adulthood" (p.706; Markstrom, Sabino, Turner and Berman, 1997). An unsuccessful outcome of a crisis is a propensity toward one of the dispositions, whether it is negative or positive. For example, progressing through the first stage Trust vs. Mistrust, and having complete and unquestioning trust toward people would make someone vulnerable to being taking advantage and being totally mistrustful of everything would not be healthy either. Erikson termed the behavioral tendency toward the "positive" extreme maladaptation, and he termed overly adopting the "negative" extreme malignancy. These unhelpful or damaging emotional, behavioral and psychological tendencies become part of the personality. A list of the maladaptions and malignancies, with the corresponding eight crises can be found in Table 1. These maladaptations, malignancies and basic strengths dictate an individual’s perception of and response to a certain situation.
Table 1

Erikson’s Eight Psychosocial Crises and Corresponding Maladaptations and Malignancies

<table>
<thead>
<tr>
<th>Crisis</th>
<th>Maladaptation</th>
<th>Malignancy</th>
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<tbody>
<tr>
<td>Trust vs. Mistrust</td>
<td>Sensory Maladjustment</td>
<td>Withdrawal</td>
</tr>
<tr>
<td>Autonomy vs. Shame/Doubt</td>
<td>Impulsivity</td>
<td>Compulsion</td>
</tr>
<tr>
<td>Initiative vs. Guilt</td>
<td>Ruthlessness</td>
<td>Inhibition</td>
</tr>
<tr>
<td>Industry vs. Inferiority</td>
<td>Narrow Virtuosity</td>
<td>Inertia</td>
</tr>
<tr>
<td>Identity vs. Role Confusion</td>
<td>Fanaticism</td>
<td>Repudiation</td>
</tr>
<tr>
<td>Intimacy vs. Isolation</td>
<td>Promiscuity</td>
<td>Exclusivity</td>
</tr>
<tr>
<td>Generativity vs. Stagnation</td>
<td>Overextension</td>
<td>Rejectivity</td>
</tr>
<tr>
<td>Integrity vs. Despair</td>
<td>Presumption</td>
<td>Disdain</td>
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Block and Block (1980) examined ego-control and -resiliency in regards to functioning in early childhood. They defined ego-control as a threshold that exists that once met determines the release or suppression of impulses, feelings and desires. Impairment in ego control resembles certain maladaptions and malignancies (e.g. impulsivity) described by Erikson. Ego resiliency (Block, 1950) is being flexible and resourceful in problem situations and being able to modulate the characteristic level of ego control appropriately based on the situation to maintain or regain equilibrium. Ego resiliency is viewed as lying on a continuum with ego brittleness being on the polar opposite side (Block and Kremen, 1996). Ego brittleness is the inability to adapt to a situation and employ either under or overcontrolled ego. Essentially, it is difficult in modulating emotion appropriately based on the circumstances and the tendency to become disorganized when faced with new situations. An ego brittle person is more
prone to anxiety because they have not learned how to self regulate or respond effectively to the ever changing world. Oshio et al., (2002) found that emotional regulation and positive future orientation were contributing factors to adolescent resilience in the Japanese population.

Ego strengths have been associated with resilience. Friborg, Hjemdal, Rosenvinge, & Martinussen (2003) listed personal and social competence as well as personal structure as factors that are responsible for promoting adult resilience. Ability to sustain competence in the face of adversity has also been cited as a definition for resilience in terms of trauma (Masten, 1994). Graham-Bermann, Gruber, Howell & Girz (2009) found that children exposed to domestic violence demonstrated greater resilience if they were high in self worth and social competence. Autonomy, another ego strength listed by Erikson, is developed through a secure attachment, and is an individual characteristic associated with resilience (Rutter, 1993).

The structure and organization of personality determines one’s approach to problems encountered in life and therefore plays a role in the perception of and adjustment to stressors (Lazarus, 1961). Historical evidence exists to suggest that personality styles are associated with vulnerability to and developmental course of clinical and subclinical psychological problems (Gittelman-Klein & Klein, 1969; Weissman, Prusoff, & Klerman, 1978 as in Everly & Lating, 2004). Theodore Millon (1969; as in Everly & Lating, 2004) has argued that psychiatric disorders are “best understood as pathological extensions, or epicenters, of latent personality processes, personality styles, and aggregate personologic constellations.” Millon differentiated between Axis I psychiatric disorders, which he considered to be simple clinical reactions,
and complex clinical syndromes (CCS); PTSD falls in the latter category. CCSs are thought to arise when an individual’s homoeostatic personality has become threatened or jeopardized and certain personality traits become activated. The CCS is connected to the preexisting personality vulnerabilities and coping styles (Everly & Lating, 2004).

Differences in coping mechanisms influence behavioral and cognitive consequences of stress (Lazarus, 1961). Environmental stressors activate particular personality-based selective perceptual filters. These filters serve to block aspects of the environment from being processed, serving as a psychological immune system (Rahe, 1974).

One of the largest occupational profiles for personality factors found that the nurse profile deviates from the reference populations showing above-average ego strength (Stewart, 1966), which is a characteristic that would be expected in women needing to handle sometimes emotionally disturbing situations (Cattel, Eber and Tatsuoka, 1992). Interestingly, the profile on physicians (general practitioners) did not deviate from the general population personality in regards to ego strength. It has been postulated that individuals that have to adjust to sudden external difficulties in an occupational setting, such as would be seen in an ICU, are selected for their high ego strength. Low ego strength scores are shown in most disorders and is the most general pathological “contributor” being found in neurotics, alcoholics and drug addicts (Cattel, Eber and Tatsuoka, 1992).

Nurses who were also characterized as more "hardy" experienced lower levels of burnout than nurses lower in this construct (Keane, Ducette, & Adler, 1985) suggesting it serves a protective function. Hardiness is comprised of three components: being committed to finding meaning and purpose in life, the belief that one can influence one’s
surroundings and the outcome of events, and the belief that one can learn and grow from both positive and negative life experiences (Kobasa, Maddi, & Kahn, 1982). Several of the ego strengths in Erikson's model are congruent with the concept of hardiness, more specifically, will and optimism to keep moving forward in life, renewed hope in the face of disappointment, and courage to accomplish one's goals.

Ego resiliency is the ability to be flexible and resourceful especially in problem situations. It is cultivated by a nurturing and responsive caregiver (Block and Block, 1980). Infants classified as securely attached relative to anxious and avoidant infants, scored higher on a measure of ego resilience and level of competence at the age of five (Arend, Gove, & Sroufe, 1979). Children that are securely attached typically have a nurturing caregiver therefore it is postulated that a securely attached individual would have greater ego resilience. Atwool (2006) posits that attachment style has implications for resiliency in that a secure internal working model includes the factors that contribute to resiliency.

**Attachment Theory**

Ainsworth (1989), a pioneer in attachment research, posited that there is an underlying attachment behavioral system, which is biologically based and is a fundamental part of the human species regardless of culture (Ungar, 2008). This behavioral system drives an individual to keep a significant other in close proximity via various behaviors. The behavioral system has an inner organization that undergoes developmental changes as it is affected by environmental influences. As a result of these changes, different behaviors are manifested and evoked by different situations. Through a
child’s development the attachment behaviors change as a child acquires language, locomotion and increased cognitive development altering the way in which a parent and child relate. For example, as a child learns to walk he/she begins to explore the environment and then returns to the attachment figure to seek out safety or assurance. An attachment figure can also be a parent surrogate such as a mentor, older sibling, or teacher, with whom the child finds security. Around the age of 3 or 4, a child becomes more aware of a caregiver’s motives and plans, and figures out ways to change these to more closely resemble what he/she needs or wants. Another shift occurs at the onset of adolescence in part by hormonal and a neurophysiological change, but also as the adolescent seeks a partnership with a same age peer.

Early patterns of attachment inform the quality of information processing throughout life (Crittenden, 1992). Bowlby (1969) believed that internal working models were developed in the formative years and were dependent on a child’s relationship with his/her caregiver. Through this relationship a child develops a self-perception (worthy or unworthy of care), a mental representation of others (i.e. available and reliable; Atwool, 2006) and a foundation with which to evaluate interactions with others (Sroufe, 1988). These internal working models are the basis for one’s interpretation of affective experience (Fonagy, 2003). The process of attachment facilitates the infant’s development of an understanding of his/her internal state as well as the state of others (Fonagy). Schore (2001) contends that infant’s exposure to their caregiver’s ability to self-regulate provides a framework for how the infant will cope with stressful situations. Internal working models have a tendency to be stable across development; however, they can be influenced by new experiences (Bowlby). The research has not reached a
consensus regarding the continuity of attachment style across time with there being evidence for both change and consistency.

Level of attachment could also influence an individual’s response to trauma and the development of PTSD. John Bowlby (1969), a pioneer in attachment theory, explains that there are two important systems that interact with attachment, one suggesting that there is an inherent fear of the unknown. This fear causes someone to feel vulnerable and generates a desire to attach to a familiar object invoking a survival mechanism. The other system drives the child to explore the environment, which results in learning and adaptation to one’s environment thereby promoting survival. Healthy attachment is suggested to affect the foundation of personality development (Herman, 1992). “When this secure connection is shattered, the traumatized person loses her basic sense of self (p. 52).” Shaw (2006) concluded that attachment and childhood strengths are reciprocal in nature, each cultivating and being able to enhance the other. Among children who were exposed to chronic abuse and trauma, those who formed a semblance of attachment with an authority figure had less psychological consequences in adulthood demonstrating resiliency to the extensive trauma.

Ainsworth (1989) also describes the affectional bond, which can exist in addition to an attachment and is unique from attachment in that it is not a relationship. “Affectional bonds are characteristic of the individual, not the dyad, and entail representation in the internal organization of the individual person (p.3).” An affectional bond is long lasting, enduring, and there is a desire to maintain closeness to the other. Additionally, an individual with whom the bond is maintained is irreplaceable such as in an attachment with a caregiver.
Ainsworth (1989) created and used the Strange Situation Procedure to observe parent and child interactions and a child’s response to separation from the parent and then subsequent reunion. Ainsworth identified three forms of attachment: secure, ambivalent and avoidant, which represent internal working models. Since that time Main, Kaplan, and Cassidy (1985) have identified a fourth attachment style they named “disorganized,” which has then been adopted by others in the field. The disorganized children were previously grouped with securely attached children because they did not seem to fit well in any of the three attachment styles. The disorganized attachment style has been highly associated with children that are in abusive situations and raised by a caregiver who is either frightened or frightening (Hesse & Man, 2000).

Ainsworth (1989) conceptualized a secure attachment to be fostered by a parent’s responsiveness (ability to tune into the infant and respond appropriately), availability, affection and warmth toward a child. A secure base is formed as a result of these positive behaviors exhibited by the parent; it is from this secure base that the child evaluates and organizes their world and learns to cope with stressful situations. This security in the attachment figure gives the infant the confidence to explore their world and retreat if faced with threat. The secure attachment provides the foundation for optimal development and classifies about 55-60% of children in community samples (Steele & Steele, 2008).

The avoidant and ambivalent insecure attachment styles develop as a result of an infant’s attempt to adapt to an unstable environment (Atwool, 2006). Defensive exclusion is a concept used to explain a child’s strategy to suppress information, that otherwise would be too unbearable, in order to survive in an environment by maintaining closeness
to an attachment figure who is not always emotionally available (Bowlby). The avoidant pattern (20-25% of children in community samples) develops in the context of a rejecting relationship to which the child learns that others are unreliable, the environment is dangerous and believes the self to be unworthy. The caregiver is unable to tolerate the infant’s distress and the infant is made to feel that his/her own distress is unreasonable. The infant disengages from attachment behavior as a means of protecting oneself from rejection and withdraws from affective experiences. Cognitive development moves to the forefront and the child relies on problem solving and hyperfocuses on control; the ability to reflect on one’s own internal state and that of others becomes impaired.

The ambivalent pattern evolves in the context of inconsistent and possibly intrusive responses from the attachment figure. Due to the unreliability of this relationship, the infant views the environment as unpredictable and chaotic, others as insensitive and/or overbearing, and develops an uncertainty about the worthiness of oneself. The ambivalent pattern is opposite to that of the avoidant pattern in terms of cognitive and affective responses. Ambivalent children (10-15% in community samples) suppress cognitive responses because they were unhelpful in evaluating the relationship with the attachment figure because it was so inconsistent. Affective experiences become heightened as a means of maintaining closeness with and relating to the caregiver. The caregiver becomes overwhelmed or helpless in response to the infant’s distress causing the infant to adopt a distorted view of his/her own distress. Therefore, the infant’s emotions become underregulated and the infant does not learn to self-regulate because this has not been modeled. The child becomes more focused on his/her own emotions and struggles to understand the internal state of others.
Disorganized attachment is the atypical pattern that results from a situation of abuse and/or neglect. The infant perceives the self to be unworthy, others to be dangerous, and the environment to be chaotic and dangerous. Due to the perceived danger around the infant, he/she maintains a state of hyperarousal to the extent that cognitive development becomes hindered. The disorganized child is hypersensitive and vigilant of the attachment figure’s and other’s internal state but has difficulty identifying feelings correctly. Reflective functioning under these circumstances is impaired. Disorganized children are the most vulnerable to risk factors and have the lowest probability of resilience.

**Adult Attachment Style and Patterns**

George, Kaplan and Main (1985) sought to examine the role of attachment in personality development by interviewing adolescents and adults to see how they feel and think about their childhood attachment experiences. This interview known as the Adult Attachment Interview (AAI) is the gold standard in adult attachment literature and was a pivotal instrument in extending the attachment phenomenon to include adult functioning. In an adult relationship, there are three behavioral systems involved: attachment, reproductive and caregiving. In a long-term relationship, attachment between the individuals develops and the caregiving component interacts with the attachment to form a reciprocal, give and take relationship.

The AAI assessment of adult and adolescent internal working models of the self in terms of autonomy focuses on the processes, the manner in which the individual conveys emotion-laden attachment memories. Conversely, the infant’s internal working
model is about the content (Main & Goldwyn, 1998). Focusing on the process, more specifically, coherence, openness, and flexibility, gives evidence to the emotional regulation pattern or strategies used by the individual. Additionally, the infant’s pattern of emotion regulation is congruent with their internal working model of the self. However, in adolescence the manner in which one regulates emotion may not be consistent with the internal working model of self (Allen & Land, 1999). From infancy to adolescence a child mirrors the caregiver’s strategy for emotion regulation since it is adaptive. During this time, the adolescent’s attachment organization is a reflection of the relationship with the caregiver. When the adolescent does not need to rely on the caregiver for emotional regulation, then the adolescent can develop an independent style. It is during this stage that the attachment strategy stabilizes, is internalized and continues into adulthood.

Researchers have attempted to measure the construct of adult attachment. Backstrom and Holmes (2007) argue that the adult attachment literature fails to directly measure what can be considered the backbone of attachment theory, security. Brenan, Clark and Shaver (1998) assumed security to mean the absence of avoidance and anxiety in their two dimensional model of adult attachment. However, that viewpoint does not take into consideration the positive aspects of security and the implications of a secure attachment. Bartholomew and Horowitz (1991) developed a four dimensional scale to measure attachment including secure, fearful, preoccupied, and dismissing. The preoccupied and dismissing categories are best equated with attachment theory’s ambivalent and avoidant styles, respectively (Backstrom and Holmes, 2007). The composite of dismissing and fearful together are congruent with infant avoidant attachment.
According to Main and colleagues (1985), a secure-autonomous adult has childhood memories easily accessible in their mind and is able to speak about them in a coherent and organized manner. An adult who demonstrates a current insecure state of mind regarding attachment “defends against conscious awareness of childhood attachment difficulties” basically dismissing what one knows to be true about the past. The adult with the insecure-preoccupied current attachment gives an inordinate amount of attention to childhood attachment difficulties and is unable to present an organized representation of the past. The individual seems overwhelmed with emotion and can be tangential during discourse in memories of childhood.

Allen et al. (2007) examined adolescent attachment security in an at-risk population over a two-year period from age 16 to 18 and found that level of security was significantly stable. When shifts in security did occur the change was accounted for in part by family interactions, poverty and depression. Studies using the AAI have demonstrated that some adults show a continuity of secure attachment from childhood into adulthood (Steele & Steele, 2008). And there are others whose early attachment appear insecure but have a secure profile implying that a shift occurred at some point in childhood due to corrective experiences in other relationships.

Ainsworth, Hazan and Shaver (1987) proposed that three mutually exclusive attachment styles, secure, anxious, and avoidant, characterize the internal working models from which adults form relationships. Although, meaningful differences have been found between these different styles, limitations in categorizing individuals into only one attachment style led Fraley and Waller (1998) to propose that adults should be rated on each attachment style when examined to yield multiple continuous scores. In
light of taxometric research published by Fraley and Waller (1998), most researchers currently conceptualize and measure individual differences in attachment dimensionally rather than categorically. Brennan, Clark, & Shaver (1998) suggest that there are two fundamental dimensions of adult attachment patterns, attachment-related avoidance and attachment-related anxiety, where an individual falls along these two dimensions. Fraley and Waller (1998) contend that the dynamic concepts of attachment theory do not require that individuals be categorized, as it would be ignoring the variability of the individual differences. Although, attachment theory as described by Bowlby and Ainsworth employs discrete categories for attachment style, current researchers believe they are still being true to the tenets of the theory and the strength of the theory does not lie in the typology. Typology does not capture the natural structure of attachment security and that attachment is a variable in which people differ in degree rather than in type. Categorization of attachment would cause researchers to overlook natural patterns and see patterns that do not exist. Failing to detect a true effect is even more problematic because the proportion of people that fall into the insecure categories is already small (Fraley and Waller, 1998).

**Attachment Style and Trauma**

Attachment representations have been associated with various psychological disorders. Stovall-McClough and Cloitre (2006) examined a group of adults diagnosed with PTSD and found an overrepresentation, 63%, of unresolved/disorganized attachment. However, all of these individuals had an abuse history, which could be the reason for the unresolved attachment, as opposed to unresolved attachment making
someone more vulnerable to the development of PTSD when exposed to a traumatic event. Unresolved or disorganized states of mind are more vulnerable to trauma-related dissociative disorders. The lapses in discourse, inconsistencies and fragmentation in speech, and disorganization reflected in an AAI are believed to be dissociative in nature.

Maunder and Hunter (2001) proposed a model based on attachment research to suggest that attachment insecurity is linked to an increased risk of disease. The paths denoted in this model are increased susceptibility to stress, altered help seeking behavior and external means of regulating affect (i.e. substance use). More specifically, dismissing individuals are self-sufficient and have a positive self-view but are mistrusting of social support and lack intimate relationships (Bartholomew & Horowitz, 1991). Therefore, they would have difficulty and be less likely to seek help even during times of illness. Fearful individuals have a negative self and other view and are characterized as shy, cautious and suspicious, which would negatively affect developing social connections (Bartholomew & Horowitz). Preoccupied individuals do not have faith in their own ability to cope but have an overreliance on others and seek support. However, the sense of comfort stemming from the support is transient and the individual enters with trepidation.

Attachment literature describes insecure attached individuals of the preoccupied and fearful avoidant types as reacting to stressful events by ruminating on negative thoughts, feelings and memories (Declercq & Willemsen, 2006). Belsky, Spritz, and Crnic (1996) found that insecurely attached children remembered more negative events and securely attached children remembered more positive events. They suggested that since attention to negative and positive events was relatively the same, children with
different attachment histories presented with the same experience, experience it differently.

Bowlby (1988) proposed that relationship-specific attachments developed in early childhood generalize over time and transcend beyond the parent-child dyad relationship. These generalized relationship representations provide a template for attachment related affect, behavior and ideas. Evidence has been provided to demonstrate the stability of attachment from infancy to adulthood (Crowell and Waters, 2005). An increasing amount of empirical evidence suggests that securely attached adults are able to cope with stressful experiences in a more constructive way and assess them more positively than insecurely attached adults. Insecure adult attachment has been associated with negative affect and lower levels of emotional adjustment (Brennan, Shaver, & Tobey, 1991; Pielage, Gerlsma, & Schaap, 2000; Platts, Tyson, & Mason, 2002).

A secure adult attachment style appears to serve a protective factor against the development of PTSD. Several studies examining the relationship between attachment styles and the development of PTSD with regards to prisoners of war (Solomon, Ginzburg, Mikulincer, Neria, & Ohry, 1998; Zakin, Solomon, & Neria, 2003), war veterans (Dekel, Solomon, Ginzburg, & Neria, 2004) and Holocaust child survivors (Cohen, Dekel, & Solomon, 2002) demonstrated that secure attachment and insecure attachment of the dismissive style were negatively associated with PTSD, whereas the other two insecure attachment styles were positively associated with PTSD. From a modified object relation’s perspective, it is suggested that psychological functioning can become damaged when the attachment belief in “cultural self-objects” is jeopardized simultaneously with ego disruption (Catherall, 1989). An example of a failed self-object
relationship could be between an individual and his country in a situation of chronic PTSD in a war veteran.

Attachment contributes to individual differences in physiological stress responses (Maunder and Hunter, 2001). Sroufe and Waters (1977) found that children's heart rate increased during the Strange Situation Procedure when separated from their caregiver. However, among the insecure (avoidant and resistant) children the heart rate remained elevated for a prolonged period of time after being reunited with their caregiver.

Meyers (1998) found that securely attached individuals reported lower levels of psychological distress than avoidantly and ambivalently attached individuals. He suggests that there is a consistent relationship between adult attachment style and ability to manage stress and anxiety. It is the relationship between the infant and caregiver from which early procedures are formed that determine how one will view the world or the field (Bowlby, 1980), and one's worldview plays a role in his or her perception of stress and coping strategies employed. Mikulincer and Florian (1993) found that all insecurely attached students who were exposed to missile attacks in the Gulf War reported more hostility than securely attached students. Additionally, ambivalently classified students reported more anxiety and depression than securely attached individuals. Insecure attachment can increase an individual's perception of stress based on their learned evaluation of their environment and the expectations they have about interactions with the environment. Attachment seems to be integral to the development of individual characteristics, family, positive connections with adults, and culture and indirectly to resilience (Atwool, 2006).
Resiliency to Trauma

Resilience theory emerged out of the work by Garmezy and Neuchterlein (1972) and Werner and Smith (1982) that was driven by the deficit model popular in social science at that time. Their work focused on examining at risk children and youth to determine the predictors of negative psychosocial outcomes in adulthood. However, they found that the majority of people in their studies successfully navigated adverse circumstances, and these results shifted the focus of subsequent research and precipitated the examination of positive outcomes in adulthood. Research on risk and resilience has more closely examined risk and protective factors. Risk factors are seen as a range of incidents and factors that make an individual more likely to develop a problem (Fraser, 1997). Protective factors are conditions or circumstances that prevent a problem from developing (Rutter, 1987).

According to Luthar et al. (2000), the trajectory of resiliency research has gone through three separate phases. The first phase began with developmental psychologists who sought to identify protective factors in three categories, individual characteristics, family (support), and the social environment. Developmental psychology viewed resilience as an ability to complete appropriate developmental tasks despite having inadequate conditions for healthy development (Masten, 2000). The second phase was more focused on the process by which protective factors and risk factors interface to produce a positive outcome. During the third and final phase resiliency was viewed as the force that compels a person to grow through adversity. In general, resiliency is defined as a set of traits (Jacelon, 1997), a process (Olsson et al., 2003) or an outcome (Vinson, 2002).
Resiliency is a complex construct that has been defined in multiple ways in the literature still without a consensus on how to define or measure it. One perspective is that resiliency is an individual’s ability to adapt to and overcome adversity (Agnes, 2005), to “bounce back.” Resiliency has also been viewed as a dynamic process between different protective factors (biological, psychological, social) that buffer the negative effects of stressful events resulting in adaptation. Masten & Coatsworth (1998) define resilience as ‘manifested competence in the context of significant challenges to adaptation or development’ (p. 206). Two common misattributions in the literature that perpetuate a lack of clarity about resilience are that resiliency can be inferred by the absence of psychopathology at a fixed point in time and relatedly, that researchers use resilience as a “catch all” term to explain failing to find psychopathology following trauma (Norris, Tracy, & Galea, 2009). However, an absence of psychopathology at a given point in time does not ensure that dysfunction was not present prior to that point in time, nor that there will not be dysfunction in the future. Smith et al (2008) contend that resilience should be distinguished from other meanings that have been associated with it such as adaptation to stress, resistance to illness, and functioning better than the norm under adverse circumstances.

Bonnano (2008) believes it is important to make the distinction between resiliency and recovery. Resiliency is being able to maintain a state of equilibrium and healthy functioning, possibly with transient interruptions, when encountered with a stressful event. That does not mean being unaffected by the event but being able to cope effectively to prevent a change in functioning. Recovery on the other hand, is returning
gradually to a state of previous functioning after being adversely affected by a stressful event.

Researchers have created different frameworks and instruments that operationalize resiliency into one of the three concepts indicated above. Baruth & Carroll (2002) measure resilience in terms of four protective factors that include adaptable personality, supportive environments, fewer stressors, and compensating experiences. Wagnild & Young (1993) also measure the construct of resilience in terms of individual characteristics namely personal competence and acceptance of self and life. Rew and Horner (2003) developed the Youth Resilience Framework postulating that resiliency is an interaction between vulnerabilities (risk factors) and positive resources (protective factors). This framework was developed to examine sociocultural and individual risk factors and resources that affect health outcomes in adolescence. Haase, Heiney, Ruccione, & Stutzer (1999) created the Adolescent Resilience Model stemming from research with chronically ill adolescents. They also emphasized the importance of protective factors, individual, familial, and societal, but pointed out specific individual factors. Haase et al. identified key individual factors including courage, adaptive coping, hope and spiritual perspective of their plight. This model explained the positive outcome of the amalgamation of these resources to be resilience, defined as self-esteem, self-transcendence, confidence or mastery, and quality of life translating into a sense of well being.

Smith et al. (2008) sought to create an instrument to measure the ability to bounce back as opposed to personal characteristics that influence resilience, protective factors, or coping styles. The Brief Resilience Scale (BRS) was created and was found to be related
to resources deemed by other researchers to contribute to resilience and health outcomes such as depression and fatigue. Additionally, the BRS had a larger effect on health outcomes than the resources of resilience assessed by other measures (i.e. Connor-Davidson Resilience Scale). Factors contributing to resilience may differ based on developmental status or age group. Ahern, Kiehl, Sole and Byers (2006) found in a review of different resiliency instruments that only one of the six were appropriate to use with the adolescent population. The construct of resiliency in this measure was reflected as personal competence and acceptance of self and life.

Resiliency is fluid, changes over time and is context related (Nguyen-Gillham, Giacaman, Naser & Boyce, 2008). There is a transactional process between a person and their environment that is important when examining resiliency (Greene, 2002; Fraser, 1997). Fonagy (2003) emphasizes the person-environment interaction and believes that ecological factors cannot be looked at in a vacuum because it is the individual’s subjective experience that mediates the impact. One’s internal working model is what influence’s subjective reality (Bowlby).

In addition to one’s internal working model, other protective factors to trauma exist. Lam and Grossman (1997) found that higher scores on a composite measure of protective factors predicted higher levels of functioning (as measured by the BDI and SCL-90R) in adult women with a history of child sexual abuse in comparison to adult women without a history of abuse. Lam and Grossman (1997) concluded that although protective factors are beneficial in general, they are significantly more important for individuals who have experienced abuse or a traumatic event. Social support and social skills are two variables that are predictive of resiliency among adult survivors of child
abuse (Parvizian, 2005). Parvizian defined resilience as fewer symptoms of PTSD, and negative ratings on 13 different factors of maladjustment (i.e. depression, insecure attachment, substance abuse). Being able to recognize protective factors against PTSD in people who have suffered chronic or severe trauma provide information from which we can extrapolate, to form predictions for individuals who are at risk for STS. Examining theories that inform attachment, resiliency, and personality development, all of which have been implicated in trauma research, can help guide the examination of secondary traumatization in a population that is chronically exposed to traumatized patients.

Goals and Objectives of Study

While the signs and symptoms of primary and secondary traumatic stress, compassion fatigue, and vicarious trauma have been well documented (Collins and Long, 2003b; Figley, 2002; Maytum et al., 2004) among different branches of medical personnel, physicians have been neglected in these studies. PTSD is prevalent among emergency responders who are in the midst of a crisis in which their own life is put in danger (i.e. rescuing people in a fire). Secondary traumatization is an extension of this work in which the helping professional is not faced with the threat of injury or loss of life but whose role is still to help an individual in crisis or suffering from a traumatic event.

The majority of the literature on STS focuses on mental health providers and more recently, nurses. However, STS in physicians has been overlooked despite the fact that they have the added pressure of dealing with life or death situations for their patients. Trauma research with children has examined the role of attachment, resiliency and intrinsic factors (i.e. ego strength) in the development of or aftermath of trauma exposure,
which has informed research with adults. Examination of how these factors translate in different adult populations necessitates research. Traumatic stress reactions are important to examine in physicians because their well being will ultimately affect their ability to help patients. The purpose of the current study is to investigate the relationship between PTSD symptomatology, adult attachment, and ego strength in PICU physicians. More specifically, 1) to determine if PICU physicians experience significant PTSD symptomatology, 2) to evaluate the relationship between ego strength and adult attachment style with reported PTSD symptomatology in PICU physicians, and 3) assess the specific ego strengths relationship with PTSD symptoms. The following hypotheses are generated based on the goals of the study:

Hypotheses:

H1: Overall degree of secondary traumatic stress symptoms will be significantly lower as a result of secure attachment style and overall ego strength after controlling for age, gender, personal trauma history, job stress, and resiliency. More specifically, there will be a lower association of PTSD symptomatology in individuals with a predominantly secure attachment style as opposed to fearful, dismissing, and preoccupied attachment style.

H2: PICU physicians with a preoccupied attachment style will demonstrate more avoidant symptoms in comparison to hyperarousal or intrusion symptoms as measured by the Impact of Events Scale- Revised form.

H3: Ego strengths of competence and hope as measured by the Psychosocial Inventory of Ego Strengths (PIES) will be more negatively associated with PTSD-like symptoms than the other six ego strengths.
H4: Ego strength dimensions (measured by the PIES) will be positively associated with resiliency in PICU physicians, as measured by the Brief Resilience Scale.

H5: Level of job stress, measured by the Job Stress Survey, will be affected by resiliency (measured by the PIES), existence of supervision and whether coping strategies were taught in medical school or during fellowship.

H6: Secondary traumatic stress symptoms measured by the IES-R, would be present in PICU physicians.
Methods

Participants

A sample of 88 was proposed as necessary for 80% power with a medium effect size (40) at the 0.05 level of significance. A sample of 117 Pediatric intensivists, ages 28-63 were obtained from Pediatric ICU physicians in hospitals across the nation via a nationwide listserv for pediatric intensivists. Upon examination of the data, it was revealed that 14 individuals did not complete the questionnaire that served as the primary dependent variable, secondary traumatic stress, measured by the IES-R. This resulted in 14 deletions and reduced the sample of 117 participants to 103. Additionally, listwise deletions were made by analysis.

Materials

Consent form. Each subject volunteering to participate in this study reviewed the consent form as the first screen in the online survey. Participation in the survey indicated passive consent (Appendix A). An introduction to the survey along with the link was provided in the email sent to the physicians on the listserv (Appendix B).

Demographic questionnaire. The covariate variables were obtained by a demographic information questionnaire that was included as part of the online survey (Appendix C). This sheet included questions regarding demographic information such as age, gender, marital status, personal trauma history, length of medical experience, work supervision, exposure to education regarding coping strategies, length of time in ICU, number of hours worked per week, job and life satisfaction, and open-ended questions regarding stressors in the ICU. After administration of the surveys, it was noticed that
question number 14 on the demographic questionnaire provided a rating scale to answer the question as opposed to the intended ‘yes’ or ‘no’ options.

Impact of Events Scale- Revised (IES-R). The IES-R (Weiss and Marmar, 1996) is a 22-item self-report measure that assesses subjective distress caused by traumatic events. It is a revised version of the original 15-item measure (Horowitz, Wilner, & Alvarez, 1979) and contains 7 additional items related to the hyperarousal symptoms of PTSD, which were not included in the original IES. The scale utilizes a 5-point Likert scale to indicate the occurrence of specific symptomatology ranging from 0 “not at all” to 4 “extremely”. The IES-R provides an overall score that ranges from 0 to 88 and three subscale scores can be derived to match the avoidance, hyperarousal and intrusion domains of PTSD as listed in the DSM-IV-TR. Scores for the subscales are derived by taking the mean item response of a subset of questions. To calculate the subscales the following items are utilized for their corresponding scales: Intrusion items 1, 2, 3, 6, 9, 14, 16, and 20; Avoidance items 5, 7, 8, 11, 12, 13, 17, and 22; and Hyperarousal items 4, 10, 15, 18, 19, and 21. Since the mean is utilized as opposed to a sum of the cluster scores the level of distress from those particular symptoms (i.e. hyperarousal) can be determined. For example, if an individual has a mean avoidance score of 2.7 then in the last week their distress from avoidance symptoms was between “moderate and quite a bit.” The following instructions were used to administer the scale: “Below is a list of difficulties people sometimes have after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you during the past seven days with respect to your work or experience with any of the pediatric patients in the. How much were you distressed or bothered by these difficulties?” An
example of one of the questions listed was, "Any reminders brought back feelings about it." The participants were instructed to complete the instrument specifically in regards to an event that was work related. The IES-R was utilized in this study because it has been widely used to examine secondary traumatic stress. It has been found to have good construct and convergent validity (Weiss & Marmar, 1997). It has shown high internal consistency (alpha=0.96). The Impact of Event Scale has a reported Cronbach alpha ratings of .79-.91 (Intrusion) and .82-.90 (Avoidance) dependent on studies from Weiss & Marmar (1997) that are two scales included in the revised form. Internal consistency of the three subscales was found to be very high, with intrusion alphas ranging from .87 to .92, avoidance alphas ranging from .84 to .86, and hyperarousal alphas ranging from .79 to .90 (Weiss and Marmar 997).

**Psychosocial Inventory of Ego Strengths.** The Psychosocial Inventory of Ego Strengths (PIES; Markstrom, Sabino, Turner, & Herman, 1997) was developed to assess Erik Erikson’s (1964) psychosocial theory of human development (Appendix E). The instrument provides a score for each of Erikson’s eight ego strengths (hope, will, purpose, competence, fidelity, love, care, and wisdom). Each is assessed using eight items and an overall ego strength score is based on the 64 items. The PIES is a 64-item measure utilizing a five-point scale (1=does not describe me well to 5=describes me very well). Negatively phrased items were reversed scored and items were summed for each subscale. The PIES demonstrated very good reliability with a Cronbach’s alpha of .94 for the 64-item measure (overall ego strength; Markstrom et al., 1997) and good validity. The internal consistency for subscales and total scores ranged from acceptable to very good: hope, .81; will, 69; purpose, .71; competence, .77; fidelity, .62; love, .60; care, .83;
wisdom, .72; total ego strength, .94 (Markstrom et al., 2007). The following includes means and standard deviations for each independent ego strength and a total score by gender for a University population: females: Total score 250.73 (29.67), hope 30.75 (5.64), will 30.34 (3.92), purpose 30.92 (5.04), competence 30.96 (4.64), fidelity 31.75 (4.77), love 32.82 (4.40), care 32.77 (5.53), wisdom 30.40 (5.33); males: total score 245.16 (32.83), hope 29.91 (6.09), will 29.99 (5.06), purpose 30.00 (5.20), competence 30.36 (5.37), fidelity 30.44 (4.61), love 31.74 (4.51), care 32.76 (5.58), wisdom 29.96 (5.46). Higher scores indicate greater ego strength and the total possible score for each ego strength is 32.

**Relationships Scales Questionnaire.** The Relationship Scales Questionnaire (RSQ; Griffin & Bartholomew, 1994) is an indirect 30-item measure of Bartholomew and Horowitz' (1991) four attachment prototypes. The four patterns of attachment include secure, fearful, preoccupied, and dismissing. The RSQ consists of 30 phrases drawn from the paragraph descriptions of Hazan and Shaver's (1987) Adult Attachment Questionnaire (AAQ), Bartholomew and Horowitz' (1991) Relationship Questionnaire (RQ), and Collins and Read's (1990) Adult Attachment Scale (AAS). Participants rated how well each item fit their characteristic style in close relationships on a 5-point Likert scale (1=not at all like me to 5=very much like me). Subscale lengths differ with a range of 4-20 for Fearful and Preoccupied subscales, and 5-25 for Dismissive and Secure subscales (one item overlaps on the Preoccupied and Dismissive subscales). The RSQ yields scores on all subscales of attachment and therefore is viewed as an attachment style as opposed to an attachment type. No norms exist for this measure however; the literature has presented means for each attachment style. The following are the means and
standard deviations for each attachment style of psychotherapy supervisors in a graduate program: secure = 18.51 (2.56); preoccupied = 9.79 (2.09); fearful = 8.63 (2.75); and dismissive 15.29 (2.75) (Foster, Lichtenberg, Heinen, and Gomez, 2006). Estimates of reliability of each of the subscales have tended to be reasonable (Cronbach’s alpha = .71).

**Job Stress Survey.** The Job Stress Survey (Spielberger and Vagg, 1994) was designed to assess occupational stress in a variety of settings. The JSS yields three scale scores (Job Stress Index, Severity and Frequency) that are based on all 30 items (1AB-30AB). The index scores are a composite score of severity and frequency. The scale also yields six subscale scores comprised of three Lack of Organizational Support (LS) scores and three Job Pressure (JP) scores; each domain measuring frequency (F), severity (S) and an overall index score (X). Respondents rate their severity of stress that they perceive to be associated with each of the job stress items relative to a standard stressor, “Assignment of disagreeable duties,” which is given a value of 5. Sample items include: “Fellow workers not doing their job”; “Inadequate support from supervisor”; and “Covering work for another employee.” Then respondents are asked to report, on a scale from 0 to 9+ days, the number of days (frequency) on which each workplace stressor was experienced during the preceding 6 months. Internal consistency alpha coefficients for the JSS are .89 for the 3 scale scores and .80 for the 6 subscale scores. The means and standard deviations, respectively, obtained from a managerial/professional sample are: JSX = 20.19 (10.06), JSS = 4.92 (1.03), JSF = 3.69 (1.63); JPX = 22.62 (12.40), JPS = 4.52 (1.27), JPF = 4.57 (2.14); LSX = 20.15 (14.37), LSS = 5.49 (1.36), LSF = 3.23 (2.06).

**Brief Resiliency Scale.** The Brief Resilience Scale (Smith, Dalen, Wiggins, Tooley, Christopher, Bernard, 2008) is a 6-item measure to assess the ability to recover
from stress (Appendix D). The following instructions were used to administer the scale: “Please indicate the extent to which you agree with each of the following statements by using the following scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.” A sample question is: “I tend to bounce back quickly after hard times.” Items are scored based on the 5-point Likert scale with items 2, 4, and 6 being reverse coded. The total score is the mean of the reverse coded items with items 1, 3 and 5. Norms and cutoff scores are not available for this measure; however, mean scores have been cited in the literature. For a sample of college students, the mean BRS score was 3.53 (SD=0.68) with a mean age of 20.4 (SD=4.0). For a sample that is closer in age to the sample of PICU physicians, the mean score was 3.61 (SD=0.85) with a mean age of 47.3 (SD=8.2) in a sample of women with fibromyalgia and healthy controls collapsed together (Smith et al, 2008).

Smith et al. (2008) tested the BRS on four samples and found good internal consistency across the samples, with Cronbach’s alpha ranging from .80-.91 and good discriminant predictive validity. The BRS also demonstrated good test-retest reliability and internal consistency in two of the samples (.62 and .69). The BRS has also shown good convergent validity and was positively correlated with social support, active coping and positive reframing and negatively correlated with behavioral disengagement, denial, self-blame and negative interactions. In terms of health-related outcomes, the BRS has been negatively correlated with depression, anxiety, perceived stress and physical symptoms. Additionally, the BRS has shown good discriminant predictive validity and was highly correlated with other resiliency measures such as the CD-RISC (Connor-Davidson, 2003) and Ego Resiliency Scale (Block & Kremen, 1996) and continued to
demonstrate a significantly negative relationship with health outcomes after controlling for the aforementioned “resiliency” scales.

**Procedure**

The target population involved pediatric intensivists nationwide. The convenience sample gathered was comprised of those who responded to an electronic invitation to participate in the study that was distributed via a nationwide listserv for PICU physicians. Study participants included PICU physicians from different levels of training (i.e. fellows, residents, licensed medical doctors). A standard brief description of the study (Appendix B) and a direct link to the online survey hosted through Survey Monkey was provided in the electronic invitation utilizing Survey Monkey. Survey Monkey is a web-based survey tool that allows the creator to add a custom link anywhere, which leads the participant directly to the survey. In the brief description of the study participants were informed that the purpose of the study was to examine factors related to how doctors cope with traumatic events related to their pediatric patients in intensive care units. In regards to LLU physicians in particular, the chief medical director of the PICU emailed them the link directly. All LLU employees were provided the link for the anonymous survey thus ensuring that no one knows whether they participated.

When the participant selected the link, the informed consent form was the first form with which he/she was presented. Following the informed consent was the demographic information sheet, the Impact of Event Scale-Revised, Relationships Scales Questionnaire, Job Stress Survey, the Brief Resiliency Scale, and Psychosocial Inventory of Ego Strengths. Physicians were prompted at the end of the survey to submit their
responses online. Once the respondent submitted their survey (selecting the “Done” button), they were automatically sent to another page requesting contact information to enter the raffle. Although, they were automatically sent to this final page, completing it was completely voluntary and they could have opted out of the page without affecting the survey they had submitted. The page was independent of their data and not directly linked. In regards to the contact information that was requested, the participant was able to choose the type of information they wanted to provide (i.e. email address, phone number, name, and/or street address). Due to the nature of the study, it was not necessary to maintain identifying information of study participants. Therefore, the consent form was not signed or returned to the investigator. This study utilized passive consent, meaning that completing and submitting the survey online implied consent. No identifying information was associated with the data and IP addresses were blocked to protect the participant’s identity; however, since contact information was provided separately for the purposes of the raffle for the $75 gift card, the information was considered confidential, not anonymous.

**Statistical analyses and data screening.** To evaluate the six hypotheses, the data set was evaluated for missing data. There were several variables with missing data percentages greater than 5 percent, which is the standard percent at which to test for patterns (Tabachnick & Fidell, 2001). A Missing Values Analysis was performed, and Separate Variance t Tests demonstrated that there was no systematic relationship between missingness on the total secondary trauma score and on the other covariates. Data for the secondary trauma score and age was shown to be Missing Completely at Random (MCAR) via the Little MCAR test which was not significant (p=. 853). Independent t-
samples were calculated and determined that there were no group differences in the means of the covariates grouped by subjects with and without missing data on the trauma score. A missing pattern was revealed among the variables of job stress, resiliency and ego strength with 42 cases sharing these missed values. Secondary to this pattern was a pattern with the four different attachment styles sharing 22 cases missing values. Lastly, there was a pattern with these 7 variables and total ego strength score with the latter variable sharing 14 cases with missing values with the other 7 variables. These patterns of missing data did not reach statistical significance with the exception of marginal significance between fearful attachment style and overall job stress index score. A Missing Values Analysis was performed in which a Separate Variance t Tests demonstrated a systematic relationship of missingness, t (30)= 2, p=.054. It is recommended that if a variable has more than 5% missing values, cases are not deleted so as not to jeopardize power (Little and Rubin, 1987). However, in this situation cases missing the secondary trauma score (14 cases), the dependent variable, were deleted. The rationale underlying this decision was that the covariates and independent variables for the primary hypothesis, and crucial variables for other hypothesis were also missing for these cases. The missing data for age was deemed random, therefore, the expectation maximization, a method of missing data imputation that is considered more sophisticated than mean substitution or regression, was completed (Tabachnick & Fidell, 2001). As a result 3 cases missing the value of age were substituted with the value of 45. Further, the variables with the highest percentage of missing data were the variables related to resiliency, ego strength (29.1%) and job stress (28.2%). Consequently, missing data was eliminated in listwise deletions by analysis.
All quantitative variables were analyzed for outliers and normality at the univariate and multivariate level by conversion of standardized z scores for the former. Three values greater than 3.29 or less than -3.29 were found and examined in conjunction with the histogram to assess impact of the outliers. Two of the outliers, belonging to the variables ego strength total score and secondary trauma total score, were retained and variable transformations were performed, to change the shape of the distribution as these two variables exceeded acceptable skewness. This will be explained in more depth when addressing the assumption of normality. For the third outlier, associated with the variable job stress, the outlying case was assigned a raw score that was one unit larger than the next most extreme score in the distribution. Transforming the value of the outlier to the next most extreme score in the distribution is one method of reducing its impact (Tabachnick & Fidell, 2001) while maintaining the case in the dataset. Mahalanobis distance was computed to detect any multivariate outliers that determined that no significant outliers were present.

Normality was assessed by examining skewness and kurtosis as well as visual examination of histograms and normal probability plots of all continuous variables. Upon examination it was revealed that secondary traumatic stress total score, ego strength total score, and job stress index score had significant deviations from normality. Once an outlier for job stress was corrected, the distribution became normal and no longer needed a variable transformation. However, a square root transformation was performed to correct for non-normality in ego strength and secondary traumatic stress. It is suggested that square root transformation be utilized when the skewness is moderate and also to attempt this method first to determine if it provides adequate correction and if not then to
move to logarithm and then to inverse until satisfactory normality/ homoscedasticity is obtained. The square root transformation appeared sufficient; therefore, no other transformation was attempted.

Next, the proposed covariates that were available from the data collection were evaluated for their relationship with the dependent variable of secondary traumatic stress and job stress index as well as with each other. The proposed covariates of resiliency and job stress were significantly related to the dependent variable and thus were included in the model. However, age, gender, history of trauma and severity of that trauma were not significantly related to the dependent variable (Table 2). This is supported by Tabachnick and Fidell (2001), who indicate that significance tests assess the usefulness of a covariate to adjust a dependent variable. They also suggest that to include non-optimal covariates reduces power by reducing degrees of freedom. However, based on previous research suggesting the influence of these factors in traumatic stress reactions, they were included in the model to determine if a combined effect with another variable exists.

Table 2

<table>
<thead>
<tr>
<th>Potential Covariates</th>
<th>IES-R Total Score</th>
</tr>
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<tbody>
<tr>
<td>Job Stress Index</td>
<td>.496 (p&lt;.000)</td>
</tr>
<tr>
<td>Resiliency</td>
<td>-.443 (p&lt; . 000)</td>
</tr>
<tr>
<td>Age</td>
<td>-.042 (p=. 9)</td>
</tr>
<tr>
<td>Severity of child trauma</td>
<td>-.127 (p=. 72)</td>
</tr>
<tr>
<td>Severity of personal trauma</td>
<td>-.042 (p=. 909)</td>
</tr>
<tr>
<td>Severity of disaster trauma</td>
<td>.554 (p=. 096)</td>
</tr>
</tbody>
</table>
To examine the first hypothesis a multiple linear regression was utilized to determine if the overall degree of secondary traumatic stress symptoms would be significantly lower as a result of secure attachment style and overall ego strength after controlling for age, gender, personal trauma history, job stress, and resiliency. For the second hypothesis a bivariate correlational analysis was utilized to determine if a greater association existed between avoidant symptoms of STS and preoccupied attachment in comparison to the relationship between symptoms of intrusion or hyperarousal and preoccupied attachment. A bivariate correlation was conducted to evaluate the third hypothesis proposing that the ego strengths of “competence” and “hope” would be more highly associated with the symptoms of secondary traumatic stress. For the fourth hypothesis stating that overall ego strength would be positively associated with resiliency a bivariate correlation was used. In order to test the fifth hypothesis suggesting that there would be a significant negative relationship between job stress level and resiliency, existence of supervision and whether coping strategies were taught in medical school or during fellowship a multiple linear regression was utilized. Lastly, descriptive statistics were calculated to determine the sixth hypothesis that secondary traumatic stress symptoms would be present in PICU physicians.
Results

Participants and Descriptives

The aforementioned data reductions reduced the sample of 117 participants to a sample size of 103. Of these 103 participants, the average age was 45 years old (SD=9.36), with the age range being 28-63. Figure one shows the distribution of ages for the PICU physicians. The sample was 44.7 percent female and 55.3 percent male. The majority of participants were married (75.7%) and 76 percent had at least one child. Respondents on average had 11.2 years of postgraduate medical experience and 85 percent of the physicians were working more than 50 hours per week. Among the respondents 23 percent were fellows, 1 percent were residents and 74.8 percent were attendings. Twenty-five percent reported receiving supervision as part of their position at the hospital.

In examining trauma history, 33 percent reported a personal trauma history, 24.3 percent a childhood trauma history, and 32 percent a traumatic experience with a natural disaster. These categories were not mutually exclusive and cannot be assumed to sum to 100 percent. The severity of these traumas can be found in Table 3. Overall, 56 percent reported a history of at least one traumatic event. A subjective rating of job stress, job satisfaction and life satisfaction was given on a scale of 1 (low) to 5 (high). Fifty-seven percent reported thinking about leaving their position at least once in the last month. Patient illness/death or making an important decision about a patient’s care was one of the most frequently reported stressful aspects of being a PICU physician (41%). Table 3 provides a description of the study participants. Table 4 has the means and standard deviations for the overall trauma score symptom clusters. No clinical cut off scores have
been established with this measure, as it is not a diagnostic tool. The creator of the Impact of Events Scales advises against utilizing arbitrary distinctions of clinical significance. No clinical cut-off scores are available for the measure of ego strength, resiliency, or attachment styles; however, information about referent groups were provided in the methods section. Table 5 shows the descriptives for the Job Stress Survey along with percentile ranks based on standardized T-scores.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N</th>
<th>%</th>
<th>Mean (SD)/ Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>113</td>
<td></td>
<td>45.27(9.39)/28-63</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>57</td>
<td>55.3</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>46</td>
<td>44.7</td>
<td></td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>12</td>
<td>11.7</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>78</td>
<td>75.7</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>7</td>
<td>6.8</td>
<td></td>
</tr>
<tr>
<td>Separated</td>
<td>2</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>Relationship</td>
<td>2</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>Cohabitating</td>
<td>2</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>76</td>
<td>73.8</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>26</td>
<td>25.2</td>
<td></td>
</tr>
<tr>
<td><strong>Trauma History (yes)</strong></td>
<td></td>
<td></td>
<td>56</td>
</tr>
<tr>
<td>Childhood</td>
<td>25</td>
<td>24.3</td>
<td></td>
</tr>
<tr>
<td>Personal</td>
<td>33</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Natural Disaster</td>
<td>32</td>
<td>31.7</td>
<td></td>
</tr>
<tr>
<td><strong>Severity of Trauma</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childhood</td>
<td></td>
<td></td>
<td>2.76(1.23)</td>
</tr>
<tr>
<td>Personal</td>
<td></td>
<td></td>
<td>3.21(1.27)</td>
</tr>
<tr>
<td>Natural Disaster</td>
<td></td>
<td></td>
<td>2.27(1.2)</td>
</tr>
<tr>
<td><strong>Supervision</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>77</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>26</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td><strong>Professional Position</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fellows</td>
<td>24</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Residents</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Licensed Medical Doctor</td>
<td>77</td>
<td>74.8</td>
<td></td>
</tr>
</tbody>
</table>
Table 3. *Continued.*

<table>
<thead>
<tr>
<th>Hours worked per week</th>
<th>40-49</th>
<th>50-59</th>
<th>60-69</th>
<th>70-79</th>
<th>80-89</th>
<th>90-99</th>
<th>100+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thought of leaving ICU</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>57</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|                | 14.6  | 20.4  | 28.2  | 11.7  | 13.6  | 3.9   | 6.8   |

Thought of leaving ICU

|                | 55.3  | 44.7  |

|                | 6.8   |

Figure 1 Age distribution for PICU physicians

*Mean = 45.27
Std. Dev. = 9.359
N = 103*
Table 4

*Means, Standard Deviations and Ranges for Trauma Scores, Ego Strengths, Attachment Styles and Resiliency*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Trauma Score</strong></td>
<td>102</td>
<td>12.51</td>
<td>8.5</td>
<td>12.83</td>
<td>0-59</td>
</tr>
<tr>
<td>Avoidance</td>
<td>102</td>
<td>1.52</td>
<td>1.33</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>Intrusion</td>
<td>102</td>
<td>0.878</td>
<td>0.8</td>
<td>0.74</td>
<td></td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>102</td>
<td>0.666</td>
<td>0.5</td>
<td>0.725</td>
<td></td>
</tr>
<tr>
<td><strong>Total Ego Strength</strong></td>
<td>73</td>
<td>258.01</td>
<td>260</td>
<td>29.98</td>
<td>180-310</td>
</tr>
<tr>
<td>Hope</td>
<td>73</td>
<td>32.28</td>
<td>33</td>
<td>6</td>
<td>12-40</td>
</tr>
<tr>
<td>Competence</td>
<td>73</td>
<td>34.22</td>
<td>35</td>
<td>4.98</td>
<td>15-40</td>
</tr>
<tr>
<td>Care</td>
<td>73</td>
<td>31.43</td>
<td>32</td>
<td>4.03</td>
<td>12-36</td>
</tr>
<tr>
<td>Will</td>
<td>73</td>
<td>31.45</td>
<td>32</td>
<td>5.161</td>
<td>19-40</td>
</tr>
<tr>
<td>Wisdom</td>
<td>73</td>
<td>30</td>
<td>30</td>
<td>4.38</td>
<td>13-37</td>
</tr>
<tr>
<td>Purpose</td>
<td>73</td>
<td>32.51</td>
<td>34</td>
<td>5.65</td>
<td>14-40</td>
</tr>
<tr>
<td>Love</td>
<td>73</td>
<td>32.7</td>
<td>33</td>
<td>5.35</td>
<td>14-40</td>
</tr>
<tr>
<td>Fidelity</td>
<td>73</td>
<td>32.55</td>
<td>32</td>
<td>4.76</td>
<td>18-40</td>
</tr>
<tr>
<td>Resiliency</td>
<td>73</td>
<td>3.83</td>
<td>4</td>
<td>0.88</td>
<td>1.5-5</td>
</tr>
<tr>
<td><strong>Attachment Style</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fearful</td>
<td>94</td>
<td>2.3</td>
<td>2.5</td>
<td>0.84</td>
<td>1-4.5</td>
</tr>
<tr>
<td>Dismissing</td>
<td>94</td>
<td>3.09</td>
<td>3</td>
<td>0.912</td>
<td>1-5</td>
</tr>
<tr>
<td>Preoccupied</td>
<td>94</td>
<td>2.47</td>
<td>2.5</td>
<td>0.695</td>
<td>1-4.33</td>
</tr>
<tr>
<td>Secure</td>
<td>94</td>
<td>3.41</td>
<td>3.4</td>
<td>0.67</td>
<td>2-5</td>
</tr>
</tbody>
</table>
Table 5

*Means, Standard Deviations and Percentiles for Job Stress Subscales*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
<th>Percentiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of support Frequency</td>
<td>74</td>
<td>3.99</td>
<td>2.08</td>
<td>1-10</td>
<td>65-70</td>
</tr>
<tr>
<td>Severity</td>
<td>76</td>
<td>5.43</td>
<td>1.39</td>
<td>1.5-8.1</td>
<td>45</td>
</tr>
<tr>
<td>Index</td>
<td>74</td>
<td>25.69</td>
<td>15.59</td>
<td>1.5-72.4</td>
<td>70</td>
</tr>
<tr>
<td>Job Pressure Frequency</td>
<td>73</td>
<td>6.39</td>
<td>30.55</td>
<td>2.4-63.6</td>
<td>75-80</td>
</tr>
<tr>
<td>Severity</td>
<td>76</td>
<td>4.48</td>
<td>1.4</td>
<td>1.2-8.1</td>
<td>45</td>
</tr>
<tr>
<td>Index</td>
<td>73</td>
<td>30.55</td>
<td>13.25</td>
<td>2.4-63.6</td>
<td>70-75</td>
</tr>
<tr>
<td>Job Stress Frequency</td>
<td>74</td>
<td>5.09</td>
<td>1.74</td>
<td>2.10-10</td>
<td>80</td>
</tr>
<tr>
<td>Severity</td>
<td>77</td>
<td>4.93</td>
<td>1.11</td>
<td>1.83-7.63</td>
<td>45</td>
</tr>
<tr>
<td>Index</td>
<td>74</td>
<td>26.95</td>
<td>11.37</td>
<td>5.5-53.8</td>
<td>70-75</td>
</tr>
</tbody>
</table>

a. referent group = managerial/professional

**Hypotheses 1: Attachment Style, Ego Strength and STS**

The first hypothesis stated that the level of secondary traumatic stress symptoms would be significantly different based on attachment style and ego strength after controlling for age, gender, personal trauma history, job stress, and resiliency. More specifically, there would be a lower association of PTSD symptomatology in individuals with a predominantly secure attachment style as opposed to fearful, dismissing, and preoccupied attachment styles and with greater ego strength. For this hypothesis, data was screened at the univariate and multivariate level according to the procedures outlined in Tabachnick and Fidell (2001). Missing data was handled by listwise deletion and 30 cases were deleted from the analysis. Univariate and multivariate outliers were determined via stem-and-leaf plots and calculation of Mahalanobis distance revealing no
significant outliers following the initial screening process previously mentioned. The assumption of linearity between the independent and dependent variables was examined through plots of standardized residuals. The assumptions of normality and homoscedasticity were met and evaluated via residual plots, tests of normality, examination of skewness and kurtosis. Measures of collinearity were assessed for all equations. A variance inflation factor (VIF) of 4 or greater was considered to be an indication of higher order collinearity and based on the VIF statistic; collinearity was not shown to be a problem in this sample. While the sample consisted of 103 physicians, 29 were missing data for the covariate of job stress and 5 from other variables; all were removed from the analysis by listwise deletion leaving a sample size of 69. There was no systematic pattern of missing data.

A hierarchical multiple linear regression was performed with secondary traumatic stress as the outcome variable, in which age, trauma history, job stress index, and resiliency were entered first into the model. Next, attachment styles and ego strength were entered and the change in the proportion of variance accounted for by the addition of each variable was determined. A significant relationship for the overall model was found \( F(10, 58)=3.53, p<.01; R^2=.378 \). Table 6 displays the standardized regression coefficients the semi-partial correlations \( (sr^2) \), expressing the unique contribution of the independent variables to the total variance in STS, \( R^2 \), and adjusted \( R^2 \). Adding the independent variables into the model after the covariates did not lead to a significant increase in variance accounted for \( (R^2=.032, \text{ ns}) \). Altogether, 38% of the variability in secondary traumatic stress symptoms was predicted by gender, age, resiliency, job stress, and history of trauma, ego strength, and attachment styles.
Job stress ($sr^2 = .126$) and resiliency ($sr^2 = .04$) were the only variables contributing significantly to prediction of (square root of) trauma symptoms. Although, ego strength was not a significant predictor in the model after controlling for resiliency and job stress, there was a significant negative correlation between ego strength and secondary traumatic stress symptoms ($r = -.373$, $p < .01$) (Table 7). The type of regression analysis that is performed can affect the significance of predictor variables based on when a variable is entered in the model. For instance, in a stepwise analysis with the same proposed variables in which job stress entered the model first, it was indicated that ego strength would have been a significant predictor ($\beta = .255, t = 2.395, p = .019$) if it were added to the regression model directly following job stress, as opposed to resiliency. However, once resiliency was added, ego strength was no longer a significant predictor ($\beta = .103, t = .813, p = .419$). Although stepwise regression is not the chosen approach to test the hypothesis, it provides an indication of underlying relationships in the model. Vicariate correlation provides further evidence for a relationship between resiliency and ego strength reflected in their high correlation ($r = -.631$, $p < .001$). In summary, hypothesis one was not supported since secure attachment did not contribute to the prediction of STS after controlling for job stress, history of trauma, age, gender and resiliency.
Table 6

*Summary of Sequential Multiple Linear Regression Analysis of Job Stress, Resiliency, and Attachment Predicting STS*

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
<th>t(69)</th>
<th>p</th>
<th>Semi-partial r</th>
<th>sr²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Stress</td>
<td>0.407</td>
<td>3.428</td>
<td>0.001</td>
<td>0.355</td>
<td>0.126</td>
</tr>
<tr>
<td>Resiliency</td>
<td>-0.265</td>
<td>-1.915</td>
<td>0.060</td>
<td>-0.198</td>
<td>0.039</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.044</td>
<td>-0.390</td>
<td>0.698</td>
<td>-0.040</td>
<td>0.002</td>
</tr>
<tr>
<td>Age</td>
<td>0.008</td>
<td>0.068</td>
<td>0.946</td>
<td>0.007</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>History of Trauma</td>
<td>0.069</td>
<td>0.620</td>
<td>0.538</td>
<td>0.064</td>
<td>0.004</td>
</tr>
<tr>
<td>Ego Strength</td>
<td>0.028</td>
<td>0.185</td>
<td>0.854</td>
<td>0.019</td>
<td>0.0004</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secure</td>
<td>-0.088</td>
<td>-0.531</td>
<td>0.598</td>
<td>-0.055</td>
<td>0.003</td>
</tr>
<tr>
<td>Preoccupied</td>
<td>-0.012</td>
<td>-0.104</td>
<td>0.918</td>
<td>-0.011</td>
<td>0.0001</td>
</tr>
<tr>
<td>Fearful</td>
<td>0.069</td>
<td>0.433</td>
<td>0.667</td>
<td>0.045</td>
<td>0.002</td>
</tr>
<tr>
<td>Dismissing</td>
<td>-0.185</td>
<td>-1.426</td>
<td>0.159</td>
<td>-0.148</td>
<td>0.021</td>
</tr>
</tbody>
</table>
Table 7

Correlation Matrix for Attachment Styles, Ego Strength, Trauma Symptoms, and Resiliency

<table>
<thead>
<tr>
<th></th>
<th>Secure</th>
<th>Preoccupied</th>
<th>Fearful</th>
<th>Dismissing</th>
<th>Resiliency</th>
<th>Ego Strength</th>
<th>STS</th>
<th>Job Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure</td>
<td>----</td>
<td>-0.173</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preoccupied</td>
<td>-0.173</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fearful</td>
<td>-.626**</td>
<td>0.019</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dismissing</td>
<td>-.362**</td>
<td>0.200</td>
<td>0.471**</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resiliency</td>
<td>.454**</td>
<td>-0.047</td>
<td>-.385**</td>
<td>-.097</td>
<td>----</td>
<td>----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ego Strength</td>
<td>.505**</td>
<td>-0.104</td>
<td>-.370**</td>
<td>0.030</td>
<td>.631**</td>
<td>----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STS</td>
<td>-0.212</td>
<td>0.001</td>
<td>.262*</td>
<td>-0.050</td>
<td>-0.443**</td>
<td>-.373**</td>
<td>----</td>
<td></td>
</tr>
<tr>
<td>Job Stress</td>
<td>-0.068</td>
<td>0.078</td>
<td>.285*</td>
<td>0.096</td>
<td>-.291*</td>
<td>-.285*</td>
<td>.496**</td>
<td>----</td>
</tr>
</tbody>
</table>

** indicates significance at < .01 level; * indicates significance at < .05 level
a. Listwise N=72
b. original ego strength variable listed here to denote correct direction of relationship
c. square root transformation reflecting the correct direction of relationship as original variable

As a result of the lack of support for this hypothesis in that attachment styles were not predictive of trauma symptoms, it was decided that Hazan and Shaver’s (1987) model of adult attachment would be examined. Hazan and Shaver suggest that there are three types of adult attachment not four as proposed by Bartholomew and Griffith (1994). The RSQ utilized in this study was based on previous adult attachment measures and therefore includes the necessary items to derive a score for secure, avoidant, and anxious-ambivalent attachment styles. Therefore, a multiple regression analysis was performed on secondary trauma including the same covariates (age, gender, history of trauma,
resiliency, and job stress) in the originally proposed model. The difference in this second model is the replacement of Hazan and Shaver's attachment styles with those of Bartholomew and Griffith. The three attachment style variables met the assumptions of normality, linearity and homoscedasticity. A significant relationship for the overall model was found (F (6, 69)=6.990, p<.01; R²=.40). Table 8 displays the unstandardized regression coefficients and intercept, the standardized regression coefficients the semi-partial correlations (sr²) and R² and adjusted R². This table reflects the entire model with all the independent variables entered at the same time including the three attachment styles, resiliency, and ego strength while controlling for job stress. Altogether, 40% of the variability in manifestation of secondary traumatic stress symptoms was predicted by resiliency, job stress, ego strength, and attachment styles. If Anxious-Ambivalent attachment and overall ego strength were added to the model directly following job stress using stepwise regression then they would have been significant (β = .330, p= .002 and β = .255, p=. 019, respectively). Additionally, if Anxious-Ambivalent attachment were added into the model following job stress and resiliency it would have been significant (β = .236, p=. 035). There is a relationship between attachment style and STS albeit it is not secure attachment that adds to the variance in the model. The relationship between attachment style and ego strength with STS seems to be suppressed by resiliency. Age, gender, and history of trauma did not serve to be significant covariates in the model and did not add a significant change in R².

In conclusion, job stress and resiliency were the significant factors contributing to the level of STS with job stress having the largest impact. Ego strength seemed to have a comparable impact to resiliency on STS but only if it was added to the model before.
resiliency suggesting that there is an overlap between these two variables which is also supported by their significant relationship with each other. Upon examination of two different models of adult attachment styles, Hazan and Shaver’s model, more specifically the Anxious-Ambivalent attachment style, was the only one that contributed significantly to the prediction of STS.

Table 8

Summary of Sequential Multiple Linear Regression Analysis of Job Stress, Resiliency, and Attachment Predicting STS using Hazan and Shaver’s Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>t(67)</th>
<th>p</th>
<th>Semi-partial r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Stress</td>
<td>0.383</td>
<td>3.681</td>
<td>&lt;.01</td>
<td>0.361</td>
</tr>
<tr>
<td>Resiliency</td>
<td>-0.195</td>
<td>-1.501</td>
<td>0.138</td>
<td>-0.147</td>
</tr>
<tr>
<td>Secure</td>
<td>0.155</td>
<td>1.438</td>
<td>0.155</td>
<td>0.141</td>
</tr>
<tr>
<td>Anxious-Ambivalent</td>
<td>0.170</td>
<td>1.314</td>
<td>0.194</td>
<td>0.129</td>
</tr>
<tr>
<td>Avoidant</td>
<td>0.002</td>
<td>0.014</td>
<td>0.989</td>
<td>0.001</td>
</tr>
<tr>
<td>Ego strength</td>
<td>0.096</td>
<td>0.710</td>
<td>0.481</td>
<td>0.090</td>
</tr>
</tbody>
</table>

**Hypothesis 2: Avoidant STS symptoms and Preoccupied Attachment**

The second hypothesis stated that avoidant symptoms would be more highly associated than hyperarousal or intrusion symptoms in preoccupied attached PICU physicians. Table 9 represents the bivariate correlations between clusters of trauma symptoms and attachment styles. The assumption of normal distribution for a Pearson’s correlation was evaluated by examining histograms, skewness and kurtosis, and converting scores to z-scores to detect outliers (-.30 < z < .30). One outlier existed for
each symptom domain that belonged to the same case. Therefore, this case was deleted from the analysis. The hyperarousal and intrusion domains demonstrated moderate positive skewness (>1) and a square root transformation and subsequent logarithmic transformation was attempted; however, both of these methods increased skewness and kurtosis drastically. The logarithmic transformation was successful in transforming the distributions closer to normality. Missing data was handled by listwise deletion and for this analysis together making the N equal in each correlation. The hypothesis was not supported indicating that individuals with preoccupied attachment style did not demonstrate a basic relationship with avoidant symptoms and additionally did not demonstrate a relationship with any of the trauma symptoms. Secure and fearful attachment styles were found to have a significant association with trauma symptoms. Fearful individuals had a positive relationship with trauma symptoms, indicating that a higher score on fearful attachment was associated with more trauma symptoms [avoidant (r=.405), hyperarousal (r=.379), and intrusion symptoms (r=.345)]. Securely attached individuals demonstrated a negative relationship with the three trauma symptom clusters [avoidant (r=-.359), hyperarousal (r=-.271), and intrusion symptoms (r=-.232)]. In summary, secure and fearful attachment were the only two attachment styles that had a significant relationship with trauma symptoms both of which had the strongest relationship with avoidant symptoms.
Table 9

*Correlation Matrix for Attachment Styles and Three Trauma Symptom Domains*

<table>
<thead>
<tr>
<th>Trauma Symptoms</th>
<th>Attachment Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidant</td>
<td>Arousal</td>
</tr>
<tr>
<td>Avoidant</td>
<td>****</td>
</tr>
<tr>
<td>Arousal</td>
<td>.678**</td>
</tr>
<tr>
<td>Intrusion</td>
<td>-.675**</td>
</tr>
<tr>
<td>Preoccupied</td>
<td>0.184</td>
</tr>
<tr>
<td>Fearful</td>
<td>.405**</td>
</tr>
<tr>
<td>Secure</td>
<td>-.359**</td>
</tr>
<tr>
<td>Dismissing</td>
<td>0.037</td>
</tr>
</tbody>
</table>

** indicates significance at <.01 level
* indicates significance at <.05 level
a. Listwise N=91
b. Original variables used for correlation analysis to accurately reflect the direction of the relationship; correlation values almost identical to inverse transformation values

**Hypothesis 3: Competence, Hope and STS symptoms**

The third hypothesis stated that ego strengths of *competence* and *hope* would be more negatively associated with PTSD-like symptoms than the other six ego strengths (love, fidelity, wisdom, care, will, and purpose). Table 10 represents the bivariate correlations between clusters of trauma symptoms and ego strengths. The assumption of normal distribution for a Pearson’s correlation was evaluated by examining histograms, skewness and kurtosis, and converting scores to z-scores to detect outliers (-.30<z<.30). Four variables had significant skewness and/or kurtosis; however, after adjusting for one
outlying case across the variables, three of the distributions came closer to normality and did not necessitate transformation. The ego strength of ‘hope’ maintained significant negative skewness and a square root transformation was performed to increase normality of the distribution. Missing data was handled by listwise deletion reducing the sample size for these correlations to 73. ‘Will’ was the most negatively correlated ego strength for avoidant symptoms \( (r = -0.458) \) followed by fidelity \( (r = -0.381) \), purpose \( (r = -0.379) \), and then hope \( (r = -0.360) \). Competence was the least significantly associated ego strength with avoidant symptoms \( (r = -0.307) \). Arousal symptoms were most highly (negatively) related to will \( (r = -0.355) \), purpose \( (r = -0.329) \) and then hope \( (r = -0.326) \) followed by competence and lastly fidelity \( (r = -0.241) \). Intrusion symptoms also had the strongest relationship with will \( (r = -0.467) \), followed by purpose \( (r = -0.363) \), fidelity \( (r = -0.353) \), hope \( (r = -0.344) \), competence \( (-0.341) \), wisdom \( (r = -0.281) \), and love \( (r = -0.249) \). Based on examination of the ego strengths and cluster of trauma symptoms, competence and hope were not the most indicative of trauma symptoms albeit the relationships were still significant. Amongst the ego strengths, will had the strongest correlation with all of the trauma symptom clusters. Care was the only ego strength that was not significantly related to any of the trauma symptom clusters. Overall, the pattern emerged that higher level of ego strengths were related to lower levels of secondary traumatic stress symptoms.
Table 10

*bivariate Correlations of Ego Strengths with Trauma Symptoms*

<table>
<thead>
<tr>
<th></th>
<th>Avoidant</th>
<th>Arousal</th>
<th>Intrusion</th>
<th>Hope</th>
<th>Competence</th>
<th>Care</th>
<th>Will</th>
<th>Wisdom</th>
<th>Purpose</th>
<th>Love</th>
<th>Fidelity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidant</td>
<td>******</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arousal</td>
<td>******</td>
<td>.614**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrusion</td>
<td>.756**</td>
<td>.651**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hope</td>
<td>- .360**</td>
<td>- .326**</td>
<td>- .344**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competence</td>
<td>- .307**</td>
<td>- .248*</td>
<td>- .341**</td>
<td>.728**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care</td>
<td>- .0122</td>
<td>0.013</td>
<td>0.001</td>
<td>0.177</td>
<td>.241*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will</td>
<td>- .458**</td>
<td>- .355**</td>
<td>- .467**</td>
<td>.702**</td>
<td>.771**</td>
<td>0.230</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisdom</td>
<td>- .336**</td>
<td>- .0255</td>
<td>- .281*</td>
<td>.786**</td>
<td>.681**</td>
<td>.248*</td>
<td>.617**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purpose</td>
<td>- .379**</td>
<td>- .329**</td>
<td>- .363**</td>
<td>.777**</td>
<td>.857**</td>
<td>.306**</td>
<td>.720**</td>
<td>.612**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Love</td>
<td>- .329**</td>
<td>- .0188</td>
<td>- .249*</td>
<td>.640**</td>
<td>.640**</td>
<td>0.194</td>
<td>.582**</td>
<td>.543**</td>
<td>.541*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fidelity</td>
<td>- .381**</td>
<td>- .241*</td>
<td>- .353**</td>
<td>.672**</td>
<td>.672**</td>
<td>.266*</td>
<td>.822**</td>
<td>.589*</td>
<td>.683*</td>
<td>.565**</td>
<td></td>
</tr>
</tbody>
</table>

** indicates significance at <.01 level. * indicates significance at <.05 level. 

a. Listwise N=73.
b. Original variables used for correlation analysis to accurately reflect the direction of the relationship; correlation values almost identical to square root transformation values.
Hypothesis 4: Ego Strengths and Resiliency

The fourth hypothesis stated that ego strength dimensions would be positively associated with resiliency in PICU physicians. The assumption of normal distribution for a Pearson’s correlation was evaluated by examining histograms, skewness and kurtosis, and converting scores to z-scores to detect outliers (-.30 < z < .30) in resiliency. Resiliency met the assumption of normality. The other variables had been previously examined and adjusted accordingly. Missing data was handled by listwise deletion reducing the sample size for these correlations to 73. Although, ‘hope’ and ‘competence’ were not the most important factors in the relationship with trauma symptoms, they were the most highly correlated with resiliency (r = .664 and .538, respectively) along with wisdom (r = .619). Care was the only ego strength not significantly related to resiliency. The remaining ego strengths and their relationship with resiliency can be found in Table 11.

Table 11
Bivariate Correlations of Ego Strengths with Resiliency

<table>
<thead>
<tr>
<th>Ego Strength</th>
<th>Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hope</td>
<td>.664, p&lt;.001</td>
</tr>
<tr>
<td>Competence</td>
<td>.538, p&lt;.001</td>
</tr>
<tr>
<td>Purpose</td>
<td>.511, p&lt;.001</td>
</tr>
<tr>
<td>Wisdom</td>
<td>.619, p&lt;.001</td>
</tr>
<tr>
<td>Love</td>
<td>.402, p&lt;.001</td>
</tr>
<tr>
<td>Care</td>
<td>.102, p=.39</td>
</tr>
<tr>
<td>Will</td>
<td>.533, p&lt;.001</td>
</tr>
<tr>
<td>Fidelity</td>
<td>.508, p&lt;.001</td>
</tr>
</tbody>
</table>

a. Listwise N=73
b. Original variables used for correlation analysis to accurately reflect the direction of the relationship; correlation values almost identical to square root transformation values
Hypothesis 5: Job Stress and Resiliency

The fifth hypothesis proposed that the level of job stress would be affected by resiliency, existence of supervision, hours worked per week and whether coping strategies were taught in medical school or during fellowship. Since the information regarding hours worked per week was gathered in an open-ended question, responses were assigned to arbitrary ranges as a means of analyzing the data (e.g. 40-49). The categories can be viewed in Table 2 under the heading hours worked per week. A multiple linear regression was performed which revealed a significant relationship $F(5,73)=3.252, p = .011$ partially supporting the hypothesis. Resiliency ($\beta=-0.344, t=-3.011, p=0.004$) and hours worked per week ($\beta=.314, t=2.774, p=.018$) were found to be predictive of job stress. Supervision on the job and education about coping strategies in medical school or postgraduate training were not related to job stress level (Table 12).

Table 12

*Summary of Sequential Multiple Linear Regression Analysis of Job Stress, Resiliency, and Attachment Predicting STS*

<table>
<thead>
<tr>
<th></th>
<th>$Beta$</th>
<th>$t(72)$</th>
<th>$p$</th>
<th>Semi-partial $r$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resiliency</td>
<td>-0.344</td>
<td>-3.011</td>
<td>0.004</td>
<td>-0.330</td>
<td>0.109</td>
</tr>
<tr>
<td>Hours worked per week</td>
<td>0.314</td>
<td>2.774</td>
<td>0.018</td>
<td>0.304</td>
<td>0.092</td>
</tr>
<tr>
<td>Supervision on the job</td>
<td>-0.044</td>
<td>-0.396</td>
<td>0.694</td>
<td>-0.043</td>
<td>0.002</td>
</tr>
<tr>
<td>Education about coping strategies</td>
<td>0.097</td>
<td>0.754</td>
<td>0.454</td>
<td>0.083</td>
<td>0.007</td>
</tr>
</tbody>
</table>
Hypothesis 6: PICU Physicians Level of STS

The sixth hypothesis stated that PICU physicians would experience a significant amount of secondary traumatic stress symptoms. The IES-R scale, which was used to measure trauma-related symptoms, does not have cutoff scores that determine a clinically significant range. Therefore, the percentages of physicians who endorsed symptoms are listed in Table 13 by symptom cluster and specific item within the cluster. The sample size for these results was 102 as a result of data cleaning. For the intrusion domain, cued psychological distress and reminders of the event evoking thoughts about it were the most frequently endorsed items. For avoidance symptoms, the most frequently endorsed items included “avoided letting themselves get upset when reminded of the stressful event” and “cued avoiding thoughts about it.” Within the hyperarousal domain, irritability was the most frequently endorsed symptom related to the stressful/traumatic event. The least endorsed symptoms each making up less than 20% of the sample included the following: feeling the event was surreal (18.2%), and reliving the moment (17.6%), easily startled (18%) and cued physiological reaction (15.7%). Eighty-three percent endorsed experiencing at least one symptom ‘a little bit’, 52.9% ‘moderately’, 34% ‘quite a bit’, and 8.7% ‘extremely’ during the last week. Overall, PICU physicians reported experiencing a significant amount of STS symptoms with 83% reporting at least one symptom of STS during the previous week.
Table 13

Frequency of Diagnostic Criteria of PTSD Based on the IES-R Reported by PICU Physicians

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little bit</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Intrusion Symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cued psychological distress</td>
<td>42(41.2)</td>
<td>34(33)</td>
<td>16(15.5)</td>
<td>8(7.8)</td>
<td>2(2)</td>
</tr>
<tr>
<td>Difficulty sleeping</td>
<td>63(61.8)</td>
<td>22(21.6)</td>
<td>10(9.8)</td>
<td>7(6.9)</td>
<td>0</td>
</tr>
<tr>
<td>Reminders evoking thoughts</td>
<td>42(41.2)</td>
<td>35(34.3)</td>
<td>17(16.7)</td>
<td>8(7.8)</td>
<td>0</td>
</tr>
<tr>
<td>Intrusive thoughts</td>
<td>45(44.6)</td>
<td>33(32.7)</td>
<td>17(16.8)</td>
<td>5(5)</td>
<td>1(1)</td>
</tr>
<tr>
<td>Intrusive images</td>
<td>50(50)</td>
<td>34(34)</td>
<td>9(9)</td>
<td>5(5)</td>
<td>2(2)</td>
</tr>
<tr>
<td>Sense of reliving moment</td>
<td>81(81.8)</td>
<td>15(15.2)</td>
<td>3(3)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Waves of strong feelings</td>
<td>58(56.3)</td>
<td>28(27.2)</td>
<td>11(10.8)</td>
<td>5(4.9)</td>
<td>0</td>
</tr>
<tr>
<td>Related dreams</td>
<td>72(71.3)</td>
<td>20(19.8)</td>
<td>5(5)</td>
<td>4(4)</td>
<td>0</td>
</tr>
<tr>
<td>Avoidant Symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional numbing</td>
<td>48(47.5)</td>
<td>24(23.8)</td>
<td>15(14.9)</td>
<td>11(10.9)</td>
<td>3(3)</td>
</tr>
<tr>
<td>Feeling event was surreal</td>
<td>84(82.4)</td>
<td>12(11.8)</td>
<td>4(3.9)</td>
<td>2(2)</td>
<td>0</td>
</tr>
<tr>
<td>Avoided reminders</td>
<td>68(67.3)</td>
<td>25(24.8)</td>
<td>6(5.9)</td>
<td>2(2)</td>
<td>0</td>
</tr>
<tr>
<td>Avoided thoughts</td>
<td>48(48.5)</td>
<td>27(27.3)</td>
<td>13(13.1)</td>
<td>10(10.1)</td>
<td>1(1)</td>
</tr>
<tr>
<td>Avoided feelings</td>
<td>58(58)</td>
<td>28(28)</td>
<td>9(9)</td>
<td>4(4)</td>
<td>1(1)</td>
</tr>
<tr>
<td>Emotional numbing</td>
<td>69(69.7)</td>
<td>20(20.2)</td>
<td>7(7.1)</td>
<td>3(3)</td>
<td>0</td>
</tr>
<tr>
<td>Tried to remove from memory</td>
<td>64(66)</td>
<td>25(25.8)</td>
<td>5(5.2)</td>
<td>2(2.1)</td>
<td>1(1)</td>
</tr>
<tr>
<td>Avoided talking about it</td>
<td>68(66.7)</td>
<td>17(16.7)</td>
<td>19(9.8)</td>
<td>6(5.9)</td>
<td>1(1)</td>
</tr>
<tr>
<td>Hyperarousal Symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irritability</td>
<td>51(50)</td>
<td>23(22.5)</td>
<td>20(19.6)</td>
<td>7(6.9)</td>
<td>1(1)</td>
</tr>
<tr>
<td>Easily startled</td>
<td>82(82)</td>
<td>10(10)</td>
<td>5(5)</td>
<td>3(3)</td>
<td>0</td>
</tr>
<tr>
<td>Difficulty sleeping</td>
<td>70(70)</td>
<td>16(16)</td>
<td>10(10)</td>
<td>3(3)</td>
<td>1(1)</td>
</tr>
</tbody>
</table>
Table 13. Continued.

<table>
<thead>
<tr>
<th></th>
<th>Count (Percentage)</th>
<th>Count (Percentage)</th>
<th>Count (Percentage)</th>
<th>Count (Percentage)</th>
<th>Count (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty concentrating</td>
<td>76(76.8)</td>
<td>15(15.2)</td>
<td>6(6.1)</td>
<td>2(2)</td>
<td>0</td>
</tr>
<tr>
<td>Cued physiological reaction</td>
<td>86(84.3)</td>
<td>10(9.8)</td>
<td>6(5.9)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hypervigilant</td>
<td>71(71.7)</td>
<td>16(16.2)</td>
<td>8(8.1)</td>
<td>3(3)</td>
<td>1(1)</td>
</tr>
</tbody>
</table>

(Note. This measure is not validated to be used as a diagnostic tool for PTSD.)

Exploratory Analyses

Information was gathered regarding the physicians’ training and results indicated that 13.6% received information about coping strategies in medical school and 29.1% in postgraduate training.

Participants were asked to rate their life and job satisfaction on a five-point scale (1=low, 5=high). Life satisfaction was positively correlated with job satisfaction (r=. 557, p<. 01), resiliency (r=. 277, p=. 05), and ego strength (r=-.417, p<. 01; it was a transformed variable therefore the valence is reversed). Life satisfaction was negatively correlated with job stress (r=-.277, p<. 01), lack of organizational support (r=-.235, p<. 05), and overall trauma score(r=-.247, p<. 05). Job satisfaction was negatively associated with job stress (r=-.259, p<. 01), lack of organizational support (r=-.592, p<. 01), and overall trauma score (r=-.279, p<. 01). Job satisfaction was positively associated with ego strength (r=-.373, p<. 01), resiliency (r=. 240, p<. 05) and time spent on current ICU(r=. 381, p=. 05).

Other variables were examined to determine if they were related to STS such as hours of work and years of experience. Years of experience did not prove to have a significant association with the level of STS (r=. -146, ns). Additionally, hours of work per week did not have a significant relationship with STS (r=. 017, ns).
Discussion

Secondary traumatization is a phenomenon that occurs in a helping professional who is affected by the trauma endured by their patient. The stress reactions to this exposure mimic those of posttraumatic stress disorder including intrusive thoughts, avoiding reminders and irritability related to the exposure. Secondary traumatic stress has been explored in the literature for approximately the last 15 years but has focused mostly on mental health workers, nurses and firefighters. Physicians in emergency rooms and critical care units are at risk for STS because they also provide urgent care to vulnerable individuals. Pediatric intensivists in particular deal with a population that is vulnerable in more ways than one. Their patients are not only critically ill or injured, but they are children, and individuals who rely on others to make important decisions for them. The purpose of the current study was to examine STS in pediatric intensivists and the effect that job stress, resiliency, attachment styles and ego strength has on the development of STS symptoms.

Overall, PTSD-like symptoms were present in the PICU physicians with 83% experiencing at least one symptom of STS, of varying degree, in the last week. Not that many studies have been conducted that provide the prevalence of STS in the medical profession. Laposa & Alden (2003) surveyed emergency personnel in one hospital with 70% comprised of nurses and physicians. It was found that 12% of the participants met full criteria for PTSD and 20% met some criteria with the most severe symptoms being related to intrusive thoughts. The current study was not able to determine if a participant met criteria for PTSD since the measure has not been validated as a diagnostic tool or created for this purpose. However, based on the results it can be extrapolated that 70.9%
met partial criteria operationally defined in this study as endorsing more than three symptoms of any level of distress.

The first hypothesis proposed that attachment style and ego strength would be predictive of STS symptoms in PICU physicians after controlling for several risk factors (age, gender, previous trauma, job stress and resilience). Job stress was by far the most significant predictor of STS symptoms. Contrary to previous literature, history of trauma, age and gender (Brewin, et al. 2000) did not significantly predict STS. Bonnano, Galea, Bucciarelli, & Vlahov (2007) found that previous trauma only made someone more likely to develop PTSD following the September 11 terrorist acts if they had experienced two or more traumas in the past. If two to three prior traumas existed, then the person was half as likely to be resilient and the chances of resilience decreased with an increased number of prior traumas. In the current study, the number of previous traumas each physician had is uncertain and only whether one existed or not was known. In the sample of physicians, gender was controlled for; however, it did not significantly contribute to the variance in the model despite previous research that suggests females are at increased risk. Bonnano et al. (2007) found that being female distinguished resilience, but not mild-moderate trauma from PTSD. This coincides with the current study, as gender was not a predictor of trauma symptoms most likely since the trauma symptoms were not severe enough to warrant a diagnosis of PTSD. Another hypothesis is that effective coping skills are necessary to successfully reach this level of education (medical school), therefore the females level of resilience could be higher than average negating gender differences.

Upon examination of the relationship between STS symptoms, attachment style (preoccupied, secure, fearful, and dismissing; Bartholomew & Griffith, 1994) and ego
strength, neither of these variables was predictive of STS after controlling for resiliency and job stress. Although significance was not found in the hierarchical regression, ego strength was a significant predictor when entered into the model before resiliency. This suggests that ego strength and resilience have shared variability, which is also supported by the significant correlation between them. The change in $R^2$ for ego strength went from 5.2% to 0.3% once resiliency was added in the model. Ego strength uniquely accounted for 0.3% of the overall variance in STS whereas resiliency accounted for 4.7%. Resiliency prevailed as the stronger predictor of STS therefore it is the more important variable to include in the model and including ego strength in the model does not significantly add to the predictive value of STS. However, overall ego strength, separate ego strength dimensions, and attachment styles were significantly correlated with STS. This suggests that ego strength contributes to an individual’s resiliency to trauma but that resiliency has other factors that create protection from trauma. Considering this explanation it would make sense that individuals could be resilient during times of distress without having a high level of day-to-day ego strengths. Another hypothesis could be that having a great degree of ego strength translates into resilience toward trauma. Individual ego strengths as they relate to trauma symptoms will be discussed in further detail later.

Among the attachment styles, fearful attachment was the only one significantly associated with STS, when utilizing the Bartholomew and Griffin model, demonstrating that a higher score in fearful attachment translated into an increase in STS symptoms. More specifically, fearful attachment was significantly associated with intrusion, arousal and avoidant symptoms to approximately the same degree. Bartholomew and Horowitz
(1991) believed that individuals with a fearful attachment style struggle with self-regulation and appropriate boundary setting. This could serve to be maladaptive when in a high-paced professional setting dealing with people that are in pain such as in the ICU. If physicians have difficulty self-regulating and are unable to maintain a healthy level of emotional distance from their patients, then they would be more susceptible to the effects of STS. The results of the present study are supported by the findings of Marmaras and colleagues (2003) who found that female trauma therapists with a fearful attachment style experienced more symptoms of STS than those with a secure or avoidant style. Fearful attachment style was also negatively correlated with resiliency and overall ego strength among PICU physicians. Since attachment style is seen as a relatively stable factor, it is likely that a fearful attachment style preceded and contributed to the underdevelopment of ego strength and low level of resiliency.

Hazan and Shaver’s model was able to provide an added perspective on the relationship between attachment (secure, avoidant, and anxious-ambivalent) and STS. Anxious-ambivalent attachment style explained a significant proportion of the variance when added to the model prior to ego strength and contributed a larger amount of unique variance to the model than ego strength. This indicates that anxious-ambivalent attachment is more relevant to the model and explains variance above and beyond ego strength. Utilizing Hazan and Shaver’s adult attachment model, more specifically anxious-ambivalent attachment, for the prediction of STS in addition to job stress and resiliency demonstrated to be the best fit as it accounted for 40% of the variance in STS.

Anxious-ambivalent and fearful attachment are both classified as insecure attachment styles and this classification is known to be a risk factor under stress and be
associated with less flexibility in thinking and acting (Brisch, 2010). These two characteristics play an important role in the life of an ICU physician. Stress is inherent in the ICU environment that requires immediate decisions at times, which could have major repercussions. Additionally, an ICU physician needs to be able to assess a situation from different angles and think outside the box to be able to provide the least risky intervention with the most positive outcome. Flexibility in thinking is also important because the situations in the ICU can be critical and change spontaneously requiring a quick shift in attention to address the imminent issue. Insecure adults are also less likely to seek support from their significant other during times of distress. If PICU physicians are under stress and are not seeking support, then they are more likely to be affected by the trauma they encounter and develop symptoms of STS. More specifically, individuals characterized as having fearful attachment have low self-confidence and high self-consciousness. These are two traits that could negatively affect an ICU physician. Low self-confidence could cause a physician to hesitate about their decisions or second-guess them once they are already made. High self-consciousness could prevent them from expressing their negative feelings about a traumatic incident in the ICU. Both of these could increase the likelihood of developing STS symptoms.

Interestingly, despite secure attachment having a strong negative correlation with fearful attachment and previous research suggesting that secure attachment serves as a protective factor to PTSD, no significant relationship was revealed between the overall trauma score and secure attachment. However, in an analysis that examined the separate clusters of trauma symptoms, which had a larger sample size due to listwise deletion, secure attachment was significantly negatively correlated with intrusion, avoidant and
arousal symptoms. On the other hand, secure attachment was positively related to resiliency and ego strength, both of which had a negative relationship with STS. The positive relationship between secure attachment and resiliency is consistent with previous literature that considers secure attachment a factor of resiliency (Griffin & Bartholomew, 1994). A secure attachment lays the foundation for developing healthy relationships and regulating emotions in addition to a positive self and positive other view (Bowlby, 1988). A secure attachment in and of itself, may not be sufficient to protect against PTSD and what a secure attachment promotes may be the important factor. Bowlby’s focus on the internal working model constituting the view of self and other can be applied in this situation to provide a theoretical basis for successful completion of Erikson’s eight psychosocial life stages. For example, someone with a positive view of the self would be more likely to develop a sense of self-reliance and self-discipline, namely the ego strength known as will. In relation to the population of interest, physicians with a high degree of will may take a different approach to coping with a traumatic incident in the ICU and engage in active problem solving or intellectualizing a situation to decrease the negative impact of the potentially traumatic event.

As mentioned previously the four-category model of attachment did not prove useful in the regression model to predict STS whereas Hazan and Shaver’s model did. There has been some concern regarding Bartholomew and Griffin’s (1994) prototype approach to their model of attachment, which can help elucidate the current study’s findings. Fraley and Waller (1998) indicated that the prototype approach creates unclear boundaries where there is significant overlap. Additionally, the prototype of secure attachment is viewed as the opposite to fearful, and dismissing attachment the opposite of
preoccupied. This can prove troublesome, as they are not mutually exclusive. Hazan and Shaver on the other hand adopted Ainsworth’s three-category model in which secure attachment does not have an opposite and stands alone; however an individual’s classification is not independent of the other categories and overlap exists. For example, secure attachment is defined as low avoidance and low anxiety. Both the three category and four category models have the underlying dimensions of anxiety and avoidance although Hazan and Shaver’s appears to be more straightforward. Fraley and Waller (1998) suggest that typology does not capture the natural structure of attachment security and that attachment is a variable in which people differ in degree rather than in type.

The second hypothesis postulated that individuals with a preoccupied attachment style would experience more avoidant symptoms of STS than arousal or intrusion. Preoccupied attachment was not determined to be a significant factor in any of the analyses and was not related to STS, thus the hypothesis was not supported. This suggests that preoccupied attachment style as listed by Bartholomew and Griffin (1994) is not a strong factor on it’s own, at least not with this population since the other three attachment styles revealed expected relationships with each other. Hazan and Shaver’s (1987) model of attachment including secure, avoidant, and anxious-ambivalent styles, was examined as an alternative to Bartholomew and Griffin’s model. Anxious-ambivalent, which is viewed as having low avoidance and high anxiety (therefore being comparable to preoccupied style (Backstrom & Holmes, 2007), was significant for predicting STS symptoms after controlling for resiliency and job stress. The higher someone scored on anxious-ambivalent attachment the more STS symptoms were reported. It is possible that anxious ambivalent attachment predicted STS as opposed to preoccupied attachment...
because the former is a purer measure of the attachment style. The preoccupied attachment had overlap with secure attachment, which could confound the results.

One aspect of attachment style is the existence of two underlying factors, the view of self and the view of other in relation to self, which differ in valence according to attachment style. Although different researchers focusing on adult attachment have taken derivations from Ainsworth’s and Bowlby’s original attachment styles, the two main underlying principles are consistent (Backstrom & Holmes, 2007; Mueller, Moergeli & Maercker, 2008). Therefore, it might be better to rely on those two factors since other research is divergent in their results of attachment. The view of self and other also has implications for the development of ego strength.

The eight ego strengths based on Erikson’s psychosocial theory of development were examined and hypothesized to be positively related to resiliency and in particular, the strengths of ‘hope’ and ‘competence.’ Hope was found to be the most correlated with resilience, which is consistent with other research (Parvizian, 2005). Wisdom and then competence were the next highest related to resiliency. Competence has surfaced in research on children and their development. Carolyn Weber Stratton (2000) highlighted the importance of social competence in the healthy development of children and a key element to combat psychosocial problems. The only ego strength that was not significantly correlated with resiliency was care, which is thought to emerge from the successful navigation of the generativity vs. stagnation phase that often occurs during mid-adulthood. The average age of this sample was 45, which would theoretically place the majority of the sample in the generativity vs. stagnation phase. It is possible that this ego strength is not fully developed if the phase is not completed which would then make
it not as influential in relation to resiliency. On the other hand, care, which is characterized by the concern for the needs of others, may be comparable for all the physicians since caring for others is an inherent part of a physicians job. Therefore, if there is not much variability in this variable then it might be difficult to determine how it relates to resiliency to trauma.

Another hypothesis predicted that ego strength, more specifically competence and hope, would be related to STS symptoms. Although ego strength was significant in the multiple linear regression model, it only reached significance when it was added into the model immediately following job stress putting its predictive value into question. Upon closer examination of the individual ego strengths it was determined that will, fidelity, purpose, hope, competence, wisdom, and love were negatively related to STS symptoms. Hope and competence did not emerge as the most correlated factors and thus did not support the hypothesis. Ego strengths overall also had a negative relationship with occupational stress suggesting that they serve as a protective factor. Will is characterized by self-control and self-determination, which in the context of an intensivist’s job could help them to manage stress and regulate emotions. In turn, this would help increase resilience and may prevent the development of STS symptoms.

Occupational stress was found to be a significant predictor of STS, which is consistent with other studies (Badger, Royse, & Craig, 2008). Regehr, Hemsworth, Leslie, Howe and Chau (2004) found occupational stress to be the strongest predictor of PTSD in child welfare workers, above and beyond individual factors and circumstances. It is important to note that the construct of job stress in this study was a composite of the severity and frequency of both job pressure and the lack of organizational support.
Accounting for the intensity of a stressor and the frequency of occurrence protects against overestimating severe stressors that occur infrequently and underestimating moderate stressors that occur persistently (Spielberger & Vagg, 1991). The comprehensive nature of this measure (JSS) and the attention it gives to social support in its relation to stress is very relevant in this study. Lack of social support has been shown to be a risk factor in the trauma literature for the development of PTSD (Brewin et al., 2000; Badger, Royse, & Craig, 2008). Additionally, a negative environment or social support, such as indifference or criticism, has recently been found to be more indicative of PTSD symptoms than a simple lack of support (Ullman & Filipas, 2001). Physicians in this study reported negative experiences with colleagues that in other occupational settings might have fewer implications. Employment characterized by organizational pressures (i.e. deadlines) and lack of support (i.e. lack of recognition for good work) creates job stress. However, when those environmental factors exist in addition to dealing with the death of patients and the outcomes of one’s medical decisions, it is more likely that one’s emotional and cognitive resources would become diminished. Bonnano et al., (2008) found that an additional life stressor made someone more susceptible to PTSD. Therefore, the extreme occupational stress endured by PICU physicians is likely to increase their risk of STS. In listing the most stressful aspects of their jobs, emerging themes included, death of a patient, dealing with a grieving family, inability to maintain balance between personal and professional life (i.e. limited time with family), and long hours. Respondents had reported working between 50 and 120 hours per week, with 40 hours constituting part-time employment. Many factors encompassed in their reported job stress would make them more vulnerable to traumatic stress reactions. If someone is
feeling unsupported at work, works such long hours that they are unable to spend time with their family and is sleep deprived, he/she is going to be more greatly affected by trauma, especially since the climate of the job does not leave time to process exposure to trauma.

In terms of occupational stress in general, ICU physicians stress level (mean=26.95, SD=11.37) was comparable to that of social workers (mean=26.01, SD=9.95) and slightly lower to that of nurses (mean=29.91, SD=9.86) in a study conducted by Gellis (2002) measured by the Job Stress Index.

**Limitations of Study**

The nature of this study limits generalizability to physicians who work in the intensive care units. Causality cannot be assumed because the study was a cross sectional design. The study did not ask participants in what area of the country they worked and there could be differences based on region or population of area (metropolitan vs. rural). It would have also been interesting to know the number of other physicians who worked in the PICU with the participant and the size of the unit to determine if this played a factor in job stress or STS. Ethnicity has been related to the development of PTSD and STS however it was not measured in this study.

In regards to the survey design, based on feedback of some of the participants the survey was too lengthy. Some reported that they did not have the amount of time to do it in one sitting and needed to return to it at a later time to complete it. Additionally, the survey was not piloted; therefore, feedback regarding the survey was not possible prior to dissemination. It was noticed later that question number 14 on the demographic
questionnaire was set up as a rating scale as opposed to a clearly indicated yes or no. This means that the option for yes and no was available and the only two options but there were five spaces next to each response (“yes” and “no”) instead of one. If a participant selected any of the five spaces next to yes, the response was filtered into yes and counted as part of the overall percentage of yes. The same applied to the response of “no”.

An important factor to discuss when addressing limitations is the thoroughness of responses. At least 30 people who began the survey discontinued it before completion and did not return to finish it at another time. Therefore, there were 30 people who thought this topic was important enough to warrant participation in the study yet they did not complete it. Unfortunately, there are a myriad of reasons that could have contributed to discontinuation but one could only speculate on what they are. One physician reported that he stopped completing the survey because he did not believe it fully captured the stressors he experiences at work. Some of the physicians reported that the survey was too lengthy and they did not have time to complete it. One physician indicated that he stopped completing the survey because he felt that the questions were getting too personal. With feedback such as this it is difficult to determine if there would be any differences between the individuals who completed the survey versus those who did not.

Analysis to determine the significance between missing data and those who completed the survey, however, does not factor in combined effect of all the missing variables at once since those other values are unknown.
Implications

This study provides implications for the training of pediatric intensivists and shines light on the extremely stressful situations in which they work evidenced by job stress being the most predictive of STS. Only one quarter of the study participants reported receiving education about coping strategies in medical school or fellowship training. How do we expect physicians to perform life and death procedures and make critical decisions day after day without knowing how to cope with the pressure? Over 50% of the participants stated that they thought of leaving the PICU at least once in the last month, and some reported having thoughts everyday. PICU physicians are currently in great need as hospitals are adding PICUs due to the increase in patient census (Collaborative Pediatric Critical Care Research Network, 2010). Thus, it makes it even that much more important that physicians have the resources available to them to cope with their job stressors. Although deaths and illnesses are an inherent part of a pediatric intensivist's job, systemic issues do not need to be. In this study, PICU physicians' report of administrative, bureaucratic, and leadership issues serving as major stressors in their job warrant further attention. It would be beneficial for hospital administrations to reevaluate their current procedures, guidelines and organizational support given to the PICU physicians to improve their quality of life at work and decrease their likelihood of secondary traumatic stress reactions. Due to the high paced environment of the ICU and the significant amount of job stress it would be important to allow decompression time so that physicians can process the events in the ICU and return to baseline level of stress. This may be an intervention that would prove to be fruitful and decrease the likelihood of the development of STS symptoms. Cultivating a culture in the hospital that allows for
physicians to express their distress and not ignore it would likely be beneficial. The fact that job stress was the most significant predictor of traumatic stress symptoms suggests that the prevalence of these symptoms can be reduced by addressing issues in the work environment. It is apparent that physicians find this topic important as evidenced by their willingness to take 20-30 minutes to complete a survey despite their demanding work hours and for others to provide feedback during the data collection process. Some physicians contacted the investigator directly to ask questions about the survey/study, state their interest, or give suggestions.

**Future Directions**

Secondary Traumatic Stress has become to be recognized as a true and valid phenomenon by those in the field but not yet by DSM-IV. Research should examine provisions that can be put into place to decrease an intensivist’s risk of STS by either providing education about STS, providing consultation/supervision following a traumatic event in the ICU, and/or encouraging self-care on a more systemic level. The concept of posttraumatic growth entering the literature suggests that people can grow following exposure to a traumatic event so examining if changes in the intensive care units can facilitate growth would be important. The traumas are not going to go away in the ICU but how they are dealt with by the intensivists can change. These physicians have dedicated their careers to helping save children’s lives and lessen their pain; they should not have to suffer because of it; especially when effective interventions are available.
References


Kids Health http://kidshealth.org/parent/system/ill/picu.html# The Nemours Foundation; When your child’s in the Pediatric Intensive Care Unit


Kraemer (2006). So the cradle won’t fall: Holding the staff who hold the parents in the NICU. *Psychoanalytic Dialogues*, 16(2), 149-164.


Examination of theory and psychometric properties. *Journal of Adolescence*, 30, 63–79.


Appendix A

Consent Form

Post-traumatic Stress Disorder-Like Symptomatology and Adult Attachment Style in Pediatric Intensive Care Unit Physicians

You are invited to participate in this student research study because you are a doctor who works with children in intensive care units (ICU).

Purpose of Research
The purpose of the current study is to examine the effect of certain factors on doctors’ abilities to cope with traumatic events related to their pediatric patients in intensive care units. If you decide to participate in this study you will be asked to answer questions about current work-related stressors, methods of handling stress and reactions to distressful events in the ICU. It will take approximately 35 minutes to answer this survey.

Risks
There are questions about how you relate to others and deal with stress. You will have the right to skip any questions that make you feel uncomfortable and you may stop at any time during the process. Participating in this study exposes you to minimal risk, no more than you would encounter in your daily life.

Benefits of the Research
There may not be any direct benefits to you for participating in this study. However, this research will help health care workers understand factors related to professional burnout.

Participants Rights
Your participation in this study is completely voluntary. You are free to refuse to participate in this study and may quit the study at any time. Your decision regarding whether or not to participate will not affect your present or future employment at the hospital as no one knows whether you choose to participate or not.

Confidentiality
Since names are not needed in this study, the information collected is anonymous.

Additional Costs/Reimbursements
There is no reimbursement or inducements for participating in this study. However, a drawing for the participants will be conducted after the study for a $75 Best Buy Gift Certificate. For the drawing, your name/address card should be completed and placed and sealed in the separate envelope that is provided in the questionnaire package. When your
package is received, these sealed envelopes will be separated from completed questionnaires to ensure anonymity.

**Impartial Third Party Contact**
If you wish to contact an impartial third party not associated with this study regarding any complaint or concern you may have about the study, you may contact the Office of Patient Relations, Loma Linda University Medical Center, Loma Linda, CA 92354, phone (909) 558-4647, e-mail patientrelations@llu.edu for information and assistance.

**Informed Consent**
Once you have read the contents of this informational letter, your completion of the questionnaire will indicate voluntary consent to participate in this study. Please download this letter for future reference. You may call Dina Cuervo, M.A., psychology trainee or Kimberly Freeman, PhD, her supervisor (909) 379-7589, if you have additional questions or concerns.

**Consent Copy**
You may print this consent form for your records.

*Due to the fact that understanding how stress may play a role in the work of the pediatric intensivist, input from each of you will make a significant difference in enabling the results from this study. Your individual questionnaire is important!*

Thank you so much for your participation,

Kimberly Freeman, Ph.D., MSW  
Social Work/Psychology  
Department of Social Work  
School of Science and Technology  
Loma Linda University

Dina Cuervo, M.A., Graduate Psychology Student  
Loma Linda University, Psychology Department
Appendix B

Introduction to the Study

My name is Dina Cuervo and I am a 5th year psychology doctoral student at Loma Linda University in California. I am asking for you participation in completing an online survey as part of my IRB approved dissertation research. The purpose of the study is to examine factors related to how doctors cope with traumatic events related to their pediatric patients in intensive care units. Therefore, this survey is for Pediatric Intensive Care Unit Physicians ONLY. The information collected is anonymous.

Due to the fact that understanding how stress may play a role in the work of the pediatric intensivist, your input will make a significant difference in enabling the results from this study. This survey will be accessible for the next week (May 17). If you are willing to participate in this study please select the following link or copy and paste it into your browser; when prompted for a password type in the word: children

https://www.surveymonkey.com/s/BT2JLRX

Your participation is greatly appreciated as I know that your time is very valuable. It would also be appreciated if you could take the time to forward this email to your attendings, fellows and/or residents. Thank you for your time.

Sincerely,

Dina Cuervo
Appendix C

Demographic Information

Please answer each of the following questions. It is important that all questions are completed.

Age ________

2. Gender  M  F

3. Marital Status
   Married
   De facto relationship
   Engaged to marry
   Single
   Divorced
   Separated
   Relationship
   Other (Please specify)...

4. Do you have any children?
   No
   Yes

5. If yes, how many children do you have?
   1
   2
   3
   4 + (Please specify).........................

6. Length of postgraduate medical experience Years _____ Months ______

7. Length of time on present ICU Years_______ Months ________

If you have worked on any other intensive care units please list the unit and length of time on that unit. ________________________________________________________________

8. Level of training    _____ Fellow    _____ Resident    _____ Licensed Medical
   Doctor

9. How many hours per week do you work? ___________ total hours
10. Do you receive regular supervision as a part of your position at the hospital?  
_______ yes     ______ no

11. If Yes, is that provided to you; once a week _____ once a month ____ once a year other_______ (please fill in)

12. Was information on coping strategies included in any of your medical school curriculum?  
_______ yes     ______ no     ______ not sure

13. Was information on coping strategies included in any of your training (fellowship or residency)?  
_______ yes     ______ no     ______ not sure

14. Do you yourself have any personal trauma history?  
_______ yes     ______ no
If yes, rate the severity of the trauma  
1     2     3     4     5
a little     extremely

15. Do you yourself have any childhood trauma history?  
_______ yes     ______ no
If yes, rate the severity of the trauma  
1     2     3     4     5
a little     extremely

16. Do you yourself have any natural trauma history (e.g. earthquakes, hurricanes, etc..)?  
_______ yes     ______ no
If yes, rate the severity of the trauma  
1     2     3     4     5
a little     extremely

Rate the following three using the following scale:

1     2     3     4     5
Low     Low-moderate     Moderate     Moderate-high     High

17. Job Stress     ______

18. Job Satisfaction     ______

19. Life Satisfaction     ______

20. How many times in the past month have you thought about leaving your unit or current position?  ______
21. List the 3 most stressful aspects of your present position and order them #1 being the most stressful of the three.
Appendix D

The Brief Resiliency Scale

“Please indicate the extent to which you agree with each of the following statements by using the following scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.”

1. I tend to bounce back quickly after hard times.
2. I have a hard time making it through stressful events.
3. It does not take me long to recover from a stressful event.
4. It is hard for me to snap back when something bad happens.
5. I usually come through difficult times with little trouble.
6. I tend to take a long time to get over set-backs in my life.
Appendix E

Psychosocial Inventory of Ego Strengths (PIES)

Directions:
Read each item carefully and consider the degree to which it describes you.
Write the number signifying your response on the line next to each item.

<table>
<thead>
<tr>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
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<tbody>
<tr>
<td>Describes me very well</td>
<td>Does not describe me well</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. When I love someone I can accept that they might want to pursue some interests without me. (LOVE)
2. I am able to follow through on a task until it's completed. (WILL)
3. I know I have skills to carry out various tasks and responsibilities important to me. (COMPETENCE)
4. I find I can easily be distracted even when I really need to finish a task. (WILL)
5. I feel okay with the way I've handled my life so far. (WISDOM)
6. I prefer to be free-floating without having to worry about commitments to other people or things. (FIDELITY)
7. I have experienced feelings of love with someone outside of my family. (LOVE)
8. When I think about the future, I feel optimistic. (HOPE)
9. When I see someone with a need, I help in whatever way I am able. (CARE)
10. I find that my opinions are frequently influenced by others. (FIDELITY)
11. I really don't know what strengths or skills I have to offer society. (COMPETENCE)
12. I can't seem to forgive myself for a lot of things I've done in the past. (WISDOM)
13. I am involved in a variety of activities that allow me to use my skills and abilities. (COMPETENCE)
14. I don't think I have really loved anyone outside of my family. (LOVE)
15. When things don't go my way, I remind myself of the positive things in my life. (HOPE)
16. I really don't know what I want out of life. (PURPOSE)
17. When I know someone is having a difficult time, I really feel concerned about them. (CARE)
18. When I make a commitment to something, I stick with it. (FIDELITY)
19. In many ways, I have control over my future. (WILL)
20. I don't pretend to be something that I'm not. (FIDELITY)
21. I really can't be bothered to help other people. (CARE)
22. I'm afraid of what might happen to me in the future. (WISDOM)
23. I don't like it when someone I love wants to do something with anyone other than me. (LOVE)
24. I try to pursue my aims even when I have to take risks. (PURPOSE)
25. I hesitate to put much energy into trying to reach my goals. (PURPOSE)
26. I'm only setting myself up for disappointment by looking forward to things in the future. (HOPE)
27. I feel like I don't have control over my life. (WILL)
28. When I think of my future, I see a definite direction for my life. (PURPOSE)
29. Even when I have opportunity to do things I might be good at, I usually can't get started. (COMPETENCE)
30. Beyond my closest friends and family, I'm not that concerned about the needs of other people. (CARE)
31. I may have difficult times ahead, but I'll try to face them with courage. (WISDOM)
32. When something doesn't work out for me, I just look forward to doing other things. (HOPE)
33. If there is something I choose to do, I am determined to do it. (WILL)
34. When I care about a friend or partner, it usually doesn't lead to a committed relationship. (LOVE)
35. I have strengths that enable me to be effective in certain situations. (COMPETENCE)
36. Sometimes I feel as if I can't control my behavior. (WILL)
37. I believe in being true to myself and others. (FIDELITY)
38. When I am in a close relationship with someone, I tend to lose sight of my interests and goals. (LOVE)

39. No matter how bad things get, I am confident they will get better. (HOPE)

40. Fear keeps me from striving for many of my goals. (PURPOSE)

41. I'm not really sure what I believe in. (FIDELITY)

42. When I feel really down, I have a hard time believing that things are going to get better. (HOPE)

43. When I reflect on the past, I feel sadness and regret. (WISDOM)

44. I don't care about things anymore because they usually don't work out anyway. (HOPE)

45. I am able to set realistic goals for myself. (PURPOSE)

46. Even when someone I don't know that well asks me for advice, I take the time to try to help. (CARE)

47. I've got enough of my own problems that it is hard to worry about other people's problems. (CARE)

48. I have trouble accepting a particular purpose or role in life. (FIDELITY)

49. I'm not afraid of what the future has in store for me. (WISDOM)

50. I don't look forward to the future. (WISDOM)

51. I hardly ever initiate activities; I usually follow the crowd. (PURPOSE)

52. It is difficult for me to ignore the pain of others. (CARE)

53. I stand up for the people and causes that are important to me. (FIDELITY)

54. It doesn't matter what I do, it's not going to change anything. (WILL)

55. I don't have time to deal with other people's problems. (CARE)

56. I can accept the fact that I've made mistakes in my life. (WISDOM)

57. When I love someone such as a friend or partner, we are equally committed to one another. (LOVE)

58. When something doesn't work out the way I had hoped, it makes me feel like just quitting everything. (HOPE)

59. I like to work to make things happen. (COMPETENCE)
60. My friends and I believe we can disagree on things and still be friends. (LOVE)

61. Most people just seem more capable than me. (COMPETENCE)

62. Even though I'm sometimes afraid of failing, if there's something I want to do I try to do it. (PURPOSE)

63. I'm usually able to resist when I'm tempted to do something that's not in my best interest. (WILL)

64. I avoid tasks that might require much of my time and energy. (COMPETENCE)