PROFESSIONAL DOCTORATES

# Trauma and psychosis : attributional style and symptomatology in emergency paramedics.

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# Trauma And Psychosis: Attributional Style And Symptomatology In Emergency Paramedics

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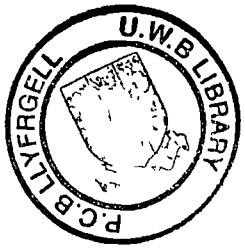

**Abstract**

There is little research exploring the links between positive psychotic phenomena such as persecutory delusions and PTSD. Despite similarities in symptomatology and similarities in the cognitive models of both disorders, few researchers have addressed the question of what factors influence outcome (PTSD or persecutory delusions) following traumatic life events. There is some evidence to suggest PTSD can develop as a result of the experience of psychosis and conversely, some research suggests psychotic symptoms can sometimes occur following traumatic life events. This study explores the role of attributional style and the search for meaning following traumatic life events as a central mechanism in the development of both PTSD and persecutory delusions. A postal survey design was used to assess PTSD and delusional symptomatology in emergency ambulance workers. Participants completed a battery of questionnaires designed to measure PTSD and delusional symptomatology as well as measures of specific and general attributional style. A measure of post-traumatic beliefs was also included.

The final sample comprised 51 emergency ambulance workers and their responses suggested that the likely rate of PTSD among this sample was 51 percent. The results suggested that in this sample, a self-blaming attributional style was associated with delusional symptomatology and that length of time spent in the emergency ambulance service may be associated with higher rates of PTSD symptomatology. Furthermore, those who met caseness for PTSD may hold delusional beliefs with more conviction and preoccupation as well as finding these beliefs more distressing than those who display less symptomatology. In keeping with the literature on PTSD, it was also discovered that self-blame and negative beliefs about oneself in relation to the cause of the traumatic event seem to predict PTSD symptomatology.

The discussion of these findings considers: the relationship between PTSD and delusional symptomatology, implications for clinical practice, implications the emergency ambulance service, and directions for future research.

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# Trauma And Psychosis: Attributional Style And Symptomatology In Emergency Paramedics

Abbreviated title: Trauma And Psychosis: Attributional Style And Symptomatology

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## Introduction

There is currently a great deal of debate about the similarities between the symptoms of Post Traumatic Stress Disorder (PTSD) and the symptoms of psychosis. Much of this discussion is focused on the potential direction of causality, fuelled by a number of studies (Meuser, Trumbetta, Rosenberg, Vidaver, Goodman, Osher, & Auciello, 1998) demonstrating that there are high levels of life-time trauma in the histories of patients with psychosis and other severe mental health disorders, and the similarities in symptom profile between PTSD and psychosis (Fowler, 1997; McGorry, 1991; Shanner & Eth, 1989; Stampfer, 1990). Another relatively small body of literature has shown that PTSD is present in patients with a primary diagnosis of psychosis and that the experience of becoming psychotic may in itself be sufficient to produce PTSD in some individuals (Lundy, 1992; McGorry, 1991, 1995; Shaner & Eth, 1989; Shaw et al.,1997; Williams-Keeler et al., 1994).

However, there appears to be very little literature that addresses the question of what mediates symptom presentation (in particular PTSD or psychosis) following a traumatic life event. Many individuals will experience the symptoms of PTSD following a traumatic life event and then over the following weeks or months recover (Ehlers & Steil, 1995). However, others go on to develop chronic PTSD symptoms. Some individuals present with symptoms that fit with a diagnosis of schizophrenia or a psychotic disorder. It is in this context that this investigation explores some cognitive factors common to both disorders in an attempt to gain further insight into the way in which individuals process traumatic experiences and how outcome, adjustment and symptomatology is determined. The role of causal attributions and beliefs developed in

an attempt to create meaning following traumatic events is examined as a potential factor for the development of positive psychotic symptoms and PTSD. Clinical and research implications are also discussed.

## *Defining Terms*

### *Post Traumatic Stress Disorder (PTSD)*

The psychopathology of trauma is currently conceptualised clinically in terms of Post Traumatic Stress Disorder (PTSD). The diagnostic criteria for PTSD are defined by the American Psychiatric Associations' Diagnostic and Statistical Manual of Mental Disorders (DSM). This suggests that PTSD may develop following an event by which the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others. In addition, where the person's response involved perceptions of intense fear, helplessness or horror (APA, DSM-IV, 1994).

The PTSD syndrome includes recurrent and persistent symptoms relating to: (i) the re-experiencing of the event (e.g. intrusive thoughts and images, re-enactment, dreams); (ii) avoidance of related stimuli (e.g. memories, thoughts, feelings, activities, situations) or numbing of general responsiveness (e.g. diminished interest, constricted affect, estrangement, detachment); and (iii) increased arousal (e.g. sleep/ concentration difficulties, irritability, hypervigilance, startle response). See Appendices 1 and 2 for DSM-IV and ICD-10 diagnostic criteria.

While the lifetime prevalence of PTSD in the general population has been estimated to be eight to nine percent (Breslau, Davis, Adreski & Peterson, 1991), it is important to recognise that PTSD is a common reaction to trauma and that most people will experience some of these symptoms in the immediate aftermath of the traumatic life event. A sizeable proportion of individuals will recover in the following weeks or months, but in a significant sub-group the symptoms persist, often for years (Ehlers & Clark, 2000; Rothbaum, Foa, Rigs, Murdock, & Walsh, 1992).

*Psychosis*

Psychotic disturbance refers to the presence of delusions, hallucinations, or marked thought disorder (Shaw, McFarlane & Bookless, 1997). These disturbances are present in a range of psychiatric disorders listed in DSM-IV and are categorised as 'Schizophrenia and other psychotic disorders' (see Appendix 3 for DSM-IV diagnostic criteria for these disorders).

Although traditionally these symptoms have been associated with the 'schizophrenias' (i.e. schizophrenia and schizophreniform disorder), psychotic symptoms can occur in discrete episodes (e.g. brief psychotic disorder, DSM-IV) and may occur concurrently with major mood disorders (e.g. schizoaffective disorder, DSM-IV) (see Appendix 3 for DSM-IV diagnostic criteria for these disorders).

It is also common that a range of disorders or syndromes may manifest during the early stages of a psychotic episode and this has been termed 'diagnostic flux' (McGorry, 1997).

Many attempts have been made to increase the reliability of diagnosing schizophrenia by means of standardised psychiatric assessments e.g., Research Diagnostic Criteria (Spitzer, Endicott and Robbins, 1978); the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 1994); and the Present State Examination (PSE; Wing, Cooper and Sartorius, 1974). All have increased the reliability of classification, but there have been no successful attempts at independently validating schizophrenia (Bentall, 1990).

The notion of different psychotic symptoms belonging to a discrete syndrome is clearly flawed, as psychotic phenomena appear in other diagnostic groups, and research suggests that the tendency to hallucinate and bizarre (delusional) thinking appears to be spread across the population at large (Claridge, 1990).

The recent shift towards a cognitive, symptom-focused approach to psychosis (Chadwick, Birchwood, & Trower, 1996) has highlighted the arbitrary nature of placing disorders such as schizophrenic, affective and other forms (eg. drug-induced) of psychosis in discrete diagnostic categories.

It is common for researchers to classify the symptoms of psychosis into two groups. Negative symptoms include: poverty of speech, attentional impairment, apathy and anhedonia. It is generally agreed that positive symptoms include: auditory hallucinations, somatic passivity, thought insertion, thought withdrawal and thought broadcast. Delusional perception (a normal perception that is perceived as having special, highly personal significance) and delusions that the person's actions, impulses

or feelings are being imposed or controlled by an external agent are also considered to be positive symptoms. Persecutory delusions also fall into this category (Bentall, 1990).

*Delusions*

Defining delusions is difficult. Traditionally, they were viewed in terms of qualitative differences between delusions and other beliefs. Jaspers (1963) argued that abnormal beliefs, in general, are held with extraordinary conviction, have bizarre or impossible content and are impervious to counter-argument or the impact of experience. More recently, Berrios (1991) suggests that delusions are not beliefs at all but, "empty speech acts, whose informational content refers to neither the world or self. They are not the symbolic expression of anything" (p.12).

However, traditional methods of defining delusions have been challenged by a call to define delusions (and hallucinations) as points on a continuum with normality. A person's position on this continuum is influenced by dimensions of thought and behaviour, such as degree of belief conviction and the extent of preoccupation with the belief (Strauss, 1969) and how much distress the belief causes the individual (Garety and Hemsley, 1994). In addition, delusions have also been shown to vary in terms of resistance to modification, interference with social functioning and pervasiveness (Garety and Hemsley, 1994). As opposed to minimising individual differences and commonality with other beliefs, this perspective embraces them and elevates them to the position of defining characteristics.

Further evidence for the dimensional or continuum view is that when psychometric testing of psychosis-proneness in non-psychotic individuals was undertaken, it was discovered that individuals scoring highly on such measures resemble psychotic individuals on a number of experimental correlates (Peters, Joseph, & Garety,1999). Furthermore, delusions tend to concern certain themes (particularly themes of persecution or grandiosity, which pertain to the person's position in the social universe) which suggests that, contrary to Berrios (1991), these kinds of beliefs do have meaning (Bentall, Kinderman & Kaney, 1994). Specifically, Bentall et al. (1994) suggest that the apparent intentionality (meaningfulness) of delusional beliefs means that it might be profitable to investigate content-specific information processing biases in deluded patients.

Bentall et al. (1994) have suggested that paranoid delusions are the result of cognitive abnormalities in relation to over-attention to threat-related stimuli, an explanatory bias towards attributing negative outcomes to external causes and biases in information processing relating to the self-concept.

Cognitive approaches to the study of delusions have provided us with some information regarding the mental processes exhibited by people who hold delusional ideas. Garety & Hemsley (1994) have demonstrated that people experiencing delusions exhibit overconfidence in their judgements, make rapid decisions, jump to conclusions and tend to focus on current stimuli.

*Continuum model*

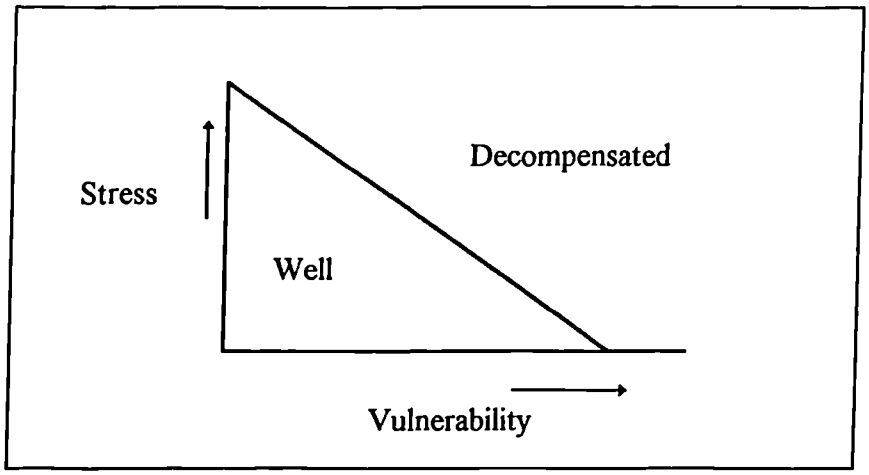
The advantage of a continuum model in explaining psychotic phenomena is that it allows for the inclusion of those experiencing bizarre ideas or vivid visual perceptions into mainstream society. Categorical definitions of these experiences could be seen to essentially exclude, pathologise and marginalise individuals. Those who report these types of experiences can be seen as distinctly different, rather than similar in many ways. It may be a lot easier and more comfortable to our sense of mental well-being to point out the differences between ourselves and those who may act in a strange or unusual way. The work of Bentall et al. (1991), Romme and Escher (1989), and Kingdon and Turkington (1993) has advanced the issue of psychological phenomena lying on a continuum with normality.

The notion has also been supported by Strauss (1989) who states: "Considerable evidence indicates that over periods of improvement, (patients') symptoms may fade slowly through intermediate levels of experience. Hallucinations may be more and more dimly perceived until they disappear entirely. Delusions can gradually lose their power and cease to exist" (p.27). Strauss, although refraining from dismissing the concept of schizophrenia altogether as others have done, does suggest that it might be more adequately described as, " a point or series of points on a functional continuum" (p. 585). He continues:

"Schizophrenia and the symptoms that characterise it are understandable exaggerations of normal function and not exotic symptoms superimposed on the personality. When

the distortions or exaggeration of certain psychological functions reach a certain level of eccentricity or begin to impair social function they are called symptoms." (p. 585)

**Figure 1.** Vulnerability-stress interaction (after Zubin & Spring, 1977).




*Vulnerability-stress interaction*

Although psychotic symptoms can be related to normal behaviour, it is necessary to consider why some individuals exhibit psychotic symptoms and go on to be diagnosed as suffering from a schizophrenic illness. Over the last 20 years it has become widely accepted that the important factors here are the interaction between the individuals' inherent vulnerability and the events or circumstances that they find themselves experiencing. Zubin and Spring (1997) developed the concept of vulnerability-stress diathesis (i.e., predisposition). Their hypothesis is summarised by Figure 1. They suggest that:

"as long as the stress induced by challenging events stays below the threshold of vulnerability, the individual...remains well within the limits of normality. When the

stress exceeds the threshold, the person is likely to develop a psychopathological episode of some sort... when the stress abates and sinks below the vulnerability threshold, the episode ends"(p.110).

It follows then that it is possible for anyone to experience symptoms that fall somewhere along the psychotic spectrum, as several studies have shown. Alcohol withdrawal and other organic confusional states like those produced by severe infections and drugs including amphetamines, LSD and cocaine have been observed to induce hallucinations, delusions and thought disorder indistinguishable from those observed in psychotic disorders (Kingdon and Turkington, 1993).

Furthermore, there is clinical evidence which demonstrates that psychotic symptoms can also occur in situations where there is no organic basis, such as sleep deprivation (Oswald, 1974), solitary confinement (Grassian, 1983) and sensory deprivation (Vernon, 1963). Such symptoms have been observed in six medical students who had no psychiatric histories after being deprived of sleep for 108 hours. After considering the results of this experiment Oswald (1974) concluded that, "the irrational thinking of sleep-deprived persons....resembles that of certain mental illnesses, notably paranoid schizophrenia" (p. 59).

Further support for the continuum approach can be taken from a study by Bentall and Slade (1985) who reported that 17 percent of undergraduate students said that they had often heard their thoughts being spoken aloud (which is generally considered a diagnostic symptom of schizophrenia).

Research has also shown that it is quite common for people to hold bizarre, unusual or unscientific beliefs. A Gallup poll (Cox and Cowling, 1989) which involved interviews with 60,000 British adults revealed that 68 percent of those interviewed believed in God, over 50 percent thought that thought transference between two people was possible, over 50 percent thought it possible to predict something that was going to happen before it did, and over 25 percent believed in ghosts.

U.S. research (Gallup and Newport, 1991) has also demonstrated that 25 percent of a non-psychiatric sample believe in telepathic experiences, 25 percent believe in ghosts, 10 percent believe that they have talked to the devil and 14 percent believe that they have seen an unidentified flying object (UFO).

It would therefore be reasonable to approach the study of psychotic symptoms with the assumption that most people under sufficiently stressful circumstances can experience these phenomena. Furthermore, the continuum approach to symptoms allows us to approach this subject with an awareness of social context.

### *Symptom overlap in PTSD & Psychosis*

The study of possible links between PTSD and psychosis is not a simple one due to the similarity of their symptoms. Just as the symptoms of psychosis can be categorised as either positive or negative clusters, so can those of PTSD (McGorry, 1991). Some of the negative symptoms of PTSD, such as emotional numbing, affective constriction, estrangement from others, difficulty concentrating, feelings of de-realisation,

detachment and general neglect overlap significantly with negative symptoms of psychosis (Fowler, 1997; McGorry, 1991; Shanner & Eth, 1989; Stampfer, 1990).

In terms of positive symptoms, there is a close similarity between the hallucinations and delusions associated with psychosis and the intrusive thoughts, images and 'flashback' experiences considered the hallmark symptoms of PTSD (Calhoun and Resick, 1993; Ehlers and Stein, 1995; Foa, Steketee and Rothbaum, 1989). These 'flashbacks' or intrusive recollections often take the form of auditory, visual, tactile, and/or olfactory hallucinations and are often accompanied by paranoia (Allen and Coyne, 1995; Butler, Meuser, Sprock and Braff, 1996; Heins, Gray, & Tennant, 1990; Romme and Escher, 1989; Sansonnet-Hayden, Haley, Marriage, & Fine, 1987; Shaner and Eth, 1989). Other shared positive symptoms include increased levels of arousal and hypervigilance (Stamfer, 1990). In addition the disturbed sleep patterns and post-traumatic nightmares of PTSD may appear as the interrupted sleep often seen in psychosis (Kinzie and Boehnlein, 1989). Furthermore, both PTSD and psychosis constitute an assault on the self-esteem of the individual which has been cited as contributing to the high suicide rates seen in both conditions (Williams-Keeler, Milliken, and Jones, 1994).

The similarity between the two disorders is potentially problematic as PTSD may be misdiagnosed (Butler et al., 1996; Van Der Hart, Wiztum & Friedman, 1993) or unrecognised (Meuser et al., 1998), and therefore inappropriate treatment may be given such as antipsychotic medication (Marmar, Foy, Kagan and Pynoos, 1994).

The relationship between these two disorders continues to fuel controversy and the association between the two disorders has been conceptualised in a variety of ways. However there are two approaches which seem to have attracted significant support:

1. The experience of a psychotic episode may lead to the development of PTSD.
2. Psychosis may develop as a reaction to traumatic life events and represents one possible outcome amongst a range of trauma-related disorders including PTSD.

**The relationship between trauma and psychosis: *PTSD as a reaction to psychosis***

This perspective holds that PTSD and psychosis are essentially different disorders. In addition it suggests that the state of acute psychosis and/or the resultant hospitalisation in a psychiatric setting may in itself be sufficient to trigger the development of PTSD (Lundy, 1992; McGorry, et al., 1991, 1995; Shaner & Eth, 1989; Shaw et al.,1997; Williams-Keeler et al., 1994).

Furthermore a substantial minority (44 percent) of patients has been demonstrated to display levels of PTSD symptoms that indicate clinical caseness in relation to the experience of compulsory or voluntary detention in a psychiatric setting (Morrison, Bowe, Larkin & Nothard, 1999).

PTSD may occur in the wake of a range of extreme stressors (APA, 1980, 1987), including severe physical illness (Kutz, Garb, & David, 1988). Before DSM IV (APA, 1994) revised the diagnostic criteria, the experience of acute psychosis and its contemporary management usually satisfied criterion A in the DSM-III (APA, 1980)

and DSM-III-R (APA, 1987) operational definitions of PTSD, in that it is outside the range of usual human experience and would be markedly distressing to almost anyone. However, the limited research into the prevalence of PTSD after acute psychosis and its relationship to other sequelae of psychotic disorders perhaps reflects the general difficulty in identifying cases of PTSD (Kolb, 1989; Singh, 1986), which in turn arises from the nature of the psychopathology.

**The relationship between PTSD and psychosis: *Psychosis as a reaction to trauma***

There is much speculation about the relationship between traumatic life events and the development of psychosis; particularly the association between childhood sexual abuse (CSA), physical abuse, or interpersonal violence. Surveys have indicated that between 34 percent and 53 percent of patients with severe mental illness report childhood sexual or physical abuse (Greenfield, Strakowski, Tohen, Bateson, & Kolbrener, 1994). Also, estimates of lifetime exposure to interpersonal violence for people with a severe mental illness vary between 48 percent and 81 percent (Hutchings & Dutton, 1993; Jacobson & Richardson, 1987).

Other studies report higher rates of psychotic disorders in groups of individuals with PTSD compared with the general population (Kinzie & Boelihein, 1989), and suggest that positive PTSD symptoms may evolve beyond 'flashback' experiences, to become unrelated to the initial trauma (Butler et al., 1996).

As referred to earlier, psychotic symptoms have been observed in the aftermath of a range of traumatic life events. Grimby (1983) demonstrated that 82 percent of elderly

participants in his study experienced either auditory or visual hallucinations one month after bereavement and, therefore, this could be considered a normal reaction.

It is not uncommon for rape victims and victims of sexual abuse to experience auditory hallucinations, often hearing the voice of the attacker/perpetrator (Morrison, 1998). Furthermore, it is common for victims of sexual abuse to experience flash backs, intrusive images and bodily flashbacks associated with the abuse often years after the event (Heins, Gray, & Tennant, 1990; Sansonnet-Hayden, Haley, Marriage, & Fine, 1987).

Somatic delusions such as Delusional Parasiosis (the belief that one is infested with parasites such as mites, lice, insects or bacteria, often in or under the skin but sometimes internally or around bodily orifices) are also documented following traumatic life events such as rape and sexual assault (Musalek, Bach, Passweg, and Jeager, 1990; Oruc & Bell, 1995).

Furthermore, Beck and van der Kolk (1987) studied chronically hospitalised psychotic women and found that patients reporting histories of childhood incest were more likely to have sexual delusions.

Further evidence that massive trauma can lead to psychotic states can be found by looking at the work of those who studied concentration camp survivors. Eitenger (1964, 1967) in his later work studied survivors in Norway and Israel and found that a core group of patients, particularly those in Israel, clearly met the schizophrenia

criteria of that time which he believed was directly related to the trauma they had experienced in the concentration camps. Klein, Zellermayer, & Shanan (1963) described psychosis among some Nazi concentration camp victims. Beebe (1975), describing a long-term follow-up of Pacific Theater prisoners of World War II, found a marked increase in schizophrenia in those who had the most severe trauma, probably attributable to the relatively more severe trauma these prisoners endured in the Japanese camps.

Kinzie and Boehnlein (1989), in a study of Cambodian refugees who suffered massive trauma as a consequence of the Pol Pot regime, concluded, "Clearly, the symptoms of PTSD and psychosis can coexist and each follow an independent course"(p.195). They go on to say that anti-psychotic drug therapy generally helped the more overt symptoms of psychosis but did not change the PTSD symptoms. Finally, they suggest that a small but definite group of people with massive trauma have schizophrenia-like symptoms which are associated with that trauma.

Meuser, Trumbetta, Rosenberg, Vidaver, Goodman, Osher, & Auciello (1998), in a study of lifetime trauma history in a mixed sample of inpatients and outpatients with severe mental illness[1], found that the rate of PTSD in this group was 43 percent. Considering the lifetime prevalence of PTSD in the general population has been estimated to be 8-9 percent (Breslau et al., 1991; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), studies by Cascardi, Meuser, DeGirolomo, & Murrin (1996), Craine,

[1] Severe mental illness was defined as, "a psychiatric illness resulting in significant impairment in ability to care for oneself, work or meet other role obligations...". All participants had a primary diagnosis (DSM-IV, APA, 1994) other than substance abuse or dependence.

Henson, Colliver, & MacLean (1998) and Meuser et al. (1998) suggest that patients with severe mental illness are at increased risk for having PTSD. These studies are consistent in that they all report high levels of exposure to traumatic life events over the lifetime compared to the general population. Meuser et al. (1998) found that 98 percent of their sample reported exposure to at least one traumatic event over their lives, compared with rates of 39-56 percent of lifetime exposure to trauma in the general population (Breslau et al., 1991; Kessler et al., 1995) using a similar definition for 'traumatic event'. Therefore, it appears that PTSD is a common comorbid disorder for patients with severe mental illness.

Finally, Meuser et al. (1998), found that the number of traumas experienced was predictive of PTSD and this is consistent with studies in the general population (Astin, Ogland-Hand, Coleman, & Foy, 1995; King, King, Foy & Gudanowski, 1996; Resnick & Kilpatrick, 1994.)

Theoretical explanations for the links between PTSD and psychosis are sparse, but Allen et al. (1995) suggest that trauma-induced dissociation and dissociative detachment render individuals vulnerable to psychotic experience. They argue that dissociative detachment undermines the individual's grounding in the outer world, thereby hampering reality-testing and rendering the individual with post-traumatic symptoms, "vulnerable to the nightmarish inner world" (p.332). They develop their formulation by suggesting that severe dissociative detachment renders individuals vulnerable to psychosis because it also robs them of internal anchors - the sense of being connected to one's body, a sense of self or identity, and one's own actions. The

result may not only be impaired reality-testing but also severe confusion, disorganisation and disorientation.

The aetiology of psychosis has been debated extensively, and opinion again can be roughly divided into two arenas; the first, primarily endogenous, governed by biological factors and characterised by a predominance of negative symptoms; and the second, a largely trauma-induced aetiology, characterised by a predominance of positive symptoms (Ellason & Ross, 1997; Ross, Anderson, & Clark 1994; Ross & Joshi, 1992; Van Der Hart, Witzum, & Freidman, 1993).

### *Cognitive models of PTSD and Psychosis*

The similarity between cognitive models of positive psychotic symptoms and cognitive models of PTSD is compatible with the notion that some psychotic symptoms may be trauma induced. In Ehlers & Clark's (2000) cognitive model of persistent PTSD, it is suggested that a key feature of persistent PTSD is that individuals who do not recover naturally are characterised by idiosyncratic negative appraisals of the traumatic event and/ or its sequelae, that have the common effect of creating a sense of serious current threat. This threat can either be external (e.g., the world is a dangerous place, people are dangerous) or internal (e.g., a threat to one's view of oneself as a capable/ acceptable person who will be able to achieve life's important goals). The sense of current threat that is maintained by these negative appraisals is accompanied by intrusions, arousal and strong emotions such as anxiety, anger, shame or sadness. These negative appraisals also prompt a series of dysfunctional cognitive and

behavioural responses that have the short term aim of reducing distress, but have the long-term effect of preventing cognitive change and therefore maintain the disorder.

This explanation is supported by several cognitive models of PTSD that suggest avoidance/emotional numbing or negative symptoms may be used as a defence against the distress caused by intrusive phenomena and therefore creates a short-term reduction in distress (Ehlers & Steil, 1995; McFarlane, 1992; Spurrell & McFarlane, 1995). However, this strategy is ultimately counter-productive as avoidance is thought to play a key role in maintaining intrusions (Ehlers & Steil, 1995).

Similarly, cognitive models of psychosis suggest that positive symptoms such as auditory hallucinations are similar to the intrusions of PTSD, in that they are essentially undesirable cognitive phenomena which, due to their inconsistency with the person's belief system are attributed to an external source in order to reduce the distress in the short-term (Morrison et al., 1995). The distress associated with these externally attributed intrusive thoughts/perceptions is suggested to lead to a variety of maladaptive responses, including avoidance, which in turn maintain the potency of the intrusions (Morrison, 1998).

Cognitive models of persecutory delusions have also highlighted the importance of needing to create meaning for negative events (Lyon, Kaney, & Bentall, 1994). Research has demonstrated that individuals who have discrepancies between their actual view of themselves and their ideal self will, on experiencing a negative life-event, attribute that event to an external source in order to avoid activation of this

latent discrepancy (self-blame and potential subsequent depression) (Lyon et al. 1994; Bentall, Kinderman & Kaney, 1994). Again this form of avoidance reduces distress in the short-term but ultimately leads to persecutory ideation (Lyon et al. 1994; Bentall, Kinderman & Kaney, 1994).

Furthermore, it has been demonstrated experimentally that paranoid individuals make external (other-blaming) attributions for negative events on explicit measures of attributional style, but on implicit (non-obvious) measures, which presumably do not activate self-discrepancies, make internal (self-blaming) attributions for negative events (Lyon, Kaney, & Bentall, 1994).

Also, it has been demonstrated experimentally that paranoid patients preferentially recall negative trait words as well as threat-related words (Bentall, Kaney, & Bowen-Jones, 1995). Two studies have demonstrated that war veterans with PTSD and rape victims with PTSD also selectively attend to threat-related stimuli, whereas control groups who have experienced similar traumatic experiences, but without PTSD, do not (Foa, Fesky, McCarthy and Kozak, 1990; McNally, Kaspi, Riemann, and Zeitlin, 1990). It would seem therefore that attributional style is important in both psychosis and PTSD.

### *Attributional style, trauma and outcome*

Making sense of the event, finding a 'general purpose or pattern of meaning' in it, is a critical task of the individual confronted with serious illness or injury (Moos and Tsu, 1977). Disease, accidents, and criminal victimisation may severely violate an

individual's customary self-view or world-view and pose a serious threat to the individual's "assumptive world" (Epstien, 1973; Janoff-Bulman, 1985; Janoff-Bulman & Lang-Gunn, 1988).

Furthermore, attributions seem to be more readily created for negative events because it is these that individuals want to affect in terms of outcome (Brickman et al., 1980; cited in Janoff-Bulman & Lang-Gunn, 1988). In fact the only attribution that seems to be consistently ruled out by those searching for meaning in the aftermath of a negative event is that of chance alone, because it entails a view of life outcomes as randomly distributed and of one's world as being arbitrary and indiscriminate (Janoff-Bulman & Lang-Gunn, 1998).

Janoff-Bulman (1979) suggested that there are two distinct types of self-blame, one representing an adaptive response, the other a maladaptive one. Behavioural self-blame consists of blaming one's own behaviours for the occurrence of negative outcomes and thus enables the individual to re-establish a sense of invulnerability and perceived control. In contrast, characterological self-blame consists of blaming one's own character or enduring qualities for the occurrence of negative outcomes and this not only precludes a sense of invulnerability and control but is associated with harsh self-criticism, low self-esteem and perceptions of helplessness (Abramson, Seligman, and Teasdale, 1978).

If one looks at these attributional styles in terms of the taxonomic scheme developed by Abramson et al. (1978) in their reformulation of learned helplessness, behavioural

self-blame is an internal, unstable, specific attribution, whereas characterological self-blame is an internal, stable and global attribution. After Abramson et al. (1978) Kinderman & Bentall (1996) developed a more sophisticated method of assessing causal locus (the Internal, Personal and Situational Attributions Questionnaire (IPSAQ)) and concluded that internal attributions for negative events may be associated with depressive reactions, personal-external (blaming another person or persons) attributions for negative events with paranoid ideation, while situational (blaming external circumstances or chance) attributions appear to be psychologically benign.

There is some evidence that causal attributions are related to the development of PTSD (see Joseph, Brewin, Yule, and Williams, 1993 for a review). Individuals with PTSD tend to attribute the trauma to more internal causes (self-blame) than traumatised individuals without PTSD (Ehlers and Steil, 1995). There is also evidence that general attributional style is correlated with PTSD in that individuals with PTSD show more externality for positive outcomes (Ehlers & Stein, 1995).

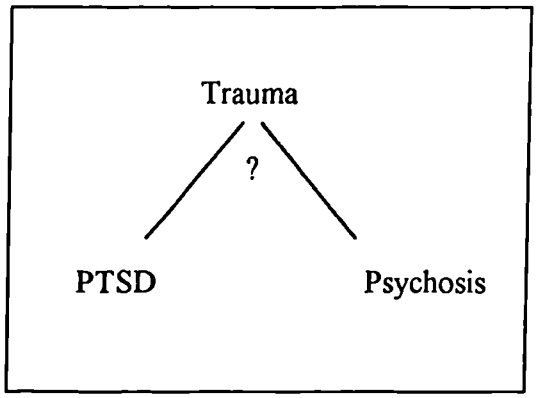
Wenninger and Ehlers (1998), found that highly symptomatic survivors of CSA attributed negative events to more internal, global and stable (characterological self-blame) causes than mildly symptomatic survivors. Similarly, in a prospective study of individuals involved in road traffic accidents, participants who met criteria for PTSD were more likely to attribute negative events to internal causes than participants who did not develop PTSD (Winter & Ehlers, in preperation; cited in Ehlers & Stein, 1995).

Attributional style appears to be a key variable in determining outcome of trauma related illness and type/ severity of symptoms (Janoff-Bulman. 1985). It has also been cited as central to cognitive explanations of both auditory hallucinations and persecutory delusions (Lyon, Kaney, & Bentall, 1994; Morrison, Haddock & Tarrier, 1995).

This divergence in outcome captures the essence of this investigation, which examines some of the factors that may influence whether an individual develops PTSD or psychotic symptoms following a traumatic event. (This question is diagramatically represented in Figure 2. Below)

Cognitive models of PTSD and the positive symptoms of psychosis do appear to share a central tenet, that is, the need to create meaning for negative life-events. Attributional style appears key in both of these areas, in that there is a need to attribute responsibility for negative life events. One can potentially blame oneself, others or the situation. In doing so individuals who experience these disorders demonstrate a form of avoidance which leads to a distorted appraisal of events. In PTSD, research suggests that this avoidance takes the form of thought suppression or physically avoiding situations which might remind one of the event. In paranoid delusions and auditory hallucinations, it seems that this avoidance takes the form of blaming others or placing distressing cognitive phenomena outside one's own self. In the long-term, both produce a sense of persistent threat which is confounded by resultant symptoms such as anxiety and fear which are ultimately maintained by avoidance.

**Figure 2.** Trauma and potential outcome.



## Aims & Hypotheses

*Aims*

The purpose of this investigation is to explore some of the cognitive factors which influence outcome in traumatised individuals and to investigate variance in symptom presentation. This is attempted by addressing the following aims:

(i) To obtain an estimate of the rate of PTSD in a UK sample of emergency ambulance personnel.

(ii) To explore the role of attributional style and blame in relation to symptom presentation and outcome in traumatised individuals.

*Hypotheses*

In response to such aims it is hypothesised that:

1. There will be a higher rate of delusional symptomatology in the high-score trauma group than the low-score trauma group.
2. Internal attributions for the traumatic event and a general internal attributional style will be associated with PTSD-type symptomatology.
3. External attributions for the traumatic event and a general external attributional style will be associated with delusional symptomatology.
4. Self-blame, negative cognitions about the self and negative cognitions about the world in relation to the cause of the traumatic event will be associated with PTSD symptomatology.
5. Negative cognitions about the world will be associated with delusional symptomatology.

## Methodology

### Design

The study used a survey method to gather data from the participants and a correlational design.

### The Participants

*Recruitment*

Participants were recruited from the Greater Manchester Ambulance Service (GMAS). The general manager of the service was contacted and expressed a willingness to be involved in terms of accessing the population under consideration.

*Selection criteria*

The only selection criterion applied to participants was that they must currently be working as either an ambulance technician or a paramedic for the GMAS.

Participation was voluntary and consent was obtained by means of a covering letter (see Appendix 4) which stated that filling in the questionnaires and returning them was to be regarded as consent. Participants were assured that any information provided would be treated as confidential and that their anonymity would be protected.

*The Target Sample*

All 570 GMAS emergency ambulance staff met the above criteria and were contacted as potential participants. They were sent written information about the study with the questionnaires, and contact numbers were provided to ensure that support and advice

was available. After one month a reminder letter was sent to all GMAS emergency staff (see Appendix 4.).

*Final Sample*

The total sample comprised 51 participants and this represented a 9 percent response rate. Although more questionnaires were returned, these were incomplete or spoiled.

There were 43 (84.3 percent) male respondents, seven (13.7 percent) female respondents and one respondent who did not specify gender. Of these 29 (56.9 percent) were paramedics and 21 (41.2 percent) were ambulance technicians, again one participant did not record job title. The length of time served in the service was an average of 194 months (6 months to 384 months). Age of participants ranged from 22 to 56 years of age the mean being 40.

## The Measures

The number of tests included was considered the maximum that could reasonably be expected to be filled in and returned without putting off potential participants, and the minimum necessary to provide the information required by the author to address the aims and hypotheses in question.

*Post-Traumatic Stress Disorder*

PTSD was assessed as a continuous as well as a dichotomous phenomenon.

The 17-item Davidson Trauma Scale (DTS) (Davidson, 1996) was used both as a continuous and dichotomous measure of the frequency and severity of PTSD

symptoms (with five-item intrusion, seven-item avoidance/numbing, and five-item hyperarousal subscales), and rate of PTSD 'caseness' (according to DSM-IV criteria). As the DTS asks respondents to: 'Please identify the trauma that is most disturbing to you', it is completed without reference to a pre-specified traumatic event. However, the covering letter and instructions provided with the questionnaires explained that the questionnaires related to experiences whilst working for GMAS. It also allowed the investigation of the rate and chronicity of PTSD 'caseness' regardless of causal event (see Appendix 5).

Participants rated each DTS item for symptom frequency and severity using a five point scale rated from zero to four, to give a total score range of zero to 136. Higher scores indicate a greater impact of the traumatic event on health and psychological well-being.

The DTS was developed from a large U.S. sample of adults exposed to early sexual abuse, adult rape, combat and hurricane trauma (Davidson, 1996). As relevant to this study, the DTS has been demonstrated to have good divergent validity with personality measures of extroversion-introversion (Davidson, 1996) and good convergent validity, yielding a correlation of .64 with the Impact of Events Scale (IES, Horowitz, Wilner & Alvarez, 1979) (Davidson, Book, Colket, Tupler, Roth, David, Hertzberg, Mellman, Beckham, Smith, Davidson, Katz & Feldman, 1997). It has high test-retest and internal reliability (Davidson, 1996) and the ability to detect treatment effects amongst female psychiatric patients with a history of childhood sexual abuse (Zlotnick, Davidson, Shea & Pearlstein, 1996). Investigations with the aforementioned mixed sample of trauma

survivors suggested a cut-off score of 40 as providing optimal diagnostic accuracy (83 per cent correctly classified as case/non-case) (Davidson, 1996; Davidson et al., 1997).

*The Trauma Questionnaire*

The Trauma Questionnaire (TQ) (Larkin, 1999) is a six item questionnaire which uses *The Internal, Personal and Situational Attributions Questionnaire* (IPSAQ) (Kinderman & Bentall, 1996), as a template. The respondent is asked to identify and state the trauma most disturbing to them and to state when it occurred. The respondent is asked to rate the cause of the trauma on a 0-100 visual analogue scale, in terms of whether it happened because of: a) something about you, b) something about another person (or group of people), (c) something about the situation (circumstances or chance). The respondent is required to rate the same trauma on these dimensions first as they think about it in the present and second as they felt about it at the time of the trauma (see Appendix 6).

*The Post Traumatic Cognitions Inventory (PTCI)*

The 36-item PTCI (Foa, Ehlers, Clark, Tolin and Orsillo, 1999) is a measure of trauma related thoughts and beliefs, with items derived from clinical observations and current theories of post-trauma psychopathology (see Appendix 7). The items load on three factors: Negative Cognitions about Self; Negative Cognitions about the World; and Self Blame. These factors have been shown to have excellent internal consistency and good test-retest reliability; to correlate moderately to strongly with measures of PTSD severity, depression and general anxiety; and to discriminate well between traumatised individuals with and without PTSD (Foa, Ehlers, Clark, Tolin and Orsillo, 1999). The

PCTI compares well with other measures of trauma related cognitions, especially in its superior ability to discriminate traumatised individuals with and without PTSD.

*Attributional Style*

*The Internal, Personal and Situational Attributions Questionnaire (IPSAQ)*

The IPSAQ ( Kinderman & Bentall, 1996) provides a method of assessing causal locus (causal locus refers to the way in which we decide upon the reason or cause of an event) (see Appendix 8). Research has indicated that causal locus may be implicated in severe psychiatric disorders (Buchanan & Seligman, 1995), particularly paranoia (Bentall, Kinderman and Kaney, 1994) and has pointed to the potential utility of taxonomies of causal locus. For positive and negative events two measures of internality are derived from responses on the 32 item questionnaire, a measure of self-blame and a measure of the extent to which external attributions implicate other persons as opposed to situations. In a group of non-psychiatric subjects the IPSAQ sub-scales were found to be adequately reliable (Bentall & Kinderman, 1996). Self-blame was significantly associated with internality scores on the Attributional Style Questionnaire (ASQ) (Peterson, Semmel, Von Baeyer, Abramson, Metalsky and Seligman, 1982) and with depressed mood. Scores representing the proportion of personal as opposed to situational external attributions were significantly associated with an analogue measure of paranoia (Bentall & Kinderman, 1996).

*Delusional Ideation*

The 40-item Peters Delusion Inventory (PDI) (Peters, Joseph, & Garety, 1999) is designed to measure delusional ideation in the normal population, using the Present

State Examination (Wing, Cooper, and Sartorius, 1974) as a template. The multidimensionality of delusions is incorporated by assessing measures of distress, preoccupation and conviction (see Appendix 9). Individual items are endorsed by one in four adults on average. This scale has good internal consistency and its concurrent validity was confirmed by percentages of common variance with three scales measuring stereotypy, magical ideation and delusions. PDI scores have been shown to remain constant up to one year later, demonstrating good test re-test reliability (Peters et al., 1999).

Items 'Suspiciousness', 'Persecution', and 'Paranoia' were found to form individual factors within a factor analysis on the PDI (Peters, Joseph, & Garety, 1999). By summing the scores for questions four, six and nine the Suspiciousness variable was created, similarly for Persecution scores for questions eight, 11, 12, 13 and 14 were grouped and for Paranoia, questions seven and 23 were summed. This allowed the present study to focus on these areas during the statistical testing of the relevant hypotheses.

## The Procedure

The recruitment procedure has already been described under the 'The Participants ' section. As stated, participation was voluntary and confidential.

After providing the general manager of GMAS with a copy of the ethical proposal for this study and obtaining consent to access the target population, arrangements were made for distribution of the questionnaires. This was achieved by arranging for the

payroll department of GMAS to attach a plain A4 envelope containing the questionnaires, a covering letter from the author, supporting letter from the general manager (see Appendix 4) and a free-post envelope (addressed to the author at the clinical psychology training course) to the pay slips of all 570 emergency ambulance staff. The covering letter by the author made it clear that participation was entirely voluntary, anonymous and strictly confidential, as well as being independent of GMAS.

After a period of one month a reminder letter was attached again to the pay-slips of the target sample (see Appendix 4). No further participants volunteered and consequently no additional questionnaires were returned.

## Ethical Approval

Ethical approval was sought and obtained from the University of Wales research ethics committee. As stated above permission to recruit and assess participants for the study was also sought and obtained from the general manager of GMAS.

## Results

Descriptive information outlining the characteristics of the sample is given in Table 1.

**Table 1.** Descriptive information about participants

| | N Valid | N Missing | Mean | Standard Deviation | Range |
|---|---|---|---|---|---|
| Age (Years) | 50 | 1 | 40.38 | 8.80 | 22-56 |
| Gender<br>• Males<br>• Females | <br>43 (84.3%)<br>7 (13.7%) | 1 (2%) | | | |
| Job Title<br>• Paramedic<br>• Technician | <br>29 (56.9%)<br>21 (41.2%) | 1 (2%) | | | |
| Time in Service (Months) | 50 | 1 | 191.78 | 97.51 | 6-384 |
| Time Since Identified Trauma (Months) | 40 | 11 | 67.77 | 80.92 | 1-240 |

**Table1a.**

| | N Valid | N Missing | Score <40 | Score >40 | Mean (SD) | Max Score | Min Score |
|---|---|---|---|---|---|---|---|
| PTSD Caseness & Total Score | 45 | 6 | 22 (49%) | 23 (51%) | 51.88 (35.70) | 128 | 0 |

**Table1b.**

| | N Valid | N Missing | Mean (SD) | Max Score | Min Score |
|---|---|---|---|---|---|
| PDI Total Score | 46 | 5 | 13.08 (10.34) | 40 | 0 |

**Table1c.**

| | N Valid | N Missing | Median | Mean (SD) | Max Score | Min Score |
|---|---|---|---|---|---|---|
| PTCI Total Score | 45 | 6 | 101.00 | 103.60 (35.58) | 175 | 35 |

*Data Screening*

Data were screened for approximation to a normal distribution (skewness and kurtosis were calculated by dividing the statistic skewness or kurtosis by the standard error (skewness or kurtosis) and regarded as acceptable if that figure was within the range of +2 to -2). Statistical transformations were carried out on the following variables: Time (since trauma) , PDI Conviction, Distress, Freqeuncy (preoccupation), IPSAQ Neg-int, Neg-sit, Pos-sit and PTCI Self-blame (see Appendix 10 for summary table). All transformed variables were squared apart from Time which was transformed using a Log transformation.

Reliability analysis was also completed (Cronbach's Alpha) for the data yielded by the questionnaires used in this study. All were found to be reliable and within acceptable parameters (above 0.7) apart from the Trauma Questionnaire (see Appendix 11). Inter-item correlations were also used as a guide to assessing reliability (scores between .2 and .4 were regarded as ideal) and the IPSAQ and TQ were both questionable in this area (see Appendix 11).

*Analysis of descriptive data*

A series of correlational analyses was carried out to investigate potential relationships between age of participants, length of time spent in job (Job Time) and time since identified trauma (Time) with PDI total and sub-scales (Preoccupation, Distress & Conviction), DTS total and sub-scales (Intrusions, Avoidance, Arousal, Frequency & Severity), as well as all six IPSAQ sub-scales (Negative internal, personal, situational

and Positive internal, personal and situational attributions) and PTCI total and sub-scales (negative cognitions about the self, negative cognitions about the world and self-blame). A summary of the significant correlations are presented in Table 2. The correlation matrix for the whole analysis is presented in Appendix 12.

A number of independent-sample t-tests were also conducted to establish any differences between the responses of technicians and paramedics (Job Type) and males or females (Gender), on the questionnaires described above (see Appendix 13).

**Table 2.** Summary of significant results from correlational analysis of descriptive data.

| | DTS TOTAL | DTS INTRU | DTS AVOID | DTS AROUS | DTS FREQ | DTS SEV | IPSAQ POSPERS | IPSAQ NEGINTt |
|---|---|---|---|---|---|---|---|---|
| Pearson correlation | | | | | | | | |
| Age | .300 | .315 | --- | .321 | --- | --- | -.358 | --- |
| Jobtime | .391 | .392 | .341 | .352 | .295 | .295 | --- | .320 |
| Timet | --- | --- | --- | --- | .403 | .367 | --- | --- |
| Sig(2-tailed) | | | | | | | | |
| Age | .045 | .035 | --- | .031 | --- | --- | .018 | --- |
| Jobtime | .008 | .008 | .022 | .018 | .049 | .049 | --- | .039 |
| Timet | --- | --- | --- | --- | .006 | .013 | --- | --- |
| N | | | | | | | | |
| Age | 45 | 45 | --- | 45 | --- | --- | 43 | --- |
| Jobtime | 45 | 45 | 45 | 45 | 45 | 45 | --- | 42 |
| Timet | --- | --- | --- | --- | 45 | 45 | --- | --- |

Key: DTS= Davidson Trauma Scale, DTSArous= Arousal sub-scale, DTSAvoid= Avoidance sub-scale, DTSIntru= Intrusions sub-scale, DTS Sev= Severity subscale & DTS Freq= Frequency sub-scale.
IPSAQ= Internal Personal and Situational Attributions Questionnaire, POSPERS= positive personal attributions, NEGINT= negative internal attributions.
t=Transformed variable.

This analysis revealed that 'Job Time' and 'Age' was significantly associated with DTS Total score, Intrusion, Avoidance and Arousal sub-scales. This suggests that level of

trauma-related symptoms increase in relation to the length of time spent in the job and age of participants.

To investigate this finding further, a partial correlation was performed correlating Age and DTS Total controlling for Job Time. This analysis revealed that there was no significant relationship between Age and PTSD symptoms once Job Time is controlled for ($r=.0357$, $n=42$, $p=.818$).

A second partial correlation was performed correlating Job Time with DTS total, controlling for Age. This analysis revealed that relationship between Job Time and DTS Total did not remain significant when controlling for Age ($r=.2562$, $n=42$, $p=.082$).

Conducting partial correlations where the independent variable (e.g. Age) is so highly related ($r=.734$, $n=50$, $p=.000$) to the control variable (e.g. Job Time) by definition reduces the power of the association.

However the size of the partial correlation is clearly greater between Job Time and DTS Total compared with the partial correlation between Age and DTS Total (whilst controlling for Age and Job Time respectively).

This suggest that while neither Age or Job Time affect level of trauma while controlling for the other, nonetheless Job Time may be the more important factor in terms of PTSD symptoms.

This speculation is reinforced by the finding that negative internal attributions are significantly associated with length of time spent in the job, as are frequency and severity of PTSD symptoms, whilst the age of participants is unrelated to these variables. This suggests that the longer one spends in the ambulance service, the more one is likely to have a self-blaming attributional style for negative events and more frequent and severe PTSD symptoms.

Furthermore, the t-tests conducted indicate that the ambulance technicians who responded score higher on PTCI self-blame items than do paramedics ($t(42)=1.74$, $p= 0.02$), and that males also score higher than females on this item paramedics ($t(42)=1.74$, $p= 0.02$), (see Appendix 13).

### *Analysis of Hypothesis I*

***There will be a higher incidence of delusional symptomatology in the high-score (caseness) trauma group than in the low-score (not caseness) trauma group.***

To investigate this hypothesis, a multivariate analysis of variance (MANOVA) was performed using 'caseness' (those scoring above 40 and below 40 on the DTS) as the grouping factor and Total and subscales from the PDI relating to conviction, distress, and preoccupation of delusions as the dependent variables. This analysis revealed a non-significant multivariate effect (Wilk's Lambda was 0.78, $F(4,36)= 2.41$, $p= 0.067$). This statistic refers to the combination of dependent variables inputted into the MANOVA, and does not describe the relationship between caseness and the individual dependent variables.

As this study is of an exploratory nature, follow-up univariate F-tests were completed and revealed significant group differences for the PDI sub-scales; 'distress' ($F(1,39)=7.28$, $p=0.010$) 'conviction' ($F(1,39)=6.00$, $p=0.019$) and 'preocupation' ($F(1,39)–6.56$, $p=0.014$). See Table 3. for summary.

**Table 3.** Univariate F-tests for PDI Total and Sub-scales using caseness as grouping factor.

| Variable | Not-Caseness Mean (SD) | Caseness (>40) Mean (SD) | F | Sig. Of F |
|---|---|---|---|---|
| PDITOTAL | 10.85 (11.71) | 16.15 (9.32) | 2.54 | 0.119 |
| PDI Conviction† | 4.49 (2.65) | 6.58 (2.80) | 6.00 | 0.019 |
| PDI Distress† | 3.96 (2.52) | 6.30 (3.00) | 7.28 | 0.010 |
| PDI Preoccupation † | 3.98 (2.52) | 6.06 (2.60) | 6.56 | 0.014 |

†=Transformed variable.

To investigate this hypothesis more specifically, a MANOVA was carried out using caseness as the grouping factor and the factors from the PDI that specifically related to paranoid delusions (paranoia, persecution and suspiciousness) as dependent variables. This revealed no overall multivariate effect (Wilk's lambda was 0.92, $F(3,40)=1.11$, $p=.353$), nor did any of the univariate F tests within it reach significance (see Table 4).

Therefore, although the hypothesis is not supported overall, significant differences on the PDI subscales indicate that those scoring above caseness on the DTS hold their delusional beliefs with greater levels of conviction, distress and preoccupation than those who score below the cut-off for caseness on the DTS.

**Table 4.** Summary of univariate F-tests relating to paranoia items with DTS caseness as grouping factor.

| Variable | Not-Caseness Mean (SD) | Caseness (>40) Mean (SD) | F | Sig. Of F |
|---|---|---|---|---|
| PDI Paranoia | 1.45 (1.33) | 1.59 (1.36) | 0.11 | 0.74 |
| PDI Persecution | 1.50 (1.68) | 2.31 (1.91) | 2.26 | 0.13 |
| PDI Suspiciousness | 1.40 (1.18) | 1.90 (1.10) | 2.09 | 0.15 |

## *Analysis of Hypothesis II*

***Internal attributions for the traumatic event and a general internal attributional style for negative events will be associated with PTSD symptomatology***

To investigate specific attributional style in relation to the identified traumatic event, a non-parametric correlational analysis (Spearman's rho) was performed because the Trauma Questionnaire (TQ) subscales could not be normalised using transformations.

DTS Total and subscales (Intrusions, Avoidance and Arousal) were correlated with TQ question 1A (internal attributions for the cause of the traumatic event at the time of the trauma) and TQ question 2A (internal attributions for the cause of the traumatic event now) and revealed no significant relationships (see Table 5).

**Table 5.** Correlational analysis of DTS total and sub-scales with TQ items relating to internal attributions for the traumatic event.

**Correlations**

| | | | TQ1A | TQ2A |
|---|---|---|---|---|
| Spearman's rho | Correlation Coefficient | DTSTOTAL | .017 | .157 |
| | | DTSAROUS | .068 | .150 |
| | | DTSAVOID | -.033 | .104 |
| | | DTSINTRU | -.070 | .156 |
| | Sig. (2-tailed) | DTSTOTAL | .912 | .334 |
| | | DTSAROUS | .666 | .357 |
| | | DTSAVOID | .831 | .524 |
| | | DTSINTRU | .657 | .336 |
| | N | DTSTOTAL | 43 | 40 |
| | | DTSAROUS | 43 | 40 |
| | | DTSAVOID | 43 | 40 |
| | | DTSINTRU | 43 | 40 |

Key: DTS= Davidson Trauma Scale, DTSArous= Arousal sub-scale, DTSAvoid= Avoidance sub-scale, DTSIntru= Intrusions sub-scale.
TQ1A= Trauma questionnaire question 1A, TQ2A= Trauma questionnaire question 2A

A parametric correlational analysis was conducted using the DTS total and subscales as above and the three negative attribution subscales of the IPSAQ. Again no significant relationships were revealed between the DTS total and subscales and the IPSAQ subscale (NEGINT), which loads on internal attributions for negative events (See Table 6).

**Table 6.** Correlational analysis of DTS sub-scales with IPSAQ negative sub-scales

| | NEGINT† | NEGPERS | NEGSIT† |
|---|---|---|---|
| Pearson Correlation | | | |
| DTSTOTAL | .133 | -.255 | .133 |
| DTSAROUS | .049 | -.205 | .049 |
| DTSAVOID | .179 | -.308 | .179 |
| DTSINTRU | .132 | -.184 | .132 |
| sig(2-tailed) | | | |
| DTSTOTAL | .414 | .112 | .414 |
| DTSAROUS | .762 | .205 | .762 |
| DTSAVOID | .270 | .053 | .270 |
| DTSINTRU | .419 | .254 | .419 |
| N | | | |
| DTSTOTAL | 40 | 40 | 40 |
| DTSAROUS | 40 | 40 | 40 |
| DTSAVOID | 40 | 40 | 40 |
| DTSINTRU | 40 | 40 | 40 |

Key: DTS= Davidson Trauma Scale, DTSArous= Arousal sub-scale, DTSAvoid= Avoidance sub-scale, DTSIntru= Intrusions sub-scale.
IPSAQ= Internal Personal and Situational Attributions Questionnaire, NEGINT= negative internal attributions, NEGPERS= negative personal attributions, NEGSIT= negative situational attributions
†=Transformed variable.

Overall, hypothesis II was not supported by the results of these analyses.

### *Analysis of Hypothesis III*

***External attributions for the identified traumatic event and a general external attributional style for negative events will be associated with delusional symptomatology.***

To investigate specific attributional style in relation to the identified traumatic event, a non-parametric correlational analysis (Spearman's rho) was performed because the Trauma Questionnaire (TQ) sub-scales could not be normalised using transformations.

PDI Total and subscales; Conviction, Distress and Preoccupation were correlated with TQ question 1B (external-personal attributions for the cause of the traumatic event at the time of the trauma) and TQ question 2B (external-personal attributions for the

cause of the traumatic event now), and no significant relationships emerged (see Table 7).

**Table 7.** Correlational analysis of PDI total and sub-scales with TQ items relating to external attributions for the traumatic event.

**Correlations**

| | | | TQ1B | TQ2B |
|---|---|---|---|---|
| Spearman's rho | Correlation Coefficient | PDITOTAL | -.145 | -.145 |
| | | PDICON | -.076 | .013 |
| | | PDIDIST | -.121 | -.034 |
| | | PDIFREQ | -.102 | -.023 |
| | Sig. (2-tailed) | PDITOTAL | .359 | .367 |
| | | PDICON | .615 | .936 |
| | | PDIDIST | .423 | .830 |
| | | PDIFREQ | .501 | .883 |
| | N | PDITOTAL | 42 | 41 |
| | | PDICON | 46 | 43 |
| | | PDIDIST | 46 | 43 |
| | | PDIFREQ | 46 | 43 |

Key= TQ= Trauma questionnaire, PDI= Peters Delusions Inventory, TOTAL= total score, Con= coviction, Dist= distress, FREQ= preoccupation.

To investigate the relationship between general attributional style and delusional symptomatology a parametric correlation was carried out. The three IPSAQ sub-scales relating to negative attributional style were correlated with PDI Total and sub-scales. The NEGPERS sub-scale from the IPSAQ represents negative-external-personal attributional style (blaming other people or persons for negative events).

This analysis revealed that the IPSAQ subscales NEGINT and NEGPERS were significantly associated with all the PDI sub-scales (see Table 8). Specifically, the NEGPERS sub-scale was highly associated with all the PDI sub-scales, but in a negative direction. That is, the more participants score on the PDI, then they are also

less likely to have an external-personal attributional style. The hypothesis therefore is not borne out in this case. It was interesting to note however, that there was a significant relationship between the PDI total and sub-scales and the negative-internal attributions sub-scale which was the opposite of what was hypothesised.

**Table 8.** Correlational analysis of PDI total and sub-scales with IPSAQ negative attributional sub-scales.

**Correlations**

| | | NEGPERS | NEGINTSQ | NEGSITSQ |
|---|---|---|---|---|
| Pearson Correlation | PDITOTAL | -.449** | .375* | .087 |
| | PDICONSQ | -.478** | .433** | .037 |
| | PDIDISQ | -.480** | .442** | .008 |
| | PDIFRSQ | -.455** | .425** | .024 |
| Sig (2-tailed) | PDITOTAL | .004 | .019 | .600 |
| | PDICONSQ | .001 | .004 | .815 |
| | PDIDISQ | .001 | .003 | .959 |
| | PDIFRSQ | .002 | .005 | .880 |
| N | PDITOTAL | 39 | 39 | 39 |
| | PDICONSQ | 42 | 42 | 42 |
| | PDIDISQ | 42 | 42 | 42 |
| | PDIFRSQ | 42 | 42 | 42 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0 05 level (2-tailed).

Key: PDI= Peters Delusions Inventory, TOTAL= total score, Consq= coviction, Distsq= distress, Freqsq= preoccupation. IPSAQ= Internal Personal and Situational Attributions Questionnaire, NEGINT= negative internal attributions, NEGPERS= negative personal attributions, NEGSIT= negative situational attributions
SQ=Transformed variable.

To investigate this hypothesis further, the specific factors relating to paranoid delusions from the PDI (suspiciousness, paranoia, and persecution) were placed in a correlational analysis with the IPSAQ sub-scales. As can be seen from the correlation matrix in Table 9, the factors loading on predisposition to paranoid delusions were again highly correlated with the IPSAQ NEGPERS sub-scale but in a negative direction. This is contrary to the hypothesis as stated and again the NEGINT sub-scale

is also highly associated with PDI factors relating to predisposition to paranoid delusions which was also contrary what was predicted.

**Table 9.** Correlational analysis of PDI factors relating to paranoia with IPSAQ negative attributional sub-scales.

**Correlations**

| | | NEGINTSQ | NEGPERS | NEGSITSQ |
|---|---|---|---|---|
| Pearson Correlation | PDIPARAN | .407** | -.318* | -.070 |
| | PDIPERSC | .432** | -.502** | -.042 |
| | PDISUSP | .450** | -.480** | -.036 |
| Sig. (2-tailed) | PDIPARAN | .008 | .040 | .657 |
| | PDIPERSC | .004 | .001 | .790 |
| | PDISUSP | .003 | .001 | .819 |
| N | PDIPARAN | 42 | 42 | 42 |
| | PDIPERSC | 42 | 42 | 42 |
| | PDISUSP | 42 | 42 | 42 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Key: PDI= Peters Delusions Inventory, SUSP= suspicion, PARA= paranoia, PERS= persecution. IPSAQ= Internal Personal and Situational Attributions Questionnaire, NEGINT= negative internal attributions, NEGPERS= negative personal attributions NEGSIT= negative situational attributions SQ=Transformed variable.

### *Analysis of Hypothesis IV*

***Self-blame, negative cognitions about the self and negative cognitions about the world in relation to the cause of the traumatic event will be associated with PTSD symptomatology.***

To investigate this hypothesis, a linear multiple regression analysis was performed. The dependent variable was DTS Total and the predictor variables were the PTCI sub-scales relating to self-blame (PCTISBSQ), negative cognitions about the self (PCTINCAS), and negative cognitions about the world (PCTINCW). A direct entry method was used and Table 10. displays the correlations between the variables, the unstandardised regression coefficients (B), the standardised regression coefficients (β),

and R, $R_2$, and adjusted $R_2$ after entry of all three IVs. It also displays the semi-partial correlations $(sr2)^2$ obtained after the entry of the IV in the relevant step of the regression equation.

**Table 10.** Regression analysis of DTS total (DV) and PTCI sub-scales (IVs).

| (N=40) | Correlations DTS TOTAL | PCTI SBSQ† | PCTI NCAS | B | β | t | sig. | $sr^2$ |
|---|---|---|---|---|---|---|---|---|
| PCTISBSQ† | .558*** | | | 1.57 | .029 | .220 | .827 | .04 |
| PCTINCAS | .795*** | .638*** | | 1.28 | .928 | 5.525 | .000 | .29 |
| PCTINCW | .401** | .278* | .668*** | -.916 | -.227 | -1.687 | .100 | .02 |

| Untransformed | DTS TOTAL | PCTI SBSQ | PCTI NCAS | PCTI NCW | |
|---|---|---|---|---|---|
| Means | 52.20 | 3.05 | 62.55 | 32.90 | $R^2$=.66 |
| SD | 36.54 | .66 | 26.32 | 9.05 | Adjusted$R^2$=.63 |
| | | | | | R=.81*** |

***significant LE .001 †= transformed variable
**significant LE .005
*significant LE .05

With all variables entered R was significantly different from zero R=.81 indicating a highly significant association between the IVs ($F(3,36) = 23.55$, $p<.001$), accounting for 66 percent (63 percent adjusted) of the variability in the DTS total scores. From the correlational analysis it appears that all of the PTCI sub-scales are highly associated with DTS Total. As can be seen from Table 10, the PTCI sub-scale relating to negative cognitions about the self (NCAS) accounts for 29 percent of the unique variance on the DTS scores. However, it is important to point out that although negative cognitions about the self (NCAS) is the only sub-scale to emerge from the

[2] Semi-partial correlations (sr2) indicate the relative importance of each IV in predicting the variance in DV scores.

regression as significant, this is not a surprise when one considers the high degree of association between NCAS and 'self-blame' (r=.638, n=40, p=.000) and between NCAS and 'negative cognitions about the world' (r=.668, n=40, p=.000).

The hypothesis is therefore supported as individually, self blame and negative beliefs about ones' own behaviour in relation to a traumatic event and negative cognitions about the world are all significantly associated with DTS Total. But for reasons explained above NCAS emerged as the most important predictor variable in the regression.

### *Hypothesis V*

***Negative cognitions about the world will be associated with paranoid delusional beliefs.***

This hypothesis was investigated by means of a parametric correlational analysis (see Table 11). The results of this analysis show that 'negative cognitions about the world' (PTCI sub-scale) are not significantly associated with PDI Total scores. More specifically, the PDI sub-scale 'suspiciousness' is significantly related to 'negative cognitions about the world'. Overall, however, the hypothesis is not supported.

**Table11.** Correlational analysis of PTCI 'negative cognitions about the world' sub-scale with PDI total and paranoia sub-scales.

**Correlations**

| | | PDIPARAN | PDIPERSC | PDISUSP | PDITOTAL |
|---|---|---|---|---|---|
| Pearson Correlation | PCTINCW | .178 | .293 | .332* | .205 |
| Sig. (2-tailed) | PCTINCW | .249 | .057 | .029 | .205 |
| N | PCTINCW | 44 | 43 | 43 | 40 |

*. Correlation is significant at the 0.05 level (2-tailed).

Key: PDI= Peters Delusions Inventory, SUSP= suspicion, PARA= paranoia, PERS= persecution. PCTINW= negative cognitions about the world.

## Discussion

### *Summary Of The Findings*

*Analysis of descriptive data*

Analysis of descriptive data revealed that the length of time spent working in the emergency ambulance service was associated with the DTS total as well as the intrusion, arousal, avoidance, frequency and severity sub-scales. This suggests that length of time spent in the service is associated with a higher level of post-trauma symptoms. Furthermore it appears that there is a relationship between the length of time spent in the job and the tendency to have a self-blaming attributional style for negative events. In also appears that males hold more self-blaming beliefs in relation to traumatic events than females and that technicians hold more of these beliefs than paramedics. When creating the variable 'caseness' for scores on the DTS it also became evident that 51 percent of the sample did meet the criteria for a diagnosis of PTSD.

*Hypothesis I*

According to the MANOVA analysis, there was no overall multivariate effect when PDI sub-scales and total were examined in relation to DTS 'caseness'. Subsequent univariate F-tests revealed that the sub-scales were however related to DTS caseness, suggesting that those who scored above 40 and therefore met the diagnostic criteria for PTSD were more likely to hold delusional beliefs with greater levels of conviction, distress and were more preoccupied with those beliefs than those who did not meet PTSD caseness.

With regard to the more specific MANOVA analysis looking at the sub-scales relating to persecution, paranoia and suspiciousness in relation to 'caseness' on the DTS, there were no significant effects, contrary to what was predicted.

*Hypothesis II*

The correlational analyses revealed no significant relationships between PTSD symptomatology and internal attributions for the cause of the traumatic event or general attributional style. This was contrary to the predicted hypothesis.

*Hypothesis III*

The non-parametric correlational analysis examining specific attributions (external-personal) for the traumatic event and PDI total and sub-scales proved non significant.

The analysis of general attributional style in relation to the PDI total and sub-scales revealed that the IPSAQ subscales NEGINT and NEGPERS were significantly associated with all of the PDI sub-scales (see Table 8). Specifically, the NEGPERS (blaming other people or persons for negative events) sub-scale was highly associated with all the PDI sub-scales, but in a negative direction. This may mean that the more participants score on the PDI, then the less likely they are to have an external- personal attributional style. The hypothesis therefore is not borne out in this case, but there are interesting implications of the high degree of association between NEGINT (self-blaming attributional style) and the PDI sub-scales. This suggests that those who hold a self-blaming attributional style are more likely to hold delusional beliefs (with greater frequency, preoccupation and conviction) than those who do not.

The analysis looking specifically at factors loading on predisposition to paranoid delusions again revealed strong associations with the IPSAQ NEGPERS sub-scale but in a negative direction (see Table 9). This is contrary to the hypothesis as stated. However, the NEGINT sub-scale was again highly associated with PDI factors relating to predisposition to paranoid delusions. This may mean that those participants with a self-blaming attributional style are more likely to hold paranoid beliefs than those who do not.

*Hypothesis IV*

The results of the correlational analysis support the hypothesis, in that there was a significant association between DTS Total and the PTCI sub-scales. Self-blame, negative beliefs about ones' own behaviour in relation to a traumatic event and negative beliefs about the world were all significantly related to DTS Total. This finding appears to confirm Foa & Riggs' (1993) and Foa & Rothbaum's (1998), theories of PTSD, which suggest that the persistent sense of threat produced by viewing the world as a completely dangerous place, and the view that one's self is totally incompetent mediate the development of PTSD.

In the regression, the IVs accounted for 66 percent of the overall variance in the DTS total scores. Furthermore, the PTCI sub-scale relating to negative cognitions about the self (NCAS) accounted for 29 percent of the unique variance on the DTS scores.

*Hypothesis V*

Overall the hypothesis was not borne out by the results yielded by the correlational analysis, in that the 'negative cognitions about the world' sub-scale from the PTCI was not significantly related to the PDI total. However, there was a significant relationship between the PDI sub-scale 'suspiciousness' and the PTCI sub-scale 'negative cognitions about the world'.

## *Discussion Of The Findings*

### *Methodological Considerations*

At this stage it is important to highlight three important methodological issues relevant to the wider applicability of the results of the present study. First, the low response rate (nine percent) obtained in this study makes it difficult to determine the exact rate of PTSD and may limit the generalisability of findings.

Second, the question of whether the sample obtained in this study is representative of the staff group employed by GMAS at this time was considered. Data were requested from GMAS to compare with the sample obtained, but unfortunately this proved problematic. The data required by the author would have to be obtained manually by GMAS staff as their computer system could not generate this. Due to the time involved in obtaining this information, GMAS regrettably were unable to provide this information at this time.

Third, two of the measures used were questionable in terms of their inter-item correlations (TQ & IPSAQ) and the TQ was also less than ideal in terms of

Cronbach's Alpha (see Appendix 11). This may mean that the analyses which used these measures are limited in terms of their validity and generalisability of findings. However, these measures in question were used in the absence of any other appropriate and relevant measures.

Another methodological issue worth highlighting is that the variables: Suspiciousness, Paranoia and Persecution consisted of relatively few items, which came out of the factor analysis by Peters et al. (1999). The results yielded by analyses using these variables should be viewed as tentative and future research into this area would benefit from a more robust measure of these beliefs. The use of these factors in the present study was one of necessity, in the absence of suitable alternative measures.

In terms of the low response rate, it is possible that this may represent apprehension regarding possible managerial retribution, or a general feeling of suspiciousness. Therefore, it may have been preferable not to have included the letter of support provided by the general manager of the service, in the questionnaire pack sent to the target sample.

The reliance on self-report measures was less than ideal, however the size of the target sample and the sensitive nature of the research necessitated the anonymity and convenience of a postal survey. This ruled out the use of standardised diagnostic interviews in order to more accurately predict PTSD prevalence. Another benefit of interview administration of the measures would have been the assistance that could have been offered to participants in filling in the questionnaires. It was clear to the

author from phone calls received by participants and incorrectly completed questionnaires that some aspects of the measures were problematic. Furthermore, in this sample, it became clear from some of the comments written on the questionnaires that choosing *one* incident was difficult considering the nature of the job. Face to face administration of the measures would have given the opportunity for participants to seek advice on choosing the event that disturbed them most.

There are no self-report measures available at present that assess the impact of multiple trauma without repeated administration. In-depth clinical interview may go some way to assessing the occurrence and impact of multiple, additive or cumulative trauma more effectively. It may be that the identification of the 'most disturbing trauma' may in itself be enough to put potential participants off completing self-report measures.

Another possible reason for a low response rate apart from the possible fear of accessing feared or distressing memories may be that PTSD sufferers do not automatically link PTSD symptoms to trauma (Jones & Barlow, 1990).

It was clear from visual analysis of the returned questionnaires that some individuals were responding negatively to every single item on the PDI. This would suggest a negative response bias in operation. It may be that that participants may have been concerned that they might be considered 'mad' if they completed this questionnaire. It is suggested in the literature (Ehlers & Steil, 1995), and clinical experience confirms, that some individuals with PTSD symptoms make appraisals of their symptoms as signs of 'going mad'. Participants may have, therefore, endorsed all of the items

negatively without considering them. This may represent a defensive or avoidant strategy.

It may, in future research be useful to compare staff who are not currently at work due to sickness, with those still working on the front-line. This may reveal important differences in general attributional style, and for traumatic events specifically. It is also likely that a substantial proportion of these individuals who are on sick leave, are presenting with physical health problems which are secondary to PTSD. In addition, it would be interesting to ascertain any marked differences in PTCI scores between these individuals and those who are still at work.

A measure such as the General Health Questionnaire (GHQ; Goldberg & Hillier, 1979) would also be useful in gaining some awareness of areas secondary to PTSD such as: social dysfunction, somatic symptoms, anxiety and insomnia and depression. These types of symptoms are likely to interfere with work and family relationships and make it even more unlikely that emergency workers will receive help in overcoming post-traumatic symptoms.

Future research in this area may benefit from a measure of sleep disturbance. Sleep disturbances are commonly observed in individuals with PTSD and can contribute considerably to the overall distress experienced by the individual. Indeed, in a study of emergency ambulance workers in Oxford, 'tiredness at work' was cited as the most stressful aspect of the job in relation to 'general work conditions' (Clohessy & Ehlers, 1999). This may allow investigators to establish how much sleep problems (particularly sleep deprivation) contribute to general psychopathology in this sample. In addition it

would be particularly interesting to explore the extent to which sleep deprivation is present in this group and the extent to which this makes individuals vulnerable to psychotic experiences.

*Ethical Considerations*

Although the covering letters made it explicit that the study was confidential and that all participants would be anonymous, several participants provided their name and were therefore potentially traceable. This in itself was not problematic, but some of those individuals who provided identifying information appeared to be scoring very highly in terms of either PTSD or delusional symptomatology. This could potentially have meant that those individuals may be particularly vulnerable to developing further mental health problems if they continue to be exposed to stress and potentially traumatic events on a daily basis whilst they work in the emergency ambulance service. One could assume that the individuals who provided identifying information did so hoping that they may be offered some kind of help independent of the emergency ambulance service.

This issue was discussed with the author's supervisor and the manager of GMAS. It was suggested by the author that the traceable participants who scored above caseness on the DTS and highly on the PDI be contacted at their home address and provided with information on PTSD and the services that could provide psychological help. This idea proved untenable because the author could not be granted access to the GMAS data base in order to obtain home addresses. An alternative suggested by the author was to contact all 570 GMAS emergency staff and provide them with information on PTSD and sources of psychological help. This was agreed by the

manager of GMAS who asked that this contact be made in early January 2000. He expressed concerns that a communication of this nature may jeopardise staff morale over the Christmas and Millennium period and result in an unacceptably high level of absenteeism at what was predicted to be a time of enormous demand on the emergency services. There was therefore no other option than to contact every member of the GMAS emergency services after the holiday period and to provide them all with information on PTSD and psychological therapies.

*Theoretical implications*

*Rates of likely PTSD* (see Table 1a).

The 51 percent rate of likely PTSD found in this sample is higher than estimates of lifetime prevalence in the general population, which has been estimated to be eight to nine percent (Breslau et al., 1991; Kessler et al., 1995). The rates of likely PTSD are also in excess of those cited by Clohessy & Ehlers (1999) in their study of ambulance service workers, who reported that 21 percent of their sample met criteria for PTSD. In a study of London Ambulance Service workers it was found that 15 percent of frontline staff could be given a diagnosis of PTSD, with another 53 percent meeting criteria for 'recent mental disturbance' (Rentoul & Ravenscroft, 1993). The reasons for such marked differences in reported rates of PTSD may be an artefact of differences in measures or criteria used for diagnosing PTSD. All of the studies cited above do utilise different methods of assessing PTSD, and this may be an important factor.

However, the low response rate (nine percent) obtained in this study makes it impossible to determine the exact prevalence of PTSD and may limit the generalizability of findings. There are two possible influences of self-selection on the results. First, it may be that emergency workers who experience PTSD symptoms may be more likely to participate than those without PTSD because they view the study as important. This could possibly result in an overestimation of PTSD prevalence. Second, despite receiving reassurances that the study was confidential, it mat be that some emergency workers with PTSD failed to return the questionnaires because they were concerned that if managers found out that they were experiencing difficulties, their jobs would be at risk. This fits with suggestions by other researchers that the psychological impact of their work on emergency personnel is under-reported (Gibbs, Drummond & Lachenmayer, 1993), or perhaps because they have an investment in denying their own vulnerability because of their own helping role (Bartone, Ursano, Wright & Ingraham, 1989).

The finding that length of time spent working in the ambulance service is associated with greater PTSD symptoms is consistent with studies in the general population indicating that the number of traumas experienced is predictive of PTSD (Astin, Ogland-Hand, Coleman, & Foy, 1995; King, King, Foy and Gudanowski, 1996; Resnick and Kilpatrick, 1994).

This finding is not surprising considering the amount of exposure to traumatic events the average emergency ambulance worker will have during their career. What predicts

who will develop PTSD and when is a complex question. However, what these results tell us is that, of those who embark on a career in the emergency ambulance service, around half may develop the symptoms of PTSD. Furthermore, the longer one spends being re-exposed to trauma, then the likelihood of developing PTSD increases. Also results of the analysis of descriptive data suggests that the longer one spends in the job, the more likely one is to develop a self- blaming attributional style. This again fits with these results and research that suggests self-blame in relation to traumatic events is a major predictor of the development of PTSD (Ehlers and Steil, 1995; Joseph, Brewin, Yule, and Williams, 1993).

It is interesting to speculate as to the reasons for individuals entering into a profession which by its very nature will lead one into situations which are complex, frightening and sometimes dangerous. Moreover, once operating within this system, it is interesting to speculate as to what motivates individuals to continue when they may be already experiencing the symptoms of PTSD.

It has been observed that those who have experienced traumatic events often go on to engage in greater risk taking behaviour. For example, Van der Kolk, Greenberg, Boyd & Krystal (1985) have suggested that war veterans with PTSD often find civilian life unstimulating and may seek out dangerous and sensational situations as part of compulsive re-exposure to trauma. This might lead to the prediction that post-traumatic stress is associated with greater sensation seeking. Zuckerman (1979) has defined sensation seeking as the need for varied, novel, and complex sensations and experiences and the willingness to take physical and psychological risks for the sake of

those experiences. Although the empirical evidence surrounding this hypothesis is inconclusive at present, a recent study by Joseph, Dalgleish, Thrasher & Yule (1997) provides evidence in support of this theory. They found that trauma survivors with high levels of PTSD symptoms scored higher on Impulsiveness (the pathological aspect of risk taking behaviour) than low PTSD symptom trauma survivors. This may explain in part why some individuals continue to work and re-expose themselves to trauma whilst experiencing the symptoms of PTSD.

*Rates of delusional ideation* (see Table 1b).

The mean score on the PDI revealed in this sample was 13.08 (SD=10.34), higher than the 9.7 (SD=6.7) mean reported score for the healthy sample reported by Peters et al. (1999). However, the rates in this sample are considerably lower than those reported by Peters et al. (1999), for a deluded sample (N=20), whose mean score was 20.7 (SD=9.0). These results appear to support the continuity view of psychosis.

The inconclusive results from the analysis of hypothesis I did not support the hypothesis. They did however, demonstrate that individuals meeting casesness for PTSD, although holding no more delusional ideas than their lower scoring colleagues, overall still demonstrated the tendency to hold delusional beliefs with greater conviction, were more preoccupied and more distressed by the beliefs.

With regard to the non-significant result yielded by the more specific analysis of factors loading on paranoia, it may be that the cut-off used as a measure of PTSD caseness may not be a useful one in this context, considering that delusional ideas are thought to

lie on a continuum with normal beliefs (Bentall, 1990). It may be that those with PTSD do not hold more delusional ideas but rather they hold their unusual beliefs with more intensity. This may be accounted for by their need to create meaning and regain a sense of self in relation to the event, the world, and other people.

The fact that hypothesis II was not supported was contrary to a general consensus in the literature which cites self-blame in relation to the cause of the traumatic event as a major predictor of the development of PTSD (Ehlers and Steil, 1995; Joseph, Brewin, Yule, and Williams, 1993). This may be explained by the notion that emergency ambulance workers rationalise the death they encounter by reminding themselves that patients would have even less chance of survival without their intervention (Rosenberg, 1991).

It may also be that emergency personnel in this sample cognitively avoid memories of the traumatic event and attempt to correct the past in fantasy as found by Clohessy et al. (1999), in their study of coping strategies in emergency ambulance workers. However, the fact that this sample do not display significant levels of self blame in relation to traumatic events does in itself contradict findings in the literature. The very low levels of self-blame reported could mean that active strategies of cognitive avoidance and wishful thinking (attempting to correct the past in fantasy) are preventing individuals processing traumatic memories emotionally and from putting the event into the past. Thus the PTSD symptoms will continue to be maintained by these attempts to cope with distressing traumatic memories (Ehlers & Steil, 1995).

When considering hypothesis III it is interesting to note that again, overall the results did not support the hypothesis. However, significant associations were revealed, but in a negative direction and opposite to what was predicted. The analysis of general attributional style revealed that the NEGPERS (blaming other people or persons for negative events) sub-scale was highly associated with all the PDI sub-scales, but in a negative direction. This suggests, the more participants score on the PDI, the less likely they are to have a general external- personal attributional style. This may indicate an active strategy of not endorsing items that suggest others are to blame for the traumatic event. It seems feasible that in order to cope with the daily exposure to tragedy and loss, one would have to develop some benevolence towards other people. The contrary view would remove the locus of control from those working in the emergency ambulance service. This position may be essentially protective, in that perceived lack of control over the event, aversive events in general, and external locus of control are generally considered central to PTSD (Marmar et al., 1984).

The significant relationship between NEGINT (self-blaming attributional style) and the PDI sub-scales suggests that those who hold a self-blaming attributional style are more likely to hold delusional ideas with a higher degree of conviction, distress and preoccupation than those who do not.

The analysis looking specifically at factors loading on predisposition to paranoid delusions again revealed strong associations with the IPSAQ NEGPERS sub-scale but in a negative direction. This is contrary to the hypothesis as stated and again consistent with the previous results. This may suggest that those who have a self-blaming attributional style are more likely to hold paranoid beliefs.

The notion of self-blame in relation to paranoid beliefs is contrary to that of Lyon, Kaney, & Bentall (1994), who suggest that individuals who have discrepancies between their actual view of themselves and their ideal self will, on experiencing a negative life-event, attribute that event to an external source in order to avoid activation of this latent discrepancy (self-blame and potential subsequent depression).

However, the 'Bad Me' theory of paranoia forwarded by Chadwick & Trower, (1996) may be useful in attempting to explain the high degree of association between self-blame/ internal attributional style and delusional (specifically paranoid) beliefs. This theory suggests that the bad me paranoid is predisposed to experience the self as alienated and bad or flawed, and the paranoia is a defence against this subjective self being revealed through self-presentation behaviour and being objectified by the other. The fear is not of an absent other, but of an intrusive and controlling one. The bad me paranoid is prone to interpret others as enormously threatening and powerful, and himself/herself as weak. The bad me paranoid 'knows' (in the sense of experienced as a fact not a belief) him/herself to be bad, indeed totally and irrevocably bad, and therefore deserves to be punished, and conversely is undeserving of being treated with respect. It continues to suggest that the bad me paranoid believes others are good, worthy, and superior (even grandiose and omnipotent) and 'I am bad', morally inferior. There is also a reversal of the self-serving bias presented in the Lyon et al. (1994) theory of paranoia. In this theory, the person attributes blame for bad outcomes to self, and responsibility for good outcomes to others.

It may be that individuals who display this particular style of creating meaning for negative events have lost their ability to distance themselves from their work and to positively reframe their role as someone without whom people involved in trauma would have less of a chance of surviving.

The results in support of hypothesis IV confirm Foa and Rothbaum's (1998) and Ehlers et al. (1995), theories of PTSD, which suggest that the persistent sense of threat produced by viewing the world as a completely dangerous place and the view that one's self is totally incompetent mediate the development of PTSD. Furthermore, the median score in the present sample was 101.00 (SD=35.58), whereas the Foa et al. (1999), samples used to standardise the PTCI scale had median scores of 49.00 (SD 23.52) for the 'trauma but no PTSD' group, and 133.00 (SD=44.17) for the PTSD group. This suggests that the present sample of emergency ambulance workers as a group are achieving scores that are approaching the scores one would expect from a sample of individuals who were all experiencing PTSD. This seems to be consistent with the high rate of PTSD present in the current sample.

Hypothesis V was not supported overall. However, it was of interest to note that 'suspiciousness' was related to 'negative cognitions about the world'. This seems to fit with the authors' clinical experience of working with individuals who have experienced PTSD as a result of being assaulted. It has also been suggested that the experience of trauma reported by people with PTSD shatters their assumptions about self-worth, vulnerability, equality, and the fairness of the world (Janoff-Bulman, 1985). It would also be reasonable to assume that the violation of ones' basic assumptions about the

world, self and others, combined with increased levels of arousal, may lead some individuals to be suspicious of others as a defensive strategy.

*Clinical implications of the findings*

The fact that there is such a high rate of PTSD present among the participants of the present study is not entirely surprising, but the fact that rates are higher than those cited in other studies of this population should perhaps be viewed tentatively due to the low response rate. However, the very nature of the work emergency personnel carry out constitutes close approximation to the criteria presented in DSM IV (APA, 1994), for developing PTSD. Furthermore, ambulance service workers respond to more emergency calls than the police and fire service combined (James & Wright, 1991) and may suffer greater psychological distress than these other groups (Marmar, Wiess, Metzler, Ronfeldt & Foreman, 1996).

The implications of the present findings may have far reaching effects on the way in which emergency personnel are supported during the course of their careers. At the time of writing, it appears that in the present sample there are high proportions of staff continuing to work on the 'front line' as paramedics or technicians who are experiencing in full or part, the symptoms of PTSD. These staff will be exposed to subsequent trauma and may experience a worsening of symptoms or a deterioration into the full PTSD syndrome.

According to the literature there is also a high level of co-morbidity with other psychiatric disorders for those experiencing PTSD. Kessler et al. (1995) suggest that

in the general population 83 percent of individuals with PTSD meet the criteria for another DSM IV (APA, 1994) psychiatric disorder. Anxiety, panic disorder, multiple phobic avoidance, marital and family disturbances, work impairment, depression, alcohol/substance abuse, and suicide are commonly associated with untreated PTSD (Deering, Glover, Ready, Eddleman, & Alarcon, 1996; Marmar et al., 1994; Rozell, McFall & Malas, 1991). Recent research has documented many examples of these disorders being present in PTSD samples (see Yule, Williams & Joseph (1999), for a review of co-morbidity in PTSD (p.8-10)). In addition to PTSD, survivors of trauma may also undergo enduring personality changes (Horowitz, 1986a, 1986b).

The potential increase in substance abuse associated with PTSD is perhaps an area for concern in this particular population. Large increases in the use of alcohol, cigarettes, sleeping tablets, anti-depressants, and tranquillisers some 30 months after the event have been documented in adult PTSD survivors (Joseph, Yule, Williams, & Hodgkinson, 1993). All of these may contribute to poor performance in emergency ambulance service staff.

There are potential implications in terms of sickness and absenteeism as a result of the high rates of physical health problems observed in PTSD survivors (Yule, Williams & Joseph, 1999). It could be argued that many of these problems are a result of depression but nonetheless they are a reality to many PTSD survivors.

Impaired psychosocial adjustment and a reduced level of occupational functioning are prominent features of PTSD and are of major concern to agencies dealing with large

groups of individuals with the disorder (Gil, Calev, Greenberg, Kugelmass, & Lerer, 1989). Gil et al. (1989), go on to present findings that suggest cognitive deficits secondary to PTSD may substantially contribute to these difficulties and that the pattern of generalised cognitive deficits is similar to that of other psychiatric disorders, such as depression (Calev & Erwin, 1985) and schizophrenia (Calev, Venables, & Monk, 1983). More recently, experimental cognitive psychologists have established that individuals with PTSD also demonstrate autobiographical memory disturbances (McNally, Lasko, Macklin, & Pitman, 1995).

Research also suggests that untreated PTSD which persists beyond three to five months following trauma, is unlikely to resolve over time (Marmar et al., 1994). Considering the average time since the identified trauma in the present sample is 67 months (5.5 years), the PTSD present in this sample is unlikely to resolve over time for a substantial proportion of participants.

*Implications for the Emergency Ambulance Service*

Some form of regular screening for the symptoms of PTSD would be desirable, but may be difficult to resolve ethically. Perhaps as part of a general medical examination it could be offered as a voluntary option or maybe a self-report measure could be available for personnel to assess their own levels of PTSD symptomatology.

It would certainly be more ethical and perhaps cause less conflict between management and staff, if each individual was able to monitor their own level of symptomatology and took responsibility for that. Perhaps a 'warning signs' monitoring package could be developed similar to those used in the area of relapse prevention in psychosis

(Birchwood, 1996). This could perhaps include psycho-educational materials, normalising information and information about the vicious circle of intrusions and thought suppression. Ambulance service workers who find it difficult to cope with traumatic memories may need to learn that mental disengagement is counter productive in coming to terms with them. Information on how to make an 'exposure tape' or on how imaginal exposure can facilitate emotional processing might be useful. At the time of writing there are sparse references to self-help packages in the literature in relation to PTSD, and this may be an area for future consideration. This type of intervention would probably need to be supervised by a trained therapist to some extent, but the fact that individuals are continuing to work while experiencing PTSD symptoms suggests that traditional routes of accessing professional help are regarded as aversive to at least a large proportion of the present sample.

With regard to the delusional ideation present in this sample, it may be useful to provide some normalising information on this subject. It is likely that those holding beliefs that are distressing or paranoid in nature may need the security of a trusting therapeutic relationship to explore these beliefs in relation to their work experiences and possible PTSD symptoms.

The difficulty here is facilitating access to services for these individuals. It may be that these individuals who hold unusual beliefs that cause them distress and result in high levels of preoccupation developed these beliefs out of an attempt to create meaning for the traumatic events they have witnessed. It may be that these ideas were present before exposure and were activated by a particular trauma or series of traumas. In

either case, professional psychological assessment and time-limited treatment may be the best course of action. Research has demonstrated that cognitive behavioural therapy delivered by trained therapists in a Community Mental Health Team setting is effective in reducing global distress, severity, impairment, frequency, conviction and control associated with delusional beliefs at the end of treatment. This research suggests that the efficacious cognitive behavioural interventions that have been shown to be possible for delusions are indeed transportable to real-life settings (Morrison, Renton, Williams, Dunn, Nothard & Payton, 1999).

*Implications for future research*

Finally, it may be important to emphasise that although most research has focused on the impact of disasters, emergency workers are commonly exposed to 'smaller scale' traumatic events such as road traffic accidents, suicides or cot deaths (Clohessy et al., 1999). In a study by Marmar et al. (1996) three groups of emergency workers were compared. One group had been involved in a rescue operation after a major disaster, the other two reported on normal operational duties which had distressed them. It was discovered that there was no difference in current symptomatology between the three groups, suggesting that everyday operational duties can be just as traumatic and stressful for emergency staff as disaster work. These results demonstrate a need for increased awareness amongst emergency service management about the effects of everyday duties upon their staff and a need for further research on PTSD arising from normal operational duties in the emergency services.

Further research is needed in this area and those undertaking such work may want to emphasise confidentiality, anonymity and their independence from the emergency service management in order to maximise the chances of a good response rate.

As mentioned earlier, it may be interesting to look at sleep difficulties and other general psychopathology as secondary to PTSD and examine how that might affect vulnerability to psychotic phenomena. Comparing individuals who are on 'sick leave' and those who are still working on the front-line may allow interesting comparisons between these two groups.

Future research into methods of measuring cumulative trauma would be invaluable, as would further investigation into the area of 'compulsive re-exposure to trauma' (Van der Kolk et al., 1985) within this particular population.

## *Conclusion*

This investigation set out to assess the prevalence of PTSD, explore the relationship between attributional factors associated with PTSD and delusional beliefs (particularly paranoia). Although these aims were addressed, the results of this investigation have raised further questions and highlighted areas for further research. Areas for possible changes in the way emergency ambulance personnel are supported have also been highlighted. The fact that this study has drawn on areas of the literature which are rarely combined will perhaps raise awareness and provoke discussion.

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## Appendix 1

*DSM-IV Criteria For PTSD*

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

(1) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.

(2) the person's response involved intense fear, helplessness, or horror.

**Note:** In children, this may be expressed instead by disorganised or agitated behaviour.

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

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

(2) recurrent distressing dreams of the event. **Note:** In children there may be frightening dreams without recognisable content.

(3) acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated). **Note:** In young children, trauma-specific re-enactment may occur.

(4) intense psychological distress at exposure to internal or external clues that symbolise or resemble an aspect of the traumatic event.

(5) physiological reactivity on exposure to internal or external cues that symbolise or resemble an aspect of the traumatic event.

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

*PTSD is defined as:*

**Acute:** if duration of symptoms is less than 3 months.

**Chronic:** if duration of symptoms is 3 months or more.

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

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

(1) efforts to avoid thoughts, feelings, or conversations associated with the trauma.

(2) efforts to avoid activities, places, or people that arouse recollections of the trauma.

(3) inability to recall an important aspect of the trauma.

(4) markedly diminished interest or participation in significant activities.

(5) feeling of detachment or estrangement from others.

(6) restricted range of affect (e.g. unable to have loving feelings).

(7) sense of a foreshortened future (e.g. does not expect to have a career, marriage, children, or a normal life span).

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

(1) difficulty falling or staying asleep.

(2) irritability or outbursts of anger.

(3) difficulty concentrating.

(4) hypervigilance

(5) exaggerated startle response.

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

## Appendix 2

*ICD-10 Criteria For PTSD*

PTSD arises as a delayed and/or protracted response to a stressful event or situation (either short or long lasting) of an exceptionally threatening or catastrophic nature, which is likely to cause pervasive distress in almost anyone (e.g. natural or man made disaster, combat, serious accident, witnessing the violent death of others or being the victim of torture, terrorism, rape, or other crime). Predisposing factors such as personality traits or previous history of neurotic illness may indicate vulnerability (but they are neither necessary nor sufficient to explain its occurrence). This condition must arise within six months of the traumatic event.

There must be a repetitive, intrusive recollection or re-enactment of the event in memories, daytime imagery, or dreams.

## Appendix 3

*DSM-IV Criteria For Schizophrenia & Other Psychotic Disorders*

**Schizophrenia**

A. *Characteristic Symptoms:* Two (or more) of the following, each present for a significant portion of time during a one month period (or less if successfully treated):

(1) delusions

(2) hallucinations

(3) disorganised speech (e.g. frequent derailment or incoherence)

(4) grossly disorganised or catatonic behaviour

(5) negative symptoms, i.e., affective flattening, alogia, or avolition

**Note:** Only one Criterion A symptom is required if delusions are bizarre or hallucinations consist of a voice keeping up a running commentary on the person's behaviour or thoughts, or two or more voices conversing with each other.

B. *Social/occupational dysfunction:* For a significant portion of the time since the onset of the disturbance, one or more major areas of functioning such as work, interpersonal relations, or self-care are markedly below the level achieved prior to the onset (or when the onset is in childhood or adolescence, failure to achieve expected level of interpersonal, academic, or occupational achievement).

C. *Duration:* Continuous signs of the disturbance persist for at least six months. This six month period must include at least one month of symptoms (or less if successfully treated) that meet Criterion A (i.e. active-phase symptoms) and may

include periods of prodromal or residual symptoms. During these prodromal or residual periods, the signs of disturbance may be manifested by only negative symptom, or two or more symptoms listed in Criterion A present in an attenuated form (e.g., off beliefs, unusual perceptual experiences).

D. *Schizoaffective and Mood Disorder exclusion:* Schizoaffective Disorder and Mood disorder With Psychotic Features have been ruled out because either (1) no Major Depressive, Manic, or Mixed Episodes have occurred concurrently with the active-phase symptoms; or (2) if mood episodes have occurred during active-phase symptoms, their total duration has been brief relative to the duration of the active and residual periods.

E. *Substance/general medical condition exclusion:* The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, medication) or a general medical condition.

F. *Relationship to a Pervasive Developmental Disorder:* If there is a history of Autistic Disorder or another Pervasive Developmental Disorder, the additional diagnosis of Schizophrenia is made only if prominent delusions or hallucinations are also present for at least a month (or less if successfully treated).

**Schizophreniform Disorder**

A. Criteria A, D, and E of Schizophrenia are met.

B. An episode of the disorder (including prodromal, active, and residual phases) lasts

at least one month but less than six months. (When the diagnosis must be made without waiting for recovery, it should be qualified as "provisional.").

**Schizoaffective Disorder**

A. An interrupted period of illness during which, at some time, there is either a lajor Depressive Episode, a Manic Episode, or a Mixed Episode concurrent with symptoms that meet Criterion A for Schizophrenia.

**Note:** The Major Depressive Episode must include Criterion A1: depressed mood.

B. during the same period of illness, there have been delusions or hallucinations for at least two weeks in the absence of prominent mood symptoms.

C. Symptoms that meet criteria for a mood disorder are present for a substantial portion of the total duration of the active and residual periods of the illness.

D. The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.

**Brief Psychotic Disorder**

A. Presence of one (or more) of the following symptoms:

(1) delusions

(2)hallucinations

(3)disorganised speech (e.g. frequent derailment or incoherence)

(4) grossly disorganised or catatonic behaviour

Note: Do not include a symptom if it is a culturally sanctioned response pattern.

B. Duration of an episode of the disturbance is at least one day but less than one month, with eventual full return to premorbid level of functioning.

C. The disturbance is not better accounted for by a Mood Disorder With Psychotic Features,. Schizoaffective disorder, of Schizophrenia and is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication or a general medical condition.

Substance-Induced Psychotic Disorder

A. Prominent hallucinations or delusions. Note: Do not include hallucinations if the person has insight that they are substance induced.

B. There is evidence from the history, physical examination, of a laboratory findings of either (1) or (2):

(1) the symptoms in Criterion A developed during, of within a month of substance intoxication or withdrawal

(2) medication use is etiologically related to the disturbance

C. The disturbance is not better accounted for by a Psychotic Disorder that is not substance induced. Evidence that the symptoms are better accounted for by a Psychotic Disorder that is not substance induced might include the following: the symptoms precede the onset of the substance use (or medication use); the symptoms

persist for a substantial period of time (e.g., about a month) after the cessation of acute withdrawal or severe intoxication, or a substantially in excess of would be expected given the type or amount of the substance used or the duration of use; of there is other evidence that suggests the existence of an independent non-substance-induced Psychotic Disorder (e.g., a history or recurrent non-substance-related episodes).

D. The disturbance does not occur exclusively during the course of a delirium.

**Psychotic Disorder Not Otherwise Specified**

This category includes psychotic symptomatology (i.e. delusions, hallucinations, disorganised speech, grossly disorganised or catatonic behaviour) about which there is inadequate information to make a specified diagnosis or about which there is a contradictory information, or disorders with psychotic symptoms that do not meet the criteria for any specific Psychotic Disorder.

---

**Note:** DSM-IV's Delusional Disorder, Shared Psychotic Disorder, Psychotic Disorder Due to a General Medical Condition, are not outlined as they are not considered central to the research, and there are no subjects with such diagnoses included in the research sample.

# Appendix 4

## Covering Letters & Reminder Letter

## About the research and invitation to take part.

You are being invited to take part in a research project which will investigate people's experience of distress following traumatic events whilst working as part of the emergency ambulance service.

This study is being conducted by myself, Warren Larkin, (Clinical Psychologist in Training) and Dr. Tony Morrison & Dr. Lucy Frame (both qualified clinical psychologists). We will be contacting all ambulance technician / paramedic personnel in the Manchester area and asking them to take part in this study.

If you decide to take part in this study you should complete the enclosed questionnaires, which ask questions about your experiences of trauma, and the distress that this caused.

This study is not intended to cause you any distress, but you are welcome to ask any questions you may have or to discuss any issues that are raised for you by filling out the questionnaires. If you do experience distress as a result of completing the questionnaires, please contact Warren Larkin, Clinical Psychologist in Training; on

You can also contact Dr. Tony Morrison or Dr. Lucy Frame at the Department of Clinical Psychology, on . (If we are not immediately available, then you can leave a message and contact number and you will be contacted as soon as possible).

Your answers will be treated with the utmost confidentiality and there will be no way of identifying who filled in the questionnaires.

You do not have to take part in the study if you do not wish to do so; however it would be appreciated if you could return any unused questionnaires in the freepost envelope provided.

If you do fill in the questionnaires and return them in the freepost envelope provided, this will be regarded as an indication of your consent to take part in the study.

The results of this study will be available from: Mr. , Ambulance HQ, , when the study is complete (June 2000).

Thank you very much for your time.

W. Larkin.

Warren Larkin (Clinical Psychologist in Training).

4 August 1999

RGW/SLM

Dear Colleague

As I am sure you are all aware, debate and discussion has occurred at all levels both within and outside of the Ambulance Service over the issue of "post traumatic stress".

As you know counselling is available within GMAS for incidents that cause concern to individuals. However, the more recent debate is over the effects of accumulated incident stress over years of continuous service.

Mr Warren Larkin, a Clinical Psychologist, is undertaking a study on this issue and has asked to use our Service as a study group. I have agreed to this on the basis that we will see the findings first and in advance of published papers in order to identify any long term change requirements.

The questionnaire is enclosed and is a fully confidential and "hidden" study. I would urge all staff to participate to enable greater understanding for improving conditions in the future.

Thank you for you assistance on this matter.

Yours sincerely

General Manager - PES

Dear Paramedic/Technician,

I would firstly like to thank all those who took time to return the questionnaires that I sent out to GMAS employees in September.

The information I have been able to take from these questionnaires looks like it will be invaluable in furthering a psychological understanding of Trauma reactions in Paramedic/Technicians.

However, I need a few more questionnaires to make sure the study is scientifically valid and therefore publishable

If you have not already filled in and/or returned the questionnaires you received, it would be a great help to myself and my colleagues if you could do so in the next few days.

As mentioned in the original covering letter included with the questionnaire; the study is completely confidential and you are not asked to give your name.

The results of the study will be available from Ambulance HQ as soon as it is complete.

Once again, thank you for your time.

Best wishes,

Yours sincerely,

WARREN LARKIN
(Clinical Psychologist in Training).

# Appendix 5

# The Davidson Trauma Scale

# DAVIDSON TRAUMA SCALE

by Jonathan R.T. Davidson, M.D.

Name:_____ Age:_____ Sex: ☐ Male ☐ Female

Date:_____/_____/_____

Please identify the trauma that is most disturbing to you.

_____

_____

**Each of the following questions asks you about a specific symptom. For each question, consider how often in the last week the symptom troubled you and how severe it was. In the two boxes beside each question, write a number from 0 - 4 to indicate the frequency and severity of the symptom.**

| FREQUENCY | SEVERITY |
|---|---|
| 0 = Not At All | 0 = Not At All Distressing |
| 1 = Once Only | 1 = Minimally Distressing |
| 2 = 2 - 3 Times | 2 = Moderately Distressing |
| 3 = 4 - 6 Times | 3 = Markedly Distressing |
| 4 = Every Day | 4 = Extremely Distressing |

| | | |
|---|---|---|
| 1. | Have you ever had painful images, memories, or thoughts of the event? | |
| 2. | Have you ever had distressing dreams of the event? | |
| 3. | Have you felt as though the event was recurring? Was it as if you were reliving it? | |
| 4. | Have you been upset by something that reminded you of the event? | |
| 5. | Have you been physically upset by reminders of the event? (This includes sweating, trembling, racing heart, shortness of breath, nausea, or diarrhea.) | |
| 6. | Have you been avoiding any thoughts or feelings about the event? | |
| 7. | Have you been avoiding doing things or going into situations that remind you of the event? | |
| 8. | Have you found yourself unable to recall important parts of the event? | |
| 9. | Have you had difficulty enjoying things? | |
| 10. | Have you felt distant or cut off from other people? | |
| 11. | Have you been unable to have sad or loving feelings? | |
| 12. | Have you found it hard to imagine having a long life span and fulfilling your goals? | |
| 13. | Have you had trouble falling asleep or staying asleep? | |
| 14. | Have you been irritable or had outbursts of anger? | |
| 15. | Have you had difficulty concentrating? | |
| 16. | Have you felt on edge, been easily distracted, or had to stay "on guard"? | |
| 17. | Have you been jumpy or easily startled? | |

# Appendix 6

# The Trauma Questionnaire

# Trauma Questionnaire

Sex: _____

Paramedic or Technician (Please Circle)

Age:_____

Length of Time In Emergency Services_____

| Please identify the trauma that is most disturbing to you: |
| --- |
| _____ |
| _____ |
| _____ |

## Instructions

Please read the following statements and try to answer them in relation to the trauma that you described above as the most disturbing to you. Try to decide what the main cause of the event you described above was and place a mark on the line at the point you feel most appropriate.

Thank you for your time and cooperation.

**How long ago was the trauma that you have identified as most disturbing to you?**

Years_____Months_____

1. **As I think about it now, I believe that the trauma was as a result of:**

a) Something about me

0|_____|100

As little as possible — As much as possible

b) Something about another person (or a group of people)

0 |_____|100

As little as possible — As much as possible

c) Something about the situation (circumstances or chance)

0 |_____|100

As little as possible — As much as possible

2. **At the time of the trauma, I believed that the trauma was as a result of:**

a) Something about me

0|_____|100

As little as possible — As much as possible

b) Something about another person (or a group of people)

0|_____|100

As little as possible — As much as possible

c) Something about the situation (circumstances or chance)

0|_____|100

As little as possible — As much as possible

# Appendix 7

# The Post Traumatic Cognitions Inventory

# PTCI

We are interested in the kind of thoughts which you may have had after a traumatic experience. Below are a number of statements that may or may not be representative of your thinking.

Please read each statement carefully and tell us how much you AGREE or DISAGREE with each statement.

People react to traumatic events in many different ways. There are no right or wrong answers to these statements.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Totally Disagree | Disagree Very Much | Disagree Slightly | Neutral | Agree Slightly | Agree Very Much | Totally Agree |

____ 1. The event happened because of the way I acted.
____ 2. I can't trust that I will do the right thing.
____ 3. I am a weak person.
____ 4. I will not be able to control my anger and will do something terrible.
____ 5. I can't deal with even the slightest upset.
____ 6. I used to be a happy person but now I am always miserable.
____ 7. People can't be trusted.
____ 8. I have to be on guard all the time.
____ 9. I feel dead inside.
____ 10. You can never know who will harm you.
____ 11. I have to be especially careful because you never know what can happen next.
____ 12. I am inadequate.
____ 13. I will not be able to control my emotions, and something terrible will happen.
____ 14. If I think about the event, I will not be able to handle it.
____ 15. The event happened to me because of the sort of person I am.
____ 16. My reactions since the event mean that I am going crazy.
____ 17. I will never be able to feel normal emotions again.
____ 18. The world is a dangerous place.
____ 19. Somebody else would have stopped the event from happening.

PTCI

(continued)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Totally Disagree | Disagree Very Much | Disagree Slightly | Neutral | Agree Slightly | Agree Very Much | Totally Agree |

____ 20. I have permanently changed for the worse.

____ 21. I feel like an object, not like a person.

____ 22. Somebody else would not have gotten into this situation.

____ 23. I can't rely on other people.

____ 24. I feel isolated and set apart from others.

____ 25. I have no future.

____ 26. I can't stop bad things from happening to me.

____ 27. People are not what they seem.

____ 28. My life has been destroyed by the trauma.

____ 29. There is something wrong with me as a person.

____ 30. My reactions since the event show that I am a lousy coper.

____ 31. There is something about me that made the event happen.

____ 32. I will not be able to tolerate my thoughts about the event, and I will fall apart.

____ 33. I feel like I don't know myself anymore.

____ 34. You never know when something terrible will happen.

____ 35. I can't rely on myself.

____ 36. Nothing good can happen to me anymore.

# Appendix 8

## The Internal Personal And Situational Attributions Questionnaire

# I.P.S.A.Q.

Name: _____ Sex: _____

Age: _____ Occupation: _____

Date Completed: _____

## INSTRUCTIONS

Please read the statements on the following pages. For each statement please try to vividly imagine that event happening to you. Then try to decide what was the main cause of the event described in each statement. Please write the cause you have thought of in the space provided. Then tick the appropriate letter (a,b or c) according to whether the cause is :

a) Something about you
b) Something about another person (or a group of people)
c) Something about the situation (circumstances or chance)

It might be quite difficult to decide which of these options is exactly right. In this case, please pick one option, the option which **best** represents your opinion. Please pick **only one** letter in each case.

Thank you for your time and co-operation.



**References**

Bentall, R.P., Kaney, S., & Dewey, M.E. (1991) Paranoia and social reasoning: An attribution theory analysis. British Journal of Clinical Psychology, 30, 13-23.
McArthur, L.A. (1972) The how and what of why: Some determinants and consequences of causal attribution. Journal of Personality and Social Psychology, 22, 171-193.

1. A friend gave you a lift home.

What caused your friend to give you a lift home?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

2. **A friend talked about you behind your back.**

What caused your friend to talk about you behind your back?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

3. **A friend said that he(she) has no respect for you.**

What caused your friend to say that he(she) has no respect for you ?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

4. **A friend helped you with the gardening.**

What caused your friend to help you with the gardening?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

5. A friend thinks you are trustworthy.

What caused your fnend to think you are trustworthy?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

6. A friend refused to talk to you.

What caused your friend to refuse to talk to you?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

7. A friend thinks you are interesting.

What caused your friend to think you are interesting?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

8. A friend sent you a postcard.

What caused your friend to send you a postcard?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

9. A friend thinks you are unfriendly.

What caused your friend to think that you are unfriendly?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

10. **A friend made an insulting remark to you.**

What caused your friend to insult you?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

11. **A friend bought you a present.**

What caused your friend to buy you a present .
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

12. **A friend picked a fight with you.**

What caused your friend to fight with you?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

13. A friend thinks you are dishonest.

What caused your friend to think you are dishonest?
(Please wnte down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

14. A friend spent some time talking to you.

What caused your friend to spend time talking with you?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

15. A friend thinks you are clever.

What caused your friend to think you are clever?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

16. A friend thinks you are sensible.

What caused your friend to think that you were sensible?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

17. A friend refused to help you with a job.

What caused your fnend to refuse to help you with the job?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

18. A friend thinks you are unfair.

What caused your friend to think that you are unfair?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

19. A friend said that he(she) dislikes you.

What caused your friend to say that he(she) dislikes you?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

20. A friend rang to enquire about you.

What caused your friend to ring to enquire about you?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

21. A friend ignored you

What caused your fnend to ignore you?
(Please wnte down the one major cause)

. . . . . .

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

22. **A friend said that she(he) admires you.**

What caused your fnend to say that she(he) admired you?
(Please write down the one major cause)

. . . . . .

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

23. **A friend said that he(she) finds you boring.**

What caused your friend to say that he(she) finds you boring?
(Please write down the one major cause)

. . . . . .

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

24. **A friend said that she(he) resents you.**

What caused your friend to say that she(he) resents you?
(Please write down the one major cause)

. . . . . .

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

25. A friend visited you for a friendly chat.

What caused your friend to visit you for a chat?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

26. **A friend believes that you are honest**

What caused your friend to believe that you are honest?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

27. **A friend betrayed the trust you had in her.**

What caused your friend to betray your trust?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

28. **A friend ordered you to leave.**

What caused your friend to order you to leave?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

29. A friend said that she(he) respects you.

What caused your fnend to say that she(he) respects you?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

30. A friend thinks you are stupid.

What caused your friend to think that you are stupid?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

IIII

31. A friend said that he(she) liked you.

What caused your friend to say that he(she) liked you?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

32. A neighbour invited you in for a drink.

What caused your friend to invite you in for a drink?
(Please write down the one major cause)

.....

Is this :

a. Something about you ?
b. Something about the other person or other people ?
c. Something about the situation (circumstances or chance) ?

# INTERNAL, PERSONAL, AND SITUATIONAL ATTRIBUTION QUESTIONNAIRE SCORING KEY

Each item describes the action of an actor towards a target person. Subjects have to choose one of three possible explanations for each action.

a. An internal attribution
b. An external, personal, attribution
c. An external, situational, attribution

Positive : 1, 4, 5, 7, 8, 11, 14, 15, 16, 20, 22, 25, 26, 29, 31, 32

Negative: 2, 3, 6, 9, 10, 12, 13, 17, 18, 19, 21, 23, 24, 27, 28, 30

# Appendix 9

## The Peters' Delusions Inventory

# P. D. I.

This questionnaire is designed to measure beliefs and vivid mental experiences. We believe that they are much more common than has previously been supposed, and that most people have had some such experiences during their lives. Please answer the following questions as honestly as you can. There are no right or wrong answers, and there are no trick questions. **Please note that we are NOT interested in experiences people may have had when under the influence of drugs.**

IT IS IMPORTANT THAT YOU ANSWER *ALL* QUESTIONS.

For the questions you answer YES to, we are interested in: (a) how distressing these beliefs or experiences are; (b) how often you think about them; and (c) how true you believe them to be. On the right hand side of the page we would like you to circle the number which corresponds most closely to how distressing this belief is, how often you think about it, and how much you believe that it is true.

---

SEX ..... ETHNIC BACKGROUND ..... AGE .....

RELIGION ..... PROFESSION ..... DATE .....

---

Examples:

| | | | | | |
|---|---|---|---|---|---|
| **Do you ever feel as if people are your mind?** | **Not at all distressing** | | | | **Very distressing** |
| | 1 | 2 | 3 | 4 | 5 |
| **(please circle)** | **Hardly ever think about it** | | | | **Think about it all the time** |
| | 1 | 2 | 3 | 4 | 5 |
| *No* Yes ——→ | **Don't believe it's true** | | | | **Believe it is absolutely true** |
| | 1 | 2 | 3 | 4 | 5 |

---

| | | | | | |
|---|---|---|---|---|---|
| **Do you ever feel as if you can read other** | **Not at all distressing** | | | | **Very distressing** |
| **people's minds?** | 1 | 2 | 3 | *4* | 5 |
| **(please circle)** | **Hardly ever think about it** | | | | **Think about it all the time** |
| | 1 | *2* | 3 | 4 | 5 |
| No *Yes* ——→ | **Don't believe it's true** | | | | **Believe it is absolutely true** |
| | 1 | 2 | *3* | 4 | 5 |

| | Please circle if answered YES | | | | |
|---|---|---|---|---|---|
| (1) Do you ever feel as if you are under the control of some force or power other than yourself?<br><br>(please circle)<br><br>No Yes ----------> | Not at all distressing<br>1 | 2 | 3 | 4 | Very distressing<br>5 |
| | Hardly ever think about it<br>1 | 2 | 3 | 4 | Think about it all the time<br>5 |
| | Don't believe it's true<br>1 | 2 | 3 | 4 | Believe it is absolutely true<br>5 |
| (2) Do you ever feel as if you are a robot or zombie without a will of your own?<br><br>(please circle)<br><br>No Yes ----------> | Not at all distressing<br>1 | 2 | 3 | 4 | Very distressing<br>5 |
| | Hardly ever think about it<br>1 | 2 | 3 | 4 | Think about it all the time<br>5 |
| | Don't believe it's true<br>1 | 2 | 3 | 4 | Believe it is absolutely true<br>5 |
| (3) Do you ever feel as if you are possessed by someone or something else?<br><br>(please circle)<br><br>No Yes ----------> | Not at all distressing<br>1 | 2 | 3 | 4 | Very distressing<br>5 |
| | Hardly ever think about it<br>1 | 2 | 3 | 4 | Think about it all the time<br>5 |
| | Don't believe it's true<br>1 | 2 | 3 | 4 | Believe it is absolutely true<br>5 |
| (4) Do you ever feel as if your feelings or actions are not under your control?<br><br>(please circle)<br><br>No Yes ----------> | Not at all distressing<br>1 | 2 | 3 | 4 | Very distressing<br>5 |
| | Hardly ever think about it<br>1 | 2 | 3 | 4 | Think about it all the time<br>5 |
| | Don't believe it's true<br>1 | 2 | 3 | 4 | Believe it is absolutely true<br>5 |
| (5) Do you ever feel as if someone or something is playing games with your mind?<br><br>(please circle)<br><br>No Yes ----------> | Not at all distressing<br>1 | 2 | 3 | 4 | Very distressing<br>5 |
| | Hardly ever think about it<br>1 | 2 | 3 | 4 | Think about it all the time<br>5 |
| | Don't believe it's true<br>1 | 2 | 3 | 4 | Believe it is absolutely true<br>5 |

| | Please circle if answered YES | | | | |
|---|---|---|---|---|---|
| (6) Do you ever feel as if people seem to drop hints about you or say things with a double meaning? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |
| (7) Do you ever feel as if things in magazines or on TV were written especially for you? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |
| (8) Do you ever think that everyone is gossiping about you? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |
| (9) Do you ever feel as if some people are not what they seem to be? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |
| (10) Do things around you ever feel unreal, as though it was all part of an experiment? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |

| | Please circle if answered YES | | | | |
|---|---|---|---|---|---|
| (11) Do you ever feel as if someone is deliberately trying to harm you? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| (please circle) | Hardly ever think about it | | | | Think about it all the time |
| | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |
| (12) Do you ever feel as if you are being persecuted in some way? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| (please circle) | Hardly ever think about it | | | | Think about it all the time |
| | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |
| (13) Do you ever feel as if there is a conspiracy against you? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| (please circle) | Hardly ever think about it | | | | Think about it all the time |
| | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |
| (14) Do you ever feel as if some organisation or institution has it in for you? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| (please circle) | Hardly ever think about it | | | | Think about it all the time |
| | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |
| (15) Do you ever feel as if someone or something is watching you? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| (please circle) | Hardly ever think about it | | | | Think about it all the time |
| | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |

| | Please circle if answered YES | | | | |
|---|---|---|---|---|---|
| (16) Do you ever feel as if you have special abilities or powers? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| (please circle) | Hardly ever think about it | | | | Think about it all the time |
| | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |
| (17) Do you ever feel as if there is a special purpose or mission to your life? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| (please circle) | Hardly ever think about it | | | | Think about it all the time |
| | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |
| (18) Do you ever feel as if there is a mysterious power working for the good of the world? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| (please circle) | Hardly ever think about it | | | | Think about it all the time |
| | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |
| (19) Do you ever feel as if you are or destined to be someone very important? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| (please circle) | Hardly ever think about it | | | | Think about it all the time |
| | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |
| (20) Do you ever feel that you are a very special or unusual person? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| (please circle) | Hardly ever think about it | | | | Think about it all the time |
| | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |

| | Please circle if answered YES | | | | |
|---|---|---|---|---|---|
| (21) Do you ever feel that you are especially close to God? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| | Hardly ever think about it | | | | Think about it all the time |
| (please circle) | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |
| (22) Do you ever think that people can communicate telepathically? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| | Hardly ever think about it | | | | Think about it all the time |
| (please circle) | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |
| (23) Do you ever feel as if electrical devices such as computers can influence the way you think? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| | Hardly ever think about it | | | | Think about it all the time |
| (please circle) | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |
| (24) Do you ever feel as if there are forces around you which affect you in strange ways? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| | Hardly ever think about it | | | | Think about it all the time |
| (please circle) | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |
| (25) Do you ever feel as if you have been chosen by God in some way? | Not at all distressing | | | | Very distressing |
| | 1 | 2 | 3 | 4 | 5 |
| | Hardly ever think about it | | | | Think about it all the time |
| (please circle) | 1 | 2 | 3 | 4 | 5 |
| No Yes ----------> | Don't believe it's true | | | | Believe it is absolutely true |
| | 1 | 2 | 3 | 4 | 5 |

| | Please circle if answered YES | | | | |
|---|---|---|---|---|---|
| (26) Do you believe in the power of witchcraft, voodoo or the occult? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |
| (27) Are you often worried that your partner may be unfaithful? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |
| (28) Do you ever think that you smell very unusual to other people? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |
| (29) Do you ever feel as if your body is changing in a peculiar way? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |
| (30) Do you ever think that strangers want to have sex with you? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |

| | Please circle if answered YES | | | | |
|---|---|---|---|---|---|
| (31) Do you ever feel that you have sinned more than the average person? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |
| (32) Do you ever feel that people look at you oddly because of your appearance? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |
| (33) Do you ever feel as if you had no thoughts in your head at all? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |
| (34) Do you ever feel as if your insides might be rotting? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |
| (35) Do you ever feel as if the world is about to end? | Not at all distressing | 1 | 2 | 3 | 4 | Very distressing 5 |
| (please circle) | Hardly ever think about it | 1 | 2 | 3 | 4 | Think about it all the time 5 |
| No Yes ----------> | Don't believe it's true | 1 | 2 | 3 | 4 | Believe it is absolutely true 5 |

**Please circle if answered YES**

(36) Do your thoughts ever feel alien to you in some way?

(please circle)

No Yes ---------->

Not at all distressing 1 2 3 4 Very distressing 5

Hardly ever think about it 1 2 3 4 Think about it all the time 5

Don't believe it's true 1 2 3 4 Believe it is absolutely true 5

---

(37) Have your thoughts ever been so vivid that you were worried other people would hear them?

(please circle)

No Yes ---------->

Not at all distressing 1 2 3 4 Very distressing 5

Hardly ever think about it 1 2 3 4 Think about it all the time 5

Don't believe it's true 1 2 3 4 Believe it is absolutely true 5

---

(38) Do you ever feel as if your own thoughts were being echoed back to you?

(please circle)

No Yes ---------->

Not at all distressing 1 2 3 4 Very distressing 5

Hardly ever think about it 1 2 3 4 Think about it all the time 5

Don't believe it's true 1 2 3 4 Believe it is absolutely true 5

---

(39) Do you ever feel as if your thoughts were blocked by someone or something else?

(please circle)

No Yes ---------->

Not at all distressing 1 2 3 4 Very distressing 5

Hardly ever think about it 1 2 3 4 Think about it all the time 5

Don't believe it's true 1 2 3 4 Believe it is absolutely true 5

---

(40) Do you ever feel as if other people can read your mind?

(please circle)

No Yes ---------->

Not at all distressing 1 2 3 4 Very distressing 5

Hardly ever think about it 1 2 3 4 Think about it all the time 5

Don't believe it's true 1 2 3 4 Believe it is absolutely true 5

---

# PTCI Scoring Key

**Negative Cognitions about Self**

2 _____
3 _____
4 _____
5 _____
6 _____
9 _____
12 _____
14 _____
16 _____
17 _____
20 _____
21 _____
24 _____
25 _____
26 _____
28 _____
29 _____
30 _____
33 _____
35 _____
36 _____

Sum A _____

÷ 21 = _____ **(Score)**

**Negative Cognitions about the World**

7 _____
8 _____
10 _____
11 _____
18 _____
23 _____
27 _____

Sum B _____

÷ 7 = _____ **(Score)**

**Self-Blame**

1 _____
15 _____
19 _____
22 _____
31 _____

Sum C _____

÷ 5 = _____ **(Score)**

**Total Score**

Sum A _____
Sum B _____
Sum C _____

Sum of A, B, C

_____ **(Score)**

**Note**: Items 13, 32, and 34 are experimental and are therefore not included in subscales.

# Appendix 10

Frequencies: Screening for normality

**Statistics**

| | N | | | Std. | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Valid | Missing | Mean | Deviation | Skewness | | Kurtosis | | Range |
| | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Error | Statistic | Std. Error | Statistic |
| AGE | 50 | 1 | 40.3800 | 8.8061 | -.187 | .337 | -.749 | .662 | 34.00 |
| CASENESS | 45 | 6 | .5111 | .5055 | -.046 | .354 | -2.093 | .695 | 1.00 |
| DTSAROUS | 45 | 6 | 19.0000 | 12.5354 | .157 | .354 | -.967 | .695 | 40.00 |
| DTSAVOID | 45 | 6 | 16.7556 | 15.1420 | .690 | .354 | -.633 | .695 | 48.00 |
| DTSFREQ | 45 | 6 | 25.7556 | 17.6083 | .524 | .354 | -.733 | .695 | 64.00 |
| DTSINTRU | 45 | 6 | 16.1333 | 11.1998 | .259 | .354 | -.904 | .695 | 40.00 |
| DTSTOTAL | 45 | 6 | 51.8889 | 35.7054 | .467 | .354 | -.792 | .695 | 128.00 |
| IPSAQNEG | 35 | 16 | 25.7429 | 4.1327 | .573 | .398 | .114 | .778 | 18.00 |
| IPSAQPOS | 36 | 15 | 25.5833 | 4.3907 | .248 | .393 | .559 | .768 | 22.00 |
| NEGINT | 42 | 9 | 5.0952 | 3.2371 | 1.133 | .365 | 1.582 | .717 | 15.00 |
| NEGINTSQ | 42 | 9 | 2.1343 | .7439 | -.122 | .365 | .943 | .717 | 3.87 |
| NEGPERS | 42 | 9 | 5.7619 | 3.1992 | -.045 | .365 | -.610 | .717 | 12.00 |
| NEGSIT | 42 | 9 | 5.0952 | 3.2371 | 1.133 | .365 | 1.582 | .717 | 15.00 |
| NEGSITSQ | 42 | 9 | 1.7899 | .7232 | -.180 | .365 | .664 | .717 | 3.46 |
| POSINT | 43 | 8 | 6.6744 | 2.3576 | .056 | .361 | .824 | .709 | 12.00 |
| POSPERS | 43 | 8 | 3.2558 | 2.0827 | .687 | .361 | .439 | .709 | 9.00 |
| POSSIT | 42 | 9 | 5.0952 | 3.2371 | 1.133 | .365 | 1.582 | .717 | 15.00 |
| POSSITSQ | 43 | 8 | 1.5569 | .7199 | -.395 | .361 | .403 | .709 | 2.83 |
| JOBTIM | 50 | 1 | 191.7800 | 97.5134 | -.357 | .337 | -.738 | .662 | 378.00 |
| PCTINCAS | 45 | 6 | 60.8667 | 26.2666 | .495 | .354 | -.699 | .695 | 94.00 |
| PCTINCW | 45 | 6 | 33.0000 | 8.8523 | -.739 | .354 | .922 | .695 | 42.00 |
| PCTISB | 45 | 6 | 9.7333 | 4.4436 | .807 | .354 | -.344 | .695 | 16.00 |
| PCTISBSQ | 45 | 6 | 3.0446 | .6887 | .501 | .354 | -.791 | .695 | 2.35 |
| PCTITOT | 45 | 6 | 103.6000 | 35.5843 | .220 | .354 | -.810 | .695 | 140.00 |
| PDICON | 51 | 0 | 35.5294 | 30.7190 | 1.072 | .333 | 1.575 | .656 | 142.00 |
| PDICONSQ | 51 | 0 | 5.2175 | 2.9109 | -.151 | .333 | -.583 | .656 | 11.92 |
| PDIDIST | 51 | 0 | 31.9020 | 31.5603 | 1.541 | .333 | 3.001 | .656 | 139.00 |
| PDIDISQ | 51 | 0 | 4.8351 | 2.9487 | .148 | .333 | -.405 | .656 | 11.79 |
| PDIFREQ | 51 | 0 | 29.5490 | 27.7332 | 1.385 | .333 | 2.652 | .656 | 133.00 |
| PDIFRSQ | 51 | 0 | 4.6970 | 2.7636 | .031 | .333 | -.469 | .656 | 11.53 |
| PDIPARAN | 50 | 1 | 1.5200 | 1.3438 | .481 | .337 | -.840 | .662 | 4.00 |
| PDIPERSC | 49 | 2 | 2.0000 | 1.7912 | .386 | .340 | -1.165 | .668 | 5.00 |
| PDISUSP | 49 | 2 | 1.7347 | 1.1324 | -.256 | .340 | -1.350 | .668 | 3.00 |
| PDITOTAL | 46 | 5 | 13.0870 | 10.3426 | .929 | .350 | .470 | .688 | 40.00 |
| time since trauma in months | 40 | 11 | 67.7750 | 80.9291 | 1.229 | .374 | .100 | .733 | 239.00 |
| TIMELOG | 40 | 11 | 1.4197 | .6998 | -.353 | .374 | -.746 | .733 | 2.38 |

## Appendix 11

Reliability analysis summary table

| Reliability | Inter-item correlation | Alpha |
|---|---|---|
| DTS | .4923 | .9707 |
| PTCI | .3664 | .9539 |
| PDI | .3101 | .9460 |
| IPSAQ | .0850 | .7431 |
| TQ | .6462 | .2037 |

# Appendix12

## Correlation Matrix For Analysis Of Descriptive Data

**Correlation matrix for descriptive data analysis**

| | | DTSAROUS | DTSAVOID | DTSFREQ | DTSINTRU | DTSSEV | DTSTOTAL | NEGINTSQ | NEGPERS | NEGSITSQ | PCTINCAS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pearson Correlation | AGE | .321* | .209 | .295* | .315* | .295* | .300* | .141 | -.250 | .151 | .170 |
| | gender | -.142 | -.256 | -.167 | -.070 | -.187 | -.180 | -.210 | .289 | -.003 | -.204 |
| | tech or para | -.143 | -.228 | -.225 | -.215 | -.198 | -.215 | .088 | -.013 | .051 | -.225 |
| | JOBTIM | .352* | .341* | .403** | .392** | .367* | .391** | .320* | -.255 | -.049 | .159 |
| | TIMELOG | .001 | .020 | -.001 | -.018 | .006 | .003 | .053 | -.411* | .244 | -.046 |
| Sig. (2-tailed) | AGE | .031 | .169 | .049 | .035 | .049 | .045 | .373 | .111 | .340 | .271 |
| | gender | .351 | .090 | .272 | .649 | .220 | .236 | .181 | .063 | .986 | .183 |
| | tech or para | .350 | .131 | .137 | .155 | .193 | .157 | .581 | .937 | .746 | .143 |
| | JOBTIM | .018 | .022 | .006 | .008 | .013 | .008 | .039 | .103 | .760 | .303 |
| | TIMELOG | .995 | .906 | .993 | .914 | .969 | .987 | .766 | .016 | .165 | .792 |
| N | AGE | 45 | 45 | 45 | 45 | 45 | 45 | 42 | 42 | 42 | 44 |
| | gender | 45 | 45 | 45 | 45 | 45 | 45 | 42 | 42 | 42 | 44 |
| | tech or para | 45 | 45 | 45 | 45 | 45 | 45 | 42 | 42 | 42 | 44 |
| | JOBTIM | 45 | 45 | 45 | 45 | 45 | 45 | 42 | 42 | 42 | 44 |
| | TIMELOG | 38 | 38 | 38 | 38 | 38 | 38 | 34 | 34 | 34 | 35 |

**Correlation matrix for descriptive data analysis**

| | | PCTINCW | PCTISBSQ | PCTITOT | PDICONSQ | PDIDISQ | PDIFRSQ | PDITOTAL | POSINT | POSPERS | POSSITSQ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pearson Correlation | AGE | -.102 | .108 | .115 | -.182 | -.133 | -.171 | -.060 | .128 | -.358* | .263 |
| | gender | .037 | -.260 | -.174 | -.038 | -.102 | -.069 | -.161 | -.059 | -.050 | .171 |
| | tech or para | -.041 | -.410** | -.226 | .098 | .027 | .051 | .072 | -.235 | .262 | .158 |
| | JOBTIM | .013 | .184 | .146 | -.049 | .001 | -.051 | .045 | .056 | -.228 | .195 |
| | TIMELOG | -.091 | .056 | -.051 | .190 | .177 | .169 | .258 | -.046 | -.027 | .148 |
| Sig. (2-tailed) | AGE | .511 | .486 | .456 | .206 | .356 | .235 | .692 | .413 | .018 | .089 |
| | gender | .810 | .088 | .259 | .795 | .483 | .635 | .285 | .707 | .750 | .274 |
| | tech or para | .792 | .006 | .139 | .498 | .853 | .723 | .635 | .128 | .089 | .311 |
| | JOBTIM | .933 | .233 | .344 | .734 | .992 | .727 | .765 | .723 | .142 | .210 |
| | TIMELOG | .605 | .747 | .771 | .240 | .274 | .298 | .129 | .794 | .879 | .405 |
| N | AGE | 44 | 44 | 44 | 50 | 50 | 50 | 46 | 43 | 43 | 43 |
| | gender | 44 | 44 | 44 | 50 | 50 | 50 | 46 | 43 | 43 | 43 |
| | tech or para | 44 | 44 | 44 | 50 | 50 | 50 | 46 | 43 | 43 | 43 |
| | JOBTIM | 44 | 44 | 44 | 50 | 50 | 50 | 46 | 43 | 43 | 43 |
| | TIMELOG | 35 | 35 | 35 | 40 | 40 | 40 | 36 | 34 | 34 | 34 |

Table Caption

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

# Appendix 13

Independent Samples t-tests for job type

| Variable | N | Mean | Std. Deviation | t | d.f. | p |
|---|---|---|---|---|---|---|
| DTS AROUS | | | | .943 | 43 | .40 |
| Technician | 18 | 21.16 | 14.20 | | | |
| Paramedic | 27 | 17.55 | 11.33 | | | |
| DTS AVOID | | | | 1.73 | 43 | .38 |
| Technician | 18 | 20.94 | 17.44 | | | |
| Paramedic | 27 | 13 96 | 12.99 | | | |
| DTS FREQ | | | | 1.12 | 43 | .43 |
| Technician | 18 | 30 55 | 20.79 | | | |
| Paramedic | 27 | 22 55 | 14.67 | | | |
| DTS INTRU | | | | .458 | 43 | .22 |
| Technician | 18 | 19.05 | 12.18 | | | |
| Paramedic | 27 | 14 18 | 10.26 | | | |
| DTS SEVER | | | | 1.24 | 43 | .28 |
| Technician | 18 | 30.61 | 20.58 | | | |
| Paramedic | 27 | 23.14 | 17.10 | | | |
| DTS TOTAL | | | | 1.20 | 43 | .36 |
| Technician | 18 | 61.16 | 40.45 | | | |
| Paramedic | 27 | 45.70 | 31.43 | | | |
| IPSAQ | | | | 1.36 | 40 | .76 |
| NEGINTSQ | | | | | | |
| Technician | 16 | 2.05 | .84 | | | |
| Paramedic | 26 | 2.18 | .68 | | | |
| IPSAQ NEGPERS | | | | -1.91 | 40 | .80 |
| Technician | | | | | | |
| Paramedic | 16 | 5.81 | 3.44 | | | |
| | 26 | 5 73 | 3.10 | | | |
| IPSAQ NESITSQ | | | | 0.18 | 40 | .79 |
| Technician | | | | | | |
| Paramedic | 16 | 1.74 | .74 | | | |
| | 26 | 1.81 | .72 | | | |
| IPSAQ POSINT | | | | .378 | 41 | .056 |
| Technician | | | | | | |
| Paramedic | 17 | 7.35 | 2.62 | | | |
| | 26 | 6.23 | 2.10 | | | |
| IPSAQ POSPERS | | | | .32 | 41 | .07 |
| Technician | | | | | | |
| Paramedic | 17 | 2.58 | 1.90 | | | |
| | 26 | 2.69 | 2.11 | | | |
| IPSAQ POSITSQ | | | | -1.10 | 41 | .46 |
| Technician | | | | | | |
| Paramedic | 17 | 1.41 | .89 | | | |
| | 26 | 1.64 | .57 | | | |
| PTCI NCAS | | | | 1.35 | 42 | .29 |
| Technician | 17 | 68.88 | 28.94 | | | |
| Paramedic | 27 | 56.96 | 23.61 | | | |
| PTCI NW | | | | -.24 | 42 | .35 |
| Technician | 17 | 33.41 | 10.66 | | | |
| Paramedic | 27 | 32.66 | 7.88 | | | |
| PTCI SBSQ | | | | 1.74 | 42 | .02 |
| Technician | 17 | 3.41 | .70 | | | |
| Paramedic | 27 | 2.84 | .58 | | | |
| PTCI TOTAL | | | | 1.14 | 42 | .21 |
| Technician | 17 | 114.41 | 39.82 | | | |
| Paramedic | 27 | 98.03 | 31.85 | | | |
| PDI CONSQ | | | | .26 | 48 | .31 |
| Technician | 21 | 4.99 | 3.35 | | | |
| Paramedic | 29 | 5.55 | 2.43 | | | |
| PDI DISQ | | | | .70 | 48 | .66 |
| Technician | 21 | 4.84 | 3.37 | | | |
| Paramedic | 29 | 4.99 | 2.55 | | | |
| PDI FRSQ | | | | .47 | 48 | .26 |
| Technician | 21 | 4.62 | 3.20 | | | |
| Paramedic | 29 | 4.90 | 2.34 | | | |
| PDI TOTAL | | | | 1.08 | 44 | .29 |
| Technician | 19 | 12.21 | 10.00 | | | |
| Paramedic | 27 | 13.70 | 10 71 | | | |

Independent Samples t-tests for gender

| Variable | N | Mean | Std. Deviation | t | d.f. | p |
|---|---|---|---|---|---|---|
| DTS AROUS | | | | .94 | 43 | .40 |
| Male | 39 | 19.69 | 12.70 | | | |
| Female | 6 | 14.50 | 11.34 | | | |
| DTS AVOID | | | | 1.73 | 43 | .38 |
| Male | 39 | 18.25 | 14.93 | | | |
| Female | 6 | 7.00 | 13.76 | | | |
| DTS FREQ | | | | 1.11 | 43 | .43 |
| Male | 39 | 26.89 | 17.68 | | | |
| Female | 6 | 18 33 | 16.60 | | | |
| DTS INTRU | | | | .45 | 43 | .22 |
| Male | 39 | 16.43 | 11.56 | | | |
| Female | 6 | 14.16 | 9.08 | | | |
| DTS SEVER | | | | 1.24 | 43 | .28 |
| Male | 39 | 27.48 | 18.82 | | | |
| Female | 6 | 17.33 | 16.83 | | | |
| DTS TOTAL | | | | 1.20 | 43 | .36 |
| Male | 39 | 54.36 | 35.79 | | | |
| Female | 6 | 35.66 | 3.39 | | | |
| IPSAQ NEGINTSQ | | | .74 | 1.36 | 40 | .76 |
| Male | 36 | 2.19 | .70 | | | |
| Female | 6 | 1.75 | | | | |
| IPSAQ NEGPERS | | | | -1.91 | 40 | .08 |
| Male | | | | | | |
| Female | 36 | 5.38 | 3.21 | | | |
| | 6 | 8 00 | 2.09 | | | |
| IPSAQ NESITSQ | | | | .01 | 40 | .79 |
| Male | | | | | | |
| Female | 36 | 1.79 | .74 | | | |
| | 6 | 1.78 | .61 | | | |
| IPSAQ POSINT | | | | .37 | 41 | .056 |
| Male | | | | | | |
| Female | 37 | 6.72 | 2.51 | | | |
| | 6 | 6.33 | 1.03. | | | |
| IPSAQ POSPERS | | | | .32 | 41 | .07 |
| Male | | | | | | |
| Female | 37 | 3.29 | 2.22 | | | |
| | 6 | 3.00 | .89 | | | |
| IPSAQ POSITSQ | | | | -1.10 | 41 | .46 |
| Male | | | | | | |
| Female | 37 | 1.50 | .74 | | | |
| | 6 | 1.85 | .50 | | | |
| PTCI NCAS | | | | 1.35 | 42 | .29 |
| Male | 37 | 63.86 | 26.72 | | | |
| Female | 6 | 49.42 | 20.14 | | | |
| PTCI NW | | | | -.24 | 42 | .35 |
| Male | 37 | 32.81 | 9.36 | | | |
| Female | 7 | 33.71 | 6.87 | | | |
| PTCI SBSQ | | | | 1.74 | 42 | .02 |
| Male | 37 | 3.13 | .71 | | | |
| Female | 7 | 2.65 | .30 | | | |
| PTCI TOTAL | | | | 1.14 | 42 | .21 |
| Male | 37 | 107.02 | 36.80 | | | |
| Female | 7 | 90.28 | 26.27 | | | |
| PDI CONSQ | | | | .26 | 48 | .31 |
| Male | 43 | 5.36 | 2.94 | | | |
| Female | 7 | 5.05 | 2.30 | | | |
| PDI DISQ Male | | | | .70 | 48 | .66 |
| Female | 43 | 5.04 | 2.97 | | | |
| | 7 | 4.20 | 2.44 | | | |
| PDI FRSQ | | | | .47 | 48 | .26 |
| Male | 43 | 4.86 | 2.79 | | | |
| Female | 7 | 4.33 | 2.21 | | | |
| PDI TOTAL | | | | 1.08 | 44 | .29 |
| Male | 40 | 13.72 | 10.62 | | | |
| Female | 6 | 8 83 | 7.52 | | | |