

THE UNIVERSITY OF HULL

**CONTINUAL EXPOSURE TO TRAUMA IN THE EMERGENCY SERVICES:
AN INVESTIGATION INTO THE PSYCHOLOGICAL
EFFECTS ON NEW RECRUITS**

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By

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ABSTRACT

The main aim of this study was to investigate the psychological effects of continual exposure to trauma on new recruits to the emergency services. Changes over a three-month period, in which trainee ambulance technicians were continually exposed to trauma, were measured in terms of anxiety, depression, posttraumatic stress symptomatology, world assumptions, and perceived social support.

Ten trainee ambulance technicians (treatment group) and eight ambulance administration staff (untreated control group) completed baseline measures, whilst the trainees were in training. Post-test measures were then completed after the trainees had been operational for one month and then again at three months. After three months of continual exposure to trauma, the trainees also completed a semi-structured questionnaire to provide qualitative insight into the trainees' experiences.

The main findings of the study were as follows: Anxiety levels of the trainee ambulance technicians decreased significantly over the three months. Posttraumatic symptomatology levels also decreased significantly in the trainees between pre-exposure and three months of continual exposure to trauma. The use of positive reinterpretation and growth as a coping response to trauma increased significantly within the group of trainees. No significant differences were found in the measures of the untreated control group, indicating that the findings from the trainees were likely to be attributable to the effects of continual exposure to trauma. These results were discussed in terms of the psychological impact that continual exposure to trauma had on the trainees. The strengths and limitations of the study, along with the clinical implications, and recommendations for future research were also presented.

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CHAPTER ONE – GENERAL INTRODUCTION

The aim of this chapter is to set the scene for this study, emphasising the gaps identified in the literature and the argument from the researcher's point of view as to why this particular piece of research has been carried out.

The study of trauma and its effects has been extensive. The potentially debilitating effects of trauma have been widely recognised since the Second World War, and as a form of psychopathology, posttraumatic stress criteria have appeared in the Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition, since 1980. Yet, the vast majority of trauma research has tended to focus on the psychological effects upon victims after exposure to disasters, or combat veterans after exposure in war. This highlights a gap in the literature of the psychological effects of other traumatic experiences (Kleber & Brom, 1998). For example, Kleber & Brom (1998) were surprised to find that so little attention had been given to the psychological effects of road traffic accidents.

It is only recently that interest has developed in the potential traumatic impact of prolonged and repeated trauma such as childhood and domestic abuse (Herman, 1992), and non-extreme but unremitting traumas such as bullying at work (Scott & Stradling, 1994). These are now classified as examples of 'continual exposure to trauma'.

Emergency service workers are one such population who are continually exposed to work-related trauma. They have long been identified, in their role of helpers and rescuers, as being at a high risk from the psychological effects of trauma. However, like other trauma studies, research carried out with the emergency services, be it with police

officers, fire fighters, paramedics or ambulance technicians, has been chiefly focused on the psychological effects of disasters on the workers. The psychological effects of 'everyday' traumas have been generally neglected in this group.

Thus, the present study attempts to explore this gap in previous studies, by focusing on continual exposure to trauma in the emergency services.

'It is important to recognise the emotional toll that exposure to injury, death, and large-scale destruction can exact on [front] line staff.'

(McCammon, 1996, p. 82)

'They have to cope with blood, pain, distorted bodies and sickness in every shape and form.'

(James, 1988, p. 320)

'How do continual exposure to daily stresses, as well as critical incidents or larger catastrophic events, impact on the psychosocial and occupational functioning of emergency workers?'

(McCammon, 1996, p. 58)

Further to this, an additional gap in the literature on this topic is one of methodology. Most trauma research compares the victims to a control group who had not been exposed. Although this appears methodologically sound, any conclusions drawn are potentially confounded by the impact of individual differences between the victims and the controls. This study provides a rare opportunity to overcome the potential limitations presented by individual differences, by utilising data that are collected pre- and post-exposure to trauma. As it is impossible to predict the occurrence of a traumatic event, only post-trauma data has been available to researchers. Using new

recruits in this research allows data to be available before they are continually exposed to work-related trauma (whilst in training), as well as after becoming operational. Research on the psychological effects of trauma upon new recruits to the emergency services is especially sparse in the literature. Yet, within the emergency services, this group provide an ideal opportunity with which to study the psychological effects of trauma as they have yet to encounter the continual exposure to trauma inevitable in the job of an emergency service worker.

This research utilises the constructs of posttraumatic symptomatology, anxiety, depression, world assumptions, coping responses, and perceived social support. These are some of the major and better-researched constructs associated with studying trauma and its consequences.

'The cumulative stress and the trauma of the job can have damaging effects on their personal and professional lives.'

(Hetherington, 2001, p. 1)

'Their strategies of framing events, of their coping methods, should be identified, and their willingness to serve others recognised and valued.'

(McCammon, 1996, p. 82)

'What should be surprising is not that some adverse effects were observed but that the officers managed as well as they did.'

(McCammon, 1996, p. 82)

This study will present the findings of an investigation carried out with newly recruited ambulance technicians serving in Tees, East and North Yorkshire Ambulance Service and West Yorkshire Metropolitan Ambulance Service. The aim of the study is to

investigate the psychological effects of continual exposure to trauma on new recruits into the emergency services. The investigation, therefore, focuses on three identified gaps in the literature: - (a) continual exposure to trauma, (b) the psychological effects on new recruits, and (c) the use of both pre- and post-exposure data.

A. Emergency Services

Emergency service workers, namely police officers, fire fighters, ambulance technicians and paramedics, are required to provide front line assistance at stressful and traumatic incidents (Toft & Reynolds, 1994), which they encounter on a daily basis. Their primary role is that of a rescuer who provides help and protection to those in need (Zettl, 1998). However, in carrying out this role, by attending to the needs of the ‘primary’ victims, emergency service workers may become ‘hidden’ victims themselves (Hodgkinson & Stewart, 1992) as they are exposed to ‘an unflattering side of humanity’ (McCammon, 1996, p59). Either directly through being present at the time of the trauma, or indirectly through spending time working with victims (Figley, 1995; Stamm, 1997), emergency service workers could suffer the same psychological reactions as the victims who they are attempting to help (Pearlman & Saakvitne, 1995). Mitchell (1984) identified the traumatic stressors to which emergency service workers are most vulnerable, as child death, other deaths, horrific sights and sounds, and multiple-casualty incidents. Exposure to dead children, especially those who have died traumatically, has been regarded as most traumatic stressor (Haddock, 1988; North et al., 2002).

Emergency service workers can easily become hidden victims of trauma because of the stereotypes and expectations that surround them. They are expected to be ‘super human’ and, therefore, invulnerable to stress and distressing emotions. It is after all ‘their job’. They are meant to be strong and always in control (Short, 1979), so that they are available to make victims feel safe. They are meant to be able to perform

correctly and quickly, in unpredictable circumstances and under challenging conditions without faltering. They are simply not viewed as potential victims themselves (Hodgkinson & Stewart, 1992).

An additional source of vulnerability in emergency service workers is being a new recruit. In this regard, an emergency service worker is even more akin to the 'primary' victim, since like them, new recruits would have been unlikely to be exposed to multiple traumas before joining the emergency services. Yet new recruits suddenly go from no previous, or infrequent and 'normal' trauma exposure, to continual exposure when they become operational. Higgins (1996) found an increase in posttraumatic symptomatology in police officers with one year of service, when compared to themselves as new recruits. Roy & Steptoe (1994) highlighted the potential vulnerability of new recruits in their finding that general daily stress ratings declined between induction and nine months in the fire service. They concluded that getting used to the new job and colleagues alone are demanding, particularly in the first nine months. The impact of being exposed to trauma is another and perhaps greater element that has to be separately studied. Raphael (1986) also proposed that new recruits would have particularly high stress levels compared to their more experienced colleagues. The scarcity of information in the literature, especially regarding the ambulance service is surprising, considering the potential psychological toll that could be taken on new recruits.

Where psychological research *has* identified emergency service workers as potential victims of trauma, it has been with regard to the aftermath of large-scale incidents and disasters. The potential psychological impact upon emergency service workers has been researched in the aftermath of such disasters as plane crashes (Mitchell, 1990), train

crashes (Andersen, Christensen, and Petersen, 1991), earthquakes (Weiss, Marmar, Metzler, and Ronfeldt, 1995), terrorist bombings (North et al., 2002), and forest fires (McFarlane, 1988). Yet as Duckworth (1991) points out, every day emergency service workers 'encounter incidents that have the potential to be equally – if not more – traumatic in their effects' (p. 224) than disasters. He explains that this is especially likely when the emergency service worker responds in a more personal manner to an incident, rather than in a 'psychologically detached' professional manner. However, little is known of the psychological effects of continual exposure to trauma in emergency service workers.

B. Continual exposure to Trauma in the Emergency Services

Trauma is described in the Diagnostic and Statistical Manual for Mental Disorders (4th Edition) (DSM-IV, APA, 1994) as a situation in which the victim 'experienced, witnessed or was confronted with an event or events that involved actual or threatened death or serious injury, or threat to the physical integrity of the self or others'. The experience becomes traumatic if the victim reacts with intense fear, helplessness, or horror at the time of the trauma (APA, 1994).

Though few researchers would dispute that emergency service workers are continually exposed to potentially traumatic events, it may be argued that these often daily occurrences, although extremely stressful, may not be so threatening as to cause psychological distress. Yet, in recent years, there has been an interest in cases of people who display posttraumatic symptomatology, even though their experiences entailed a series of 'unremitting though individually (relatively) less intense circumstances' (Scott & Stradling, 1994, p. 73).

Ravin & Boal (1989) identified six cases of continual exposure to trauma stemming from work-related stressors in emergency service workers. In all cases, posttraumatic symptomatology was present following a *series* of events that had taken place. Scott & Stradling (1994) reported a case of a police officer who described the debilitating psychological after-effects of four recent events all of which were within the normal range of work-related stressors that she came across on a daily basis. In response to such cases, Grevin (1996) identified that although the effects of disasters had been studied in emergency service workers, psychological effects have not yet been studied in relation to continuous work-related stressors. She proposed that continual exposure to stressors such as seeing someone seriously injured or killed, could lead to posttraumatic symptomatology, because essentially, such stressors are comparable to those on a battlefield (Grevin, 1996).

Although the literature on the psychological effects of continual exposure to trauma is limited, findings highlight the potential impact upon the victim. Green, Goodman, Krupnick, Corcoran, Petty, Stockton, and Stern (2000) in their study comparing the outcomes of single trauma exposure with multiple trauma exposure found higher levels of posttraumatic symptomatology in the group who had been exposed to multiple trauma. Larsen (1998) also reported high levels of posttraumatic symptomatology in those who had been repeatedly exposed to trauma at work, along with high levels of anxiety and depression. Brown, Mulhern, and Joseph (2002) discovered that those with less exposure to trauma were more likely to utilise emotion-focused coping whereas those with a higher level of exposure to trauma were more likely to utilise task-focused coping. Genest, Levine, Ramsden, and Swanson (1990) found that standard jobs such as cardiopulmonary resuscitation in the ambulance service could become traumatic if

efforts were unsuccessful, with ambulance technicians reporting intrusive recollections of the trauma, along with elevated levels of depression.

After being exposed to trauma, the majority of emergency service workers report successful adaptation in terms of job satisfaction, self-appraisal of performance, daily functioning, and relationships with colleagues (North et al., 2002). However, groups like emergency service workers could suffer psychological effects after experiencing continual exposure to trauma, which may impact on them emotionally, cognitively, behaviourally, and physiologically.

C. Psychological Effects of Trauma

Emotional Effects. Emotional reactions to trauma are varied, and depend largely upon the victim and the traumatic situation. However, exposure to a trauma can trigger intense feelings that are not usually experienced, and are therefore not easily managed (Paton & Violanti, 1996). One of the most common emotional responses following trauma is **anxiety** and panic (McCann, Sakheim, and Abrahamson, 1988). Victims, who have experienced or witnessed a significant threat to life or health, are likely to endure overwhelming levels of arousal created by continuing worry, fear, and anticipation of repeated threat (Tedeschi & Calhoun, 1995). Another common emotional response is **depression**. This reaction is especially prevalent in those who have suffered major losses in the trauma (Hodgkinson & Stewart, 1992), but it can also surface in those who experienced loss of control during the trauma leading to a plummeting confidence and lowered self-esteem. Other emotional reactions to trauma involve guilt, especially when victims believe that they could have done something

differently, and anger, which may surface if the victim feels someone was to blame or if the trauma was unjust.

Cognitive Effects. Cognitive reactions to trauma involve processes of assimilation or adaptation. When people experience something that they deem to be traumatic, they are faced with new information that generally does not fit with their previous **assumptions and knowledge of the world**. In order to adapt to and incorporate this new information, Taylor (1983) proposed three phases of readjustment: - searching for meaning, regaining mastery, and enhancing self-esteem. If victims find meaning in the experience that has traumatised them, they understand how the traumatic event occurred, why it happened to them, and how life has changed because of their experience. Regaining mastery after the trauma involves gaining cognitive control over what happened, with an emphasis on successful recovery and prevention of reoccurrence. Enhancing self-esteem involves discovering ways to feel better as a person (Taylor, 1983). Such readjustment can involve many cognitive processes including restructuring previous assumptions to incorporate the traumatic experience, deriving benefit from the experience, and making comparisons to those who are less well off. Many victims will experience **nightmares and intrusive thoughts, images or recollections**, as they attempt to make sense of the disturbing memories of the trauma (Tedeschi & Calhoun, 1995).

Behavioural Effects. Victims may withdraw from their **social supports** in the aftermath of trauma, no longer believing that people, even those close to them, could possibly understand them (Tedeschi & Calhoun, 1995). Victims may withdraw from family and friends and display no interest in social activities. Victims suffering from distressing emotional and cognitive effects of trauma are likely to increase drug usage, be it

medicines, illegal substances, alcohol, caffeine, or tobacco, as a **coping response** to the distress. Those who increase alcohol usage may also become physically aggressive in their behaviour (Tedeschi & Calhoun, 1995).

Physiological Effects. **Overwhelming levels of arousal** can remain long after the trauma has ceased, as the body continues to be ready for action in case the threat returns (Tedeschi & Calhoun, 1995). Such an increase in arousal levels, brought about by elevated secretions of adrenaline, can cause palpitations, sweaty palms, muscle tension, and dry mouth. Understandably, along with an increased level of arousal, victims also tend to experience fatigue. An increase in physical health complaints can also often develop. Such complaints can include, stomach pains, headaches, general muscular aches and pains, and loss of appetite.

These psychological effects highlight the wide variety of responses in emergency service workers in the aftermath of trauma. It seems appropriate to review six constructs in more detail (components of which are highlighted in bold in the above text) that are considered likely to be affected by continual exposure to trauma in new recruits to the emergency services based on general trauma literature. These are anxiety and depression, posttraumatic symptomatology, world assumptions, coping responses, and perceived social support.

D. Anxiety and Depression

Anxiety and depression have been long recognised as common responses after exposure to trauma (Valent, 1995). The most commonly presented facet of anxiety is that of fear, and the subsequent development of phobias resulting from experience of trauma. The

threat created by the traumatic event becomes an unconditioned stimulus that elicited anxiety at the time. Once the trauma has ceased however, the characteristics of it such as sights, sounds, and smells, are associated with the threat of the trauma and become conditioned stimuli by means of classical conditioning. Long after the trauma has ceased, the associated characteristics can create immense anxiety, causing panic, fear, and uncontrollable physiological reactions. Phobia results when anxiety-provoking situations are completely avoided. Thus a rape victim may no longer walk out by herself (Burgess & Holmstrom, 1974) and the victim of a road traffic accident may no longer get into a car. Soldiers suffering traumatic stress symptomatology one year following a war, reported intense anxiety symptoms including paralysing anxiety, fear of death, and thoughts of death (Soloman, Mikulincer, and Flum, 1989).

Depression after exposure to trauma often presents as lethargy, low mood, lack of concentration, negative thinking, apathy, sleep problems, and loss of appetite. If the trauma is appraised as being uncontrollable and something that must therefore be endured (Abramson, Seligman, and Teasdale, 1978), the victim is likely to suffer a lowered self-esteem, powerlessness, and ultimately helplessness. Victims may also suffer depressive symptoms due to losses that may have occurred during the trauma, both the loss of loved ones and also the loss of property or finance. Fullerton et al. (1992) found that victims who have lower levels of social support are at a higher risk of suffering from depression. Fire fighters who perceived low levels of social support from their family, friends, employer, and their union were found to suffer higher levels of depression (Regehr, Hill, and Glancy, 2000). Whitley, Revicki, Allison, and Landis (1988) also found that higher levels of reported occupational stress were associated with higher levels of depression in the emergency medical services. However, in general, a low level of depression was identified.

E. Posttraumatic Symptomatology

Symptoms of Posttraumatic Stress Disorder (PTSD) are described by the World Health Organisation (WHO) in the International Statistical Classification of Diseases and Related Health Problems (10th revision, ICD-10) and by the American Psychiatric Association (APA) in the Diagnostic and Statistical Manual of Mental Disorders (4th edition, DSM-IV, 1994), and comprise the three factors of re-experiencing, avoidance, and increased arousal.

Re-experiencing, or intrusive phenomena, is identified by reoccurrence of thoughts, images, and dreams related to the trauma, intense distress on exposure to trauma related stimuli, and re-enactment of the trauma through flashbacks and hallucinations.

Horowitz (1976) hypothesised that re-experiencing phenomena result as the victim processes the traumatic experience. In this way, the intrusions are deemed to serve a purpose as they and other symptoms decrease as the trauma is gradually processed (Creamer, Burgess, and Pattison, 1992). However, in many cases, intrusions produce negative effects by intensely increasing arousal levels to a point where the victim attempts to block out the intrusions (Creamer et al., 1992). In this way avoidance phenomena, which include avoidance of thoughts, feelings, places and people that provoke reminders of the trauma, impairs the processing of the trauma, which often results in the maintenance of symptomatology.

Creamer et al. (1992) developed a cognitive processing model. This proposed that intrusions trigger an avoidant response that acts as a coping strategy to reduce the distress caused by the intrusions. Although this coping response initially reduces distress it hinders the processing of the trauma, prolonging posttraumatic

symptomatology (Creamer et al., 1992). This forms a cyclical process between symptoms of intrusion and avoidance (Horowitz, Wilner, and Alvarez, 1979).

Increased, or disordered arousal includes symptoms of difficulty in falling or staying asleep (Ross, Ball, and Sullivan, 1989), impaired concentration, irritability, and exaggerated startle response, and present in the same debilitating way as anxiety disorders and depression. Increased arousal associated with expectations of the threat returning, may also lead to distortions in information processing.

F. World Assumptions

Janoff-Bulman's (1989) model of world assumptions, which will be the focus of this sub-section, was developed from the concepts of 'schema' and 'assumptive worlds'.

Schemata are the structures of knowledge, stored in memory, which are based on past experiences and our reactions to, and interpretations of those experiences. The way that a person behaves towards a new experience, or indeed a traumatic event, is largely determined by the specific schema to which it most closely relates (Landmann & Manis, 1983). It is the concept of behaviour being led by our past experiences, upon which the concept of assumptive worlds (Parkes, 1971) is based.

Parkes described our assumptive world as a 'strongly held set of assumptions about the world and the self which is confidently maintained and used as a means of recognising, planning, and acting' (p. 132). Through our past experiences, assumptions are learned and solidified. Essentially, our views of the world and the self are considered to be schemas (Janoff-Bulman, 1989).

Janoff-Bulman (1989) extended the two concepts of schema and assumptive world to develop a model based on the content of our world assumptions. She proposed a model comprising three basic assumptions. These are: - benevolence of the world, meaningfulness of the world, and worthiness of the self. Our assumptions regarding the benevolence of the world are based around whether the world is viewed as primarily positive or negative, whether generally the world is a good place or a bad place. Our assumptions about the benevolence of the world are made up from assumptions about the benevolence of the impersonal world, and the benevolence of people.

Assumptions about the meaningfulness of the world are closely linked to assumptions about the benevolence of the world, and are based on the allocation of positive and negative outcomes. People may assume that outcomes are allocated through: - justice (whether a person deserves a positive or negative outcome), controllability (whether people can control their own outcomes through the way they behave), or chance (whether people can do anything to predict outcomes) (Janoff-Bulman, 1989).

Assumptions regarding the worthiness of the self are based on beliefs about oneself. These assumptions are about one's self-worth (whether one is generally good, decent, and moral), one's self-controllability (whether one carries out appropriate behaviours), and luck (the extent to which one can control outcomes) (Janoff-Bulman, 1989).

These basic assumptions proposed by Janoff-Bulman (1989) are 'our most fundamental schemas, [and therefore] the assumptions most apt to be affected by the experience of traumatic events' (p. 120). In general, people's assumptions are based on the illusion that the world is a safe place and that they are invulnerable and are cocooned in the common belief that 'it won't happen to me'. As our basic assumptions are rarely challenged and are, therefore, never questioned, we are able to function on a day-to-day

basis. However, when exposed to a traumatic event, our assumptions can be 'shattered' (Janoff-Bulman, 1992). Our basic beliefs about the world and the self come into question, as traumatic data do not fit in with our view of the world as safe, and us as invulnerable.

Janoff-Bulman (1989) found that victims who had experienced a traumatic event were more likely than non-victims to view themselves in a negative way and view the world as malevolent. They were also more likely to be depressed. Galloucis et al. (2000) found that paramedics are likely to have 'disrupted beliefs' about safety after continual exposure to trauma, in particular about the vulnerability of others to harm. He also reported that 18 percent of paramedics had shattered assumptions regarding the meaningfulness of the world. These changes in basic assumptions in emergency service workers highlight a likely source of traumatic stress when continually exposed to events in which people have suffered physical harm.

G. Coping Responses

According to Lazarus & Folkman (1984) coping is a person's continually changing cognitive and behavioural attempts to manage external/internal demands that are considered to be challenging or exceeding that person's resources. Efforts will be aimed at overcoming, reducing, or putting up with such demands whether the outcome is adaptive or maladaptive (Folkman, 1984). One of the most widely used models of coping and stress is that proposed by Lazarus and Folkman (1984). This model is based on evaluating situations. It posits that each stressful situation encountered is independently appraised before a coping strategy is chosen and in this way, each stressful experience is situation-specific. It is essentially deemed that our coping is

dependent on the specific stressful situation that is encountered. Lazarus and Folkman's model describes the two processes of cognitive appraisal and coping.

The cognitive appraisal of a stressful situation involves the evaluation as to whether anything is at risk, primarily one's own or other's well being. Following this primary appraisal, the evaluation proceeds to render whether what, if anything, can be done about the situation. This is deemed to be the 'secondary appraisal' (Folkman, Lazarus, Dunkel-Schetter, DeLongis, and Gruen, 1986). The coping process that follows the cognitive appraisal of the situation involves the utilisation of emotion-focused and/or problem-focused coping. Together, these serve to regulate distress (emotion-focused coping) and to manage the situation that is causing the distress (problem-focused coping). After the development of the 'Way of Coping' scale (Folkman & Lazarus, 1980), it was found that both forms of coping were used during stressful events, but the amount that either was used, depended on the cognitive appraisal of the situation. It was found that if the stressful experience was deemed as changeable, more problem-focused coping ensued compared to more emotion-focused coping if the experience was deemed as not susceptible to change (Folkman & Lazarus, 1980).

People use both problem-focused coping and emotion-focused coping to a greater or lesser degree. Although the distinction between these two coping styles was felt to be significant, Carver, Scheier, and Weintrub (1989) deemed it to be too simplistic. They argue that emotion-focused coping can involve many, very different, reactions that result in adaptive or maladaptive outcomes; 'some responses involve denial, others involve positive reinterpretation of event, and still others the seeking of social support' (Carver et al., 1989, p. 268). Similarly, they argue that problem-focused coping can involve many processes rather than the single process implicated. It can potentially

involve several distinct activities: - planning, taking direct action, seeking assistance, screening out other activities, and sometimes even forcing oneself to wait before acting' (p. 268). From this argument, Carver et al. (1989) developed a self-report questionnaire called COPE; to measure independently 15 different theoretically based constructs. The COPE, which will be used in this research, measures: - active coping; planning; suppression of competing activities; restraint coping; seeking social support for instrumental reasons; seeking social support for emotional reasons; positive reinterpretation and growth; acceptance; turning to religion; focus on and venting of emotions; denial; behavioural disengagement; mental disengagement; alcohol/drug use; humour.

Coping responses to exposure to traumatic events in emergency service workers will vary greatly from individual to individual. However, research has shown distinct characteristics of those who may suffer psychologically in the aftermath of trauma. Coping strategies that have been related to higher levels of psychological distress in emergency service workers include, greater avoidance (Williams, Joseph, and Yule, 1994), less problem-focused coping, and less emotion-focused coping (Brown et al., 2002). North et al. (2002) reported that the most commonly used coping strategy amongst emergency service workers, other than the seeking of interpersonal support, was alcohol use, which was found to be associated with reduced levels of functioning. The specific emotion-focused processes of self-blame and wishful thinking were coping strategies linked to the prevalence of PTSD in police officers (Stromnes, 2000). Dyregrov & Mitchell (1992) found that the on-the-scene coping strategies of emergency service workers focused on the task in hand and successful completion of their job, which involved suppressing their emotion and using activity to avoid reflecting on the trauma. Horowitz, Wilner, Kaltreider, and Alvarez (1980) reported that the most

adaptive post-trauma coping strategy is the gradual 'self-dosing' of anxiety-provoking thoughts, alternated with avoidance of the painful intrusions.

H. Perceived Social Support

Social support and traumatic stress can influence each other (Kleber & Brom, 1998). Social support can act as a buffer against the effects of traumatic stress, with research focussing on the amount and type of support that a person may *receive* to reduce the effects of traumatic stress. In this way, social support becomes a protection against traumatic stress (Brown & Harris, 1978), by redressing the negative effects of the trauma. People who receive social support during and after a traumatic event, tend to appraise or reappraise the trauma as less disruptive and traumatic, which results in fewer trauma-related symptoms. Social support also helps to rebuild self-esteem after a traumatic experience (Kleber & Brom, 1998). Evans (1978), in a study with rape victims, and Foeckler et al. (1978) in their research with road traffic accident victims, both concluded that social support from victims' close environment enabled them to talk about their trauma. This resulted in fewer negative consequences of trauma when compared to victims who received less social support.

Social support can be received from many sources, with partners, friends, and colleagues being the most commonly sought after (Kleber & Brom, 1998). It can also be received in several ways: - cognitive support; social sanctioning; material help; companionship; emotional support (Hirsch, 1980). The same study reported that receiving cognitive support is related to less trauma-related symptoms, and companionship is associated with high self-esteem.

The effects of traumatic stress can also directly affect social support. Lazarus (1983) proposed that the intense emotions experienced by a victim after a traumatic event can ward off social support. Victims may feel isolated after a traumatic experience, feeling that no-one would understand or that no-one would want to listen to their experience. In this way, social support is *perceived* differently from what it would be prior to the trauma. Other researchers have highlighted the distinction between the actual social support received and the perceived social support (Sarason, Sarason, and Pierce, 1990). It is the construct of 'perceived social support' that will be researched in this study. Lepore, Evans, and Schneider (1991) researched perceived social support and concluded that traumatic stress can 'influence psychological functioning by diminishing perceptions of social support' (p. 906).

Research on receiving social support in emergency service workers after exposure to disasters confirms the findings discussed. Fire fighters were most likely to use family and friends for support after exposure to trauma, with work colleagues providing a secondary source of support (McCammon, 1996). Neuman & Gamble (1995) found that support from both the non-work and work environments can enhance a victim's level of self-esteem, and need for intimacy, safety, and trust. In addition to this, Anderson et al. (1995), found that police officers who were satisfied with their level of social support were less likely to suffer posttraumatic symptomatology, anxiety, or emotional exhaustion, compared to police officers who were not satisfied with their level of social support.

Studies of exposure to trauma show that lowered levels of symptomatology and less disrupted basic assumptions are related to positive perceptions of social support in

paramedics (Janoff-Bulman, 1992; Jones & Barlow, 1990; & Keane, Scott, Chavoya, Lamparski, and Fairbank, 1985).

I. Summary and Basis for the Present Study

This review of the literature has identified that past research has predominantly focused on the psychological effects resulting from disasters and serious events. The resulting lack of literature on the psychological effects of continual exposure to trauma is highlighted and its potential impact upon emergency service workers emphasised. In addition to this, the review also highlights the lack of literature addressing the potential vulnerabilities of new recruits into the emergency services. Due to the unpredictability of traumatic experiences, past research has used samples of emergency service workers present at the time of the trauma, which would mostly comprise experienced workers who have previously been impacted by trauma. Research findings suggest a variety of possible constructs that could be influenced by the psychological impact of trauma. However, six broad constructs were chosen due to their identified importance and recurrence throughout the literature, and together for their representation within the realms of emotion, cognition, behaviour, and physiology.

This study attempts to address the identified gaps in the trauma literature and investigates the psychological effects (in terms of anxiety, depression, posttraumatic symptomatology, world assumptions, coping responses, and perceived social support) of continual exposure to trauma on new recruits to the emergency services.

CHAPTER THREE – AIMS AND HYPOTHESES

This chapter states the aims of the research study, followed by the specific hypotheses to be tested, presented in both null and H_1 forms, which pertain to each research aim.

A. Aims of the Research

- A1.** Aim: To investigate the effects of continual exposure to trauma on anxiety levels in trainee ambulance technicians.
- A2.** Aim: To investigate the effects of continual exposure to trauma on depression levels in trainee ambulance technicians.
- A3.** Aim: To investigate the effects of continual exposure to trauma on posttraumatic symptomatology in trainee ambulance technicians.
- A4.** Aim: To investigate the effects of continual exposure to trauma on world assumptions in trainee ambulance technicians.
- A5.** Aim: To investigate the effects of continual exposure to trauma on coping responses in trainee ambulance technicians.
- A6.** Aim: To investigate the effects of continual exposure to trauma on perceived social support in trainee ambulance technicians.

A7. Aim: To investigate psychological constructs, as measured by anxiety levels, depression levels, posttraumatic symptomatology, world assumptions, coping responses, and perceived social support, in the control group over three time intervals that parallel the time of continual exposure to trauma experienced by the trainee ambulance technicians

A8. Aim: To explore the psychological effects of continual exposure to trauma by qualitative analysis of trainee ambulance technicians' responses to semi-structured questions.

B. Hypotheses of the Research

B1. Null Hypothesis for Aim A1

There will be no significant difference in anxiety levels between pre-exposure to trauma and at 1 month and 3 months of continual exposure to trauma in the trainee ambulance technicians.

H₁ Hypothesis for Aim A1

There will be a significant difference in anxiety levels between pre-exposure to trauma and at 1 month and 3 months of continual exposure to trauma in the trainee ambulance technicians.

B2. Null Hypothesis for Aim A2

There will be no significant difference in depression levels between pre-exposure to trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

H₁ Hypothesis for Aim A2

There will be a significant difference in depression levels between pre-exposure to trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

B3. Null Hypothesis for Aim A3

There will be no significant difference in posttraumatic symptomatology between pre-exposure to trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

H₁ Hypothesis for Aim A3

There will be a significant difference in posttraumatic symptomatology between pre-exposure to trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

B4. Null Hypothesis for Aim A4

There will be no significant difference in world assumptions between pre-exposure to trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

H₁ Hypothesis for Aim A4

There will be a significant difference in world assumptions between pre-exposure to trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

B5. Null Hypothesis for Aim A5

There will be no difference in coping responses between pre-exposure to trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

H₁ Hypothesis for Aim A5

There will be a difference in coping responses between pre-exposure to trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

B6. Null Hypothesis for Aim A6

There will be no difference in perceived social support between pre-exposure to trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

H₁ Hypothesis for Aim A6

There will be a difference in perceived social support between pre-exposure to trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

B7. Null Hypothesis for Aim A7

There will be no significant difference in psychological constructs in the control group, as measured by anxiety and depression levels, posttraumatic symptomatology, world assumptions, coping responses, and perceived social support, between the three time intervals that parallel the time of continual exposure to trauma experienced by the trainee ambulance technicians.

H₁ Hypothesis for Aim A7

There will be a significant difference in psychological constructs in the control group, as measured by anxiety and depression levels, posttraumatic symptomatology, world assumptions, coping responses, and perceived social

support, between the three time intervals that parallel the time of continual exposure to trauma experienced by the trainee ambulance technicians.

B8. Exploratory Research Question for Aim A8

What are the psychological effects of continual exposure to trauma on trainee ambulance technicians? (What incidents do they find traumatic? Why? What are their thoughts and reactions? How do they cope? What do they helpful/unhelpful? Have they changed?)

CHAPTER FOUR - METHOD

Introduction

The aim of this section is to describe the design of the research, the sample used, the measures used, how the research was carried out, and how the data were analysed. It comprises the following sub-sections:

- Research design
- Participants
- Sample characteristics
- Variables and quantitative measures
- Qualitative measures
- Procedure for data collection
- Statistical analysis
- Qualitative analysis

A. Research Design

This study utilises a ‘Two-Group Pretest-Posttest Design Using an Untreated Control Group’ (Cook & Campbell, 1979). The ‘treatment group’ comprises trainee ambulance technicians and the ‘untreated control group’ comprises ambulance service administrative staff. Both groups undergo pretest measures to provide a baseline of each participant’s performance. The treatment group is then subjected to the independent variable, whilst the control group remains ‘untreated’. Post-test measures on the dependent variables are then carried out with both groups.

The independent variable, 'continual exposure to trauma', has three levels in this research design: - (1) no continual exposure to trauma; (2) one month of continual exposure to trauma; and (3) three months of continual exposure to trauma. The quasi-experimental design does not allow the independent variable to be manipulated in a controlled way. Instead, it allows for comparison between the different levels of the independent variable. Using a pre-test baseline and a control group in this way ameliorates the potential weaknesses of a quasi-experimental procedure by reducing threats to its validity.

B. Participants

B1. The Treatment Group

Trainee ambulance technicians from the Tees, East and North Yorkshire Ambulance Service (TENYAS) and the West Yorkshire Metropolitan Ambulance Service (WYMAS) were approached in their final week of training school. Trainee ambulance care assistants were not approached for this research because they were deemed less likely to be continually exposed to trauma as part of their work. Trainee paramedics were not approached for this research because they were likely to have been recruited to paramedic status from ambulance technician status, and have therefore already been continually exposed to trauma.

It was expected that 30 trainee ambulance technicians would be approached in their final week of training school. As 37 percent failed to begin training school after job acceptance, or failed to complete training school after its commencement, 19 trainee ambulance technicians were approached. All 19 were willing to take part in the

research. 19 trainee ambulance technicians completed phase 1 of the research (in training school). 15 of those participants completed phase 2 at one month operational (21 percent attrition rate). 10 of the original 19 participants completed all three phases of the research (47 percent attrition rate) and were therefore qualified for inclusion in the research.

B2. The Control Group

Ambulance service administration staff working for WYMAS were approach at the same time as the treatment group. This group work for the same employer as the treatment group but they are not exposed to trauma as an integral part of their employment. Out of 40 staff that were approached, 25 were willing to take part in the research. 25 ambulance administration staff completed phase 1 of the research. 16 of those participants also completed phase 2 (36 percent attrition rate). 8 out of the original 25 participants completed all three phases (68 percent attrition rate) and were therefore qualified for inclusion in the research

C. Sample Characteristics

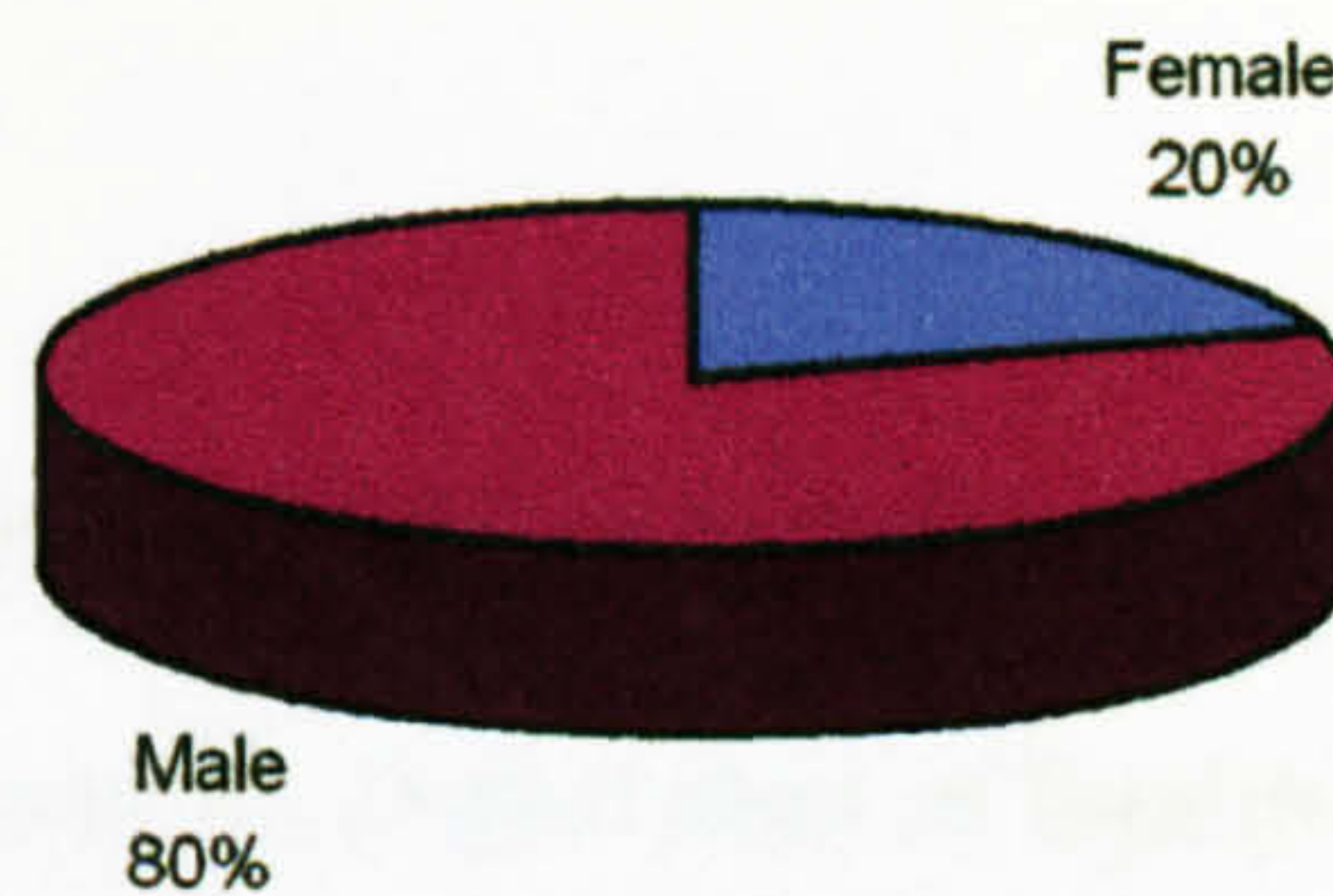
This section describes the demographic characteristics of both the treatment group (N=10) and the control group (N=8)

C1. The Treatment Group

I. Gender

Figure 4.1 shows the gender distribution of the group of trainee ambulance technicians.

Figure 4.1 Gender Distribution of the Treatment Group (N=10)

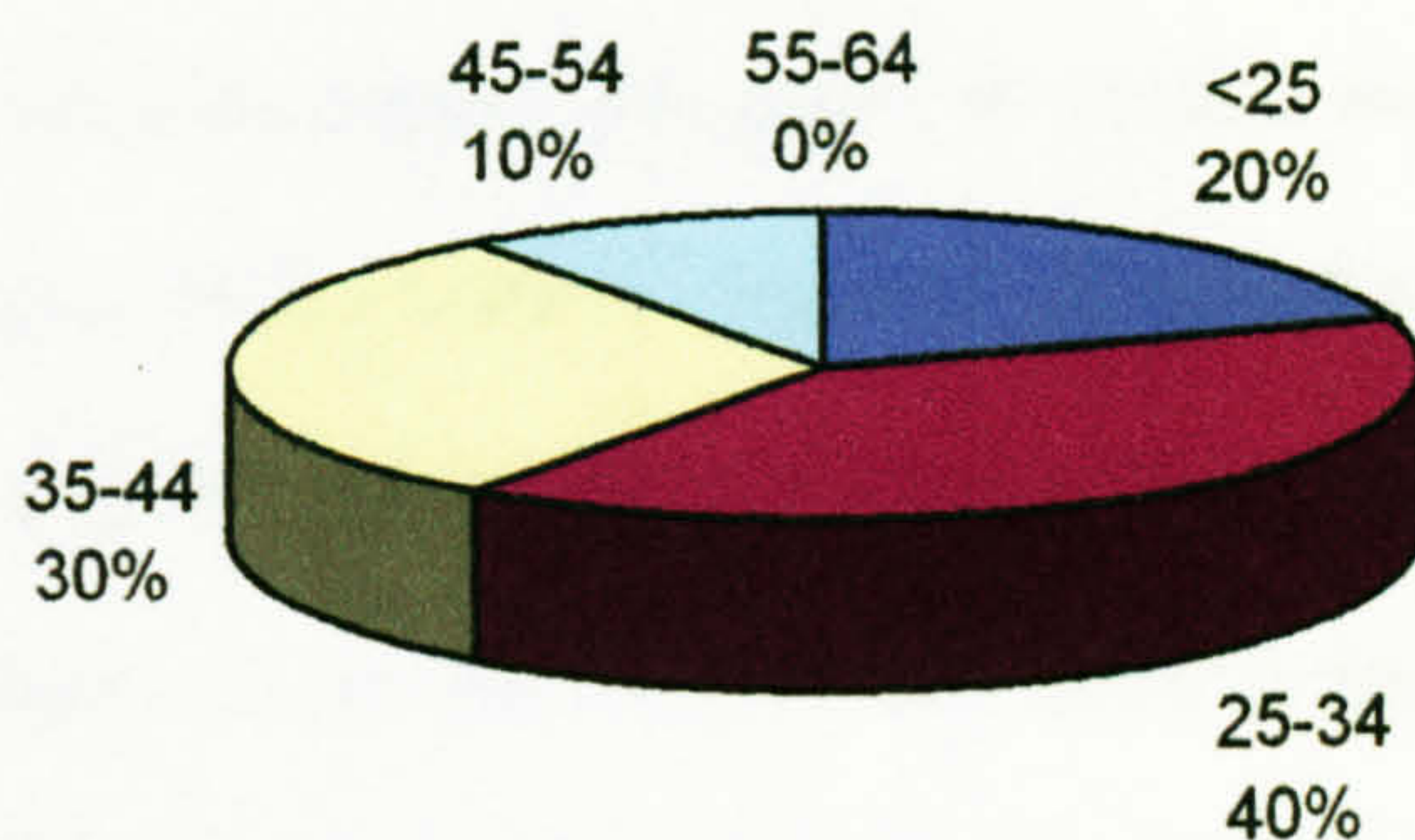


The treatment group comprised 80 percent males and 20 percent females. According to the Department of Health statistics (September 2001), ambulance staff in England comprises 72 percent males and 28 percent females. 'Ambulance staff' is made up of ambulance paramedics (43 percent), other ambulance personnel (41 percent), trainees (13 percent), and managers (3 percent). The research sample has a slightly larger representation of males and smaller representation of females than in the general population, but remains closely comparable to the general population.

II. Age

The mean age of the treatment group is 34.10 (SD 8.25) years of age. The minimum age is 24 years old and the maximum 45 years old. Figure 4.2 shows the age distribution of the treatment group.

Figure 4.2 Age Distribution of the Treatment Group (N=10)



The highest frequency of trainee ambulance technicians falls into the '25-34' age group. This sample differs slightly from the Department of Health statistics whose highest frequency of ambulance staff in England falls into the '35-44' age group (33 percent). 5 percent of ambulance staff in England are under the age of 25, 31 percent are between age 25 and 34, 23 percent of ambulance staff are aged between 45 and 54, whilst 8 percent fall into the '55-64' age group. However the latter sample would be expected to be slightly older because of the inclusion of the more qualified Paramedics.

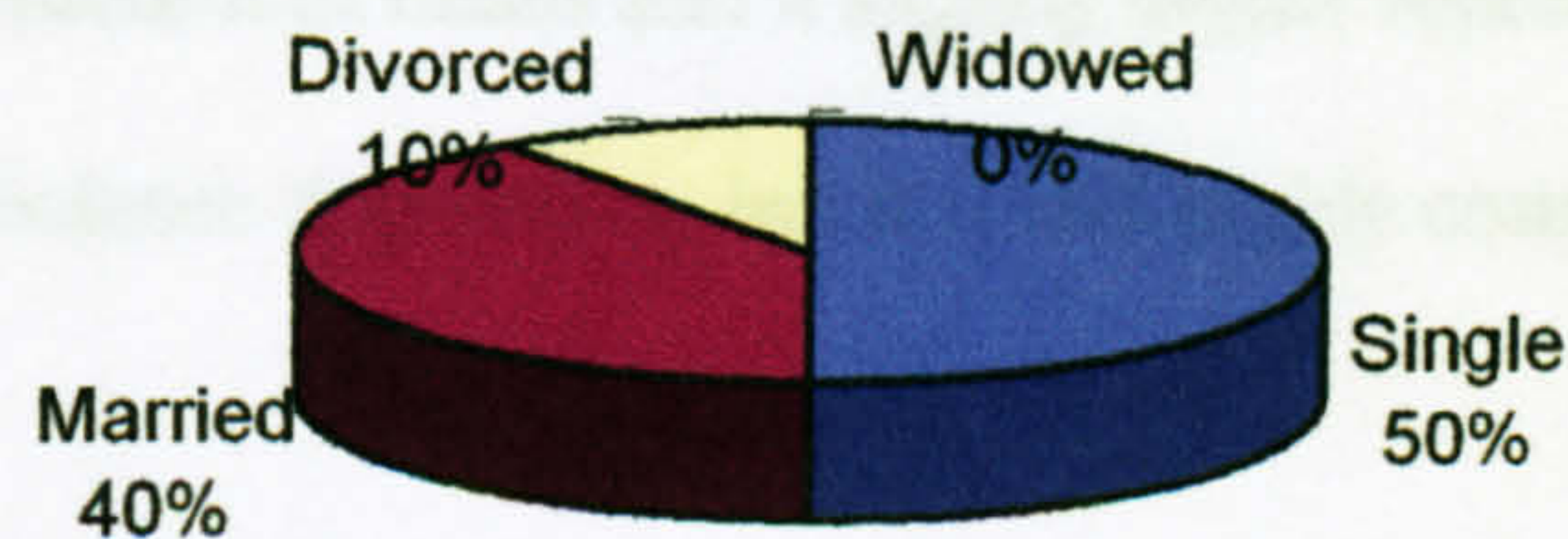
III. Ethnicity

The sample of trainee ambulance technicians comprised 100 percent white participants. In comparison, ambulance staff in England (Department of Health Statistics, 2001) comprise 96 percent white, 1 percent black, 1 percent Asian, and 2 percent mixed race. The research sample therefore represents the majority of the ethnic population of ambulance staff in England, but has no members of minority ethnic groups.

IV. Marital Status

Demographic data were also obtained regarding the marital status of the treatment group (see Figure 4.3). Half of the sample was single, 40 percent were married, and 10 percent were divorced. In this research, 'married' is defined as being married or living with a partner as if married. 'Divorced' is defined as being divorced or separated from a partner. There are no comparable data for marital status from the Department of Health statistics, so it is unknown whether the marital status of the treatment group is comparable with that of ambulance staff in England.

Figure 4.3 Marital Status Distribution of the Treatment Group (N=10)

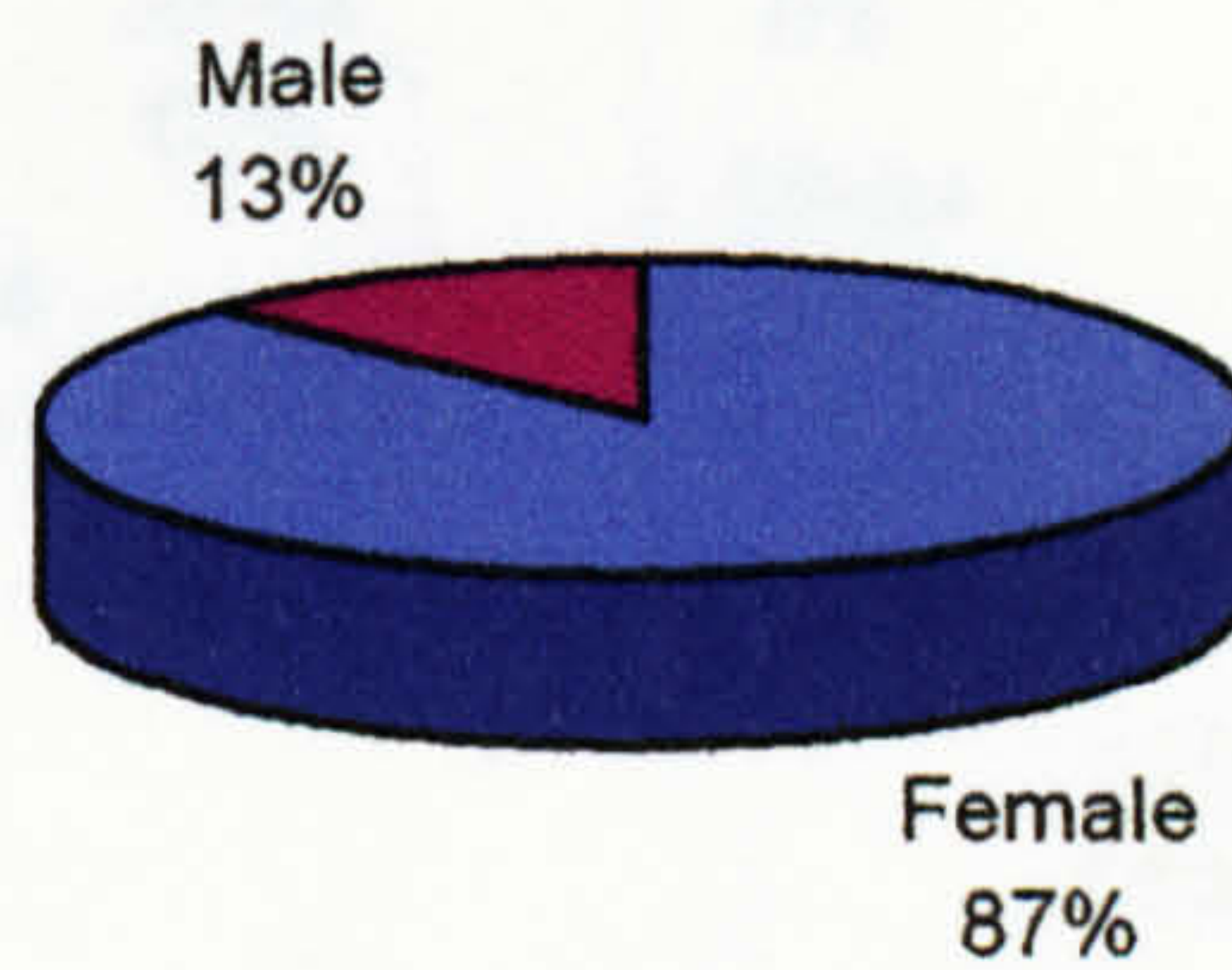


C2. The Control Group

I. Gender

Figure 4.4 shows the gender distribution of the control group.

Figure 4.4 Gender Distribution of the Control Group (N=8)

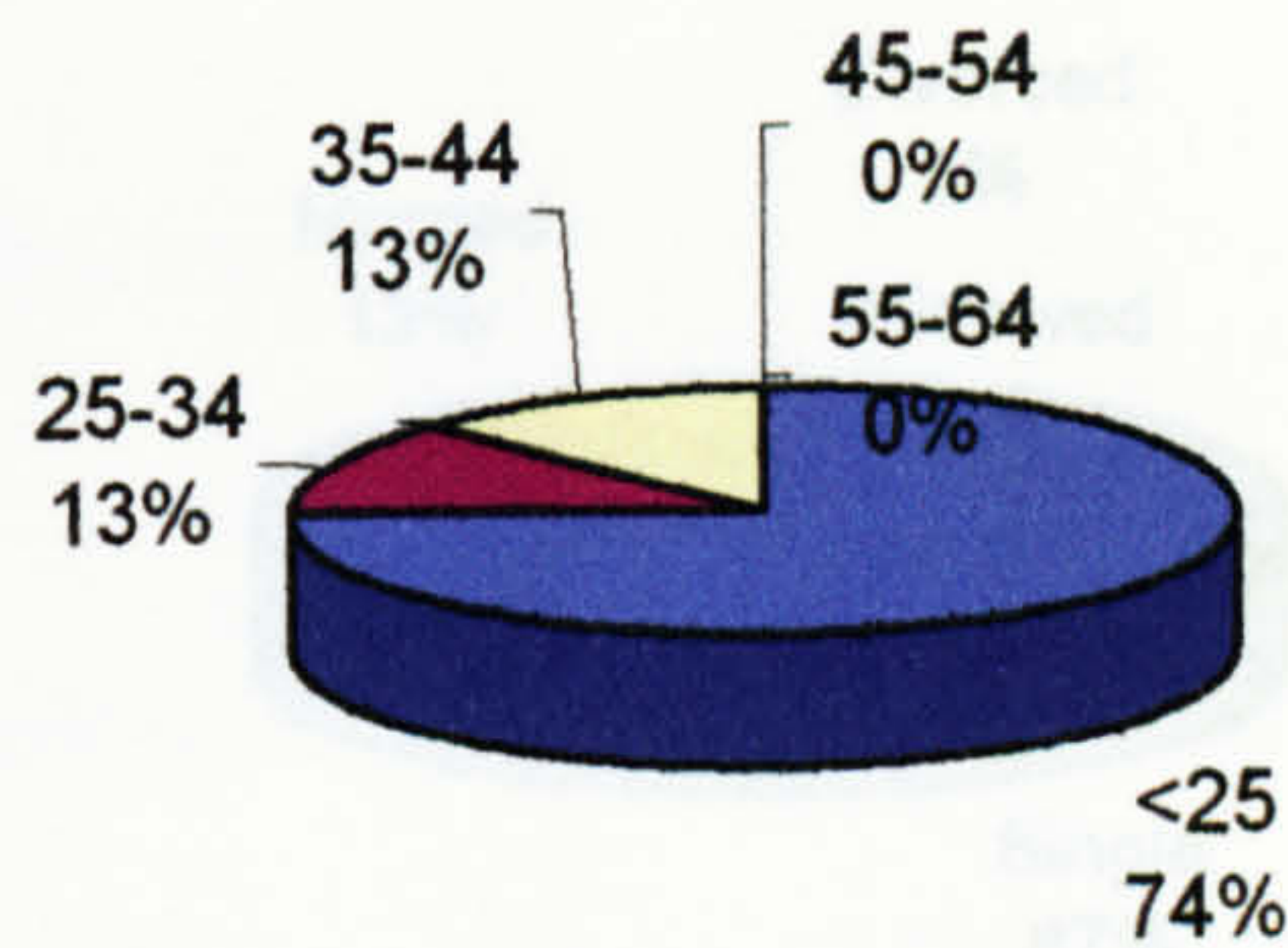


The control group comprised 13 percent males and 87 percent females. According to the Department of Health statistics (September, 2001), Non-medical staff working in administration and estates comprised 21 percent males and 79 percent females. 'Non-medical staff working in administration and estates' is made up of senior managers (5 percent), other administrative managers (9 percent), clerical and administrative staff (80 percent), and maintenance and works staff (6 percent). The research sample has a slightly smaller representation of males and a slightly higher representation of females than in the general ambulance population, but it is still highly comparable with this population.

II. Age

The mean age of the control group is 24.50 (SD 6.82) years of age. The minimum age is 20 years old and the maximum 40 years old. Figure 4.5 shows the age distribution of the control group.

Figure 4.5 Age Distribution of the Control Group (N=8)



The highest frequency of participants in the control group fall into the '<25' age group. This sample differs markedly from the Department of Health statistics whose highest frequency of administration and estates staff fall into the '45-54' age group (31 percent). 6 percent of ambulance staff in England are under the age of 25, 19 percent are between age 25 and 34, 29 percent of ambulance staff are aged between 35 and 44, whilst 15 percent fall into the '55-64' age group. However, the latter population would be expected to have a higher concentration of older age groups due to the inclusion of managers.

III. Ethnicity

The control group comprised 100 percent white participants. In comparison, administration and estates staff in England (Department of Health Statistics, 2001) comprise 95 percent white, 2 percent black, 2 percent Asian, and 1 percent mixed race. The research sample therefore represents the majority of the ethnic population of ambulance staff in England, but has no members of minority ethnic groups.

IV. Marital Status

Figure 4.6 shows the distribution of marital status of the control group.

Figure 4.6 Marital Status Distribution of the Control Group (N=8)



The high percentage of 'single' participants in the control group is likely to be attributable to the younger age representation of the sample. There are no comparable data for marital status from the Department of Health statistics.

D. Variables and Quantitative Measures

Three types of data were collected for the research: demographic data, quantitative data, and qualitative data. The qualitative data will be discussed in sub-section E.

Demographic data were collected via a personal information sheet (Appendix A). This short questionnaire requested the participant's name, date of birth, gender, marital status, ethnicity, job title, and work address. This allowed the researcher to ascertain the sample characteristics presented in sub-section C.

Quantitative data were collected via five self-report questionnaires. These five measures serve as the dependent variables and pertain to the six psychological constructs discussed in chapter two:

- ❖ Anxiety and Depression
- ❖ Posttraumatic stress

- ❖ World assumptions
- ❖ Coping
- ❖ Perception of social support

D1. Anxiety and Depression

The literature pertaining to anxiety and depression has been described in chapter two. The Hospital Anxiety and Depression Scale (HADS) developed by Zigmond & Snaith (1983) was selected for use in this research to measure changes in anxiety and depression (see Appendix B). The HADS is a 14-item self-report questionnaire that looks at how participants have been feeling during the past week with regards to anxiety (seven items) and depression (seven items). Each item is made up of four statements of which the participant has to choose the most relevant. The items are then summed to provide an overall score for severity of both anxiety and depression. Higher scores indicate greater anxiety and depression.

The scale was originally used in medical outpatient clinics, so is appropriate for this research. The HADS has also favoured characteristics of combining the two constructs of anxiety and depression into one measure, and of being short in length. According to Zigmond & Snaith (1983), the internal consistency of the anxiety and depression subscales was 0.93 and 0.90 respectively as assessed by Cronbach's alpha. Zigmond & Snaith assessed the concurrent validity of the HADS subscales by comparing them with 5-point psychiatric rating scales of anxiety and depression for 100 medical outpatients. They correlated significantly with the rating scales (anxiety, $r = 0.54$; depression, $r = 0.79$).

D2. Posttraumatic Stress

The literature pertaining to posttraumatic stress has been discussed in chapter two. The PENN Posttraumatic Stress Inventory (PENN) developed by Hammarberg (1992) was selected for use in this research as a measure of posttraumatic stress symptomatology (see Appendix C). The inventory comprises 27 groups of statements that cover all aspects of posttraumatic stress symptomatology. Participants are required to select the statement from each group which best describes the way that they have been feeling during the past week. The statements are then summed to provide an overall score for severity of posttraumatic symptomatology. A higher score indicates greater posttraumatic symptomatology.

The scale was originally used with combat veterans and obtained a sensitivity of 90-98percent and specificity of 94-100percent, using a cut-off score of 35 (Hammarberg, 1992). A study by Scott, Stradling, and Lee (2001) researched the utility and accuracy of three self-report measures of posttraumatic stress disorder. It showed that the PENN outperformed the Impact of Event Scale (Horowitz et al., 1979) and the Modified PTSD Scale – Self Report (Falsetti, Resnick, Resnick, and Kilpatrick, 1993) with a sensitivity of 81percent and specificity 90percent (when an optimally efficient cut-off score of 39 was utilised). The study used a sample of litigants who had suffered traumas including road traffic accidents and non-sexual assaults. The PENN was also selected for this research because the participant does not have to answer the questionnaire with reference to a specific trauma, unlike other self-report measures such as the Impact of Event Scale. This makes the PENN ideal as a posttraumatic symptomatology baseline before the trainee ambulance technicians have been exposed to work-related trauma.

D3. World Assumptions

The literature pertaining to 'world assumptions' in emergency service staffs has been described in chapter two. The World Assumption Scale (WAS), developed by Janoff-Bulman (1989) was selected for use in this research to measure changes in world assumptions (see Appendix D). The WAS is a 32-item self-report questionnaire that taps into the eight world assumptions (four items each) proposed in Janoff-Bulman's model of basic assumptions. These are: - benevolence of the world; benevolence of people; justice; controllability; randomness; self-worth; self-controllability; and luck. Participants are required to score their response to each statement on a 6-point scale, which ranges from 'strongly disagree' (1) to 'strongly agree' (6).

The scale was developed to explore the differences between victims and non-victims of traumatic events with regard to their basic world assumptions. The scale has also been used previously with emergency personnel. Galloucis et al. (2000) used a sub-scale of the WAS in his research, which focused on the impact of trauma exposure on the cognitive schemas of a sample of paramedics. The scale is, therefore, appropriate for use in this research. According to Janoff-Bulman (1989), the WAS subscales were found to have reliabilities between 0.67 and 0.78, providing a sufficiently reliable scale to measure changes in world assumptions.

D4. Coping

The literature pertaining to coping in emergency service staffs has been described in chapter two. The COPE developed by Carver et al. (1989) was selected for use in this research to measure change in coping responses (see Appendix E). The COPE is a 60-

item self-report questionnaire that taps into 15 distinct concepts of coping. These are active coping; planning; seeking instrumental social support; seeking emotional social support; suppression of competing activities; turning to religion; positive reinterpretation and growth; restraint coping; acceptance; focus on and venting of emotions; denial; mental disengagement; behavioural disengagement; drug and alcohol use; and humour. The participant is required to score their response to each item on a 4-point scale ranging from 'I usually don't do this at all' (1) to 'I usually do this a lot' (4).

According to Carver et al. (1989), the internal consistencies of each subscale are acceptably high, exceeding 0.6 (Cronbach's alpha). This is with the exception of the social disengagement subscale, which is made up of a number of dissimilar items. Test-retest reliabilities produced scores ranging from 0.42 to 0.89 for the different subscales. The COPE was developed from the use of the Lazarus model of stress and a model of behavioural self-regulation (Carver & Scheier, 1981, 1983, 1985). It measures the wide diversity of potential coping responses, which may have very different implications for successful coping in different participants.

D5. Perception of Social Support

The literature pertaining to perception of social support in emergency service staff has been described in chapter two. The Social Support Questionnaire (SSQ-6) developed by Sarason, Shearin, Pierce, and Sarason (1987) was selected for use in this research to measure change in perceived social support (see Appendix F). The SSQ-6 is a six-item self-report questionnaire that comprises two parts. For each item participants are required to list people that they know who provide the specific type of support described by the item. The participants are then required to rate their level of

satisfaction of the available support on a six-point scale ranging from 'very dissatisfied' (1) to 'very satisfied' (6) for each item. Scores are then averaged for both parts to find the mean number of available supports and the mean satisfaction rating for each participant.

According to Sarason et al. (1987), the SSQ-6 has high internal consistency for both measures (alpha = 0.90 to 0.93) and high test-retest reliability. The SSQ-6, therefore, provides a quick and reliable measure of social support both in terms of the number of supports and satisfaction with support.

E. Qualitative Measures

In addition to the five self-report measures, the study also utilised a 12-item semi-structured questionnaire that was introduced at the final phase (see Appendix G). This part of the data collection was only necessary for the treatment group. The purpose of the semi-structured questionnaire, which contained both open-ended and closed questions, was to explore further some of the issues that the trainees would have experienced when attending traumatic incidents in the first three months of the job. The semi-structured questionnaire allowed the trainees to express in their own words, views and issues that may not have been captured within the self-report questionnaires.

F. Procedure for Data Collection

Hull and East Riding Local Research Ethics Committee granted ethical approval for the research (See Appendix H for a copy of the research proposal submitted to the committee).

The Chief Executive of TENYAS was approached with a request to carry out the research within the local geographical area, and provided with an outline of the research. The Chief Executive passed this information to the Director of Occupational Health for WYMAS and TENYAS, who approved the research.

The researcher contacted the head of the training department, after he had been approached and briefed by the Director of Occupational Health, to obtain estimates of numbers of participants, and to arrange a suitable date to introduce the study to the trainee ambulance technicians.

An outline of the research procedure was presented to the trainee ambulance technicians during their eighth and final week of training. Theory, questions, and hypotheses were omitted from the presentation to avoid influencing the responses of willing participants.

All trainee ambulance technicians were then given a participant information sheet (Appendix I), which explained issues of confidentiality and the right to withdraw.

Willing participants (forming the treatment group) then filled in a consent form (Appendix J) and completed the questionnaire package, which comprised a personal information sheet and the five self-report measures described in sub-section D. Each completed questionnaire package was then sealed into an envelope to ensure confidentiality.

One month after being operational, the researcher sent the trainee ambulance technicians an identical questionnaire package with a covering letter and a self-addressed envelope. The participants completed the questionnaire package in the same way and sent it back to the researcher. After three months of being operational, the researcher sent out the final questionnaire package with a covering letter and a self-

addressed envelope. This package was identical to the previous two with the addition of an optional semi-structured questionnaire. This is the qualitative measure discussed in sub-section V. It was optional because it was not stated as part of the main research procedure in the participant information sheet and participants had therefore not agreed in their consent form to this part of the research.

During the same time periods that the treatment group completed their three questionnaire packages, the untreated control group also completed their packages. Initial questionnaire packages, along with participant information sheet and consent form, were distributed by the Occupational Health Department to administration staff and team managers who were employed by WYMAS. Willing participants (forming the control group) completed the questionnaire package and returned them to Occupational Health via internal mail. The researcher then sent the next two follow-up questionnaire packages to the participants with a covering letter and self-addressed envelope to be returned to the researcher when completed. The control group's final questionnaire package did not contain either the additional questionnaire or the optional semi-structured questionnaire, as they were not deemed necessary for the purpose of this group.

G. Statistical Analysis

As previously stated, only trainees and administration staff who had completed all three phases of the data collection qualified for inclusion in the study. The raw data from the five self-report questionnaires was transferred into a statistical package by the researcher. The treatment group and the control group were analysed separately. Each of the 23 factors (HADS-anxiety, HADS-depression, PENN, 3 WAS sub-scales, 15

COPE responses, and 2 SSQ-6 sub-scales) was then analysed using the Statistical Package for the Social Sciences (SPSS) for Windows, version 10.0. Descriptive statistics were calculated for each factor, to include the mean, standard deviation, minimum score, maximum score, skewness, and the standard error of the skewness. Boxplots revealed any outliers, which were consequently removed from the data set.

The distributions of the data were then examined for normality/skewness. Visual inspection of the boxplots was confirmed by dividing the skewness calculation by the standard error of the skewness:

'If the resulting value equals or exceeds 1.96 then [the] skewness is significant at the 5% level and the null hypothesis that [the] sample comes from a symmetrical population should be rejected' (Howitt & Cramer, 1997, p.340)

Where the distributions of scores were deemed to be significantly skewed rather than normally distributed, nonparametric tests were utilised. For factor scores that were normally distributed, the data were analysed using Repeated Measures Analysis of Variance (ANOVA). Where the ANOVA showed a significant outcome ($p < 0.05$), Paired-Sample T-Tests were utilised to identify the source of the significant difference between the means. For factor scores that were significantly skewed, the Wilcoxon paired samples test, which does not assume normality, was calculated. All results were written to two decimal places except for p values, which were written to three decimal places to indicate values of $p < 0.01$.

H. Qualitative Analysis

Nine out of the ten trainee ambulance technicians, who qualified for inclusion in the study, chose to take part in the qualitative part of the research. The responses from the 12-item semi-structured questionnaire were examined by content analysis:

'Content analysis provides a useful means of bridging quantitative and qualitative approaches, in that it applies quantitative analysis to verbal (qualitative) descriptions' (Barker, Pistrang, and Elliott, 2002, p.129)

Each question was analysed separately. The nine responses to each question were grouped into categories of differing concepts. Corresponding frequencies for each concept were then calculated in order to quantify the data. The trainees' responses often contained more than one concept, which meant that the corresponding frequencies often summed to more than 100 percent. Quotes from the trainees' responses were then used to illustrate the concepts that were identified.

CHAPTER FIVE – RESULTS

The aim of this section is to present the findings of the study. The chapter comprises three sections:

- A. Descriptive statistics
- B. Statistical analysis: aims and hypotheses
- C. Analysis of responses to the semi-structured questionnaire

A. Descriptive Statistics

A1. Anxiety

Table 5.1 presents the descriptive statistics for the anxiety levels of the trainee ambulance technicians as measured by the HADS over the three time periods of the study.

Table 5.1 Descriptive Statistics for Anxiety Levels of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	8.50	6.30	5.40
Standard Deviation	4.60	3.92	3.27
Minimum Score	3	1	1
Maximum Score	15	11	10

Over the three months of being continually exposed to trauma, the mean anxiety score of the trainee ambulance technicians decreased. At pre-trauma, the trainee ambulance

technicians' mean anxiety score was classified as 'mild'. At both one month and three months of continual exposure to trauma, the trainees' mean anxiety scores were classified as 'normal'. The maximum scores over the three levels of exposure to trauma are classed as 'severe', 'moderate', and 'mild' respectively, highlighting the overall decrease in the anxiety levels of the trainee ambulance technicians.

A2. Depression

Table 5.2 presents the descriptive statistics for the depression levels of the trainee ambulance technicians as measured by the HADS over the three time periods of the study.

Table 5.2 Descriptive Statistics for Depression Levels of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	2.10	1.40	1.30
Standard Deviation	2.51	1.71	0.95
Minimum Score	0	0	0
Maximum Score	8	6	3

As with the anxiety levels of trainee ambulance technicians, the mean depression scores also decreased over the three time periods, although to a much lesser degree. Even at pre-trauma levels, the maximum depression score was low in severity and classed as 'normal'. The maximum score at pre-trauma was classed as 'mild', and as 'normal' for both the one-month and three-month time intervals, highlighting the marginal decrease in severity.

A3. Posttraumatic Symptomatology

Table 5.3 presents the descriptive statistics for the posttraumatic symptomatology of the trainee ambulance technicians as measured by the PENN Inventory over the three time periods of the study.

Table 5.3 Descriptive Statistics for Posttraumatic Symptomatology of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	18.90	17.20	16.60
Standard Deviation	4.33	4.73	2.72
Minimum Score	11	9	13
Maximum Score	26	26	21

Mean posttraumatic symptomatology scores decreased over the three time periods. Although the minimum score increased between pre-trauma and at three-months of continual exposure to trauma, indicating that there was some experience of additional or more intense posttraumatic symptomatology, the maximum score decreased more dramatically, highlighting the overall decline in posttraumatic symptomatology. However, it should be noted that, even at the maximum score across all three time periods, posttraumatic symptomatology levels were below the cut-off point for indications of PTSD.

A4. World Assumptions

Table 5.4 presents the descriptive statistics of the trainee ambulance technicians' world assumptions regarding the benevolence of the world as measured by the World Assumptions Scale over the three time periods of the study.

Table 5.4 Descriptive Statistics for the WAS – Benevolence of the World Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	36.10	37.70	36.50
Standard Deviation	4.86	4.24	5.02
Minimum Score	30	30	31
Maximum Score	44	45	46

The mean scores on this sub-scale of the WAS show very little change over time, and do not show a continuous increase or decrease over the three time periods. Both the minimum and the maximum scores increase slightly, but generally the scores remain stable.

Table 5.5 presents the descriptive statistics of the trainee ambulance technicians' world assumptions regarding the meaningfulness of the world as measured by the World Assumptions Scale over the three time periods of the study.

Table 5.5 Descriptive Statistics for the WAS – Meaningfulness of the World Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	37.0	35.70	37.80
Standard Deviation	6.09	6.85	5.98
Minimum Score	24	26	23
Maximum Score	44	46	43

As in the previous sub-scale of the WAS, the meaningfulness of the world sub-scale shows no continuous incline or decline in the mean, minimum, or maximum scores over time. The results show only slight fluctuations in scores, and indicate very little overall change.

Table 5.6 presents the descriptive statistics of the trainee ambulance technicians' world assumptions regarding their self-worth as measured by the World Assumptions Scale over the three time periods of the study.

Table 5.6 Descriptive Statistics for the WAS – Self-Worth Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	51.90	54.70	55.40
Standard Deviation	4.46	8.00	6.42
Minimum Score	47	37	45
Maximum Score	60	64	65

These results show an increase in the mean scores over time, especially between pre-trauma scores and scores at one-month of continual exposure to trauma. This indicates

a general increase in feelings of self-worth among the trainee ambulance technicians.

The increase in the mean score is also consistent with the slight increase in the maximum score over the three time intervals.

A5. Coping Responses

Table 5.7 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to active coping, as measured by the COPE over the three time periods of the study.

Table 5.7 Descriptive Statistics of the 'Active Coping' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	10.80	11.60	12.30
Standard Deviation	2.57	2.37	1.89
Minimum Score	6	8	8
Maximum Score	15	14	15

Mean active coping scores increase slightly over time, as do the minimum scores for the trainee ambulance technicians.

Table 5.8 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to planning, as measured by the COPE over the three time periods of the study.

Table 5.8 Descriptive Statistics of the 'Planning' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	11.30	11.40	12.70
Standard Deviation	2.91	2.88	2.50
Minimum Score	8	6	8
Maximum Score	16	15	16

The results show an overall increase in planning with regard to the mean scores over the three time periods.

Table 5.9 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to seeking instrumental social support, as measured by the COPE over the three time periods of the study.

Table 5.9 Descriptive Statistics of the 'Seeking Instrumental Social Support' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	12.40	12.80	13.10
Standard Deviation	2.32	2.30	2.08
Minimum Score	7	8	9
Maximum Score	16	16	16

The results show a slight increase in seeking instrumental social support over time, as reflected in both the mean scores and the minimum scores.

Table 5.10 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to seeking emotional social support, as measured by the COPE over the three time periods of the study.

Table 5.10 Descriptive Statistics of the 'Seeking Emotional Social Support' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	10.80	12.00	12.00
Standard Deviation	4.73	3.50	3.30
Minimum Score	4	8	8
Maximum Score	16	16	16

The 'seeking emotional support' mean scores increased over time, although overall the trainee ambulance technicians rated this means of support lower than seeking instrumental social support.

Table 5.11 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to suppression of competing activities, as measured by the COPE over the three time periods of the study.

Table 5.11 Descriptive Statistics of the 'Suppression of Competing Activities' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	10.20	10.00	9.60
Standard Deviation	1.32	1.63	2.55
Minimum Score	8	7	6
Maximum Score	12	12	14

Although only a slight change, the mean scores and minimum scores decreased with increased exposure to trauma. However, the maximum score did increase at the three-months of continual exposure to trauma stage, which is reflected in the corresponding increase in the standard deviation, showing a greater variance within the scores.

Table 5.12 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to turning to religion, as measured by the COPE over the three time periods of the study.

Table 5.12 Descriptive Statistics of the 'Turning to Religion' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	6.00	6.30	6.10
Standard Deviation	4.14	4.22	4.20
Minimum Score	4	4	4
Maximum Score	16	16	15

Turning to religion as a coping response showed the highest variance in the scores by the trainee ambulance technicians out of all the coping responses. The stability of the scores throughout the time period suggests that both weak and strong beliefs in religion as a coping response are unlikely to change when continually exposed to trauma.

Table 5.13 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to positive reinterpretation and growth, as measured by the COPE over the three time periods of the study.

Table 5.13 Descriptive Statistics of the 'Positive Reinterpretation and Growth' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	12.20	12.60	13.60
Standard Deviation	1.81	2.41	2.46
Minimum Score	10	9	8
Maximum Score	15	16	16

Positive reinterpretation and growth mean scores increase over the three time periods, whilst the minimum score decreases over time.

Table 5.14 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to restraint coping, as measured by the COPE over the three time periods of the study.

Table 5.14 Descriptive Statistics of the 'Restraint Coping' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	9.70	10.30	10.80
Standard Deviation	2.16	1.64	2.10
Minimum Score	5	8	8
Maximum Score	12	12	14

The mean, minimum, and maximum scores all increase over time, indicating that the trainee ambulance technicians increasingly use restraint as a coping response with an increase of continual exposure to trauma.

Table 5.15 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to acceptance, as measured by the COPE over the three time periods of the study.

Table 5.15 Descriptive Statistics of the 'Acceptance' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	13.30	12.60	13.40
Standard Deviation	2.41	2.99	2.59
Minimum Score	9	8	8
Maximum Score	16	16	16

The results for the use of acceptance as a coping response remain virtually stable over time, with no continuous increase or decrease in mean scores.

Table 5.16 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to focusing on and venting emotions, as measured by the COPE over the three time periods of the study.

Table 5.16 Descriptive Statistics of the 'Focus On and Venting of Emotions' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	7.90	8.10	8.10
Standard Deviation	3.25	3.07	3.70
Minimum Score	4	4	4
Maximum Score	13	14	15

There is a marginal increase in both mean scores and maximum scores with regards to the use of focusing on and venting of emotions as a coping response, but overall the scores are quite low for this coping response.

Table 5.17 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to denial, as measured by the COPE over the three time periods of the study.

Table 5.17 Descriptive Statistics of the 'Denial' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	5.90	6.50	5.90
Standard Deviation	1.52	1.90	1.85
Minimum Score	4	4	4
Maximum Score	8	10	9

The scores for denial stay relatively stable over time, only fluctuating slightly. The mean scores are generally very low.

Table 5.18 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to mental disengagement, as measured by the COPE over the three time periods of the study.

Table 5.18 Descriptive Statistics of the 'Mental Disengagement' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	8.60	8.60	7.30
Standard Deviation	1.96	2.27	2.75
Minimum Score	6	5	4
Maximum Score	12	13	13

There is a slight decrease in both mean scores and minimum scores over time, indicating that the trainee ambulance technicians are using less mental disengagement as a coping strategy, when continually exposed to trauma.

Table 5.19 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to behavioural disengagement, as measured by the COPE over the three time periods of the study.

Table 5.19 Descriptive Statistics of the 'Behavioural Disengagement' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	5.90	6.40	5.40
Standard Deviation	2.18	2.22	1.17
Minimum Score	4	4	4
Maximum Score	10	9	7

Although the maximum score decreased over time, there were no continuous increases or decreases in the mean score.

Table 5.20 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to alcohol/drug use, as measured by the COPE over the three time periods of the study.

Table 5.20 Descriptive Statistics of the 'Alcohol/Drug Use' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	7.90	6.80	6.30
Standard Deviation	4.58	2.25	3.13
Minimum Score	4	4	4
Maximum Score	16	9	12

The use of drugs and/or alcohol as a coping response decreased over the three time periods as indicated by the mean score, which was generally low.

Table 5.21 presents the descriptive statistics of the trainee ambulance technicians' coping scores with regards to humour, as measured by the COPE over the three time periods of the study.

Table 5.21 Descriptive Statistics of the 'Humour' Scores of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	11.60	12.20	12.00
Standard Deviation	3.27	3.52	3.27
Minimum Score	8	7	8
Maximum Score	16	16	16

The use of humour remained relatively stable over time, with no continuous increase or decrease in the mean scores.

A6. Perceived Social Support

Table 5.22 presents the descriptive statistics for the mean number of social supports of the trainee ambulance technicians, as measured by the SSQ6 over the three time periods of the study.

Table 5.22 Descriptive Statistics of the Mean Number of Social Supports of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	4.28	3.80	4.08
Standard Deviation	2.15	1.70	2.04
Minimum Score	2	2	2
Maximum Score	9	8	9

The mean number of supports was generally stable over the three time periods, decreasing slightly after the first month of continual exposure to trauma, and then increasing to an average of four people again at three months of continual exposure to trauma.

Table 5.23 presents the descriptive statistics of the mean level of satisfaction with the social support perceived by the trainee ambulance technicians, as measured by the SSQ6 over the three time periods of the study.

Table 5.23 Descriptive Statistics of the Mean Level of Satisfaction with Social Supports of the Trainee Ambulance Technicians over 3 time periods

	Pre-trauma	1 month of continual exposure to trauma	3 months of continual exposure to trauma
N	10	10	10
Mean	5.67	5.62	5.62
Standard Deviation	0.30	0.94	0.44
Minimum Score	5	3	5
Maximum Score	6	6	6

Whilst levels of satisfaction decreased, with regards to the minimum score at one-month of continual exposure to trauma, the mean scores remained virtually constant throughout the three time periods.

A7. Control Group

As the descriptive statistics for the control group are not deemed to be an integral part of the study, they shall not be presented in the main body of the research (see Appendix K for presentation of the descriptive statistics).

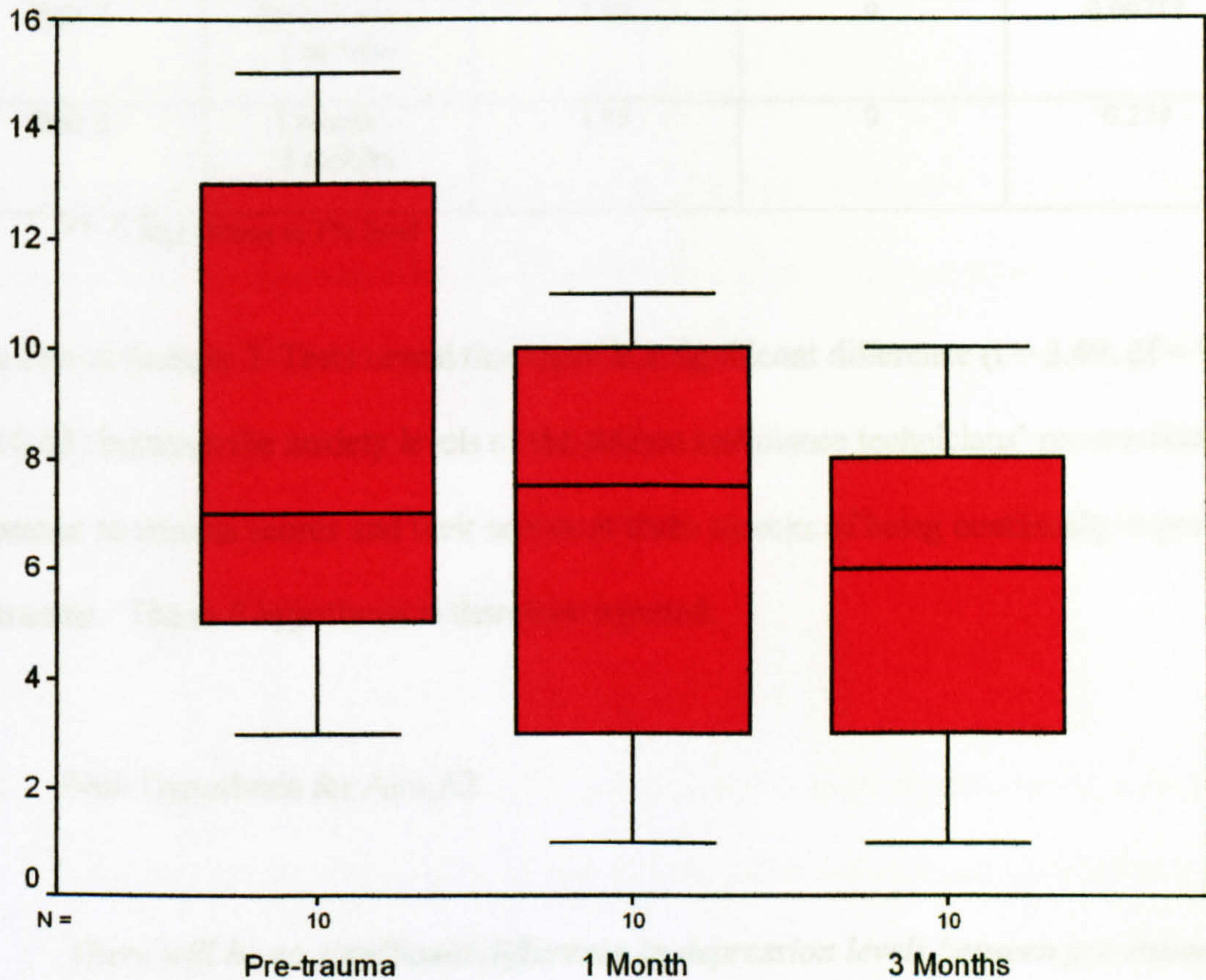
B. Statistical Analysis of the Hypotheses

B1. Null Hypothesis for Aim A1

There will be no significant difference in anxiety levels between pre-trauma and at 1 month and 3 months of continual exposure to trauma in the trainee ambulance technicians.

Figure 5.1 shows a boxplot of the anxiety scores of the trainee ambulance technicians at the three levels of continuous trauma exposure.

Figure 5.1 Anxiety Scores of the Trainee Ambulance Technicians at the 3 Levels of Continual exposure to Trauma



A repeated measures ANOVA was found to be significant:

$$F(2,18) = 5.99; p < 0.01$$

The results of the analysis can be found in Appendix L. Table 5.24 shows Paired-Sample T-Tests for comparisons among the means of the anxiety scores over the three levels of exposure to trauma.

Table 5.24 Paired-Sample T-Tests of the Anxiety Scores at the 3 Levels of Continual exposure to Trauma

		t	df	Sig. (2-tailed)
Pair 1	Pre-trauma – 1 month	2.05	9	0.071
Pair 2	Pre-trauma – 3 months	3.49	9	0.007**
Pair 3	1 month – 3 months	1.15	9	0.279

** = Significant at 1% level

The Paired-Sample T-Tests reveal that there is a significant difference ($t = 3.49$; $df = 9$; $p < 0.01$) between the anxiety levels of the trainee ambulance technicians' pre-continual exposure to trauma scores and their scores at three months of being continually exposed to trauma. The null hypothesis is therefore rejected.

B2. Null Hypothesis for Aim A2

There will be no significant difference in depression levels between pre-trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

Due to the similarity of scores on the HADS depression scale by the trainee ambulance technicians, the distribution of scores was not normal, requiring a non-parametric test to test the null hypothesis.

Table 5.25 shows the results of the Wilcoxon Signed Ranks Test for the HADS depression sub-scale.

Table 5.25 Wilcoxon Signed Ranks Tests for the HADS Depression Sub-Scale at the 3 Levels of Continual exposure to Trauma

		Z	Sig. (2-tailed)
Pair 1	Pre-trauma – 1 month	-1.28	0.200
Pair 2	Pre-trauma – 3 months	-1.19	0.236
Pair 3	1 month – 3 months	-0.18	0.854

These results show that there were no significant differences in depression levels between pre-trauma and one month of continual exposure to trauma ($z=-1.28$; $p > 0.05$), between pre-trauma and three months of continual exposure to trauma ($z=-1.19$; $p > 0.05$), or between one month and three months of continual exposure to trauma ($z=-0.18$; $p > 0.05$). The null hypothesis is therefore accepted.

B3. Null Hypothesis for Aim A3

There will be no significant difference in posttraumatic symptomatology between pre-trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

Figure 5.2 shows a boxplot of the PENN scores of the trainee ambulance technicians at the three levels of continual exposure to trauma.

A repeated measures ANOVA was found to be significant:

$$F(2,14) = 8.91; p < 0.01$$

The results of this analysis can be found in Appendix L.

Figure 5.2 PENN Scores of the Trainee Ambulance Technicians for the 3 Levels of Continual exposure to Trauma

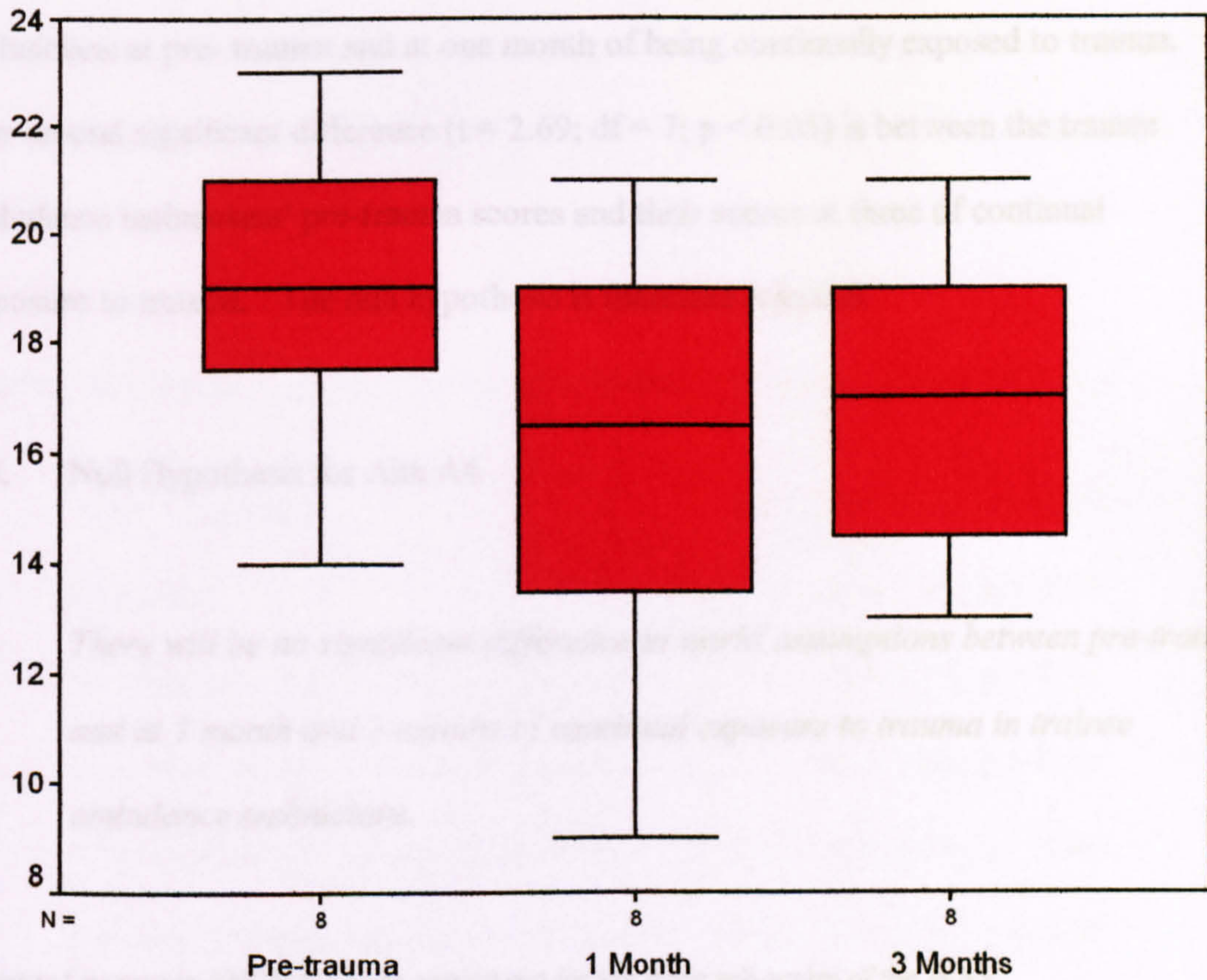


Table 5.26 shows Paired-Sample T-Tests for comparisons among the means of the PENN scores over the three levels of exposure to trauma.

Table 5.26 Paired-Sample T-Tests of the PENN Scores at the 3 Levels of Exposure to Trauma

		t	df	Sig. (2-tailed)
Pair 1	Pre-trauma – 1 month	3.64	7	0.008**
Pair 2	Pre-trauma – 3 months	2.69	7	0.031*
Pair 3	1 month – 3 months	-1.59	7	0.155

* = Significant at 5% level
 ** = Significant at 1% level

The Paired-Sample T-Tests reveal that there are two significant differences. The first ($t = 3.64$; $df = 7$; $p < 0.01$) is between the PENN scores of the trainee ambulance technicians at pre- trauma and at one month of being continually exposed to trauma. The second significant difference ($t = 2.69$; $df = 7$; $p < 0.05$) is between the trainee ambulance technicians' pre-trauma scores and their scores at three of continual exposure to trauma. The null hypothesis is therefore rejected.

B4. Null Hypothesis for Aim A4

There will be no significant difference in world assumptions between pre-trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

Repeated measures ANOVA's were carried out for the three sub-scales of the WAS:

- Benevolence of the World:** $F(2,14) = 1.37$; $p > 0.05$
- Meaningfulness of the World:** $F(2,16) = 1.31$; $p > 0.05$
- Self-Worth:** $F(2,14) = 2.18$; $p > 0.05$

The results of these analyses can be found in Appendix L. These findings all show that there were no significant differences in world assumptions over the three levels of exposure to trauma. Therefore the null hypothesis is accepted.

B5. Null Hypothesis for Aim A5

There will be no difference in coping responses between pre-trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

Repeated measures ANOVA's were carried out on thirteen of the fifteen sub-scales of the COPE:

Active Coping:	F (2,14) = 0.85; p > 0.05
Planning:	F (2,18) = 2.15; p > 0.05
Seeking Instrumental Social Support:	F (2,14) = 0.12; p > 0.05
Seeking Emotional Social Support:	F (2,18) = 1.65; p > 0.05
Suppression of Competing Activities:	F (2,18) = 0.34; p > 0.05
Positive Reinterpretation and Growth:	F (2,14) = 6.32; p < 0.05
Restraint Coping:	F (2,16) = 0.56; p > 0.05
Acceptance:	F (2,14) = 1.16; p > 0.05
Focus On and Venting of Emotions:	F (2,14) = 1.77; p > 0.05
Denial:	F (2,18) = 0.61; p > 0.05
Mental Disengagement:	F (2,18) = 1.57; p > 0.05
Behavioural Disengagement:	F (2,18) = 1.31; p > 0.05
Humour:	F (2,18) = 0.35; p > 0.05

The results of these analyses can be found in Appendix L. With regards to the remaining two coping responses (turning to religion and alcohol/drug use), the similarity of the scores given by the trainee ambulance technicians required a non-parametric test to be carried out to test the null hypothesis.

Table 5.27 shows the results of the Wilcoxon Signed Ranks Test for the 'Turning to Religion' sub-scale of the COPE.

Table 5.27 Wilcoxon Signed Ranks Tests for the 'Turning to Religion' Sub-Scale of the COPE at the 3 Levels of Continual exposure to Trauma

		Z	Sig. (2-tailed)
Pair 1	Pre-trauma – 1 month	-1.41	0.157
Pair 2	Pre-trauma – 3 months	0.00	1.000
Pair 3	1 month – 3 months	-1.41	0.157

Table 5.28 shows the results of the Wilcoxon Signed Ranks Test for the 'Alcohol/Drug Use' sub-scale of the COPE.

Table 5.28 Wilcoxon Signed Ranks Tests for the 'Alcohol/Drug Use' Sub-Scale of the COPE at the 3 Levels of Continual exposure to Trauma

		Z	Sig. (2-tailed)
Pair 1	Pre-trauma – 1 month	-1.13	0.257
Pair 2	Pre-trauma – 3 months	-0.82	0.414
Pair 3	1 month – 3 months	-1.29	0.197

Overall the findings show that there were no significant differences in fourteen of the fifteen coping responses tested. However, there was a significant difference between the mean scores of the three levels of exposure to trauma in the coping response of 'Positive Reinterpretation and Growth'.

Figure 5.3 shows a boxplot of the 'positive reinterpretation and growth' coping response scores of the trainee ambulance technicians at the three levels of continuous trauma exposure.

The Paired-Sample T-Tests reveal that there is a significant difference ($t = -3.36, df = 7, p < .001$) between the positive reinterpretation and growth scores of the trainee

Figure 5.3 Positive Reinterpretation and Growth Scores of the Trainee Ambulance Technicians for the 3 Levels of Continual exposure to Trauma

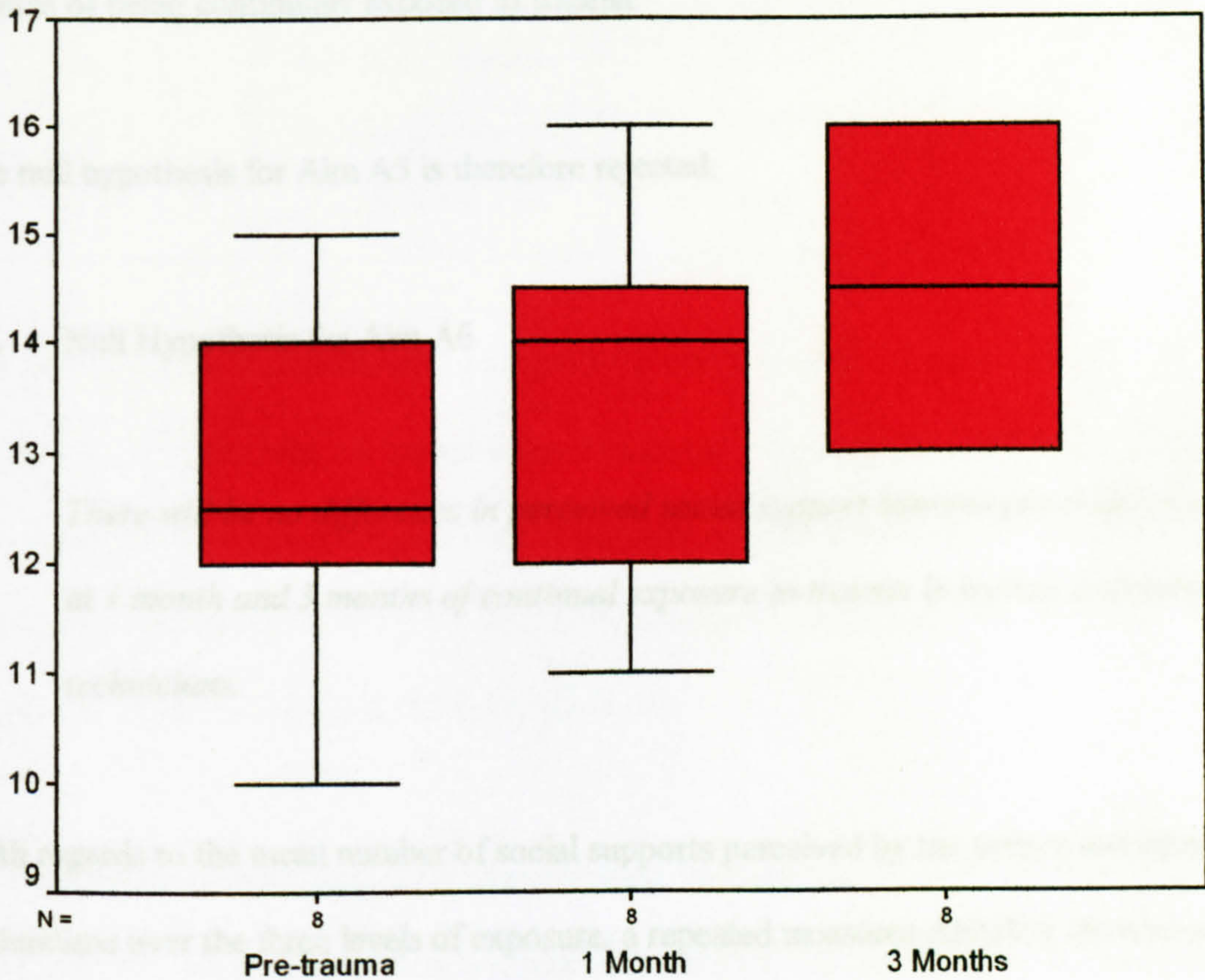


Table 5.29 shows Paired-Sample T-Tests for comparisons among the means of the positive reinterpretation and growth scores over the three levels of exposure to trauma.

Table 5.29 Paired-Sample T-Tests of the Positive Reinterpretation and Growth Scores at the 3 Levels of Exposure to Trauma

		t	df	Sig. (2-tailed)
Pair 1	Pre-trauma – 1 month	-2.05	7	0.080
Pair 2	Pre-trauma – 3 months	-3.56	7	0.009**
Pair 3	1 month – 3 months	-1.67	7	0.138

** = Significant at 1% level

The Paired-Sample T-Tests reveal that there is a significant difference ($t = -3.56$; $df = 7$; $p < 0.01$) between the positive reinterpretation and growth scores of the trainee

ambulance technicians' pre-continual exposure to trauma scores and their scores at three months of being continually exposed to trauma.

The null hypothesis for Aim A5 is therefore rejected.

B6. Null Hypothesis for Aim A6

There will be no difference in perceived social support between pre-trauma and at 1 month and 3 months of continual exposure to trauma in trainee ambulance technicians.

With regards to the mean number of social supports perceived by the trainee ambulance technicians over the three levels of exposure, a repeated measures ANOVA showed no significant differences:

$$F(2,14) = 0.75; p > 0.05$$

The result of the analysis can be found in Appendix L. With regards to the mean level of satisfaction with their social support, the similarity of the scores given by the trainee ambulance technicians required a non-parametric test was carried to test the null hypothesis.

Table 5.30 shows the results of the Wilcoxon Signed Ranks Test for the SSQ-6 'mean level of satisfaction' sub-scale.

Table 5.30 Wilcoxon Signed Ranks Tests for the SSQ-6 ‘Mean Level of Satisfaction’ Sub-Scale at the 3 Levels of Continual exposure to Trauma

		Z	Sig. (2-tailed)
Pair 1	Pre-trauma – 1 month	-0.64	0.521
Pair 2	Pre-trauma – 3 months	-0.56	0.573
Pair 3	1 month – 3 months	-0.42	0.674

The findings show that there were no significant differences in the mean levels of satisfaction of social support between pre-trauma and one month of continual exposure to trauma ($z=-0.64$; $p > 0.05$), between pre-trauma and three months of continual exposure to trauma ($z=-0.56$; $p > 0.05$), or between one month and three months of continual exposure to trauma ($z=-0.42$; $p > 0.05$).

As there were no significant differences between the mean scores over the three levels of exposure to trauma, on both sub-scales of the SSQ-6, the null hypothesis is accepted.

B7. Null Hypothesis for Aim A7

There will be no significant difference in psychological constructs in the control group, as measured by anxiety and depression levels, posttraumatic symptomatology, world assumptions, coping responses, and perceived social support, between the three time intervals that parallel the time of continual exposure to trauma experienced by the trainee ambulance technicians.

Repeated measures ANOVA's were carried out on 19 out of the 23 factors of the study:

HADS-Anxiety	F (2,12) = 0.13; p > 0.05
PENN-Posttraumatic symptomatology	F (2,14) = 0.57; p > 0.05
WAS-Benevolence of the World	F (2,14) = 2.50; p > 0.05
WAS-Meaningfulness of the World	F (2,14) = 0.20; p > 0.05
WAS-Self-Worth	F (2,14) = 1.04; p > 0.05
COPE-Active Coping	F (2,14) = 0.32; p > 0.05
COPE-Planning	F (2,14) = 0.68; p > 0.05
COPE-Seeking Instrumental Social Support	F (2,14) = 0.45; p > 0.05
COPE-Suppression of Competing Activities	F (2,14) = 0.82; p > 0.05
COPE-Positive Reinterpretation and Growth	F (2,14) = 2.05; p > 0.05
COPE-Restraint Coping	F (2,14) = 0.67; p > 0.05
COPE-Acceptance	F (2,10) = 0.39; p > 0.05
COPE-Focus on and Venting of Emotions	F (2,14) = 0.33; p > 0.05
COPE-Denial	F (2,10) = 3.78; p > 0.05
COPE-Mental Disengagement	F (2,14) = 2.18; p > 0.05
COPE-Behavioural Disengagement	F (2,10) = 3.78; p > 0.05
COPE-Humour	F (2,14) = 1.65; p > 0.05
SSQ-Mean Number of Social Supports	F (2,12) = 2.33; p > 0.05
SSQ-Level of Satisfaction with Social Supports	F (2,12) = 1.38; p > 0.05

The results of these analyses can be found in Appendix M. Wilcoxon Signed Ranks test were carried out on the remaining four factors. Table 5.31 shows the results of the Wilcoxon Signed Ranks Test for the HADS-depression, COPE-seeking of emotional social support, COPE-turning to religion, and COPE-alcohol/drug use factors.

Table 5.31 Wilcoxon Signed Ranks Tests for HADS-Depression, COPE-Seeking of Emotional Social Support, COPE-Turning to Religion, and COPE-Alcohol/Drug Use at the 3 Levels of Continual exposure to Trauma

		Z	Sig. (2-tailed)
HADS-Depression	Pre-trauma – 1 month	-0.45	0.665 (p>0.05)
	Pre-trauma – 3 months	-1.73	0.084 (p>0.05)
	1 month – 3 months	-1.63	0.102 (p>0.05)
COPE-Seeking of Emotional Social Support	Pre-trauma – 1 month	-0.32	0.750 (p>0.05)
	Pre-trauma – 3 months	-1.41	0.159 (p>0.05)
	1 month – 3 months	-0.95	0.344 (p>0.05)
COPE-Turning to Religion	Pre-trauma – 1 month	0.00	1.00 (p>0.05)
	Pre-trauma – 3 months	-1.00	0.317 (p>0.05)
	1 month – 3 months	-1.00	0.317 (p>0.05)
COPE-Alcohol/Drug Use	Pre-trauma – 1 month	-1.47	0.141 (p>0.05)
	Pre-trauma – 3 months	-0.74	0.461 (p>0.05)
	1 month – 3 months	-1.60	0.109 (p>0.05)

Overall the findings show that there were no significant differences in any of the 23 factors tested. Therefore, the null hypothesis is accepted.

C. Analysis of Responses to Semi-Structured Questionnaire

Question One – *Out of the incidents that you have attended since becoming operational, what specific types of incident do you consider to be most traumatic?*

Table 5.32 shows the categories and frequencies for the types of events that the trainee ambulance technicians found to be most traumatic.

Table 5.32 Categories of Events Deemed to be Most Traumatic

Category	Frequency
Incidents involving babies/children	4
Road traffic accidents	3
Cardiac arrests	2
Incidents of self-harm	1
Delivery of 'death messages'	1
Assaults	1

The results show that 40 percent of the trainee ambulance technicians found that, of the incidents that they have attended in the first three months of their training, those involving babies and children were deemed to be the most traumatic. Road traffic accidents (30 percent) and cardiac arrests (20 percent) were specific incidents cited by the trainees to be the most traumatic, even if there were no fatalities:

'[A] 68 [year-old] male in cardiac arrest – [the] patient was shocked four times and survived'

Incidents involving self-harm and assaults also featured in the most traumatic responses, although these were isolated cases, along with the job of delivering death messages to relatives in the aftermath of a fatal incident.

Question Two – *What particular aspects of dealing with these incidents is the most traumatic?*

Table 5.33 shows the categories and frequencies for which aspects of the incidents were found to be particularly traumatic.

Table 5.33 Categories of Aspects of Events Deemed to be Traumatic

Category	Frequency
Lack of self-confidence	4
Dealing with relatives	2
Young age of victims	1
Unexpected events	1
Dead/disfigured faces	1
Listening to victim's problems	1
Level of violence	1

This question of the semi-structured questionnaire provided the most variance in the responses. However the most common responses were categorised by a lack of self-confidence, with 40 percent of the trainees highlighting this as the most traumatic aspect of an incident:

'Choosing the right words'

'[I] thought of the patient dying and it being my fault'

'Not knowing if you are doing things right'

'Feeling of not knowing enough/doing the right things to improve [the] situation'

Other aspects of incidents that were deemed to be traumatic by the trainees were dealing with the relatives, especially parents and the effect that the loss of their child has on them. Contemplating the young age at which children become very ill was considered to be especially traumatic for one of the trainees:

'How young these people are and that they have yet to have a life'

One trainee found the dead/disfigured bodies of victims to be particularly traumatic, whilst others found violence, unexpected events, and listening to the problems of the

victims to be the most traumatic aspects of the incidences that they have encountered over their first three months in the job.

Question Three – *In general, what has been your initial reaction to them?*

Table 5.34 shows the categories and frequencies for the trainee ambulance technicians' initial reactions to traumatic events.

Table 5.34 Categories of Initial Reactions to Traumatic Events

Category	Frequency
Anxiety	4
Focus on job in hand	2
Disbelief	1
Learn from experience	1
Frustration	1

The findings show that 40 percent of the trainee ambulance technicians initially reacted with an anxiety response of some kind:

'I was shaking and felt sick'

'Worrying if I had chosen the right words or way of telling them'

'...Adrenaline running very high'

'Excitement but slightly apprehensive'

Two of the trainees cited that their initial reaction was to focus on the job in hand:

'Just get on with the job in hand. [I] don't tend to think about it until later'

'Head down, remember your job, get on with that and try not to think of anything other than that'

Other reactions by individual trainees were of utter disbelief, frustration (with regard to drunken assaults) and to try to learn from the experience.

Question Four – *Did any thoughts in particular go through your mind?*

Table 5.35 shows the categories and frequencies of the trainee ambulance technician's initial thoughts.

Table 5.35 Categories of Initial Thoughts

Category	Frequency
None	3
Victim's family	2
Improve situation	1
Value own situation	1
Own family	1
Waste of time	1

30 percent of the trainees were unable to identify any thoughts that went through their minds at a traumatic incident. Those that could identify thoughts were varied in their responses. Two trainees thoughts were of the victim's family:

'[My] thoughts [were] of the victim's family in the house at the time of losing their father, husband'

Whilst one trainee thought of their own family:

'[I thought of] my own children and what I would do if it was them in this position'

Other immediate thoughts were to improve the situation, and to value one's own situation:

'I'm glad it's not me being told'

One trainee thought how some jobs were a waste of ambulance service time (drunken assaults).

Question Five & Question Six – *What do you tend to do after a potentially traumatic incident? How do you cope afterwards?*

Table 5.36 shows the categories and frequencies of how the trainee ambulance technicians' tended to cope in the aftermath of trauma.

Table 5.36 Categories of Coping Responses

Category	Frequency
Talk	6
Focus on next job	6
Self-appraisal	2
Relax	2
Use of humour	1

Questions five and six in the semi-structured questionnaire provided similar responses and were therefore combined for the purpose of analysis. 60 percent of the trainees talked about the experience in the aftermath of a traumatic incident. 60 percent also tended to focus on the next job:

'Get on, as soon as possible with the next job'

'Just accept it and get on with [the] next incident'

'Take time to gather myself, then concentrate on [the] next job'

'Try to forget about the incident and wait for the next one'

'[I] usually carry on with work and forget about the incident'

Two trainees use self-appraisal:

'[I] think about the patient and what they have experienced and realise that myself and my crew partner have done a good job'

'[I] usually feel more grateful for what I have and tend to feel better about the incident'

Two of the trainees take time to relax:

'[I] go on the computer, watch TV, listen to music'

'[I] have a cuppa'

One trainee uses humour:

'[I] make a joke of it or about something at the job (policemen being sick). I think humour is a particularly common coping mechanism in this job'

Question Seven – *Do you find it easy to show your emotions?*

Table 5.37 shows the categories and frequencies of the trainee ambulance technicians' emotional expression.

Table 5.37 Categories of Emotional Expression

Category	Frequency
Hide emotions	6
Show emotions	3

For this question of the semi-structured questionnaire, the trainees simply cited whether they either tended to hide their emotions or whether they were able to show their emotions. The findings show that 60 percent of the trainees tended to hide their emotions:

'I try to keep them inside'

'[I] tend to bottle them up'

Yet 30 percent of the trainees are able to show their emotions:

'I show my emotions quite easily'

'Yes, I found it easy to show my emotions, I tend not to keep things to myself'

I show emotions very easily'

Question Eight – *What do you find helpful from your colleagues/family/friends?*

Table 5.38 shows the categories and frequencies of what the trainee ambulance technician's found helpful in the aftermath of trauma.

Table 5.38 Categories of Helpful Reactions from Others

Category	Frequency
Having someone to listen	5
Having someone to share experience with	5
Perceived support	3

Over the first three months since becoming operational, the trainees found three main things to be helpful from others. 50 percent found it helpful to have someone to listen to them after a traumatic incident:

'A good listening ear'

'My family and friends are very good listeners'

'[Having] someone who will listen and not give advice unless asked for'

50 percent of the trainees found it helpful to have someone to share their traumatic experiences with:

'Sharing similar anecdotes, experiences, and talking about 'messy' jobs'

'Advice, past experiences, company, encouragement'

'The fact that my colleagues have experienced the same or similar things'

'Their experience that helps me to put into perspective my own issues'

Support was deemed to be helpful for 30 percent of the trainees:

'Support, talking through jobs with colleagues'

'The knowledge that they are there if needed'

Question Nine – *What, if anything, do you find unhelpful?*

Table 5.39 shows the categories and frequencies of what the trainee ambulance technicians' found unhelpful in the aftermath of trauma.

Table 5.39 Categories of Unhelpful Reactions from Others

Category	Frequency
Lack of understanding from others	5
Nothing found to be unhelpful	2
Negative reactions from others	1
Poor equipment/vehicles	1

The results show that 50 percent of the trainees found that a lack of understanding from others was most unhelpful to them during the first three months of the job:

'Ignorance'

'Being fairly new in the job, I find it unhelpful when other people don't appreciate what a big deal a patient's death or illness is to me'

'People saying 'Oh, you'll get over it' and shrugging it aside'

'Disregarding how I feel or what I've said or the comment 'I've had worse''

'People who do not understand what you've been through or seen'

Whilst two of the trainees found nothing to be unhelpful, one trainee found 'negative vibes' to be unhelpful, and another found that poor equipment and vehicles to be particularly unhelpful.

Question Ten – *Do you feel you can talk to people about incidents you have attended?*

If so, who do you usually talk to the most? Why them?

Table 5.40 shows the categories and frequencies of people whom the trainee ambulance technician's tend to talk to in the aftermath of trauma.

Table 5.40 Categories of People whom the Trainee Ambulance Technicians Tended to Talk to

Category	Frequency
Family	7
Colleagues	5
Friends	2

The findings to question ten show that the trainees tend to talk to their families the most about their traumatic incidents, followed by their colleagues, and then friends. 70 percent of the trainees talked to their families about their experiences:

'[My] wife, she listens keenly and asked what interventions I supplied'

'People are sick of hearing my 'ambulance stories!' But family and friends most – they can relate to my strange sense of humour'

'My husband is a good listener and has lots of life and death experience'

'I usually talk to my partner'

'[My] brother because he's interested'

'My girlfriend who is a nurse'

'[My] family [and] girlfriend. They listen and comfort'

50 percent of the trainees talked to their colleagues:

'I talk to work colleagues but no-one in particular'

'My work colleagues are helpful'

'Colleagues [who] have similar experiences'

'Usually colleagues as they are more able to understand'

'I feel I can talk to anyone on station for advice/views/personal experiences etc.'

Two of the trainees also preferred to talk to their friends about their traumatic experiences.

Question Eleven – *In what ways, if any, have your views or beliefs changed since becoming operational? (about yourself, the world, the future?)*

Table 5.41 shows the categories and frequencies of changes in the trainee ambulance technicians' views of the world.

Table 5.41 Categories of Changes in Views of the world

Category	Frequency
Enhance appreciation of life	3
Decreased sense of control	2
More cynical	2
Less naïve	1
Beliefs have not changed	1

The results show that 30 percent of the trainees felt that they tended to appreciate life more since starting the job:

'I realise how lucky I am and well off'

'Live life to the full, you only get one'

'How much we take life and good health for granted and how easily and quickly we can lose both'

Two trainees felt that they had a decreased sense of control:

'I [have] come to realise that people die and sometimes there is nothing you can do about it despite your best efforts and interventions'

'I do feel that if your time is up it's up and there's nothing you can do about it.

If it's not your time to go, you won't'

Two trainees felt that they have become more cynical:

'I think I have become even more cynical than I was'

'I have discovered there are more idiots than I thought existed. Also people who misuse the '999' service for silly little incidents'

Other trainees felt that they were now less naïve than they were three months ago, whilst another did not believe that their views had changed at all.

Question Twelve – *Has becoming an ambulance technician changed you?*

Table 5.42 shows the categories and frequencies of whether becoming an ambulance technician has changed them.

Table 5.42 Categories of Change after becoming an Ambulance Technician

Category	Frequency
Changed for the better	6
No perceived change	2
Changed for the worse	1

Overall, 60 percent of the trainees believed that becoming an ambulance technician had changed them for the better:

‘Yes, for the better I hope!’

‘Yes, for the better. I have pride in everything I do. I always have had pride, but now even more so’

‘Yes it has, but not in a bad way. I appreciate my life and health more. Also I appreciate my friends and family. I find I have less to complain about’

‘[It has] made me more confident generally’

‘[It has] made me a happier person – according to my girlfriend!’

Two of the trainees felt that becoming an ambulance technician had not changed them, whilst one trainee felt that the job has changed them in a more negative way:

'I['m a] bit more pessimistic about people at face value and what they admit/volunteer to'

CHAPTER SIX – DISCUSSION

This chapter reports the findings of the study along with a discussion of the possible reasons behind its findings and their clinical implications. It will also include the main strengths and limitations of the study, along with suggestions for future research. It is divided into the following sections:

- A Aims and hypotheses
- B Clinical implications of the findings
- C Strengths and limitations of the study
- D Suggestions for future research
- E Conclusions

A. Aims and Hypotheses

A1. *Null hypothesis for Aim A1: There will be no significant difference in anxiety levels between pre-exposure and at one month and three months of continual exposure to trauma in trainee ambulance technicians.*

The results showed that there were significant differences in the anxiety levels of the trainee ambulance technicians over the time in which they were continually exposed to trauma. The null hypothesis is, therefore, rejected.

The anxiety levels of the trainee ambulance technicians were found to decrease with time. The decrease in anxiety levels between the pre-continual exposure to trauma and after one month of continual exposure was greater than the decrease in anxiety levels

between one month and three months of continual exposure. This indicates that anxiety levels drop primarily within the first month after becoming operational.

This finding is consistent with that of a study by Alexander (1993) who investigated the effects of stress among police body handlers after a major disaster. He found that contrary to previous studies, such as Jones (1985), anxiety levels had declined significantly three months after the experience, compared to baseline data taken prior to the disaster.

It is possible that the anxiety levels of the trainee ambulance technicians had been elevated at the pre-exposure stage, as the trainees were due to take their final examinations the same week that the baseline data were collected. Also, they were likely to have been anxious about starting their new job and meeting new colleagues the week following the baseline assessment. This accounts for a reduction in anxiety at the one-month stage, after they had got used to their jobs.

However, this explanation would be unlikely to account for the continued decline in anxiety between the one-month and the three-month stage. Additional factors must account for the continued decline in anxiety levels. Such factors, suggested by Alexander (1993), could involve the acquisition of new coping strategies used during the trauma, building strong relationships with colleagues exposed to the same traumas, and an increase in self-esteem attained through successful completion of the task which they were called out to do. Due to the continuous re-exposure to potentially anxiety-provoking traumas experienced by the trainees, it is also likely that fearful reactions fail to develop. This is because the stimuli associated with an initial anxiety-provoking threat do not become conditioned and do not lead to avoidance reactions by the trainees.

A2. Null hypothesis for Aim A2: There will be no significant difference in depression levels between pre- exposure and those at one month and three months of continual exposure to trauma in trainee ambulance technicians.

The results showed that there were no significant differences in the depression levels of the trainee ambulance technicians over the time in which they were continually exposed to trauma, and therefore the null hypothesis is accepted.

The levels of depression, which did not fluctuate significantly throughout the data collection, were exceptionally low in severity. This finding supports that of Regehr et al.'s (2000) study, which identified a generally low level of depression in another group of emergency service workers - fire fighters. Such low levels in the trainee ambulance technicians could be accounted for by their likely sense of pride in starting out in a job with the hope of immense job satisfaction and personal achievement. They are also likely to be in receipt of extra support and encouragement from colleagues and employers during their trainee phase, which according to Fullerton, McCarroll, Ursano, and Wright (1992) could put them at a lower risk from suffering depressive symptomatology.

In reference to aims A1 and A2, the findings of this study show that there are no adverse effects, in terms of anxiety and depression, of continual exposure to trauma on new recruits in an emergency service. These results do not support Valent's (1995) report that anxiety and depression have long been recognised as common responses after exposure to trauma.

A3. Null hypothesis for Aim A3: There will be no significant difference in posttraumatic symptomatology between pre- exposure and at one month and three months of continual exposure to trauma in trainee ambulance technicians.

The findings of the study show that there were significant differences in posttraumatic symptomatology in trainee ambulance technicians over the time in which they were continually exposed to trauma. Therefore, the null hypothesis is rejected.

The posttraumatic symptomatology levels of the trainee ambulance technicians were found to decrease over the three-month time period. These findings do not support suggestions by Paton & Violanti (1996) that paramedics report high levels of posttraumatic stress symptomatology. It is known that due to the continual exposure to trauma experienced by emergency service workers, they are at an increased risk of developing posttraumatic symptomatology (McCafferty, Domingo, and McCafferty, 1990; Ursano, Fullerton, Vance, and Kao, 1999) when compared to the general population. However, as the emergency service workers become aware of the horrors to which they are regularly exposed to, they are likely to develop coping strategies which protect them from the effects of posttraumatic stress. There is another possible explanation for the significant decrease in posttraumatic symptomatology levels. When compared to a person who experiences a single trauma, who may subsequently avoid trauma related stimuli, the trainee ambulance technicians are effectively forced to re-expose themselves by attending further, similar traumatic incidents, thus aiding the processing of the trauma, which is likely to prevent the trainee from suffering posttraumatic symptomatology.

The PENN inventory has a cut-off score of 35 (Hammarberg, 1992) for PTSD classification. The results of this study show a maximum score of 26 in any one of the time periods, indicating that none of the trainee ambulance technicians were even close to the severity for a diagnosis of PTSD.

A4. Null hypothesis for Aim A4: There will be no significant difference in world assumptions between pre-exposure and at one month and three months of continual exposure to trauma in trainee ambulance technicians.

The findings of the study showed that there were no significant differences in world assumptions in the trainee ambulance technicians over the time in which they were continually exposed to trauma. Therefore, the null hypothesis is accepted.

These results do not support Janoff-Bulman's (1989, 1992) findings on world assumptions. She found that people who had been exposed to trauma were more likely to view themselves in a negative way and view the world as malevolent when compared to those who had not been exposed to trauma. This study indicates that the trainee ambulance technicians did not view themselves as more negative and the world as more malevolent after being continually exposed to trauma. Indeed, although the findings of the study were not significant, the world assumptions data showed an increase in scores over the time in which the trainees' were continually exposed to trauma. This suggests that they viewed themselves in a slightly more positive way. This trend is likely to indicate that, in terms of self-worth, the trainee ambulance technician's role as 'helpers' may protect them from the horrors of trauma that could have potentially 'shattered' their assumptions of self-worth if they were primary victims.

The results of this study show that the mean scores of the 'meaningfulness of the world' sub-scale remain virtually constant over time at 37.40, 37.0, and 37.80, showing, if anything, a very slight increase between pre-continual exposure to trauma and at three months of continual exposure to trauma. Interestingly, the mean scores of the 'meaningfulness of the world' sub-scale in Galloucis, Silverman, and Francek's (2000) study were 41.43 for non-urban paramedics, and 40.88 for urban paramedics. The sample in the study comprised participants who had served a median length of 9.6 years as paramedics. This might indicate that the world could be deemed as more meaningful with greater exposure to trauma, in terms of the allocation of outcomes through 'chance', 'controllability', and 'justice'.

A5. Null hypothesis for Aim A5: There will be no significant difference in coping responses between pre-exposure and at one month and three months of continual exposure to trauma in trainee ambulance technicians.

The findings from this study show that of the 15 different coping responses tested, there was one coping response that changed over the time in which the trainee ambulance technicians were continually exposed to trauma, and therefore the null hypothesis is rejected.

The coping response that changed with continual exposure to trauma was 'positive reinterpretation and growth'. Positive reinterpretation and growth includes the coping responses of 'I try to grow as a person as a result of the experience', 'I try to see it in a different light', 'I look for something good in what is happening', and 'I learn something from the experience'. The use of such responses was found to increase over the three months of continual exposure to trauma.

O'Leary, Alday, and Ickovics (1998) developed a model of posttraumatic growth that proposed that there are three outcomes of trauma: survival, recovery, and thriving. The model suggests that those who survive never return to their pre-trauma level of functioning; those who recover return to their original level of functioning; and those who thrive exceed their previous level of functioning, thus 'growing' from the trauma. According to this model, the results indicate that the trainee ambulance technicians have exceeded their previous level of functioning and have grown as a result of being continually exposed to trauma.

Lazarus & Folkman (1984) depicted positive interpretation and growth as a type of emotion-focused coping, as such a response to trauma would aid in the reduction of psychological distress. However, as O'Leary et al.'s (1998) model demonstrates, posttraumatic growth goes beyond distress reduction. Schaefer & Moos (1992) report that there are three main ways that an individual can positively interpret a trauma and 'grow' in its aftermath. They can (1) enhance their social resources by developing closer relationships with their friends and family and building new social supports. They can (2) enhance their personal resources by becoming more empathic, understanding, altruistic, assertive, and mature. They can also (3) enhance their coping repertoire, by developing the ability to ask for help, logically plan, problem-solve, and control their emotions.

The findings of this study on positive reinterpretation and growth have been replicated in other studies researching the psychological effects of trauma on emergency service workers. Orner (2001) concluded that emergency service workers 'appear to learn to make accommodations to what has happened and these are generally conducive to achieving positive adjustments to trauma' (p.25). Alexander's (1993) study on police

body handlers indicated that the police officers did not suffer adverse effects as a result of the disaster, but rather, gained from the experience by appraising the outcome of the trauma in a positive way. In their study on the functioning of fire fighters after the Oklahoma City bombing, North, Tivis, McMillen, Pfefferbaum, Cox, Spitznagel, Bunch, Schorr, and Smith (2002) found an increase in job satisfaction 'possibly by allowing them to demonstrate their competency and provide services for which they were selected and trained' (p. 175). Taylor (1983) highlights that after exposure to trauma, the majority of victims will readjust and are able to experience the quality of life that they achieved pre-trauma, and some will experience a better quality of life and a greater level of satisfaction.

Considering the general coping responses of the trainee ambulance technicians, overall the three most utilised coping responses were acceptance (which included responses such as 'I accept that this has happened and I get used to it'), positive reinterpretation and growth, and seeking instrumental social support (which included responses such as 'I ask people who have had similar experiences what they did'). In contrast to this, the three coping responses that were utilised the least were 'behavioural disengagement' (which included responses such as 'I reduce the amount of effort I'm putting into solving the problem'), 'denial' (which included responses such as 'I act as though it hasn't even happened'), and 'turning to religion' (which included responses such as 'I put my trust in God'). These responses of seeking social support, accepting what has happened, appraising the trauma in a positive light, whilst refusing to avoid the trauma as it happens, highlight that the trainee ambulance technicians are coping in a way that allows them to do the job that they were selected to do. This is in a way that is enhancing their psychological well-being and protecting them from the adverse effects of trauma.

A6. Null hypothesis for Aim A6: There will be no significant difference in perceived social support between pre-exposure and at one month and three months of continual exposure to trauma in trainee ambulance technicians.

The findings of the study show that there were no significant differences in perceived social support in trainee ambulance technicians over the time in which they were continually exposed to trauma, and therefore the null hypothesis is accepted.

Support for or against this finding was not identified in the review of the literature. Past studies have tended to focus on the psychological differences between those who perceived more or less social support after trauma, rather than stating whether, in general, emergency service workers perceived greater or lesser social support after experiencing trauma. Definite conclusions are also difficult to infer from this study, due to the apparent ceiling effect of the 'level of satisfaction' subscale. On a scale of 1-6, where 6 indicates a higher level of satisfaction with perceived social support, the mean score at the pre-exposure stage was 5.71 with 71% giving the highest score of 6 on each of the questions. No-one gave a rating of less than 5. The study was, therefore, unable to identify whether there would have been an increase in perceived social support once the ambulance technicians had been continually exposed to trauma for three months.

However, the results do show that the mean level of satisfaction with social support after three months of continual exposure to trauma was 5.62. This indicates that the trainee ambulance technicians were highly satisfied with their social support networks and that if support were required after a trauma, it would be available (Sarason et al., 1990). Janoff-Bulman (1992), Jones & Barlow (1990), and Keane et al. (1985) found that positive perceptions of social support in paramedics are related to low levels of

posttraumatic symptomatology and less disrupted world assumptions, both of which are supported in this study.

A7. Null hypothesis for Aim A7: There will be no significant difference in psychological constructs in the control group, as measured by anxiety and depression levels, posttraumatic symptomatology, world assumptions, coping responses, and perceived social support between the three time intervals that parallel the time of continual exposure to trauma experienced by the trainee ambulance technicians.

The findings of the study showed that there were no significant differences in any of the studied psychological constructs in the control group over the time in which the trainee ambulance technicians were continually exposed to trauma. Therefore the null hypothesis is accepted.

The purpose of the control group in this study was not so that the group could be compared with the group of trainee ambulance technicians, as in many experimental studies. Its purpose was to strengthen the design of the study by allowing identification of any significant psychological effects that could be solely attributed to the effects of work-related trauma. Using the control group achieved this aim. The control group was not continually exposed to work-related trauma. Therefore, as would be expected, there were no significant differences in the psychological constructs measured. This means that the significant results found in the differences in anxiety and posttraumatic symptomatology levels, and the coping response of positive reinterpretation and growth have resulted from the continual exposure to trauma experienced by the trainee ambulance technicians.

A8. *Exploratory Research Question for Aim A8: What are the psychological effects of continual exposure to trauma on trainee ambulance technicians?*

The semi-structured questionnaire allowed for the exploration of the trainee's views and experiences over a period of three months of continual exposure to trauma. This subsection will pick out the main points of interest that emerged from the qualitative data.

Mitchell (1984) identified stressors that were deemed to be most traumatic to emergency service workers. Such stressors included child death, other death, horrific sights and sounds, and multiple-casualty incidents. The trainees cited incidents involving children and babies, road traffic accidents, cardiac arrests, incidents of self-harm, delivery of 'death messages', and assaults to be most traumatic for them. As the majority of these incidents were likely to have involved death, horrific sights and sounds, or multiple casualties, it can be assumed that the trainees were exposed to incidents that were traumatic in nature, and therefore the trainees were susceptible to the potential emotional, behavioural, cognitive, and physiological effects of trauma.

Questions from the semi-structured questionnaire provided insight into the specific effects that traumatic incidents have on new recruits. The trainees most frequently cited that a lack of self-confidence was the most traumatic aspect of an incident and that their initial reaction was anxiety. Their responses indicate that the trainees tended to be extremely anxious about their ability to carry out their job, and perhaps more specifically, they were fearful of the consequences if they did not act correctly or quickly in an emergency situation. However, their lack of self-confidence would have been likely to diminish with experience, as it is known from the quantitative data that the trainee's anxiety levels decreased significantly during the three-month period. This

finding highlights the intense stress that the trainees experience in their first encounters with trauma, and is consistent with the findings of Roy & Steptoe (1994) and Raphael (1986). However, the additional stress that the new recruits appear to experience may not necessarily make them more vulnerable to the negative effects of trauma as shown by a decrease in posttraumatic symptomatology scores from the PENN inventory.

Trainees were able to talk through their traumatic experiences. They did so particularly with their families and their colleagues, and cited that it was most helpful knowing that there was always someone available to listen. This is consistent with the findings of King & Orner (1999) who found that talking was a priority for the majority of the police officers, fire fighters, and National Health Service staff that they interviewed. However, it appears that the content of the trainees 'talking' was likely to lack emotion, as the majority of the trainees cited that they tended to hide their emotions. Considering that the trainees were unsure of their own abilities, it is likely, therefore, that talking through traumatic experiences with family and colleagues served to reassure them about their actions.

Although the majority of the trainees tended not to show their emotions, they cited that they were feeling emotional about the trauma that they were dealing with. Trainees would think about the victim's family, the young age of the victim, or their own family. They tended to find dealing with relatives traumatic, as well as talking to victims about their problem's, or dealing with the fact that a child was so young. It is possible, that the trainees were not willing to show their emotions at this stage in their career, in order to show that they are in control and coping with the traumatic aspects of the job. This is likely to be important to the trainees, especially as they have just entered a profession with a strong history of 'macho' culture. Orner (2001) reported that emergency service

workers tend to focus on the next job in hand to enable them to retain a sense of personal control and order. The findings are consistent with Ormer's reports, as the majority of trainees cited that they tended to focus on the next job after a traumatic incident.

A significant finding of this study is that the trainees used positive reinterpretation and growth increasingly more often during the three-month period of continual exposure to trauma. The semi-structured questionnaire confirmed this finding by showing that the trainees tended to feel that they had 'grown' from their experiences. The majority reported that they were happier, have more pride, appreciated life more, and have more confidence.

B. Clinical Implications of the Findings

B1. Making Sense of the Findings

The review of the literature and the results of this study show that it is important to describe the effects of psychological constructs as a whole, rather than as separate and isolated. Emotional, cognitive, behavioural, or physiological responses to trauma will influence each other and the effects of these influences should, therefore, be discussed.

Anderson (1995) found that those who were satisfied with their perceived social support also reported lower levels of posttraumatic symptomatology and anxiety than those who were less satisfied with their support networks. Fullerton et al. (1992) found that those who were satisfied with their support network were less likely to suffer depressive symptomatology. After three months of continual exposure to trauma, this study

supports the findings of Anderson and Fullerton. The trainee ambulance technicians perceived high levels of social support, decreased levels of anxiety, low levels of posttraumatic symptomatology, and low levels of depression.

Low levels of anxiety coincided with low responses of avoidant coping such as denial and behavioural disengagement. Tendencies to accept rather than avoid trauma meant that aversive stimuli were unlikely to become conditioned, preventing the onset of general anxiety. In addition to this, a new coping response, positive reinterpretation and growth, was acquired over the three time intervals. Alexander (1993) suggested that gaining a new coping response could account for a reduction in anxiety levels, and could serve as a likely explanation for the two significant findings of this study.

According to Janoff-Bulman (1989), utilising the coping response of positive reinterpretation 'reduces the trauma's attack on victim's assumptive worlds' (p.123). Being able to derive positive gain from trauma enables the new information to fit in with basic assumptions about the world and self. Those who can positively interpret trauma are likely to still see the world as benevolent, meaningful, and themselves as worthy. This study supports this view, as the trainee ambulance technicians were able positively to interpret their experiences throughout being continually exposed to trauma whilst their world assumptions stayed stable.

B2. Clinical Implications

'Relieving the states that make life miserable has relegated building the states that make life worth living to a distant back seat'

(Seligman, 2003, p.127)

This study has highlighted the positive side of being continually exposed to trauma in the emergency services, not only in the development of new coping responses to trauma, but also in the stability of concepts often associated with the negative aftermath of trauma. The clinical implications of this study can be viewed in two different ways. Maintaining and enhancing well-being in those who are psychologically healthy, and promoting positive reinterpretation and growth in those who are traumatised.

B2.1 *Maintaining and Enhancing Well-Being in the Psychologically Healthy*

Mental health professionals will never see the majority of emergency service workers. This is because such workers may thrive, recover independently, or simply survive in the aftermath of trauma. They function within their jobs at a level that does not cause concern. However, this study highlights that emergency service workers can grow in their roles and achieve a high level of satisfaction from their job. Identifying and providing workers with knowledge and techniques could help those who are merely surviving, to recover to their pre-trauma level of functioning, and those who are recovering, to thrive in the aftermath of trauma. The constructs used in this study could be explained along with their potential positive and adverse effects. Knowing how these constructs interact with each other could aid in the identification of emergency service workers' strengths and weaknesses, and how they can enhance their strengths to build on their weaknesses. It is common knowledge that emergency service workers are at a high risk of the negative effects of trauma in their job, yet the vast majority of input from management and mental health professionals will focus on those who are already suffering from its effects, rather than decreasing the likelihood of workers suffering in the future through programmes of awareness and support.

B2.2 *Promoting Positive Reinterpretation and Growth in the Traumatized*

‘An awareness of the potential for positive change following trauma provides a potentially rich seam for therapists to consider in their work with traumatized persons’ (Linley & Joseph, 2003, p. 135). These authors highlight that evidence of incorporating positive reinterpretation and growth in a therapeutic programme for those who have been traumatized is in its early stages and, therefore, the implications are uncertain. However, it is believed that having knowledge and awareness of the potential effectiveness of such constructs could aid those who are suffering in the aftermath of trauma to thrive, once they have recovered. This awareness should not be restricted to mental health professionals, but promoted to supervisors and managers, which will aid enhancement of work-related social support and encouragement to adopt new coping strategies.

Overall, this study will be of interest to mental health professionals, managers, and trainers working within the emergency services. The new knowledge and positive results could provide a boost for recruitment to and appeal of these services, which are normally under immense pressure of financial and working targets.

C. Strengths and Limitations of the Study

The present study appears to have some strengths: -

- This study has identified three important gaps in the existing literature and incorporated all three areas into one piece of research. The specific repeated measures investigation into the effects of continual exposure to trauma upon

new recruits into the emergency services appears not to have been attempted to date. The findings have added to the existing literature pertaining to the psychological effects of trauma.

- The study utilised a repeated measures design, which limited the effects of individual differences by allowing the trainee ambulance technicians to act as their own controls. In addition to this, an independent control group was incorporated into the design to ensure that any significant differences found in the study were due to the effects of work-related trauma.**
- The study incorporated widely used and validated self-report questionnaires in order to assess six psychological constructs. All the measures chosen were particularly suited to the study, as they did not request the participants to refer to a specific trauma.**
- The study utilised qualitative methods and analyses, which enabled enrichment of the findings of the quantitative analysis through content analysis of the participant's responses to semi-structured questions.**
- The study cites the implications of the research and the possible recommendations that could be utilised by the emergency services.**

The following are the limitations of the present study:

- **The main limitation of this study was the limited availability of potential participants and the 53 percent response rate in the final phase from the new recruits who had participated in the initial phase. The training school initially identified 30 new recruits that would be available for participation in the study. Due to some individuals deciding not to take the job of a trainee ambulance technician and some failing to complete the course, the availability of potential participants was reduced to 19. Of the 19 trainee ambulance technicians who agreed to take part in the study, only 10 new recruits completed all three phases. As the two follow-up phases relied on mailing questionnaires to the researcher, it is unknown if the responses of the unaccounted 47 percent would have differed from those who have responded. It is possible that those who did not respond to the follow-up phases after continual exposure to trauma were most psychologically affected in the aftermath of trauma compared to their participating colleagues who adapted positively overall.**
- **The above limitation affects the potential of these results to be generalised to other groups of emergency service workers such as police officers and fire fighters, or possibly to other geographical areas. It is possible that the small sample size of the study could also have overlooked differences within the three month time period that might have been significant in a larger population.**
- **This study highlights the limitations of carrying out a study in the public sector, with individuals who are under immense time pressure with regards to their**

work commitments, and find it difficult to give up time to take part in such studies.

- The present study did not allow for the investigation of factors such as personality variables, which could contribute to the psychological effects of continual exposure to trauma.
- Due to the repeated measures design of the study, anonymity of the participants was not possible, and although confidentiality was promised, this could have affected the honesty of the trainees who were eager to project positive adjustment to the job.

D. Suggestions for Future Research

The findings of this study would be usefully replicated in other groups of the emergency services, such as in new recruits into the fire service and into the police service, and in other geographical areas. This would allow confirmation of the results found in this study regarding the overall positive effects of continual exposure to trauma, and would allow for generalisation of the results.

More longitudinal studies, using follow-up data after six months, nine months, and one year of continual exposure to trauma would allow further investigation into the effects of the psychological constructs upon the continuous experience of trauma, to see whether the new recruits continue to thrive, or even if negative effects of continual exposure to trauma have a delayed onset.

Similar studies, using different psychological constructs such as personality variables would allow for an increasingly accurate insight into the effects of trauma upon new recruits, and could aid in the selection process for emergency service workers who are likely to thrive in the aftermath of trauma.

Further studies could attempt to log details of trauma attended by the participants.

Doing this could identify which traumas tend to lead to personal growth in their aftermath, and which, such as traumatic deaths of children, could have more negative consequences.

E. Conclusion

The purpose of this study was to investigate the psychological effects of continual exposure to trauma on new recruits in the emergency services. Over the three-month period that trainee ambulance technicians from the Tees, East, West, and North Yorkshire catchments area were monitored, positive effects were highlighted. Of the six psychological constructs measured, depression levels remained low, world assumptions were not affected, and perceived social support remained high.

Posttraumatic symptomatology levels decreased significantly. Of the coping responses monitored, all remained at pre-trauma levels, except for positive reinterpretation and growth, which increased significantly. Possibly due to this newly adopted coping response and generally settling into their new role within society, the anxiety levels of the trainee ambulance technicians decreased significantly during the data collection period.

The results of this study add to the existing trauma literature and, in particular, add to the relatively new concept of posttraumatic growth within the field of trauma and its aftermath.

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APPENDICES

APPENDIX A – PERSONAL INFORMATION SHEET

Personal Information Sheet

Please complete in block capitals:

Today's date: ____/____/____

Name: _____

Date of Birth: ____/____/____

Gender (please tick): Male

Female

Marital Status (please state): _____

Ethnicity (please tick): White

Asian

Black

Other _____

Job Title: _____

Work Address: _____

APPENDIX B – HOSPITAL ANXIETY AND DEPRESSION SCALE

Questionnaire 1

Read each item below and circle the reply that comes closest to how you have been feeling in the past week. Don't take too long over your replies; your immediate reaction to each item will probably be more accurate than a long thought-out response. Please answer honestly. Thanks.

- | | |
|--|---|
| 1. I feel tense or 'wound up': | 2. I still enjoy the things I used to enjoy: |
| Most of the time | Definitely as much |
| A lot of the time | Not quite so much |
| From time to time, occasionally | Only a little |
| Not at all | Hardly at all |
| 3. I get a sort of frightened feeling as if something awful is about to happen: | 4. I can laugh and see the funny side of things: |
| Very definitely and quite badly | As much as I always could |
| Yes, but not too badly | Not quite so much now |
| A little, but it doesn't worry me | Definitely not so much now |
| Not at all | Not at all |
| 5. Worrying thoughts go through my mind: | 6. I feel cheerful: |
| A great deal of the time | Not at all |
| A lot of the time | Not often |
| From time to time but not that often | Sometimes |
| Only occasionally | Most of the time |
| 7. I can sit at ease and feel relaxed: | 8. I feel as if I am slowed down: |
| Definitely | Nearly all the time |
| Usually | Very often |
| Not often | Sometimes |
| Not at all | Not at all |
| 9. I get a sort of frightened feeling like 'butterflies' in the stomach: | 10. I have lost interest in my appearance: |
| Not at all | Definitely |
| Occasionally | I don't take as much care as I should |
| Quite often | I may not take quite as much care |
| Very often | I take just as much care as ever |

<p>11. I feel restless as if I have to be on the move:</p> <p>Very much indeed Quite a lot Not very much Not at all</p>	<p>12. I look forward with enjoyment to things:</p> <p>As much as I ever did Rather less than I used to Definitely less than I used to Hardly at all</p>
<p>13. I get sudden feelings of panic:</p> <p>Very often indeed Quite often Not very often Not at all</p>	<p>14. I can enjoy a good book or radio or TV programme:</p> <p>Often Sometimes Not often Very seldom</p>

Now please check that you have answered all the questions

This is the end of Questionnaire 1.

Questionnaire 2

On this questionnaire are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group which best describes the way you have been feeling during the PAST WEEK, INCLUDING TODAY. Circle the number beside the statement you picked. *Be sure to read all the statements in each group before making your choice.*

1.
 - 0 I don't feel much different from most other people my age.
 - 1 I feel somewhat different from most other people my age.
 - 2 I feel so different from most other people my age that I choose pretty carefully who I'll be with and when.
 - 3 I feel so totally alien to most other people my age that I stay away from all of them at all costs.

2.
 - 0 I care as much about the consequences of what I'm doing as most other people.
 - 1 I care less about the consequences of what I'm doing than most other people.
 - 2 I care much less about the consequences of what I'm doing than most other people.
 - 3 Often I think, 'Let the consequences be damned!' because I don't care about them at all.

3.
 - 0 When I want to do something for enjoyment I can find someone to join me if I want to.
 - 1 I'm able to do something for enjoyment even when I can't find someone to join me.
 - 2 I lose interest in doing things for enjoyment when there's no one to join me.
 - 3 I have no interest in doing anything for enjoyment when there's no one to join me.

4.
 - 0 I rarely feel jumpy or uptight.
 - 1 I sometimes feel jumpy or uptight.
 - 2 I often feel jumpy or uptight.
 - 3 I feel jumpy or uptight all the time.

5.
 - 0 I know someone nearby who really understands me.
 - 1 I'm not sure there's anyone nearby who really understands me.
 - 2 I'm worried because no one nearby really seems to understand me.
 - 3 I'm extremely disturbed that no one nearby understands me at all.

6.
 - 0 I'm not able to show my anger because it's no worse or better than anyone else's.
 - 1 I'm sometimes afraid to show my anger because it goes up quicker than some people's.
 - 2 I'm often afraid to show my anger because it might turn to violence.
 - 3 I'm so afraid of becoming violent that I never allow myself to show anger at all.

7.
 0 I don't have any past traumas to feel overly anxious about.
 1 When something reminds me of my past traumas I feel anxious but can tolerate it.
 2 When something reminds me of my past traumas I feel very anxious but can use special ways to tolerate it.
 3 When something reminds me of my past traumas I feel so anxious I can hardly stand it and have no ways to tolerate it.
8.
 0 I have not re-experienced a flashback to a trauma event 'as if I were there again'.
 1 I have re-experienced a flashback to a trauma event 'as if I were there again' for a few minutes or less
 2 My re-experiencing of a flashback to a trauma event sometimes lasts the better part of an hour.
 3 My re-experiencing of a flashback to a trauma event often lasts for an hour or more.
9.
 0 I am less easily distracted than ever.
 1 I am as easily distracted as ever.
 2 I am more easily distracted than ever.
 3 I feel distracted all the time.
10.
 0 My spiritual life provides more meaning than it used to.
 1 My spiritual life provides about as much meaning as it used to.
 2 My spiritual life provides less meaning than it used to.
 3 I don't care about my spiritual life.
11.
 0 I can concentrate better than ever.
 1 I can concentrate about as well as ever.
 2 I can't concentrate as well as I used to.
 3 I can't concentrate at all.
12.
 0 I've told a friend or family member about the important parts of my most traumatic experiences.
 1 I've had to be careful in choosing the parts of my traumatic experiences to tell friends or family members.
 2 Some parts of my traumatic experiences are so hard to understand that I've said almost nothing about them to anyone.
 3 No one could possibly understand the traumatic experiences I've had to live with.
13.
 0 I generally don't have nightmares.
 1 My nightmares are less troubling than they were.
 2 My nightmares are just as troubling as they were.
 3 My nightmares are more troubling than they were.

- 14.**
0 I don't feel confused about my life.
1 I feel less confused about my life than I used to.
2 I feel just as confused about my life as I used to.
3 I feel more confused about my life than I used to.
- 15.**
0 I know myself better than I used to.
1 I know myself about as well as I used to.
2 I don't know myself as well as I used to.
3 I feel like I don't know who I am at all.
- 16.**
0 I know more ways to control or reduce my anger than most people.
1 I know about as many ways to control or reduce my anger as most people.
2 I know fewer ways to control or reduce my anger than most people.
3 I know of no ways to control or reduce my anger.
- 17.**
0 I have not experienced a major trauma in my life.
1 I have experienced one or more traumas of limited intensity.
2 I have experienced very intense and upsetting traumas.
3 The traumas I have experienced were so intense that memories of them intrude on my mind without warning
- 18.**
0 I've been able to shape things toward attaining many of my goals.
1 I've been able to shape things towards attaining some of my goals.
2 My goals aren't clear.
3 I don't know how to shape things toward my goals.
- 19.**
0 I am able to focus my mind and concentrate on the task at hand regardless of unwanted thoughts.
1 When unwanted thoughts intrude on my mind I'm able to recognize them briefly and then refocus my mind on the task at hand.
2 I'm having a hard time coping with unwanted thoughts and don't know how to refocus my mind on the task at hand.
3 I'll never be able to cope with unwanted thoughts.
- 20.**
0 I am achieving most of the things I want.
1 I am achieving many of the things I want.
2 I am achieving some of the things I want.
3 I am achieving few of the things I want.

- 21.**
0 I sleep as well as usual.
1 I don't sleep as well as usual.
2 I wake up more frequently or earlier than usual and having difficulty getting back to sleep.
3 I often have nightmares or wake up several hours earlier than usual and cannot get back to sleep.
- 22.**
0 I don't have trouble remembering the things I should know.
1 I have less trouble than I used to remembering things I should know.
2 I have about the same trouble as I used to remembering things I should know.
3 I have more trouble than I used to remembering things I should know.
- 23.**
0 My goals are clearer than they were.
1 My goals are as clear as they were.
2 My goals are not as clear as they were.
3 I don't know what my goals are.
- 24.**
0 I'm usually able to let bad memories fade from my mind.
1 Sometimes a bad memory comes back to me, but I can modify it, replace it, or set it aside.
2 When bad memories intrude on my mind I can't seem to get them out.
3 I worry that I'm going crazy because bad memories keep intruding on my mind.
- 25.**
0 Usually I feel understood by others.
1 Sometimes I don't feel understood by others.
2 Most of the time I don't feel understood by others.
3 No one understands me at all.
- 26.**
0 I have not lost anything or anyone dear to me.
1 I have grieved for those I've lost and can now go on.
2 I haven't finished grieving for those I've lost.
3 The pain of my loss is so great that I can't grieve and don't know how to get started.

Now please check that you have answered all the questions.

This is the end of Questionnaire 2.

APPENDIX D – WORLD ASSUMPTIONS SCALE

Questionnaire 3

Using the scale below, please select the number that indicates how much you agree or disagree with each statement. Please answer honestly. Thanks.

- 1 = strongly disagree**
2 = moderately disagree
3 = slightly disagree
4 = slightly agree
5 = moderately agree
6 = strongly agree

- | | |
|--|-------------|
| 1. Misfortune is least likely to strike worthy, decent people. | 1 2 3 4 5 6 |
| 2. People are naturally unfriendly and unkind. | 1 2 3 4 5 6 |
| 3. Bad events are distributed to people at random. | 1 2 3 4 5 6 |
| 4. Human nature is basically good. | 1 2 3 4 5 6 |
| 5. The good things that happen in this world far outnumber the bad. | 1 2 3 4 5 6 |
| 6. The course of our lives is largely determined by chance. | 1 2 3 4 5 6 |
| 7. Generally, people deserve what they get in this world. | 1 2 3 4 5 6 |
| 8. I often think I am no good at all. | 1 2 3 4 5 6 |
| 9. There is more good than evil in the world. | 1 2 3 4 5 6 |
| 10. I am basically a lucky person. | 1 2 3 4 5 6 |
| 11. People's misfortunes result from mistakes they have made. | 1 2 3 4 5 6 |
| 12. People don't really care what happens to the next person. | 1 2 3 4 5 6 |
| 13. I usually behave in ways that are likely to maximize good results for me. | 1 2 3 4 5 6 |
| 14. People will experience good fortune if they themselves are good. | 1 2 3 4 5 6 |
| 15. Life is too full of uncertainties that are determined by chance. | 1 2 3 4 5 6 |
| 16. When I think about it, I consider my self very lucky. | 1 2 3 4 5 6 |
| 17. I almost always make an effort to prevent bad things from happening to me. | 1 2 3 4 5 6 |

18. I have a low opinion of myself.	1 2 3 4 5 6
19. By and large, good people get what they deserve in this world.	1 2 3 4 5 6
20. Through our actions we can prevent bad things from happening to us.	1 2 3 4 5 6
21. Looking at my life, I realize that chance events have worked out well for me.	1 2 3 4 5 6
22. If people took preventative actions, most misfortune could be avoided.	1 2 3 4 5 6
23. I take the actions necessary to protect myself against misfortune.	1 2 3 4 5 6
24. In general, life is mostly a gamble.	1 2 3 4 5 6
25. The world is a good place.	1 2 3 4 5 6
26. People are basically kind and helpful.	1 2 3 4 5 6
27. I usually behave so as to bring about the greatest good for me.	1 2 3 4 5 6
28. I am very satisfied with the kind of person I am.	1 2 3 4 5 6
29. When bad things happen, it is typically because people have not taken the necessary actions to protect themselves.	1 2 3 4 5 6
30. If you look closely enough, you will see that the world is full of goodness.	1 2 3 4 5 6
31. I have reason to be ashamed of my personal character.	1 2 3 4 5 6
32. I am luckier than most people.	1 2 3 4 5 6

Now please check that you have answered all of the questions.

This is the end of Questionnaire 3.

Questionnaire 4

This questionnaire asks you to indicate what you generally do and feel when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress. Then respond to each of the following items by choosing one number for each, using the response choices listed below:

- 1 = I usually don't do this at all 2 = I usually do this a little bit**
3 = I usually do this a medium amount 4 = I usually do this a lot

Please try to respond to each item separately in your mind from each other item. Choose your answers thoughtfully, and make your answers as true FOR YOU as you can. Please answer every item. There are no 'right' or 'wrong' answers, so choose the most accurate answer for YOU – not what you think 'most people' would say or do. Indicate what YOU usually do when YOU experience a stressful event.

- | | |
|--|--------------------------|
| 1. I try to grow as a person as a result of the experience. | <input type="checkbox"/> |
| 2. I turn to work or other substitute activities to take my mind off things. | <input type="checkbox"/> |
| 3. I get upset and let my emotions out. | <input type="checkbox"/> |
| 4. I try to get advice from someone about what to do. | <input type="checkbox"/> |
| 5. I concentrate my efforts on doing something about it. | <input type="checkbox"/> |
| 6. I say to myself "this isn't real". | <input type="checkbox"/> |
| 7. I put my trust in God | <input type="checkbox"/> |
| 8. I laugh about the situation. | <input type="checkbox"/> |
| 9. I admit to myself that I can't deal with it, and give up trying. | <input type="checkbox"/> |
| 10. I restrain myself from doing anything too quickly. | <input type="checkbox"/> |
| 11. I discuss my feelings with someone. | <input type="checkbox"/> |
| 12. I use alcohol or drugs to make myself feel better. | <input type="checkbox"/> |
| 13. I get used to the idea that it happened. | <input type="checkbox"/> |
| 14. I talk to someone to find out more about the situation. | <input type="checkbox"/> |
| 15. I keep myself from getting distracted by other thoughts or activities. | <input type="checkbox"/> |
| 16. I daydream about things other than this. | <input type="checkbox"/> |
| 17. I get upset, and am really aware of it. | <input type="checkbox"/> |
| 18. I seek God's help. | <input type="checkbox"/> |
| 19. I make a plan of action. | <input type="checkbox"/> |
| 20. I make jokes about it. | <input type="checkbox"/> |
| 21. I accept that this has happened and can't be changed. | <input type="checkbox"/> |
| 22. I hold off doing anything about it until the situation permits. | <input type="checkbox"/> |
| 23. I try to get emotional support from friends and relatives. | <input type="checkbox"/> |
| 24. I just give up trying to reach my goal. | <input type="checkbox"/> |
| 25. I take additional action to try to get rid of the problem. | <input type="checkbox"/> |
| 26. I try to lose myself for a while by drinking alcohol or taking drugs. | <input type="checkbox"/> |
| 27. I refuse to believe that it has happened. | <input type="checkbox"/> |
| 28. I let my feelings out. | <input type="checkbox"/> |
| 29. I try to see it in a different light, to make it seem more positive. | <input type="checkbox"/> |

- | | |
|---|--------------------------|
| 30. I talk to someone who could do something concrete about the problem. | <input type="checkbox"/> |
| 31. I sleep more than usual. | <input type="checkbox"/> |
| 32. I try to come up with a strategy about what to do. | <input type="checkbox"/> |
| 33. I focus on dealing with this problem and, if necessary, let other things slide a little. | <input type="checkbox"/> |
| 34. I get sympathy and understanding from someone. | <input type="checkbox"/> |
| 35. I drink alcohol or take drugs, in order to think about it less. | <input type="checkbox"/> |
| 36. I kid around about it. | <input type="checkbox"/> |
| 37. I give up the attempt to get what I want. | <input type="checkbox"/> |
| 38. I look for something good in what is happening. | <input type="checkbox"/> |
| 39. I think about how I might best handle the problem. | <input type="checkbox"/> |
| 40. I pretend that it hasn't really happened. | <input type="checkbox"/> |
| 41. I make sure not to make matters worse by acting too soon. | <input type="checkbox"/> |
| 42. I try hard to prevent other things from interfering with my efforts at dealing with this. | <input type="checkbox"/> |
| 43. I go to the cinema or watch television, to think about it less. | <input type="checkbox"/> |
| 44. I accept the reality of the fact that it has happened. | <input type="checkbox"/> |
| 45. I ask people who have had similar experiences what they did. | <input type="checkbox"/> |
| 46. I feel a lot of emotional distress and I find myself expressing those feelings a lot. | <input type="checkbox"/> |
| 47. I take direct action to get around the problem. | <input type="checkbox"/> |
| 48. I try to find comfort in my religion. | <input type="checkbox"/> |
| 49. I force my self to wait for the right time to do something. | <input type="checkbox"/> |
| 50. I make fun of the situation. | <input type="checkbox"/> |
| 51. I reduce the amount of effort I'm putting into solving the problem. | <input type="checkbox"/> |
| 52. I talk to someone about how I feel. | <input type="checkbox"/> |
| 53. I use alcohol or drugs to help me get through it. | <input type="checkbox"/> |
| 54. I learn to live with it. | <input type="checkbox"/> |
| 55. I put aside other activities in order to concentrate on this. | <input type="checkbox"/> |
| 56. I think hard about what steps to take. | <input type="checkbox"/> |
| 57. I act as though it hasn't even happened. | <input type="checkbox"/> |
| 58. I do what has to be done, one step at a time. | <input type="checkbox"/> |
| 59. I learn something from the experience. | <input type="checkbox"/> |
| 60. I pray more than usual. | <input type="checkbox"/> |

Now please check that you have answered all the questions.

This is the end of Questionnaire 4.

Questionnaire 5

Each question has two parts. For the first part, list all the people you know, excluding yourself, whom you can count on for help or support in the manner described. Give each person's initials and their relationship to you (see example). Do not list more than one person next to each of the numbers beneath each question. Do not list more than nine people per question. For the second part, using the scale below, circle how satisfied you are with the overall support you have.

- 6 = very satisfied
- 5 = fairly satisfied
- 4 = a little satisfied
- 3 = a little dissatisfied
- 2 = fairly dissatisfied
- 1 = very dissatisfied

If you have no support for a question, tick the words 'No one', but still rate your level of satisfaction. All your responses will be kept confidential.

Example:

Who do you know whom you can trust with information that could get you in trouble?

- | | | | | | | | |
|-----|------------------|------------------|----|----|---|---|---|
| (a) | No one | 3) Ass (friend) | 6) | 9) | | | |
| | 1) TEN (brother) | 4) PEN (father) | 7) | | | | |
| | 2) LM (friend) | 5) LM (employer) | 8) | | | | |
| (b) | How satisfied? | 6 | 5 | 4 | 3 | 2 | 1 |

1. Whom can you really count on to distract you from your worries when you feel under stress?

- | | | | | | | | |
|-----|----------------|----|----|----|---|---|---|
| (a) | No one | 3) | 6) | 9) | | | |
| | 1) | 4) | 7) | | | | |
| | 2) | 5) | 8) | | | | |
| (b) | How satisfied? | 6 | 5 | 4 | 3 | 2 | 1 |

2. Whom can you really count on to help you feel more relaxed when you are under pressure or tense?

- | | | | | | | | |
|-----|----------------|----|----|----|---|---|---|
| (a) | No one | 3) | 6) | 9) | | | |
| | 1) | 4) | 7) | | | | |
| | 2) | 5) | 8) | | | | |
| (b) | How satisfied? | 6 | 5 | 4 | 3 | 2 | 1 |

3.	Who accepts you totally, including both your worst and best points?						
(a)	No one	3)		6)		9)	
	1)	4)		7)			
	2)	5)		8)			
(b)	How satisfied?	6	5	4	3	2	1
4.	Whom can you really count on to care about you, regardless of what is happening to you?						
(a)	No one	3)		6)		9)	
	1)	4)		7)			
	2)	5)		8)			
(b)	How satisfied?	6	5	4	3	2	1
5.	Whom can you really count on to help you feel better when you are feeling generally down-in-the-dumps?						
(a)	No one	3)		6)		9)	
	1)	4)		7)			
	2)	5)		8)			
(b)	How satisfied?	6	5	4	3	2	1
6.	Whom can you really count on to console you when you are very upset?						
(a)	No one	3)		6)		9)	
	1)	4)		7)			
	2)	5)		8)			
(b)	How satisfied?	6	5	4	3	2	1

Now please check that you have answered all the questions

This is the end of Questionnaire 5.

OPTIONAL QUESTIONNAIRE

Out of the incidents that you have attended since becoming operational, what *specific types* of incident do you consider to be most *traumatic*?

What particular *aspects* of dealing with these incidents is the most traumatic?

In general what has been your *initial* reaction to them?

Did any *thoughts* in particular go through your mind?

What do you *tend* to do after a potentially traumatic incident?

How do you *cope* afterwards?

Do you find it easy to show your *emotions*, or do you tend to keep them inside?

What do you find *helpful* from your colleagues/family/friends?

What, if anything, do you find *unhelpful*?

Do you feel you can talk to people about incidents you have attended? If so, who do you usually talk to the most? Why them?

In what ways, if any, have your *views or beliefs* changed since becoming operational? (about yourself, the world, the future?)

Has becoming an ambulance technician changed you?

**APPENDIX H – ETHICS COMMITTEE RESEARCH PROPOSAL
HULL AND EAST RIDING LOCAL RESEARCH ETHICS COMMITTEE
APPLICATION FORM**

REF NO:
(Office use)

1. Title of project

Psychological Adaptation to Continuous Exposure to Trauma in the Emergency Services

2. Investigators

Name and qualifications of principal investigator:

Cheryl Miller, BSc (HONS)

Appointment(s):

Trainee Clinical Psychologist

Employer:

Hull and East Riding Community Health NHS Trust

Contact Address:

Department of Clinical Psychology
The University of Hull, HU6 7RX

Telephone No:

01482 465933

Fax No:

01482 466155

E-mail:

cherylmiller@aol.com

2.2 Names, qualifications and addresses of other investigators:

There are no other investigators involved in the project

2.3 Name, qualifications and address of research supervisor:

Professor Masud Hoghghi, BA (HONS) PHD CPsYCHOL FBPsS
Department of Clinical Psychology, The University of Hull, Hull, HU6 7RX

2.4 Name, qualifications and address of individual with responsibility for patients in study:

Mr Trevor Molton, Chief Executive,
Tees, East and North Yorkshire Ambulance Service
Ambulance Headquarters, Fairfield, Skipton Road, York, YO30 1XW

2.5 Resume of investigators' experience in field of proposed research and techniques used:

My experience in the field of trauma has been based on assessing and treating both adults and children whilst on clinical placement in year 4 (core adult mental health placement) and in year 5 (core child placement) who were suffering from Post-traumatic Stress Disorder. My knowledge of trauma spans over five years of various trauma-related lectures, in particular a trauma module in year 4 of my training.

My experience of the techniques to be used in the study also spans my five years of training. Tutorial Based Projects in years 1 and 2 and my dissertation in year 3 required the used of data collection and analysis in quantitative studies. Lectures and workshops throughout both my undergraduate and post-graduate years on statistical analysis and research design have given me experience in how to design the most suitable study and the most appropriate statistics to use.

2.6 If research arises from an academic course or qualification, please identify the course/qualification, and the institution:

Doctorate in Clinical Psychology (ClinPsyD)
The University of Hull

3. Sponsors and Funding

Sponsorship includes financial reward, payment in kind, reimbursement of expenses, gifts, provision of equipment, resources, practical or technical expertise.

3.1 Name of commercial sponsor(s):

This project is not sponsored

3.2 Name of non-commercial sponsor(s):

This project is not sponsored

3.3 Value of sponsorship to host institution(s):

Not applicable

3.4 Value of sponsorship to researcher(s):

Not applicable

3.5 Value of payments/expenses to patients/volunteers:

Not applicable

4. The Research Proposal

Detail should be sufficient so that reference to a protocol will not usually be necessary.

4.1 Background (i.e. current knowledge, gaps in evidence).

Past trauma studies have tended to focus on the effects of a single traumatic event upon the individual, and the factors that can either protect individuals from suffering from a traumatic stress reaction or increase the probability of a pathological outcome. This made me question how individuals are affected by continuous exposure to trauma, and in particular how individuals adapt to the repeated traumatisation which is associated with emergency work.

Because of the nature of traumatic events, most trauma research is carried out after the trauma has occurred. This study provides a rare opportunity to assess individuals before, as well as after, trauma.

This research is important; as it will identify how individuals are affected by continuous exposure to trauma and how/if they change in order to protect themselves against a traumatic stress response.

4.2 Objectives, hypothesis, research question.

The research aims to explore how new recruits in the emergency services adapt to the continuous exposure to trauma that is associated with emergency work.

Research Question: What psychological adaptations take place when continually being exposure to trauma in the ambulance service?

Perceived social support:

- There will be a significant change in perceived social support after being continually exposed to trauma (*experimental hypothesis*)

Coping Strategies:

- There will be a significant change in individual coping strategies after being continually exposed to trauma (*experimental hypothesis*)

World beliefs:

- There will be a significant change in world beliefs after being continually exposed to trauma (*experimental hypothesis*)

Additional Research Question: Do individuals suffering from traumatic stress symptomatology experience changes in their perceived social support, coping strategies, and world beliefs?

- Individuals suffering from traumatic stress symptomatology will experience significant changes in their perceived social support, coping strategies, and world beliefs (*experimental hypothesis*)

This research uses a Repeated Measures design. All participants in the experimental group will complete a questionnaire package during their training course before becoming operational (Stage 1). The comparison group will complete the questionnaire package at the same time. The same participants in both groups will then repeat the questionnaires at one month (Stage 2) and at three months (Stage 3) after the experimental group have completed their training.

The study will use several self-report questionnaires: the *Impact of Events Scale* (IES) to measure trauma symptomatology; the *Hospital Anxiety and Depression Scale* (HADS) to measure levels of anxiety and depression; the *Coping Responses Questionnaire* (CRQ) to identify individual coping strategies; the *Social Support Questionnaire* (SSQ6) to identify the perceived level of social support; and the *World Assumptions Scale* (WAS) to identify general world beliefs. The study will also include a personal information sheet to obtain demographics.

An additional stage (Stage 4) will be implemented for six participants from the *experimental group at the end of Stage 3*. These participants will be selected to take part in a semi-structured interview to give a more detailed insight into their experiences since becoming operational in terms of their psychological characteristics and experiences.

5. Research Subjects

5.1 Subject group to be studied, including age and sex.

All participants taking part in this research will be employees of Tees, East and North Yorkshire Ambulance Service NHS Trust. Participants will be newly recruited Ambulance Technicians working in Accident and Emergency (experimental group) and non-emergency employees (comparison group). All participants will be aged between 18 and 65. Both males and females will be approached.

5.2 Total number of subjects (with proportion recruited locally, if relevant) and statistical justification.

Assuming an effect size of 0.5, 17 participants per group would be required to achieve a power of 82% (page 311 of J. Cohen, *Statistical Power Analysis for the Behavioural Sciences*, Academic Press, 1977).

5.3 Indicate whether subjects are

healthy volunteers	<input checked="" type="checkbox"/>	healthy patients	<input type="checkbox"/>
symptomatic patients	<input type="checkbox"/>	other (specify)	<input type="checkbox"/>

5.4 Indicate whether any subjects fall into a special group:

children under 18 years	<input type="checkbox"/>	pregnant/breast feeding women	<input type="checkbox"/>
individuals with comprehension, communication or language difficulties	<input type="checkbox"/>		

subjects over 70 years emergency or intensive care patients
no special group women requiring contraception

5.5 Indicate the type of consent/assent to be obtained from the participant.

written consent verbal consent written assent no consent

Enclose consent/assent form and patient or subject information sheet.

5.6 How will subjects be traced/identified?

The new recruits (experimental group) will be identified through the Training department of TENYAS. The non-emergency employees (comparison group) will be identified through the Personnel department of TENYAS.

5.7 How will subjects be recruited?

The new recruits will be approached whilst in training by the investigator and their trainer and asked to take part in the study. The non emergency employees will be recruited by letter which will outline the details of the study, their involvement, and what they would be required to do if they agree to take part.

5.8 Specify any important inclusion or exclusion criteria:

New recruits and non-emergency employees who have previously worked in the accident and emergency field will be excluded from the study.

5.9 Give details of the management of the patient on completion of the study:
e.g. will patient revert to usual treatment, or stay on the study medication, will follow-up be with investigator or change to another clinician.

No specific management of the participants is required in this study. A debriefing letter will be sent to all participants after the data analysis phase to inform them of the results and implications of the study and to express thanks for their participation.

5.10 State whether and how other medical carers e.g. GP or specialist will be informed of the subject's involvement in the study.

This study does not require other medical carers to be informed of the participant's involvement.

6. Methodology and Treatments

6.1 Indicate whether any treatment(s) or investigative procedure(s) are undertaken in the study:

No procedures involved
Invasive investigation (e.g. blood sampling, cannulation etc)
Drug administration
Radiation administration (e.g. x-ray, gamma radiation)
Other (specify below)

Give detail of procedures and treatment, with doses of drugs/radiation, routes of administration, measurements, tests, etc:

There are no procedures involved

In the event of use of radioactive materials, are doses given are ARSAC approved?

yes []

no (give reasons) []

6.3 Specify individuals responsible for drug or radioactive material administration.

Not Applicable

6.4 Specify whether study involves use of a medicinal product or medical device, the regulatory status and number of a product licence or investigation authority. (CTC, CTX, CTMP, DDX).

The study does not involve the use of a medicinal product or medical device

6.5 Does the use of the product differ from its product licence?

yes (give details) []

no []

6.6 Detail any management/treatment/investigations patients would have had if they were not in the study.

Not applicable

7. Risk Limitation

7.1 Describe potential risks and hazards to trial participants.

Some of the material in the questionnaire package could evoke distressing thoughts for the participants.

7.2 Specify precautions to avoid or limit these risks

The contact name, address, and number of the TENYAS Occupational Health Department will be included in the questionnaire package, if a participant were to become distressed by the content of the questionnaires.

7.3 State which guidelines for Good Research Practice have been made available to researchers involved in this study.

Declaration of Helsinki []

Committee for Proprietary Products Note for Guidance on Good Practice for Trials of Medicinal Products 1990 []

Other guidelines (specify)

Describe any inconveniences to study participants, including limitations or restrictions to normal lifestyle (e.g. fasting, hospital attendance).

The only inconvenience in this study is the time taken to complete the questionnaire package and return the self-addressed envelope.

7.5 Describe any potential benefits of participation in study to patient/patient group.

There are no immediate benefits of participation in this study.

8. Data protection

8.1 How and where and for how long will study data be stored:

Data from the questionnaire packages will be immediately transferred to the investigators computer when they are inputted into a data analysis package and saved onto a floppy disk. The data will be stored for approximately 12-18 months until the thesis is completed.

8.2 How will confidentiality of stored/computerised data be ensured?

Participant's names will be replaced with a number when their data is inputted.

8.3 List the people and organisations with access to data.

Only the investigator will have access to data unless the research supervisor requires access to aid data analysis.

8.4 Are all individuals/organisations with access to these data registered and compliant with the Data Protection Act 1984?

yes [x] no (give reasons) []

8.5 If data is being transferred from one institution to another has the Caldicott Guardian been informed?

Yes [] no []

8.6 If patient information is in any way to be shared outside the Trust, will the patients have given specific consent for this?

Yes [] no []

9. Compensation for death or personal injury

9.1 State which of the following apply:

- The ABPI Clinical Trials Compensation Guidelines 1991 (patient studies) []
- The ABPI Guidelines for Medical Experiments in non-patient volunteers 1988 (healthy volunteer studies) []
- University insurance
- Indemnity certificate from sponsoring body (enclose copy) []
- NHS indemnity
- Other (specify) []

There is no risk of death or personal injury as a result of taking part in this study

9.2 Specify the indemnity arrangements (e.g. via professional organisation) for all staff involved with the study. (e.g. outpatient staff, radiologists, phlebotomists, technicians, junior doctors who perform any study procedure on the subject/patient).

Nurses:

PAMs: Not applicable

Doctors:

10. Host Institution

Indicate which institution(s) are to act as host for your study (This application will be forwarded automatically to the relevant office).

H&EYH NHS Trust	<input type="checkbox"/>	SPONSOR	<input type="checkbox"/>
H & ERCH NHS Trust	<input type="checkbox"/>	OTHER: TENYAS	<input checked="" type="checkbox"/>
		UNIVERSITY OF HULL	<input type="checkbox"/>
		UNIVERSITY OF HUMBERSIDE	<input type="checkbox"/>

10.2 Specify all NHS/University/other departments and services (e.g. service specialities, pharmacy, outpatients, intensive care) involved in any way with the procedures or subjects in the study. State whether formal permission has been granted from the head of each department/service, and whether costings/payments have been agreed.

Department	Organisation	Permission granted and costs agreed by
------------	--------------	--

Tees, East and North Yorkshire Ambulance Service
--

The investigator is currently waiting for formal permission to be granted by the Chief Executive of TENYAS
--

11. Signature of applicant

Print name

Date

C P MILLER

02-05-02

APPENDIX I – PARTICIPANT INFORMATION SHEET

Participant Information Sheet (Treatment Group)

Adaptation to Continuous Exposure to Trauma in the Emergency Services

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Please ask if you would like more information. Take time to decide whether or not to take part. Thank you for reading this.

What is the purpose of this study?

The research aims to explore how new recruits to the ambulance service adapt to the continuous exposure to trauma that is associated with emergency work. The research will look at the differences between individual's answers on structured questionnaires before becoming operational and after becoming operational.

Why have I been chosen?

As a new recruit to TENYAS/WYMAS, you are invited to take part in this research as it is hoped that you would be able to throw light on how ambulance technicians and paramedics adapt to the more emotionally demanding parts of your job.

Do I have to take part?

It is up to you to decide whether or not to take part. If you decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason.

What do I have to do?

If you decide to take part, you will complete a questionnaire package consisting of an information sheet and five questionnaires. The whole package will only take about 30-45 minutes to complete. There will then be a follow-up questionnaire package at one month and at three months after becoming operational.

What are the possible 'costs' of taking part?

The only thing asked of you would be the time taken to complete the questionnaires. If any of the material in the questionnaires evokes distressing thoughts, you can contact the Occupational Health department on (01422) 350791, who will be happy to give you advice.

What are the possible benefits of taking part?

By taking part in the research, you can help to improve the training and support of ambulance technicians and paramedics by identifying the major factors central to successful adaptation to continuous exposure to trauma. The research will help to refine the understanding of how individuals adapt to trauma exposure. In addition, it will provide awareness of the potential impact and possible detrimental effects of continuous exposure to trauma so that support services can intervene at an earlier stage.

Will my taking part in this study be kept confidential?

All information which is collected about you during the course of the research will be kept strictly confidential. As soon as your information is received, your name will be replaced with a number so that you cannot be recognised from it.

Who is carrying out and funding the research?

This research is being carried out by a Clinical Psychologist in Doctoral Training from the University of Hull. The research is funded by Hull and East Riding Community Health NHS Trust.

Who has reviewed the study?

The Hull and East Riding Local Research Ethics Committee have reviewed the study.

Contact for further information

Cheryl Miller
Clinical Psychologist in Doctoral Training
Department of Clinical Psychology
The University of Hull
Cottingham Road
Hull
HU6 7RX

Tel: (01482) 465933

Participant Information Sheet (Control Group)

Adaptation to Continuous Exposure to Trauma in the Emergency Services

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Please ask if you would like more information. Take time to decide whether or not to take part. Thank you for reading this.

What is the purpose of this study?

The research aims to explore how new recruits to the ambulance service adapt to the continuous exposure to trauma that is associated with emergency work. The research will look at the differences between individual's answers on structured questionnaires before becoming operational and after becoming operational.

Why have I been chosen?

As an employee of TENYAS/WYMAS, you are invited to take part in this research. If you decide to take part, you will form part of the 'control group' that the newly recruited ambulance technicians will be compared against. You will play an essential part in the research. A comparison group is needed to ensure that any conclusions drawn from the results are from the effects of work-related continuous exposure to trauma and not from every-day life traumas that the population as a whole may experience.

Do I have to take part?

It is up to you to decide whether or not to take part. If you decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason.

What do I have to do?

If you decide to take part, you will complete a questionnaire package consisting of an information sheet and five questionnaires. The whole package will only take about 30-45 minutes to complete. There will then be a follow-up questionnaire package at one month and at three months after becoming operational.

What are the possible 'costs' of taking part?

The only thing asked of you would be the time taken to complete the questionnaires. If any of the material in the questionnaires evokes distressing thoughts, you can contact the Occupational Health department on (01422) 350791, who will be happy to give you advice.

What are the possible benefits of taking part?

By taking part in the research, you can help to improve the training and support of ambulance technicians and paramedics by identifying the major factors central to successful adaptation to continuous exposure to trauma. The research will help to refine the understanding of how individuals adapt to trauma exposure. In addition, it will provide awareness of the potential impact and possible detrimental effects of continuous exposure to trauma so that support services can intervene at an earlier stage.

Will my taking part in this study be kept confidential?

All information which is collected about you during the course of the research will be kept strictly confidential. As soon as your information is received, your name will be replaced with a number so that you cannot be recognised from it.

Who is carrying out and funding the research?

This research is being carried out by a Clinical Psychologist in Doctoral Training from the University of Hull. The research is funded by Hull and East Riding Community Health NHS Trust.

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Contact for further information

Cheryl Miller
Clinical Psychologist in Doctoral Training
Department of Clinical Psychology
The University of Hull
Cottingham Road
Hull
HU6 7RX

Tel: (01482) 465933

APPENDIX J – CONSENT FORM

Patient Identification Number for this trial:

(to be completed by the researcher)

CONSENT FORM

Title of Project: Adaptation to Continuous Exposure to Trauma in the
Emergency Services

Name of Researcher: Cheryl Miller

1. I confirm that I have read and understood the information sheet attached
for the above project .

2. I understand that my participation is voluntary and that I can withdraw
at any time.

3. I agree to take part in the above study.

Name of Participant

Date

Signature

APPENDIX K – DESCRIPTIVE STATISTICS FOR THE CONTROL GROUP

	N	Minimum	Maximum	Mean	Std. Deviation
HADS-Anxiety 1	8	4	9	6.25	1.58
HADS-Anxiety 2	8	1	7	5.25	1.98
HADS-Anxiety 3	8	0	12	5.50	4.57
HADS-Depression 1	8	1	4	1.63	1.06
HADS-Depression 2	8	1	3	1.50	.76
HADS-Depression 3	8	1	11	3.25	3.41
PENN 1	8	6	25	16.25	5.82
PENN 2	8	5	20	14.63	4.96
PENN 3	8	7	32	15.75	8.22
WAS-Benevolence of the World 1	8	29	41	34.88	4.70
WAS-Benevolence of the World 2	8	29	44	36.63	4.96
WAS-Benevolence of the World 3	8	26	42	35.00	6.12
WAS-Meaningfulness of the World 1	8	20	44	33.38	8.88
WAS-Meaningfulness of the World 2	8	22	49	33.38	9.12
WAS-Meaningfulness of the World 3	8	20	49	32.38	9.05
WAS-Worthiness of the Self 1	8	46	62	56.00	5.35
WAS-Worthiness of the Self 2	8	47	62	55.13	4.76
WAS-Worthiness of the Self 3	8	48	62	54.63	5.29
COPE-Active Coping 1	8	8	13	11.13	1.96
COPE-Active Coping 2	8	8	16	11.63	3.07
COPE-Active Coping 3	8	9	16	11.50	2.39
COPE-Planning 1	8	8	16	11.75	3.01
COPE-Planning 2	8	8	16	11.50	3.02
COPE-Planning 3	8	8	16	11.13	2.80
COPE-Seeking of Instrumental Social Support 1	8	4	15	9.50	3.63
COPE-Seeking of Instrumental Social Support 2	8	4	16	9.63	3.58
COPE-Seeking of Instrumental Social Support 3	8	5	15	10.25	3.49
COPE-Seeking of Emotional Social Support 1	8	4	14	8.50	3.16
COPE-Seeking of Emotional Social Support 2	8	4	16	9.00	4.14
COPE-Seeking of Emotional Social Support 3	8	8	15	9.75	2.38
COPE-Suppression of Competing Activities 1	8	7	13	9.50	1.93
COPE-Suppression of Competing Activities 2	8	6	13	9.00	2.67
COPE-Suppression of Competing Activities 3	8	6	13	9.00	2.39
COPE-Turning to Religion 1	8	4	8	4.63	1.41
COPE-Turning to Religion 2	8	4	8	4.63	1.41
COPE-Turning to Religion 3	8	4	8	4.50	1.41
COPE-Positive Reinterpretation and Growth 1	8	7	16	11.00	2.83
COPE-Positive Reinterpretation and Growth 2	8	8	16	12.00	2.56
COPE-Positive Reinterpretation and Growth 3	8	8	16	11.63	2.72
COPE-Restraint Coping 1	8	5	12	9.13	2.53
COPE-Restraint Coping 2	8	6	10	8.50	1.69
COPE-Restraint Coping 3	8	5	12	8.63	2.39
COPE-Acceptance 1	8	9	16	10.63	2.39
COPE-Acceptance 2	8	7	15	10.75	2.60
COPE-Acceptance 3	8	7	14	11.00	2.27
COPE-Focusing and Venting of Emotions 1	8	4	11	7.75	2.25
COPE-Focusing and Venting of Emotions 2	8	4	10	7.38	2.13
COPE-Focusing and Venting of Emotions 3	8	4	12	7.38	2.67
COPE-Denial 1	8	4	10	6.50	1.85
COPE-Denial 2	8	4	10	5.38	2.33
COPE-Denial 3	8	4	9	5.25	2.05
COPE-Mental Disengagement 1	8	5	12	8.75	2.12
COPE-Mental Disengagement 2	8	5	10	7.38	1.51
COPE-Mental Disengagement 3	8	5	12	8.25	2.60
COPE-Behavioural Disengagement 1	8	4	8	4.75	1.39
COPE-Behavioural Disengagement 2	8	4	8	5.25	1.49
COPE-Behavioural Disengagement 3	8	4	7	5.75	1.16
COPE-Alcohol/Drug Use 1	8	4	11	6.38	2.50

COPE-Alcohol/Drug Use 2	8	4	12	5.63	2.92
COPE-Alcohol/Drug Use 3	8	4	14	6.75	3.54
COPE-Humour 1	8	5	12	8.13	2.53
COPE-Humour 2	8	5	12	9.25	2.87
COPE-Humour 3	8	4	13	9.00	3.42
SSQ-Mean Number of Social Supports 1	8	3	9	5.06	2.09
SSQ-Mean Number of Social Supports 2	8	2	9	4.81	2.36
SSQ-Mean Number of Social Supports 3	8	2	9	4.35	2.20
SSQ-Mean Satisfaction with Level of Support 1	8	5	6	5.60	.33
SSQ-Mean Satisfaction with Level of Support 2	8	5	6	5.75	.33
SSQ-Mean Satisfaction with Level of Support 3	8	5	6	5.73	.34
Valid N	8				

**APPENDIX L – REPEATED MEASURES ANOVA RESULTS
(TREATMENT GROUP)**

FACTOR	F	df	Sig.
HADS-Anxiety	5.99	2,18	0.010**
PENN	8.91	2,14	0.003**
WAS-Benevolence of the World	1.37	2,14	0.287
WAS-Meaningfulness of the World	1.31	2,16	0.297
WAS-Worthiness of the Self	2.18	2,14	0.150
COPE-Active Coping	0.85	2,14	0.448
COPE-Planning	2.15	2,18	0.146
COPE-Seeking of Instrumental Social Support	0.12	2,14	0.886
COPE-Seeking of Emotional Social Support	1.65	2,18	0.220
COPE-Suppression of Competing Activities	0.34	2,18	0.720
COPE-Positive Reinterpretation and Growth	6.32	2,14	0.011*
COPE-Restraint Coping	0.56	2,16	0.580
COPE-Acceptance	1.16	2,14	0.342
COPE-Focusing on and Venting of Emotions	1.77	2,14	0.206
COPE-Denial	0.61	2,18	0.556
COPE-Mental Disengagement	1.57	2,18	0.236
COPE-Behavioural Disengagement	1.31	2,18	0.294
COPE-Humour	0.35	2,18	0.632
SSQ-Mean Number of Social Supports	0.75	2,14	0.490

** = Significant at 1% level

* = Significant at 5% level

**APPENDIX M – REPEATED MEASURES ANOVA RESULTS
(CONTROL GROUP)**

FACTOR	F	df	Sig.
HADS-Anxiety	0.13	2,12	0.880
PENN	0.57	2,14	0.577
WAS-Benevolence of the World	2.50	2,14	0.118
WAS-Meaningfulness of the World	0.20	2,14	0.820
WAS-Worthiness of the Self	1.04	2,14	0.380
COPE-Active Coping	0.32	2,14	0.730
COPE-Planning	0.68	2,14	0.525
COPE-Seeking of Instrumental Social Support	0.45	2,14	0.646
COPE-Suppression of Competing Activities	0.82	2,14	0.459
COPE-Positive Reinterpretation and Growth	2.05	2,14	0.165
COPE-Restraint Coping	0.67	2,14	0.527
COPE-Acceptance	0.39	2,10	0.690
COPE-Focusing on and Venting of Emotions	0.33	2,14	0.724
COPE-Denial	3.78	2,10	0.060
COPE-Mental Disengagement	2.18	2,14	0.150
COPE-Behavioural Disengagement	3.78	2,10	0.060
COPE-Humour	1.65	2,14	0.228
SSQ-Mean Number of Social Supports	2.33	2,12	0.140
SSQ-Mean Satisfaction with Social Supports	1.38	2,12	0.288