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TRAUMA STRESS SEVERITY AND ROAD TRAFFIC ACCIDENTS: A PROSPECTIVE PILOT STUDY INTO 11 CAUSAL FACTORS

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TRAUMA STRESS SEVERITY AND ROAD TRAFFIC ACCIDENTS:
A PROSPECTIVE PILOT STUDY INTO 11 CAUSAL FACTORS

by

LOUISE HORNER-BAGGS

A thesis submitted to the University of Plymouth in partial fulfilment for the degree of

DOCTOR OF CLINICAL PSYCHOLOGY

Department of Psychology
Faculty of Human Sciences

In collaboration with East Gloucestershire NHS Trust

May 1999
Factors associated with the development of post traumatic stress symptomatology have frequently been reported in the literature over the last decade. However, of the empirical studies examining these factors, few have used appropriate methodological designs and most have examined one factor in isolation. This pilot study used a cross-lagged panel analysis design to investigate 11 factors previously identified in the literature as being causally related to the development of post traumatic stress symptomatology. The 11 factors investigated were: perceived controllability, perceived predictability, perceived threat, shattering and confirmation of core assumptions, causal attributions, supportive and unsupportive behaviour, peritraumatic dissociation and the personality factors of neuroticism and introversion. 13 participants were recruited through Cheltenham General Hospital’s accident and emergency department after being involved in a road traffic accident (RTA). They were interviewed on three occasions; ten days post RTA, ten weeks post RTA and six months post RTA and were required to complete four questionnaires. It was found that participants who had high levels of post traumatic stress symptomatology at ten days received low levels of supportive behaviour at six months. Participants who perceived the accident to be unpredictable at ten days had low levels of symptomatology at six months. Two other factors were also found to be causally related to the development of post traumatic stress symptomatology; confirmation and neuroticism, but these factors must be treated with caution due to the possibility of an unspecified third variable. The remaining seven factors were not found to be causally related to the development of symptomatology. Overall these findings support the interactive field theories which propose that post traumatic stress symptomatology develops through a complex interaction of numerous factors from the emotional, social and cognitive domains and cannot be related to specific linear factors.
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AUTHOR'S DECLARATION

At no time during the registration for the degree of Doctor of Clinical Psychology has the author been registered for any other University award.

The contents of this bound volume are identical to the volume submitted for examination in temporary binding except for amendments requested at the examination.

This study was conducted while the author was a Trainee Clinical Psychologist in the South and West Region based in East Gloucestershire NHS Trust and the research was also conducted in collaboration with East Gloucestershire NHS Trust.

Signed ..........................................................

Date .. 29th June 1988 ........................................
CHAPTER 1: INTRODUCTION

1.1 The origins of PTSD

Symptoms of post traumatic stress disorder (PTSD) have appeared in the literature over many years and have included accurate descriptions by Shakespeare i.e. Henry IV, and Samuel Pepys when he wrote about his reactions following the great fire of London in 1666. It is only during the last century, however, that clusterings of symptoms have been isolated and named. This initial understanding of what is now called PTSD was based around the medical model and a biological framework, essentially involving a stimulus and response explanation.

Cardiologists reported occurrences of "soldiers heart", "irritable heart", "effort syndrome" and "DaCostas Syndrome" following symptoms including nightmares, sweating, numbness, intrusive memories, relationship difficulties and hypervigilence, experienced by soldiers following the American Civil War (Tomb, 1994). Similarly the first world war produced terms such as "shell shock", "battle fatigue" and "war neurosis" by neurologists to account for very similar symptoms which were thought to be caused by subtle brain damage. Ericksen (1866, 1876, cited in Williams, 1992), suggested that exposure to railway accidents caused spinal damage that resulted in molecular, inflammatory changes, resulting in severe behavioural effects including the symptoms outlined above. It was not until the onset of the second world war and the efforts of Kardiner (1941, 1947), that the psychological aspects of PTSD were considered alongside the medical view.

Kardiner (1941, 1947, cited in Williams, 1992), alerted the medical profession to the symptoms of combat exposure following the second world war and the
concept that an individual's belief system could moderate his traumatic response. Although the DSM I (American Psychiatric Association, 1952), introduced the first formal classification of a reaction to trauma by the creation of the category "Gross Stress Reaction", this did not incorporate the role of the belief system and was based upon the biological stimulus response framework. Gross Stress Reaction was defined as "a reaction to severe combat or civilian catastrophe that may progress to one of the neurotic reactions if the reaction persists" (Tomb, 1994, p. 238). With the publication of the DSM II in 1968, Gross Stress Reaction was removed and reactions to trauma were minimised significantly with the appearance of "transient situational disturbance" or "adjustment reaction". It appeared that there was a failure to keep the notion of reaction to trauma salient and in mind during times of peace. Nevertheless, pressure from and evidence on the situation and persisting symptoms of the Vietnam war veterans, alongside growing evidence of symptoms amongst civilians involved in natural disasters such as, the Boston Coconut Grove Fire (Adler, 1943), the Buffalo Creek dam collapse (Glesses, Green and Winget, 1981) and other civilian traumas (Horowitz, 1976), produced a specific "Post Traumatic Stress Disorder" in the DSM III of 1980.

The DSM III underwent two revisions and the DSM IV (1993), now exists which still includes a diagnosis of PTSD. The essential features of this are psychological and involve the notion of an individual's belief system. The core symptoms consist of re-experiencing, avoidance and heightened arousal. The symptoms must have occurred for over one month and must cause clinically significant distress or impairment to functioning. Lastly the role of the stressor (criterion A) causing the symptomatology is seen as very important

1 Category A within the DSM-IV which defines what can be considered a traumatic event within the context of physical experience and emotional response.
and has largely shifted away from an emphasis on the severity of the stressor, to a mixture of exposure to the stressor combined with the individual's reaction and perception of it. (See Appendix 1 for the diagnostic criteria for PTSD DSM-IV).

1.2 Is PTSD a real disorder?
Despite the large amount of clinical and research evidence supporting PTSD (Burgess and Holmstrom, 1974; Egendorf, Kadushin, Laufer, Rothbart and Sloan, 1981; Green, Grace, Lindy, Titchener and Lindy, 1983; Knight, 1984, cited in Keane, Wolfe and Taylor, 1987; Malloy, Fairbank and Keane, 1983; Silver and Iacono 1984; Zimering, 1984, cited in Keane et al. 1987 etc....), there is still some debate as to the existence of such a psychiatric disorder. Sparr (1995), has suggested that this doubt has developed due to two separate and sometimes conflicting contexts in which the PTSD diagnosis is used: psychiatric and lay-legal. The 1980s and 1990s have seen growing public interest and awareness around the issue of stress and how it can affect work. There has been much publicity surrounding workers compensation claims following "stress" and hence, this has served to increase public scepticism.

Unfortunately, lawyers and the general public have confused notions of "stress" which confer eligibility for financial gains with PTSD, because the legal concept of stress uses the psychiatric notion which identifies a stressor (event) and the resulting emotional reactions to that stressor.

Sparr (1995), has argued that in many cases involving compensation, a decision as to whether a stress is detrimental is made on ethical or moral grounds i.e. unfair treatment could be stressful and hence, psychiatrically harmful. It could thus be argued that this untoward external event, "unfair treatment", which has resulted in psychiatric distress, is tantamount to PTSD. Lawyers are often trying to obtain clear answers to clear questions in order for a
judge to make a clear decision. Consequently, they will often try to fit the psychiatric testimony to the legal rules. As a response to this increasing difficulty the DSM IV has refined the diagnostic criteria for PTSD, but the concept of stress still remains idiosyncratic.

It is likely that the debate was also fuelled by increasing evidence of co-morbidity within the diagnosis of PTSD. It appears that PTSD is not the only disorder that develops following exposure to trauma. Davidson, Hughes and Blazer (1991), found that within subjects diagnosed with PTSD there existed a co-morbidity rate of 30 per cent for depression, 50 per cent for generalised anxiety disorder, 50 per cent for simple phobia and 31 per cent for agoraphobia. It has also been found that PTSD frequently co-occurs with substance abuse (Davidson, Swartz and Storck, 1985; Escobar Randolf and Puente, 1983; Green, Lindy and Grace, 1989; Sierles 1983). Nevertheless, it is difficult to establish which of the disorders is primary and which is secondary. However, there is certainly evidence to suggest that both substance abuse and depression occur as a secondary condition, developing in response to the PTSD rather than developing as a reaction to the stressful event itself (Green et al 1989). Interestingly, if other diagnostic conditions are examined, for example, depression, it is common for co-morbidity to exist here also. Depression and generalised anxiety often share an integral relationship and a high correlation between the two disorders is frequently found (Kendall and Ingram, 1989), but this has not lead to a discussion regarding the existence of depression as a psychiatric disorder.

Considering the relatively recent arrival of the diagnosis of PTSD a surprising amount of research has been conducted into the disorder, with a recent review indicating the appearance of 1596 references to traumatic stress before 1990 (Blake, Albano and Keane, 1992). Nevertheless, despite this mass of research
very little is still known about PTSD in terms of susceptibility and individual differences. There still exist large unexplained individual differences in the chronicity and severity of symptoms following a traumatic experience as defined by the criterion A within DSM IV. Consequently, we are still in the dark about who will and who will not develop PTSD following a traumatic experience. This air of mystery could also be another factor adding to the debate surrounding the existence of PTSD.

1.3 Theories of PTSD

Theories of psychological trauma have developed significantly from the initial medical stimulus response models proposed a century ago. The theories appear to have moved through three phases: (1) stimulus response; (2) information processing and (3) field theory or interactive models. Although each phase often contained several different theories or models, each theory could generally be ascribed to one of these broad titles.

1.3.1 Stimulus response theories

The stimulus response theories moved from a biological to a psychological model after the second world war. Learning theories were at this time very influential and were widely used as a theory for PTSD after the publication of the DSM III. Mowrer's (1947; 1960) two factor learning theory was initially very popular. Keane, Zimmerling and Caddell (1985), suggested that a person exposed to a life threatening experience would become conditioned to the stimuli present during the traumatic experience and hence, would develop anxiety symptoms when the stimuli were re-encountered. As a result of higher order conditioning and stimulus generalisation other situations would also elicit anxiety symptoms even though they were not previously encountered during the traumatic event i.e. a car backfiring. Other researchers have used Mowrer's two factor theory in order to explain PTSD, for instance, Becker,
Skinner, Abel, Axelrod and Cichon (1984), to explain PTSD following sexual assault and Kilpatrick, Veronen and Best (1985), to explain PTSD following rape.

Becker and Emery (1985), believed the sexual assault to be the unconditioned stimulus that evoked both fear and anxiety and that sexual activity associated with the assault became the conditioned stimuli for anxiety. Subsequently other sexual activities may come to evoke fear due to generalisation and higher order conditioning. Kilpatrick et al. (1985), suggested that the rape situation was viewed as life threatening and hence, this elicited terror and high autonomic arousal. Stimuli associated with the rape acquired the capacity to produce a fear response through classical conditioning and then through stimulus generalisation and higher order conditioning other situations and circumstances begin to evoke the same anxiety.

Mowrer's theory may have initially been very compelling due to it's simplicity, but it soon became evident that there were a number of flaws in its explanation of PTSD. Firstly, it does not differentiate between phobia and PTSD in terms of the greater generalisation of fear stimuli found in PTSD. Individuals experiencing PTSD avoid a wider range of situations that may act as cues than do those individuals experiencing phobias including agoraphobics. Secondly, Mowrer's theory does not address the appearance of startle responses found in individuals with PTSD and lastly, the theory also fails to explain the re-experiencing or intrusive symptoms of PTSD, such as flashbacks, nightmares and intrusive images of the traumatic event.

1.3.2 Information processing theories

The information processing approach to developing theories of PTSD is based around the premise that any message, behaviour or trauma could be
interpreted by the individual in a multiplicity of ways, depending upon his/her assumptions, beliefs, expectations or schemata. It is argued that the brain attempts to fit any experience as information into pre-existing schemata and expectancies, but when these do not fit, as in the case of a traumatic experience, the brain increases its activity in an attempt to augment the information processing response. Such increases of activity are argued to utilise the protective mechanisms of hallucinating, deluding, avoiding and denial (de la Pena, 1984). Transformative information processing mechanisms are entirely individual and depend upon thought, choice, learning style, selective perception, assignment of meaning, adaptation, self-attribution and appraisal. The entire information processing approach attempts to return the self to a steady state and when a return does not occur less and less adaptive strategies are used.

Horowitz (1976), developed one of the earliest information processing theories on PTSD. The core concept of this model was approach-avoidance as a way of coming to terms with the traumatic event and threat of future occurrence. Avoidance strategies which included cognitive as well as behavioural were used as an attempt to reduce anxiety and approach strategies (intrusions) allowed for the ventilation of emotions whilst action was taken to make sense of the situation and rework personal belief systems. Horowitz, Wilner & Alvarez (1979), operationalised the theory with the publication of the Impact of Event Scale, a short, self report measure capturing the level of symptomatic response to a specific trauma with intrusion and avoidance as the primary domains of measurement.

Foa and Kozak (1986), proposed another theory for PTSD also based upon the information processing premise. They developed their theory from Lang's (1977, 1979), theory of anxiety. In summary this proposed that emotional stimuli
are represented by propositional networks within the brain. These networks contain information about the meaning of the stimuli, their imaginal properties, whether the stimuli are unpleasant or dangerous and the behaviours that the person will perform in response to the stimuli. Foa and Kozak (1986), suggested that this network therefore, could serve as a programme for escape or avoidance. They argued that this network differed from other information processing networks because it contained information about danger and hence could be viewed as a fear structure. Consequently, only when an event acquires meaning of threat and danger does it become represented in memory as a fear structure separate from other memory structures with the activation of escape or avoidance reactions. They argued that PTSD differs from other anxiety disorders because the traumatic event is of monumental significance and violates previously held concepts of safety.

Foa & Kozak (1986), argued that as stimuli and responses that once signalled safety become dangerous the individual's world becomes much less predictable and controllable. Consequently, it is suggested that an individual is much more likely to develop PTSD if the trauma occurred in a previously safe environment. For instance, a woman raped by a stranger whilst walking home at night is much less likely to experience a violation of safety assumptions than a woman who was raped whilst at home in her own bed. Due to the change in rules of safety a multitude of stimuli enter the fear structure resulting in frequent activation. This in turn results in bursts of arousal and re-experiencing, alternating with attempts to avoid or escape the fear. Avoidance tactics are not adaptive and as Rachman (1980), suggested they result in a lack of satisfactory emotional processing leading to symptomatology such as, inability to concentrate, excessive restlessness, irritability etc.
Other information processing theories of PTSD have included Beck and Emery's (1985), threat reaction model and Chemtob, Roitblat, Hamada, Carlson and Twentyman's (1988), cognitive action theory of PTSD. Nevertheless, although information processing theories have provided an instructive explanation of PTSD, there is still some disagreement over whether information processing models can exclusively account for all individual differences observed when exposure to the same or similar traumatic experience occurs. Consequently, the interactive field model is now gaining support and this allows for the consideration of the wider context where bio-psycho-social forces are examined (Freedy and Donkervoet 1995).

1.3.3 Interactive field theories
The interactive field model argues that traumatic reactions have multiple causes and these causes involve the belief systems and subjective reality of the victim. The model considers situational and individual characteristics such as, pretrauma experiences, premorbid personality, support, familial background, etc, whilst still incorporating the basic premise of the information processing model. Foy, Carroll and Donahoe (1987), argued that when using an interactive field model a post traumatic reaction could only be considered to be "multi-determined and related to a complex array of factors ... (and so any) firm conclusion about the causal significance of factors is precluded" (p.18).

Hart (1975), when writing about the stressor involved in a traumatic event, suggested an interactive field model approach, although it was not identified as this at the time. He argued that the stressor should be viewed as a complex system of related factors including, the context, type and focus of the stressor; the predictability, controllability, recurrence, threat to life and duration of the stressor; whether the stressor was man-made or natural; the number of perpetrators involved (if any) and relationship of victim to perpetrator during the
stressor. Furthermore, Hart (1975), argued that these aspects of the stressor have meaning only as the victim gives meaning to them.

Wilson (1989), has developed an interactive field model or bio-psycho-social model of traumatic stress which examines psychological predisposition, pre-trauma personality and post trauma support in relation to the development of PTSD. Wilson has proposed an equation which considers the individuals past (f) in terms of previous trauma and pre trauma personality (p), the traumatic aspects of the event (E), the environment i.e. society and social support (e), and cognitive process or information processing strategies (t) as all combining to produce PTSD (b): \( b = f(p, E, e, t) \). However, Wilson suggests that the amount of variance in post traumatic symptoms due to each of the variables is largely unknown.

Therefore, the interactive field model appears to be an all inclusive model which argues that the causes of PTSD are highly individual. However, by examining the available research data to date, certain causal themes continue to re-emerge which broadly cover Wilson's equation.

Consequently, there has been a gradual acceptance of PTSD as a real disorder which cumulated in the appearance of the diagnosis for the first time in the DSM III of 1980. Theories of PTSD are however, continuing to be debated and as yet there is no one theory that clearly explains all the symptomatology found. Although the interactive field model can explain PTSD symptomatology, there is no feasible way of testing the theory in order to prove or disprove it due to its complexity and individuality. Thus, one is left with the feeling that PTSD is a complex disorder possibly caused by a number of different 'unknown' factors. However, after reviewing all the literature on the etiology of PTSD it can be found that certain factors are known to contribute to the development of PTSD.
What is surprising, however, is that very few empirical studies have drawn together all the available evidence concerning these known factors in order to examine them in a single study.

1.4 Current study

Dunmore, Clark and Ehlers’ (1997), research is the only study which has examined more than two causal factors of PTSD. Dunmore et al. (1997), focused exclusively upon cognitive theory and information processing factors, and although these are very significant to the development of PTSD as discussed previously, other factors from the different domains i.e. emotional and social are also of importance as demonstrated by the literature (Freedy and Donkervoet 1995; Wilson 1989).

In this study 11 factors from the cognitive, behavioural, emotional and social domains will be examined which are demonstrated by the literature to be important in predicting the chronicity and severity of symptoms following a traumatic experience as defined by criterion A in the DSM IV. Firstly, perceived controllability and predictability are demonstrated to be very important in the development of PTSD symptoms and hence, these will be the first and second factors in this study (Baum, Cohen and Hall, 1993; Davidson and Foa 1993; Foa Zinbarg and Rothbaum 1992; Hart 1975; Jones and Barlow 1990). Foa et al. (1992), stated that:

*The most important conclusion emerging from this review is that not only must the stressor be perceived as a potential threat to survival, it must also be experienced as uncontrollable or unpredictable. This suggests that the constructs of uncontrollability and unpredictability should be incorporated into the definition of what constitutes a trauma for criterion A in the DSM-III-R criteria for PTSD (p.233).*
The third factor, briefly stated above, is that of perceived threat to life. Kilpatrick, Saunders, Amick-McMullan, Best, Veronen and Resick (1989), found that PTSD frequency in crime victims was more than doubled if either injury or perceived life threat was present and the incidence was quadrupled if both were present. Hence, it is argued that the perception of threat is at least as important as objective indicators of actual danger in predicting the chronicity and severity of PTSD symptoms. (Blanchard, Hickling, Mitnick, Taylor, Loos and Buckley, 1985; Ehlers and Steil, 1995; Foa et al. 1992; Hart, 1975). Memory of perceived threat appears to change over time and this has important implications for the development of PTSD symptomatology. Foa, Steketee and Rothbaum (1989), found that a rape client only developed PTSD after she had discovered that the perpetrator killed his next victim.

The fourth and fifth factors to be investigated within this study are "shattering" and "confirmation" of core assumptions. Shattering refers to the situation in which a traumatic episode leads to evidence that disproves previously held positive core beliefs about the world. Confirmation is the opposite of this in that it refers to the situation in which the traumatic episode confirms negative core beliefs about the world. Although many researchers have hypothesised about the importance of shattering and confirmation (Foa et al. 1989; Foa and Riggs, 1993; Janoff-Bulman and Frieze, 1983; Resick and Schicke, 1993), only one study has examined it empirically. Dunmore et al. (1997), found that participants with persistent symptoms of PTSD were significantly more likely to report global negative appraisals i.e. shattering or confirmation, than those participants who recovered.

Causal attributions have been found to be associated with PTSD symptomatology and hence, this will be the sixth factor. Joseph, Brewin, Yule
and Williams (1991), who examined survivors of the Herald of Free Enterprise, found that internal attributions for negative outcomes, such as guilt and shame, were related to higher levels of distress. Similarly, Frazier and Schauben (1994), found that among rape survivors both behavioural and characterological self-blame were associated with poorer recovery from PTSD symptomatology.

The next factor is that of social support. Keane, Scott, Chavoya, Lamparski and Fairbank (1985), found that Vietnam veterans who had persistent PTSD symptomatology had significantly lower levels of qualitative and quantitative social support, compared to well-adjusted Vietnam veterans. More recently, Davis, Brickman and Baker (1991), found that unsupportive behaviour, such as emotional withdrawal, blaming the victim and self-centred behaviour, was more important than supportive behaviour in terms of predicting poor adjustment following rape. Thus, this study will focus on both supportive and unsupportive behaviours as the seventh and eighth factors.

Peritraumatic dissociation is the ninth factor to be investigated. Trauma victims often report alterations in the experience of time, place and person which confer a sense of unreality to the event as it is occurring. Holen (1993), who investigated a North Sea oil rig disaster, found that the level of reported dissociation during the trauma was a predictor of subsequent PTSD. Koopman, Classen and Spiegel (1994), investigated survivors of the Oakland Hills firestorm and found that dissociative symptoms at the time of the firestorm more strongly predicted subsequent PTSD symptomatology than did anxiety and loss of personal autonomy.

Finally, personality/trait factors will be investigated. It has been argued that those participants who indicate a neurotic and/or introversion trait on standardised personality measures are more susceptible to developing PTSD.
symptoms. (Breslau and Davis, 1992; Elder and Clipp, 1987 cited in Davidson, Cudler and Smith, 1987; McFarlane, 1989). Hence, neuroticism and extroversion will be the tenth and eleventh factors.

Many of the empirical studies outlined above have been designed and conducted in a retrospective rather than prospective style. Consequently, some of the findings indicating a significant relationship between the development of PTSD symptoms and the single factor i.e. uncontrollability / unpredictability, shattering or confirmation etc. must be viewed as promising rather than definitive. This study will therefore, examine the factors outlined above in a prospective style in order to produce reliable and valid results.

1.5 Accidents and PTSD

Psychological reactions following accidents requiring an admission to an Accident and Emergency department are rarely reported upon, although this area of research has recently started to grow. The most common type of accident resulting in admission is the road traffic accident (RTA). Mason and Rowlands (1997), reported that 50 181 people were killed or seriously injured during 1994, as a result of road traffic accidents in Great Britain and many more had less significant physical injuries. The implications of these accidents are rarely limited to the individual, but disrupt family structure, occupation and have financial implications for society.

Mayou, Bryant and Duthie (1993), examined the psychological effects of RTAs on three separate groups; car occupants, motorcycle riders and whiplash injury victims and found a total PTSD prevalence of 11 per cent. However, if Post Traumatic Stress symptoms were examined 76 per cent of victims displayed these at the initial interview, 25 per cent at three months and 24 per cent at one year. Hence, PTSD symptomatology was still present in just under one quarter
of the victims one year post RTA. Mayou et al. (1993), also found that the severity of the injury did not influence the development of symptomatology. In his study, motorcyclists suffered more psychiatric problems than the other two groups, but there were no significant differences between the car accident and whiplash injury group.

Blanchard, Hickling, Taylor, Loos and Gerardi (1994), found that of 50 road traffic accident victims seeking medical attention, 46 per cent met the criteria for PTSD at one month. However, this had reduced significantly at six months with a quarter of those originally showing PTSD no longer meeting the diagnosis. In a later study, Blanchard, Hickling, Mitnick, Taylor, Loos and Buckley (1995), found that of 98 RTA victims seeking medical attention and interviewed one to four months post RTA, 39 met a diagnosis of PTSD and a further 26 (66 per cent) displayed post traumatic symptomatology. It was also reported that the extent of the physical injury sustained was significantly correlated to both a diagnosis of PTSD and increased traumatic stress symptomatology thus, contradicting Mayou et al's. (1993), findings.

Nevertheless, Blanchard et al. (1995), did not conduct a prospective study and as he already indicated in his earlier research (Blanchard et al. 1994), a substantial remission in diagnosis can occur between one and six months, thus substantially effecting the results. Blanchard et al. (1995), also reported stark individual exceptions to this significant finding in his paper. This included a female who was ejected from a vehicle whilst travelling at high speed. She received fractures to both femurs, a severe laceration to one leg and nerve damage to one knee, as well as having several fractured ribs and a collapsed lung. She did not have a diagnosis of PTSD and displayed minimal traumatic stress symptomatology. However, a male participant of the same age, who
sustained bruising and whiplash after his accident, clearly met all the criteria for a diagnosis of PTSD.

Blanchard et al. (1995), also examined the perception of threat to life as a predictor of PTSD and traumatic stress symptomatology. Perceived threat to life was found to be both significantly correlated and independent of the extent of physical injury. However, it is unknown as to whether this factor was more important than severity of injury in predicting PTSD symptomatology and whether it could account for the individual differences highlighted above.

Hence, although Blanchard et al. (1994) and Mayou et al. (1993), conducted prospective studies, very little information about susceptibility to PTSD was indicated. For instance, no explanation was given by Blanchard about any individual differences to account for the remission of 25 per cent of his participants. Mayou et al. (1993), did provide an account, but it was very non-specific and could not be used to assess risk: "initial horrifying memories of the accident and evidence of a vulnerable personality are indicators of later difficulty" (p.651). Blanchard, in his later paper (Blanchard et al. 1995), did examine factors influencing the development of PTSD symptomatology and whilst his findings of severity of injury and perceived threat to life were significant, he was still unable to explain the stark individual differences found.

It should also be noted that there were shortcomings in his design i.e. it was retrospective with large a deviation in data collection times post RTA.

1.6 Aims

It is anticipated that this study will demonstrate that the 11 factors identified in the literature: perceived controllability and predictability, perceived threat, shattering or confirmation, causal attributions, supportive and unsupportive behaviour, peritraumatic dissociation and personality factors (neuroticism and
introversion), will be correlated to the development of PTSD symptoms. By prospectively studying for six months participants who have experienced a life threatening event, as defined by criterion A of the DSM-IV, i.e. a road traffic accident, it is believed that there will be a differentiation between severity and duration of symptomatology. It is hoped that this differentiation will be related to differences in the factors outlined above.

In addition it is expected that an interaction between the factors will be identified, thus providing information about the severity and importance of certain factors over others in contributing to an enduring trauma which may be diagnosed as PTSD.

By studying participants for six months a further differentiation may be highlighted between those experiencing "normal" anxiety reactions following trauma i.e. symptoms lasting up to four weeks and those developing enduring trauma i.e. over four weeks.

As this study is a pilot study, with limited subject numbers it is hoped that a more comprehensive prospective study involving larger numbers will build upon work initiated and the information obtained here. It is envisaged that the ultimate aim of this and further work, would be to produce a checklist identifying the risk factors associated with developing an enduring trauma following a traumatic incident. This would be of great benefit to the NHS in aiding primary health care workers identify those clients who are at risk, in order to begin preventative work.
1.7 Hypotheses

Those participants who develop enduring trauma symptoms i.e. beyond four weeks, but not necessarily a full diagnosis of PTSD will have:

- A greater composite score on all factors

It is predicted that certain factors will be of greater significance to the development of enduring trauma, although it cannot be hypothesised at this time which factors.
2.1 Participants and sampling

Fifteen participants were recruited through the accident and emergency department at Cheltenham General hospital. Fifteen was deemed a suitable total considering both the exploratory nature of this research project and a realistic appraisal of the research time available.

Participants were considered for the study if they had been involved in a road traffic accident (RTA) and the following criteria were met:

- aged 18 years or over and,
  - (i) travelling at, or in excess of 30 mph in any vehicle including a motorbike
  - (ii) ejected from a vehicle
  - (iii) a pedestrian
  - (iv) a bicyclist
- were able to meet with the researcher within 10 days of the accident
- were contactable by telephone
- consented to take part in the research.

Participants were excluded from the research if one or more of the following criteria were met:

- they experienced post traumatic amnesia of greater than 24 hours
- the RTA resulted in the death of one or more persons
- they were abusing either alcohol or drugs
- they had experienced a previous trauma including,
  - (i) serious accident, fire, or explosion
(ii) natural disaster
(iii) torture
(iv) other traumatic event, to be disclosed by participant.

All participants who met the inclusion and exclusion criteria were contacted by telephone or in person, if still within the hospital site, by the researcher.

Consequently, 15 participants, 11 males and four females, with an age range from 21 to 68 years (mean 36.6; S.D. 11.02) took part in the study. This age range was quite diverse and hence, it is acknowledged that this could potentially be a factor of importance when considering severity of symptomatology. However, this factor will not be considered within this study.

Of the 15 participants nine were involved in car accidents, four motorcycle accidents and two bicycle accidents.

2.2 Design
The study has a prospective cross-lagged panel correlation design (Campbell, 1963). The 11 'independent variables': perceived controllability and predictability; perceived threat to life; shattering or confirmation; causal attributions; social support; dissociation; and personality/trait factors, will be correlated with the dependent variable, which is a measurement of the severity of post traumatic stress symptoms.

The 'independent variables' will be measured within ten days of the RTA and at six months post RTA. The dependent variable will be measured within ten days

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2 The 11 factors are referred to as independent variables within quotation marks, as this is not a true experiment and the variables are not controlled for or manipulated.
of the RTA and at ten weeks and six months post RTA. The dependent variable was measured again at ten weeks for two reasons, although this was not required for the cross-lagged panel correlation design. Firstly, it enabled the researcher to maintain contact with the participant over a six month period which was thought to both reduce the likelihood of withdrawal from the research and enable an appropriate referral to a colleague should the situation arise. Secondly, it allowed for a more detailed picture of the progress of post traumatic stress severity during a six month period.

Cross-lagged panel correlation is an exploratory strategy of data analysis. In summary, two constructs are measured at two different points in time e.g. ten days and six months. The two constructs (A & B) measured at two different times produce four variables (A1, A2, B1, B2) which, in turn, produce six correlations: two autocorrelations (A1A2 & B1B2), two synchronous correlations (A1B1 & A2B2) and two cross-lagged correlations (A1B2 & A2B1) (see Figure 1).

![Figure 1](Cross-lagged panel correlation)
A and B are variables and 1 and 2 are times at measurement
The logic behind cross-lagged panel analysis is to control for spuriousness. In research design where it is not practical or ethical for random assignment to occur, studies still need to take into consideration the effect of an unmeasured third variable. Cross-lagged panel analysis controls for this effect by considering three key assumptions: stationarity, equal stability and synchronicity. Stationarity refers to the lack of change over time of the strength and direction of the causes of a variable as measured by the synchronous correlation. Equal stability refers to the approximate equality of the two autocorrelations. Synchronicity refers to both variables being measured at the same points in time and not being retrospective at the time of measurement or aggregated over time. Consequently, if the stationarity, stability and synchronicity assumptions are met, then a cross-lagged panel correlation is thought to be significant when one is significantly larger than the other. Hence, in this instance, it can be stated that the significant causal effect is not due to the spurious effects of an unspecified third variable (Kenny, 1975).

Consequently, in this study, each of the 11 'independent variables' at two measurement times i.e. ten days and six months will be correlated with the dependent variable measured at the same times. Hence, for each independent and dependent variable correlated, there will be six correlations: two autocorrelations, two synchronous correlations and two cross-lagged correlations. Since Fisher's z transformation cannot be used to test for the significance of differences between the synchronous, auto and cross-lagged correlations, as the correlations are already correlated, Steiger's (1980) formula will be used (see Figure 2).

Peters and Van Voorhis' (1940), popular formula was considered for this task, but rejected because their formula is designed for large samples. If it is used
with small populations and these populations have extreme values, then the statistics often depart from their nominal Type I error rates (Steiger 1980).

\[
\psi_{jk,hm} = 1/2 \left[ (p_{jk} - p_{jk}p_{km}) (p_{km} - p_{km}p_{hm}) \right] + \left[ (p_{jm} - p_{jm}p_{hm}) (p_{km} - p_{km}p_{hm}) \right] + \\
\left[ (p_{jm} - p_{jm}p_{mh}) (p_{km} - p_{km}p_{jm}) \right] + \left[ (p_{jm} - p_{jm}p_{km}) (p_{km} - p_{km}p_{mh}) \right].
\]

\[
S_{jk,hm} = \psi_{jk,hm} / (1 - p_{jk}^2) (1 - p_{hm}^2).
\]

\[
Z^* = (N - 3) \left( Z_{jk} - Z_{hm} \right) (2 - 2S_{jk,hm})^{-1/2}.
\]

Figure 2

Steiger (1980), formula to test for the significance of the differences between two correlated correlations where the same participants are used for all measures.

2.3 Setting

All participants were interviewed in their own homes with the exception of one participant whose first interview was conducted within Cheltenham General Hospital where he was an inpatient. All interviews were conducted separately with the researcher and interruptions/distractions were minimised. For instance, the television or radio was switched off, the interview occurred at a time when other members of the family/household were not at home and would not be returning home.

2.4 Materials

2.4.1 Posttraumatic Stress Diagnostic Scale (Foa, 1995; see Appendix II)

The Posttraumatic Stress Diagnostic Scale (PDS), is a 49 item, self-report instrument, designed to aid the diagnosis of PTSD and provide a measure of severity of PTSD symptoms. The structure and content of the PDS mirror the DSM-IV diagnostic criteria for PTSD.
The PDS was validated on individuals aged 18 to 65 years who had experienced or witnessed a traumatic event. The participants were recruited from a variety of settings, such as, Veterans Administration hospitals, PTSD treatment clinics, womens shelters, emergency/trauma centres, fire stations, ambulance corps and residential rehabilitation centres. Thus, the sample consisted of a broad spectrum of people who had experienced varying types of trauma.

The PDS has a high degree of reliability with 87.3 per cent agreement between PTSD diagnoses 16 days apart and a Pearson correlation coefficient between symptom severity scores, of 0.83. Internal consistency is also high with a Cronbach alpha score of 0.92. The PDS has high validity with a sensitivity score of 82 per cent and a specificity score of 76.7 per cent when compared to the PTSD module of the Structured Clinical Interview for DSM-III-R (SCID).

The PDS materials consist of a users manual, scoring directions, answer sheets and scoring worksheets. It is usual for the participant to complete the answer sheet and then for the researcher to use the scoring worksheet to ascertain whether a diagnosis of PTSD can be made and calculate the symptom severity score. In this study the researcher completed the PDS answer sheet in conjunction with the participant. This is because part one, which asks the participant to place a mark next to any of the traumatic events listed which have occurred within his/her lifetime, was thought to be inappropriate. Although previous traumas are of consequence to this research, in terms of exclusion criteria, this information was collected in an alternative and more sensitive way. Although a PTSD diagnosis could be established using this instrument, the purpose of the research was to consider symptom severity and hence, only this data was used.
2.4.2 Eysenck Personality Inventory - EPQ-R Short Scale (Eysenck and Eysenck, 1991: see Appendix III)

The EPQ-R is a self-report personality inventory based on Eysenck's factor theory of personality which assumes three basic dimensions; extroversion-introversion, neuroticism and psychoticism. The questionnaire also has a lie scale which measures a tendency of some participants to answer questions in order to enhance their "goodness".

The EPQ-R was developed from various earlier personality questionnaires, such as the Maudsley Medical Questionnaire (Eysenck, 1952), the Maudsley Personality Inventory (Eysenck, 1959), the Eysenck Personality Inventory (Eysenck and Eysenck, 1964) and the Eysenck Personality Questionnaire (Eysenck and Eysenck, 1975). The EPQ-R was standardised on a population of 408 adult males and 494 adult females largely consisting of students and teachers, but also including other "varied subjects" through postal questionnaire.

The short scale version of the EPQ-R was constructed from 12 items chosen from each of the four scales. Hence, each participant is required to complete 48 statements all of which have "Yes/No" responses. The extroversion-introversion, neuroticism and lie scales have high test re-test reliability for both males and females, with the lowest score of 0.73. However, the psychoticism scale is not as reliable with correlations of 0.62 and 0.61 respectively.

Nevertheless, within this research the scales of extroversion-introversion and neuroticism are of importance and hence, the psychoticism scale although scored, will not be used.
2.4.3 Peritraumatic Dissociative Experiences Questionnaire - Rater Version (PDEQ: Marmar, Weiss, Metzler and Dulucchi 1996; see Appendix IV)

This questionnaire which is completed by the researcher consists of 10 items which measure the level of dissociative experiences at the time the traumatic incident was occurring. The PDEQ has been tested within four studies examining dissociation in male Vietnam theatre veterans, emergency services personnel exposed to traumatic critical incidents, female Vietnam theatre veterans and participants exposed to the 1994 Los Angeles Northridge earthquake (Marmar, Weiss, Schlenger, Fairbank, Jordan, Kulka and Hough, 1994; Marmar, Weiss, Metzler and Delucchi, 1996; Tichenor, Marmar, Weiss, Metzler and Ronfeldt, 1994). These studies were all found to support the reliability and convergent, discriminant and predictive validity of the PDEQ.

2.4.4 Trauma Questionnaire (see Appendix V)

This questionnaire was developed by the researcher in order to examine the remaining 'independent variables' that do not have a standardised published measure i.e. perceived controllability and predictability, perceived threat to life, shattering and confirmation, causal attributions and social support.

The questionnaire primarily uses visual analogue scales of 100 millimetres in length, with each millimetre corresponding to 1 per cent. Each visual analogue scale represents one variable of interest and is preceded by a statement. The participant is asked to mark on the visual analogue line, how much they agree with the statement where '0' represents no agreement and '100' represents absolute agreement.

The questionnaire is completed by the participant but with aid from the researcher. Hence, the participants understanding of the questionnaire can be examined and the participant is encouraged to ask if he/she does not
understand a particular question. Even though the questionnaire is completed in collaboration with the researcher the principles of questionnaire planning, as highlighted by Oppenheim (1992), were followed. For instance, in order to increase compliance, confidentiality and anonymity were highlighted, the length was kept to a minimum i.e. seven questions over four sides of A4 and the questions were all relevant pertaining to the participants RTA. Where applicable the funnel approach was used in order to direct a participants sequence of thoughts in order to enhance understanding of a specific topic e.g. question seven. A section at the end of the questionnaire was left open in order for the participant to write any additional comments relating to his/her experience of the road traffic accident, thus allowing the participant to vent any extra thoughts or feelings.

The questionnaire was piloted to ensure that it was congenial and that all questions were easily understandable and produced quantifiable responses. It was piloted on ten willing acquaintances of the researcher, who had differing lengths of formal education, ranging from 10 to 18 years and diverse social backgrounds. The questionnaire was subsequently revised and a Flesch reading analysis was conducted. The questionnaire has a reading ease of 65 per cent and a reading grade level of eight years.

2.4.5 Patient Information Sheet (see Appendix VI)

This was devised by the researcher and posted to all potential participants after the first telephone contact.

2.4.6 Consent Form (see Appendix VII)

This was devised by the researcher and followed the criteria stipulated by the South and West Local Research Ethics Committee: East Gloucestershire Ethics Committee. All participants completed this at the first interview.
2.5 Procedure

Brief personal and accident details of all RTA victims entering the accident and emergency department at Cheltenham General Hospital, between the months of January 1998 and July 1998, were screened twice weekly by the researcher. If the inclusion and available exclusion criteria were met, the researcher contacted the prospective participant by telephone or in person, if they had not been discharged from the hospital. The prospective participant was informed of the purpose of the research and was given specific details regarding the number and length of interviews, the time schedule of the interviews i.e. within ten days at ten weeks and at six months and where the interviews would be conducted i.e. within his/her own home. He/she was also informed that the interview would require detailed discussion of the accident and completion of four questionnaires. If the prospective participant was agreeable to partaking in the research then an appointment was made and a patient information sheet was posted to him/her. It was made clear, however, that this would be an exploratory interview and would be mutually beneficial in terms of the researcher deciding the appropriateness of the participant for the research, based on exclusion criteria and the prospective participant deciding whether he/she wanted to take part.

At the first interview which always occurred between three and ten days post RTA, the participant was asked if after reading the information sheet, he/she had any questions that needed clarification. The topic of other significant traumas and alcohol / drug dependency were gently introduced into the

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3 The A&E cards and PAS system screened by the researcher contained basic personal details of the victim a description of the accident, including any deaths and the extent of the injuries sustained. If drugs/alcohol were involved at the time of the RTA this was also noted. No information was provided about addiction history or previous trauma.
conversation. If the participant did acknowledge a previous trauma and/or addiction then he/she was informed that this would influence the study and hence, the data that they provided could not be used. If the inclusion criteria were met the potential participant was asked if he/she wanted to partake, and if agreeable, a consent form was completed and signed. The first formal interview was then conducted, unless the participant required an alternative day for this to be done. All interviews were audiotaped and conducted by the same researcher. It is acknowledged that this may induce bias and is not an ideal situation, but practically there were no alternatives. Hence, all interviews maintained a structure which was adhered to, in an attempt to increase the reliability of the information obtained.

2.5.1 Interview 1: 3 to 10 days post RTA
Initially the participant was asked to complete the EPQ-R short version. The participant was then asked to describe the RTA to the researcher in order to help focus the participants mind and familiarise the researcher with the details of the accident. This allowed the researcher to introduce the PDEQ, by stating:

I'm now going to ask you some specific questions about your accident.
I'd like you to try to recall as best you can how you felt and what you experienced at the time the accident happened, including how you felt the few minutes just before it happened.

After the PDEQ was completed the researcher asked the participant to complete the trauma questionnaire.

I'd now like you to complete this questionnaire. As you can see it consists of statements followed by a line with a '0' and '100' written on them. I would like you to read each statement and then mark on the line
how much you agree with the statement where '0' means that you don't agree with it at all and '100' means that you strongly agree with it. If you have any difficulties please ask.

Lastly, the PDS was completed by the researcher and the questionnaire commenced with part two, question 15 (part one was ignored for reasons stated in the materials section). Part three of the questionnaire was introduced by the statement

*I'm now going to read a list of difficulties that some people experience after a traumatic event has occurred. I would like you to tell me if any of these have occurred since the accident and if so, roughly how often.*

Part four of the questionnaire was introduced by the statement

*I'm now going to read a list of activities that often form a part of peoples lives. I would like you to tell me if any of the difficulties that we have just discussed such as, bad dreams or nightmares, trying not to think about the accident, being overly alert... have interfered with these activities in any way.*

After the PDS was completed the participant was given the opportunity to discuss any aspects of the interview that hey found difficult or upsetting and ask any questions. Before departing a second appointment time was arranged and the participant was informed that a reminder letter would be sent in the post.
2.5.2 Interview 2: 10 weeks post RTA

Within this interview only the PDS was administered. Again the questionnaire commenced at part two, question 15. All instructions were read as they were at interview one, with the exception that the line "since the accident" was substituted for "within the last month" within part three. Similarly, the phrase "within the last month", was added to the end of the instructions for part four. The participant was again given the opportunity to discuss any aspects of the interview that they found distressing and to ask any questions. The interview ended after a third appointment had been arranged with an acknowledgement that a reminder letter would be sent.

2.5.3 Interview 3: 6 months post RTA

This interview followed exactly the same format as interview one with the exception of the changes to the instructions for the PDS, as noted in interview two. The interview ended with the acknowledgement that this was the last meeting and all participants were gratefully thanked for their assistance. The researcher was aware of those participants who were continuing to experience significant psychological difficulties following their RTA and offered an appropriate clinical service.
CHAPTER 3: RESULTS

3.1 Review of hypotheses
This study aimed to demonstrate that 11 factors identified in the literature; controllability and predictability, perceived threat, shattering or confirmation, causal attributions, social support (supportive and unsupportive behaviour), peritraumatic dissociation and personality factors (neuroticism and extroversion), would be correlated to the development of PTSD symptoms. The hypotheses were:

Those participants who develop enduring trauma symptoms i.e. beyond four weeks, but not necessarily a full diagnosis of PTSD will have:

- A greater composite score on all factors

It is predicted that certain factors will be of greater significance to the development of enduring trauma, although it cannot be hypothesised at this time which factors.

During the six month data collection period, two participants withdrew from the study. Both participants withdrew before the second interview and there was not sufficient time to recruit more participants. Both participants were male, one had been involved in a motorcycle accident and the second was involved in a car accident. Thus, 13 participants took part in the study, nine males and four females with an age range from 24 to 68 years (mean 38; S.D. 10.891).

3.2 Enduring trauma
Table 1 depicts the number of participants at ten weeks and six months who developed enduring trauma symptoms. Enduring trauma refers to participants
who received a moderate or moderate/severe score on the posttraumatic stress diagnostic scale.

**Table 1. The number of participants displaying enduring trauma (n=13)**

<table>
<thead>
<tr>
<th></th>
<th>None/mild</th>
<th>Enduring trauma</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 weeks</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>6 months</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

All participants who developed enduring trauma at ten weeks continued to experience enduring trauma at six months, except for two participants who swapped categories. Consequently, one participant who developed enduring trauma symptoms at ten weeks had reduced his symptoms at six months to mild and conversely, one participant who had mild symptomatology at ten weeks developed enduring trauma at six months. Of the seven participants who developed enduring trauma symptoms, three met a diagnosis of PTSD at ten weeks and two of these continued to meet the diagnosis at six months.

Graph 1 depicts the symptom severity score profile for each participant at ten days, ten weeks and six months. The profiles tend to form three general patterns: (a) a decline in symptom severity scores over the three measurement points (participants 1, 4, 6, 8, 11 and 13); (b) an increase in the symptom severity score between ten days and ten weeks, with a decrease at six months (participants 2, 3 and 10); (c) a decrease in the symptom severity score between ten days and ten weeks, with an increase at six months (participants 5, 9 and 12).
Graph 1: The symptom severity scores for each participant at ten days, ten weeks and six months post RTA.
3.3 Composite score analyses

The mean composite scores and standard deviations for the 11 factors for each of the 13 participants are shown in Table 2. They are categorised according to the enduring symptom severity score at ten weeks and six months; mild, moderate or moderate/severe, and the time at which the independent variable data (factors) was collected; ten days or six months.

Table 2. The mean composite scores categorised by symptom severity

<table>
<thead>
<tr>
<th>Time of measurement:</th>
<th>10 days</th>
<th>6 months</th>
<th>10 weeks</th>
<th>6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severity score at:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity score category</td>
<td>Mild</td>
<td>Mod/Sev</td>
<td>Mild</td>
<td>Mod/Sev</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td></td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td></td>
<td>N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td></td>
<td>S.D.</td>
<td></td>
</tr>
<tr>
<td>10 weeks</td>
<td>411</td>
<td>432</td>
<td>448</td>
<td>404</td>
</tr>
<tr>
<td>6 months</td>
<td>404</td>
<td>425</td>
<td>472</td>
<td>414</td>
</tr>
<tr>
<td>Mean</td>
<td>414</td>
<td>430</td>
<td>462</td>
<td>394</td>
</tr>
<tr>
<td>N</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>S.D.</td>
<td>81.2</td>
<td>71.0</td>
<td>14.3</td>
<td>62.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>66.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>29.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>81.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>64.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>54.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>63.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

Note - Mild: 0-10 on PDS; Moderate: 11-20 on PDS; Moderate/Severe: 21-30 on PDS.

The mean composite factor score did increase with an increase in the symptom severity score at both ten weeks and six months. Graphs 2 and 3 depict this data using the independent variable results from ten days and six months respectively.

To assess whether these scores were significantly different, the composite factor scores for participants who developed enduring trauma symptoms i.e. those scoring within the moderate and moderate/severe range at ten weeks and six months, were compared using independent t-tests to participants experiencing none or mild symptoms at ten weeks and six months. The results are shown in Table 3.
Graph 2: The mean composite scores for all factors at ten days, categorised by the symptom severity score at ten weeks and six months.
Graph 3: The mean composite scores for all factors at six months, categorised by the symptom severity score at ten weeks and six months.
Table 3. A 't test' analysis of the composite factor scores for the groups 'enduring trauma' and 'none/mild trauma'

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>'t' value</th>
<th>d.f.</th>
<th>2-tail significance</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 weeks</td>
<td>6</td>
<td>411</td>
<td>-0.59</td>
<td>11</td>
<td>0.56</td>
<td>n.s.</td>
</tr>
<tr>
<td>None</td>
<td>7</td>
<td>436</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enduring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 months</td>
<td>6</td>
<td>419</td>
<td>-0.48</td>
<td>11</td>
<td>0.63</td>
<td>n.s.</td>
</tr>
<tr>
<td>None</td>
<td>7</td>
<td>438</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enduring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 months</td>
<td>6</td>
<td>413</td>
<td>-0.65</td>
<td>11</td>
<td>0.52</td>
<td>n.s.</td>
</tr>
<tr>
<td>None</td>
<td>7</td>
<td>441</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enduring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Participants who developed moderate to severe enduring trauma symptoms did not have significantly different composite scores on the 11 factors when compared to participants who developed none or mild symptoms.

3.4 Analyses of the 11 factors

Pearson product moment correlations between the 11 factors and the 'dependent variable' at both time points i.e. ten days and six months are shown in Tables 4a to 4k. Correlations of significance are displayed in the tables below (4a to 4d). The remaining correlations can be found in Appendix VIII (4e to 4k).
Table 4. Correlation matrices

(a) Unpredictability and symptom severity

<table>
<thead>
<tr>
<th>Variables/factors</th>
<th>Unpredictability at 10 days</th>
<th>Unpredictability at 6 months</th>
<th>Symptom severity at 10 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unpredictability at 6 months</td>
<td>0.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptom severity at 10 days</td>
<td>-0.35</td>
<td>0.0005</td>
<td></td>
</tr>
<tr>
<td>Symptom severity at 6 months</td>
<td>-0.62*</td>
<td>-0.39</td>
<td>0.54*</td>
</tr>
</tbody>
</table>

Note. *p<0.05; **p<0.01; ***p<0.001.

(b) Confirmation and symptom severity

<table>
<thead>
<tr>
<th>Variables/factors</th>
<th>Confirmation at 10 days</th>
<th>Confirmation at 6 months</th>
<th>Symptom severity at 10 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirmation at 6 months</td>
<td>0.94***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptom severity at 10 days</td>
<td>0.80***</td>
<td>0.77**</td>
<td></td>
</tr>
<tr>
<td>Symptom severity at 6 months</td>
<td>0.55*</td>
<td>0.63*</td>
<td>0.54*</td>
</tr>
</tbody>
</table>

Note. * p<0.05; ** p<0.01; *** p<0.001.

(c) Supportive behaviour and symptom severity

<table>
<thead>
<tr>
<th>Variables/factors</th>
<th>Supportive behaviour at 10 days</th>
<th>Supportive behaviour at 6 months</th>
<th>Symptom severity at 10 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supportive behaviour at 6 month</td>
<td>0.54*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptom severity at 10 days</td>
<td>-0.24</td>
<td>-0.59*</td>
<td></td>
</tr>
<tr>
<td>Symptom severity at 6 months</td>
<td>0.23</td>
<td>-0.25</td>
<td>0.54*</td>
</tr>
</tbody>
</table>

Note. * p<0.05; ** p<0.01; *** p<0.001.
(d) Neuroticism & symptom severity

<table>
<thead>
<tr>
<th>Variables/factors</th>
<th>Neuroticism at 10 days</th>
<th>Neuroticism at 6 months</th>
<th>Symptom severity at 10 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroticism at 6 months</td>
<td>0.90***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptom severity at 10 days</td>
<td>0.44</td>
<td>0.54*</td>
<td></td>
</tr>
<tr>
<td>Symptom severity at 6 months</td>
<td>0.60*</td>
<td>0.75**</td>
<td>0.54*</td>
</tr>
</tbody>
</table>

*Note. * p<0.05; ** p<0.01; *** p<0.001.

Nine of the 11 factors ('independent variables') and the 'dependent variable' were significantly and positively correlated at the two points in time. The factors of unpredictability and shattering were not significantly correlated at ten days and six months. The following correlations were also significant and positive: Symptom severity at ten days and neuroticism at six months (n=13; r= 0.90; p<0.001); symptom severity at ten days and confirmation at ten days (n=13; r=0.80; p<0.001); symptom severity at ten days and confirmation at six months (n=13; r=0.77; p<0.01); symptom severity at six months and confirmation at ten days (n=13; r=0.55; p<0.05); and symptom severity at six months and confirmation at six months (n=13; r=0.63; p<0.05). Two correlations were found to be significant and negative: symptom severity at ten days and supportive behaviour at six months (n=13; r=-0.59; p<0.05); and symptom severity at six months and unpredictability at ten days (n=13; r=-0.62; p<0.05).
3.5 Cross-lagged panel analysis

The cross-lagged analysis can be portrayed in the diagramatical form:

Figure 3

Cross-lagged panel correlation where:

V1 - variable 1; V2 - variable 2
T1 - time 1 (ten days); T2 - time 2 (six months)
A1 - autocorrelation 1; A2 autocorrelation 2
S1 - synchronous correlation 1; S2 synchronous correlation 2
C1 - cross-lagged correlation 1; C2 cross-lagged correlation 2

Eleven complete cross-lagged correlation analyses were conducted between each of the 11 factors ('independent variables') and the symptom severity score ('dependent variable'). Hence, 33 equations were conducted as each complete analysis requires the comparison of six correlations: two autocorrelations; two synchronous correlations and two cross-lagged correlations. The correlation figures used for each analysis are displayed in Table 5.
**Table 5. The correlation data used for each cross-lagged panel analysis**

<table>
<thead>
<tr>
<th>Variable</th>
<th>A1</th>
<th>A2</th>
<th>S1</th>
<th>S2</th>
<th>C1</th>
<th>C2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived threat</td>
<td>0.69</td>
<td>0.54</td>
<td>-0.04</td>
<td>0.24</td>
<td>0.07</td>
<td>0.08</td>
</tr>
<tr>
<td>Uncontrollability</td>
<td>0.69</td>
<td>0.54</td>
<td>0.15</td>
<td>-0.25</td>
<td>0.32</td>
<td>0.003</td>
</tr>
<tr>
<td>Unpredictability</td>
<td>0.52</td>
<td>0.54</td>
<td>-0.35</td>
<td>-0.39</td>
<td>0.0005</td>
<td>-0.62</td>
</tr>
<tr>
<td>Shattering</td>
<td>0.51</td>
<td>0.54</td>
<td>0.14</td>
<td>-0.25</td>
<td>-0.31</td>
<td>0.01</td>
</tr>
<tr>
<td>Confirmation</td>
<td>0.94</td>
<td>0.54</td>
<td>0.8</td>
<td>0.63</td>
<td>0.77</td>
<td>0.55</td>
</tr>
<tr>
<td>Causal attributions</td>
<td>0.78</td>
<td>0.54</td>
<td>0.43</td>
<td>0.45</td>
<td>0.39</td>
<td>0.24</td>
</tr>
<tr>
<td>Supportive behaviour</td>
<td>0.54</td>
<td>0.54</td>
<td>-0.24</td>
<td>-0.25</td>
<td>-0.59</td>
<td>0.23</td>
</tr>
<tr>
<td>Unsupportive behaviour</td>
<td>0.91</td>
<td>0.54</td>
<td>0.007</td>
<td>-0.13</td>
<td>-0.07</td>
<td>-0.32</td>
</tr>
<tr>
<td>Dissociation</td>
<td>0.63</td>
<td>0.54</td>
<td>0.44</td>
<td>0.32</td>
<td>0.23</td>
<td>0.08</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>0.90</td>
<td>0.54</td>
<td>0.44</td>
<td>0.75</td>
<td>0.54</td>
<td>0.60</td>
</tr>
<tr>
<td>Extroversion</td>
<td>0.95</td>
<td>0.54</td>
<td>0.23</td>
<td>0.36</td>
<td>0.36</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Note: A1 - autocorrelation 1; A2 - autocorrelation 2; S1 synchronous correlation 1; S2 synchronous correlation 2; C1 cross-lagged correlation 1; C2 cross-lagged correlation 2.

To determine the statistical significance of difference between the three pairs of correlations in each cross-lagged correlation analysis i.e. autocorrelation, synchronous correlation and cross-lagged correlation, Z* statistics were calculated as recommended by Steiger (1980), and are presented in Table 6.
### Table 6. Values of Z* for the pairs of correlations

<table>
<thead>
<tr>
<th>Pairs of variables</th>
<th>Synchronous</th>
<th>Auto</th>
<th>Cross-lagged</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived threat and symptom severity</td>
<td>-0.458</td>
<td>0.533</td>
<td>0.001</td>
</tr>
<tr>
<td>Uncontrollability and symptom severity</td>
<td>0.345</td>
<td>0.584</td>
<td>-0.772</td>
</tr>
<tr>
<td>Unpredictability and symptom severity</td>
<td>-0.094</td>
<td>-0.088</td>
<td>1.89*</td>
</tr>
<tr>
<td>Shattering and symptom severity</td>
<td>-0.286</td>
<td>-0.101</td>
<td>0.786</td>
</tr>
<tr>
<td>Confirmation and symptom severity</td>
<td>4.838***</td>
<td>-12.636**</td>
<td>-1.116</td>
</tr>
<tr>
<td>Causal attributions and symptom severity</td>
<td>-0.048</td>
<td>1.037</td>
<td>-0.445</td>
</tr>
<tr>
<td>Supportive behaviour and symptom severity</td>
<td>-0.02</td>
<td>0</td>
<td>-4.476**</td>
</tr>
<tr>
<td>Unsupportive behaviour and symptom severity</td>
<td>-0.24</td>
<td>2.643**</td>
<td>0.569</td>
</tr>
<tr>
<td>Dissociation and symptom severity</td>
<td>0.337</td>
<td>0.305</td>
<td>0.407</td>
</tr>
<tr>
<td>Neuroticism and symptom severity</td>
<td>-1.402</td>
<td>3.352***</td>
<td>0.466</td>
</tr>
<tr>
<td>Extroversion and symptom severity</td>
<td>-0.383</td>
<td>6.568***</td>
<td>0.123</td>
</tr>
</tbody>
</table>

*Note. p<0.05; ** p<0.01; *** p<0.001 (two tailed tests).*

There was a significant difference between the cross-lagged correlations for the factors of supportive behaviour and unpredictability. To ensure that these results are authentic and are not caused by an unknown third variable, it is important that the assumptions of synchronicity, stationarity and stability have been met for the variables involved in the analyses and upon inspection, it can be seen that all of the assumptions have been satisfied (Kenny, 1975).

Synchronicity was met by ensuring that all the variables were measured at the same point in time and stationarity and stability were met as there were no significant differences in the size of the synchronous and autocorrelations.
The factors of confirmation and neuroticism which were found to be significantly positively correlated with symptom severity at all time points (see Tables 4b and 4d and Graphs 4 and 5), were not significantly different in the cross-lagged analysis. However, the differences between the synchronous correlations for confirmation and the autocorrelations for both neuroticism and confirmation were significant. This would indicate that if the cross-lagged analyses were significantly different for these factors, the assumptions would not have been satisfied.

In summary, the significant negative correlation of symptom severity at ten days with supportive behaviour at six months (see graph 6), was found to be significantly different in the cross-lagged analysis, from symptom severity at six months and supportive behaviour at ten days. Similarly, symptom severity at six months and unpredictability at ten days, which had a significant negative correlation (see graph 7), was also found to be significantly different in the cross-lagged analysis, from the correlation of symptom severity at ten days and unpredictability at six months. Both of these significantly different cross-lagged analyses met the three assumptions of synchronicity, stationarity and stability. None of the remaining nine factors ('independent variables') were found to be significant in both the initial correlation matrices and significantly different in the cross-lagged analysis.
GRAPH 4: Confirmation and symptom severity

Confirmation Score

Symptom Severity Score

- Confirmation 3
- Symptom severity 1
- Confirmation 1
- Symptom severity 3
GRAPH 5: Neuroticism and symptom severity

- Neuroticism 3
- Symptom severity 1
- Neuroticism 1
- Symptom severity 3
GRAPH 6: Supportive behaviour and symptom severity

Symptom severity score 10 days post RTA
GRAPH 7: Perceived unpredictability and symptom severity

Symptom severity score 6 months post RTA
3.6 Summary of results

1. The mean composite score for all factors did increase with an increase in the symptom severity score. However, these scores were found to be non-significant i.e. participants who developed enduring trauma symptoms did not have significantly different composite scores on the 11 factors compared to participants who did not develop enduring trauma symptoms.

2. The factors of confirmation and symptom severity and neuroticism and symptom severity did have significantly positive correlations at all points of measurement, but they were not significantly different in the cross-lagged panel analysis. The assumptions of synchronicity, stationarity and stability were also not met for these factors.

3. A significant negative correlation was found between the factors of supportive behaviour at six months and symptom severity at ten days and unpredictability at ten days and symptom severity at six months. These correlations were found to be significantly different within the cross-lagged panel analysis and met the assumptions of synchronicity, stationarity and stability. Consequently, participants who had low symptom severity scores at ten days received high amounts of supportive behaviour at six months. Participants who found the RTA unpredictable at ten days had low levels of symptom severity at six months.
CHAPTER 4: DISCUSSION

4.1 Review of the aims and hypotheses

This study aimed to demonstrate that the eleven factors of controllability, predictability, perceived threat, shattering, confirmation, causal attributions, supportive and unsupportive behaviour, peritraumatic dissociation and the personality factors of neuroticism and introversion, would be correlated with the development of PTSD symptomatology at six months.

It was found however, that only four of the factors were significantly correlated; confirmation, neuroticism, unpredictability and supportive behaviour. Of these four factors, two factors, unpredictability and supportive behaviour, were found to be significantly negatively correlated. This implies that a high score for unpredictability at ten days was indicative of low amounts of post traumatic stress symptomatology at six months and secondly, that high post traumatic stress symptomatology at ten days was predictive of low amounts of supportive behaviour at six months. Although these findings are different to that anticipated, the significant causal relationships are in one direction only and can be said to be reliable and valid as they are not caused by an unspecified third variable. This can be stated because the cross-lagged panel analyses were significantly different and the assumptions of synchronicity, stationarity and stability were met.

The remaining significant correlations of confirmation and neuroticism were found to be positive correlations and were correlated with post traumatic stress symptom severity at all time points (ten days and six months). This indicates that high levels of confirmation and neuroticism at ten days would predict high levels of post traumatic stress symptomatology at six months. Conversely, high
levels of post traumatic stress symptomatology at ten days would also predict high levels of confirmation and neuroticism at six months.

Consequently, one is left with a dilemma in terms of which comes first, the factor, either confirmation or neuroticism, or the 'dependent variable', post traumatic stress symptomatology. Although within each pair of correlations, one correlation was larger, there was no significant difference between the pair in the cross-lagged analysis and hence, the direction of causality remains unknown. Also of importance is the fact that the assumptions of synchronicity, stationarity and stability were not met for these factors and consequently, the significant causal relationships could be influenced by an unknown third variable. In summary, these correlations are in both directions and could be affected by a third variable, hence, these results must be treated with caution.

Although this study has identified causal relationships between four factors and PTSD symptomatology, two of the causal relationships have been found to be different to that anticipated and remaining two causal relationships are in both directions and should also be treated with caution. Therefore, the second aim of the study which sought to provide information about the importance of certain factors over others in contributing to an enduring trauma, cannot be discussed further except to state that seven factors were found to have no causal relationship to the development of PTSD symptomatology.

The final aim of the study was to differentiate between those participants who developed an enduring trauma i.e. symptoms lasting over four weeks and those who experienced a "normal" anxiety reaction i.e. symptoms lasting up to four weeks. It was found that there was an increase in the mean composite factor score with an increase in post traumatic stress symptomatology. Therefore, those participants who developed an enduring trauma did have higher
composite factor scores than those who experienced a "normal" anxiety reaction. Nevertheless, this difference was found to be non-significant.

If the specific hypotheses for this study are examined i.e.

Those participants who develop enduring trauma symptoms i.e. beyond four weeks, but not necessarily a full diagnosis of PTSD will have:

- A greater composite score on all factors

It is predicted that certain factors will be of greater significance to the development of enduring trauma, although it cannot be hypothesised at this time which factors.

it can be seen that the null hypotheses cannot be rejected.

4.2 Methodological issues

4.2.1 Design

The cross-lagged panel analysis design as discussed in Chapter two, controls for the effects of an unspecified third variable by considering three key assumptions; stationarity, stability and synchronicity. Although this study constantly reviewed these assumptions when interpreting data, it must be acknowledged that the assumption of stationarity could, at times be questioned. Stationarity refers to the lack of change over time of the strength and direction of the causes of a variable. Although this can be judged as true for the 'independent variables' or factors, this cannot always be seen to be the case for the 'dependent variable'; symptom severity. This is because the 'dependent variable' did change considerably for certain individuals from one point of measurement to the next. Kenny (1975), stated "One would then expect
stationarity to be less plausible during periods of rapid growth" (p.890). Similarly I would predict that stationarity would also be less plausible in periods of rapid demise. However, after stating this, it must be acknowledged that this study always interpreted data within the context of the three assumptions and when the assumptions were clearly violated, this was reported.

In order to avoid the difficulties encountered by the stationarity assumption, a clear design alternative to the cross-lagged panel analysis would be multiple regression. However, in applying multiple regression to panel data spuriousness is not controlled for and hence, there is the problem of an unspecified third variable. Consequently, I feel it is preferable to be aware that the assumption of stationarity may not always be met, than to know that all the data obtained must be treated with caution due to the effects of an unspecified third variable.

Another potential difficulty regarding the design of this study, is the small number of participants. Although it is clearly stated that this is a pilot study, it must be acknowledged that a causal relationship or a significant difference may be being missed and hence, a type II error could be occurring in the acceptance of the null hypothesis. To a certain extent the effect of a small sample size was minimised by the use of Steiger's (1980) formula to test for the significance of the differences between two correlated correlations with small samples i.e. less than twenty.

An obvious difficulty with the design of this study was the unintentional, but evident therapeutic effects of conducting the three interviews. Although the researcher had given much thought to this problem, there was no apparent alternative. It had been debated that the interview with each participant need not occur and all data would instead be collected through postal questionnaires.
However, this method was inherent with difficulties including, low response rate, the increased likelihood of drop-out, decreased reliability and validity and ethical considerations. It also did not remove the original problem of the participant cognitively and emotionally processing the RTA, which they may not have ordinarily done.

Finally, an unanticipated difficulty with the design, involved the interpretation by the participant of the meaning given to "previous traumatic event" and subsequent changes in that interpretation throughout the course of the interviews. Although each participant was specifically asked in the initial interview about a previous "accident, fire, or explosion", "involvement in a natural disaster", the "personal experience of torture", or "any other event that he/she would consider as traumatic", two participants after completion of the third interview reviewed their understanding of the phrase traumatic experience. One participant stated

It's strange what things pop into your head. I suppose this may have been important for you to know, but I didn't think it was important before. Two years ago I was a witness at a serious accident in which a person died in a car fire............. I didn't think this was particularly important before, and I didn't think it was traumatic, but I've been thinking about it more and more recently.

This participant was still included in the study as his initial beliefs about his participation in a traumatic event prior to his RTA, were negative. It was only through the course of the research interviews and the ongoing assimilation of the RTA into his schemata, that his beliefs began to change.
4.2.2 Materials

The trauma questionnaire, designed by the researcher was the only non-standardised questionnaire used within the study and hence, it's reliability and validity is unknown. The questionnaire was piloted on ten acquaintances of the researcher and was always completed in collaboration with the researcher during the interviews in order to increase reliability and validity. The questionnaire measured eight factors and interestingly only two factors were not significantly positively correlated with each other at the two measurement points; perceived unpredictability (n=13; r=0.52; p=>0.05) and shattering (n=13; r=0.51; p=>0.05). It cannot be judged from these correlations alone that the two measures were unreliable, but it is important to consider this when interpreting the data obtained.

Many potential difficulties with the methodology of this research have been highlighted in this section. However, given the nature and complexity of this research, numerous potential difficulties have been minimised substantially i.e. by using cross-lagged panel analysis, Steiger's formulation etc. and perhaps the difficulties that remain are the unavoidable realities of conducting a pilot longitudinal project.

4.3 Integration of this study with the existing literature

Of the eleven factors studied, unpredictability and social support were found to have a negative causal relationship with PTSD symptomatology, although the exact findings were different to those anticipated. Participants who found the RTA unpredictable at ten days had low levels of PTSD symptomatology at six months and those participants who had low symptom severity scores at ten days received high amounts of supportive behaviour at six months.
Previous research has demonstrated that the factor of perceived predictability is very important in the development of PTSD symptomatology, i.e. the more unpredictable the traumatic event is, the more likely it is that the individual will develop PTSD symptomatology (Baum et al., 1993; Davidson et al., 1993; Foa et al., 1989; Foa et al., 1992; Hart, 1975; Jones et al., 1990). However, this study has clearly produced evidence to the contrary.

Upon review of these previous studies, it can be seen that the majority of the evidence has come from the experimental neurosis literature (Davidson et al., 1993; Foa et al., 1989; Foa et al., 1992). Mineka and Kihlstrom's (1978), reanalyses of the experimental neurosis literature found that animals and humans prefer predictable to unpredictable aversive events. Typical responses in animals exposed to unpredictable events involved aggressive behaviours, attempts to escape, intense agitation, lethargy, passivity and withdrawal. In summary, Mineka and Kihlstrom (1978), stated "the important variable.......is the loss of predictability in an animal who once possessed it...." (p.261). However, there appears to be a clear divide and substantial difference between controlled laboratory experiments involving shocks and prospective correlational studies involving real people experiencing real traumas.

A second area of difference appears to be the combined use of the terms predictability and controllability to refer to the same phenomenon. It has been argued that these factors are not conceptually independent of each other, for instance, an individual who controls the onset of an event can predict when the event will occur and similarly, an individual who controls the termination of an event can predict when that event will end. However, it was apparent in this research that the two concepts were seen as independent by the participants. It was common for a participant to feel out of control of the accident and his/her vehicle, but able to predict that the accident was going to occur and vice versa.
Baum et al. (1993), in their prospective study of individuals living near the three mile island nuclear disaster, found that perceived loss of control was the significant mediator of PTSD symptoms. Loss of control in this study encapsulated the concept of predictability.

The notion of definition is therefore, central to obtaining an understanding of a factor and it's relationship to the development of PTSD symptomatology. Timing is quite crucial in the definition of unpredictability. For instance, an individual may set out on a journey to the supermarket. At the point of getting into the car he/she may perceive the likelihood of having an accident as minimal and hence, an accident would be unpredictable. However, at the junction to the supermarket another car pulls out in front of the participant and consequently, his/her perception of an accident occurring may be greatly increased and hence, more predictable. In this study the participants were asked to complete the rating scale for predictability, but after completion the researcher asked about how the decision was made. It was very interesting to note that all participants judged predictability as the moment before impact occurred.

In summary, it can be seen that a substantial amount of literature concerning predictability and PTSD symptomatology has come from the experimental neurosis literature, which is clearly very different from correlational 'real life' studies. Secondly, prospective correlational studies have merged the concepts of perceived predictability and controllability and perhaps if these concepts had remained independent, different results would have been obtained. Lastly, there is the important notion of definition. Studies have rarely produced information about their own definitions of 'perceived predictability' and therefore, it could be asked "Are we all measuring the same phenomenon?".
In order to understand this study's finding regarding predictability i.e. the more predictable the accident was the more likely the individual was to develop PTSD symptomatology, it is important to examine individual cases. Participant one when discussing predictability stated:

_the accident was very predictable, as soon as I realised that he was not going to stop, I knew it would happen...... it was weird, it was as if I was waiting for minutes not seconds for him to hit me and I sort of relaxed into it_

Participant six stated:

_I wish I was unconscious during the accident and opened my eyes in hospital... I wouldn't have the memory of it ....waiting for the accident to happen it was so predictable._

Participant seven stated:

_It was not as bad as I thought it was going to be, I really didn't think I was going to survive...... as soon as I realised the accident was going to happen, I relaxed into it, there was nothing I could do.... it was inevitable._

All of these participants developed enduring trauma symptoms at six months and participant one met the diagnosis for PTSD. There is a clear theme in these statements of waiting for the physical impact of the accident to happen. Perhaps this phenomenon is more apparent in RTAs compared to other types of traumatic experience and it may even be unique to RTAs as this area has not been investigated before.
The negative correlation of social support and PTSD symptomatology may upon first reading be surprising, but after consideration it becomes more plausible and obvious. To recap, it was found that participants who had low levels of PTSD symptomatology at ten days received high levels of supportive behaviour at six months or alternatively, participants who had high levels of PTSD symptomatology at ten days received low levels of supportive behaviour at six months. Consequently, it appears that social support is not causing PTSD symptomatology, but rather the presence and severity of PTSD symptomatology is related to decreased social support.

Keane et al. (1985), examined social support in Vietnam veterans with and without PTSD. They found that Vietnam veterans with PTSD had significantly lower levels of social support compared to well-adjusted Vietnam veterans. Social support was measured at three points in time: one to three months prior to entering the military; one to three months following discharge from service; and one to three months prior to the study. Significant differences between the two groups of veterans were found at the last two measurement points and it is important to note that at the first interview, prior to entering the military, there were no significant differences between the groups. This evidence could be interpreted in two ways; firstly a decline in social support could result in PTSD symptomatology, or alternatively, as was evident in the current study, the presence of PTSD symptomatology results in a decline in the individuals social support. Thus, high levels of PTSD symptomatology at ten days post RTA could be indicative of decreased social support during the following six months. It is anticipated that this would have an effect upon the individual and his/her ability to cope with the enduring symptomatology.
Interestingly, unsupportive behaviour was not significantly correlated with symptom severity at any time points. It had been suggested in the literature that unsupportive behaviour was more important than supportive behaviour in predicting psychological distress following a traumatic experience (Davis et al., 1991). Thus, the question is raised about whether the absence of supportive behaviour is the same as the presence of unsupportive behaviour.

The factors of confirmation and neuroticism were found to be significantly positively correlated with the development of PTSD symptomatology, although this result must be treated with caution as discussed previously. Confirmation has only been empirically examined in one other study, although hypothesised about in many others (Foa et al., 1993; Foa, et al., 1989; Janoff-Bulman et al., 1983; Resick et al., 1993). Dunmore, et al. (1997), found that participants who experienced persistent PTSD symptoms following a sexual assault, were significantly more likely to report global negative appraisals which included confirmation, than those who recovered.

Although Dunmore et al.'s (1997), study supports the phenomenon of confirmation and it's importance to persistent PTSD symptomatology, it must be noted that the design is retrospective and hence, must also be treated with some caution. It must also be noted that confirmation was not studied as a single factor and was included in the umbrella term of "global negative appraisals". This term also included the concept of shattering and general negative changes in the individuals schemata. Therefore, both the current study and Dunmore et al's (1997), study supports the importance of the factor confirmation in the development of PTSD. However, both studies must treat this result with caution and hence, further investigation is warranted.
Previous studies examining neuroticism and PTSD have found a causal link between pre-morbid personality i.e. high neuroticism scores and the development of PTSD after a traumatic episode (Breslau et al., 1992; Davidson et al., 1987; Elder et al. 1987, cited in Davidson et al. 1987). In a prospective study, Elder et al. (1987, cited in Davidson, Cudler and Smith, 1987), found that participants with pre-morbid neuroticism traits were more likely to develop PTSD after combat exposure than those who did not.

The results of the current study implicate a causal link between neuroticism and PTSD symptomatology, but the link is in both directions and there was no significant difference between the directions in the cross-lagged panel analysis. The results must also be treated with some caution as stated previously. Therefore, it can be stated that the data suggests an interaction and given the evidence from previous studies, this interaction could be said to be causal i.e. pre-morbid measures of neuroticism are associated with the development of PTSD symptomatology. Nevertheless, this result does require further investigation and clarification.

The current study found that seven factors which had been suggested to be involved in the development of PTSD symptomatology, through previous research, were not significantly correlated to the development of PTSD. Perceived threat to life, perceived controllability, shattering of core assumptions, causal attributions, unsupportive behaviour, peritraumatic dissociation and extroversion/introversion were not causally implicated in the development of PTSD symptomatology. Therefore, there is a difference between this research and previous studies. It has to be acknowledged that there were some methodological difficulties with this research (see section 4.2), but there have been clear methodological problems with the previous studies.
Many of the previous studies have used retrospective rather than prospective designs. This immediately raises the problem of reliability, validity and the potential biasing effects of a probably recently acquired "psychiatric disorder" on a respondent's report about risk factors. It also requires a participant to make judgements about something that may have occurred anything from one month to two years previously. Another potential difficulty with the methodology in the cited literature, relates to the issue of the unspecified third variable. Many studies have used either correlational designs without a cross-lagged analysis or multiple regression. In both of these instances, any conclusions emerging from the data must be treated with caution due to the possible presence of an unspecified variable. As an illustration, Kilpatrick et al. (1989), in their well documented and revered research examining perceived threat to life, used a retrospective design with multiple regression. Similarly, Blanchard et al. (1995), in their examination of perceived threat to life and PTSD following RTAs, used a retrospective design with correlational analysis without cross-lagged analysis.

In summary, it can be seen that seven factors were not significantly causally related to the development of PTSD symptomatology. This finding should not be ignored as it is an important finding and has wide implications for understanding the causality of PTSD. It also raises questions about the acceptance of previous research findings where there are evident problems with design.

4.3.1 Theories of PTSD

Given the results of this study the next question to be considered is how the results fit the existing theories of PTSD, if they do fit the theories at all. Stimulus response theories are flawed in their explanation of PTSD as discussed in Chapter one and hence, they will not be considered at all. Consequently, the
information processing theories and the interactive field theories are available for consideration.

The information processing theories state that a trauma may be interpreted by the individual in a number of ways depending on his/her beliefs, expectations or schemata. If a trauma does not fit into an individual's pre-existing schemata, then the brain increases its activity in order increase the information processing response and, in turn, incorporate the experience. Thus, the cognitive factors investigated in this study, should have significantly and positively correlated with the development of PTSD, if this theory is to be supported. However, perception of threat, perceived controllability and predictability, shattering and confirmation did not correlate both significantly and positively with symptom severity. Therefore, it appears that there were many individual differences between participants that could not be explained by the information processing theories even though the same traumatic experience was encountered.

Therefore, the interactive field theories appear to explain the results of this study more appropriately. These theories incorporate the basic premise of the information processing models but add the dimensions of situational, individual, and social characteristics. Hence, any PTSD symptomatology may be related to a complex interaction of numerous factors and although it feels unsafe not to know exactly what these factors are and how they may interact with each other, it is perhaps unrealistic to have a notion of specific linear factors causing PTSD symptomatology. It is perhaps more realistic to know that there are a multitude of factors from the emotional, social and cognitive domains broadly covering some of the factors investigated in this study, that could, given the individual circumstances, predispose an individual to the development of PTSD symptomatology. As Foy et al. (1987), stated
the development of a post traumatic reaction appeared to be multi-determined and related to a complex array of factors... (and so any) firm conclusion about the causal significance of factors is precluded (p.18).

4.4 Individual differences

Of significant interest considering the relevance of the interactive field theories is the area of individual difference. During the research four aspects became noteworthy: (1) the consideration of other life stressors, (2) the extent of physical injury, (3) the importance of completing and making sense of the accident and (4) driver phobia.

4.4.1 Other life stressors

Three of the participants in the research concurrently had other stressful life events. Of particular importance is the fact that all three met the diagnosis for PTSD at ten weeks and two met the diagnosis at six months (see Participants 1, 5 and 6; Graph 1; Chapter 3). Consequently, 'other' stressful life events seem to have been of importance to the development of PTSD symptomatology.

'Other' stressful life events for these participants included more than one of the following: divorce/separation, moving house, physical ill health of self or significant other, miscarriage and significant changes within the workplace. When these life events were combined with the RTA participants reported that life had become unmanageable. One participant stated "the accident was the last straw.... I can't cope any more". Another participant stated:

I've coped and coped. You have to get on with it, people depend on me, my son depends on me, but I don't know how long I can go on, there is a heaviness on my heart, a weight on my heart........I can't concentrate, I
think it's because I'm trying to block everything out in order to cope, but if you turn the computer off everything else gets turned off.

4.4.2 Physical injury

The participants in this study had a range of physical injuries. It did not appear that physical injury was associated with PTSD symptomatology although there were huge individual differences in this area. One participant who developed PTSD received whiplash injuries after a 40 mile per hour collision. At the other extreme, a participant received a broken arm in two places, a fractured femur, lacerations to the face and stomach and fractured ribs after a 70 mile per hour motorcycle accident, but had minimal PTSD symptomatology throughout the six months.

4.4.3 Completion/making sense of the accident

Three participant's PTSD symptomatology decreased dramatically and quite suddenly after they were able to make sense of their accident (see Participant 4, 8 and 12; Graph 1; Chapter 3). These participants previously had symptom severity scores within the moderate or moderate to severe range, which decreased to the mild symptom severity range on completion of their story. One participant stated:

*Now I know where my car finished up. At first I thought I was on one side of the road and I realised now that I was actually right across the other side of the road. I was wondering how people helped me from the pavement if I was where I thought I was...........Now I'm fairly certain also that the fire engine came across the wrong side of the road...........I've only just realised that this is why I saw it at the very last minute and why I wasn't able to turn alongside it ......my reactions are usually very
quick...... It was only in the last two weeks when I've been making myself think about it that I've worked it out.

This quote from the participant clearly represents his processing of the traumatic event in order for it to be accommodated within the his schemata. It is a cognitive process, but it is also enmeshed within the individual's social and emotional domains and it is only given meaning as the participant gives meaning to it. This statement could not be encapsulated by the factors of shattering, confirmation, predictability, controllability etc. but perhaps it could be considered within the broader concept of 'making sense of the accident' or 'completed processing' etc.

4.4.4 Driver phobia
All participants at interview one were phobic of driving. By interview two (ten weeks), nine of the participants continued to be driver phobic. At interview three (six months), two participants remained driver phobic. In this study I am using the term driver phobic to refer to the participants inability to drive the type of vehicle i.e. car, motorcycle or bicycle, that was involved in the accident, due to intense psychological fear. Interestingly, individuals who were involved in motorcycle accidents tended to be able to drive cars before they were able to drive their motorcycles, although one participant was still unable to drive his motorcycle at six months.

All participants who were able to begin driving again had some avoidance and/or high arousal symptoms whilst driving. Typically there was an avoidance of the exact road, roundabout, etc. where the accident had happened and increased arousal occurred on approach to a perceived dangerous situation i.e. on an approach to a junction. For three participants at interview two (ten weeks) and one participant at interview three (six months), the symptom severity scores
increased beyond previous levels (see Participants 2, 3, 9 and 11; Graph 1; Chapter 3). This was directly related to their return to driving. It appears that returning to driving increased the participants level of arousal and triggered intrusions. However, these symptoms tended to be situation specific and did not develop in other circumstances.

4.5 Clinical implications of the current study

Within this study, two participants developed PTSD (15 per cent) and a further five participants developed enduring trauma symptoms (38 per cent). Consequently, PTSD symptomatology was present in over half of this population sample at six months. Considering that there are over 50 000 serious RTAs every year, this has significant implications for both the health professionals and society.

In terms of considering who is more likely to develop enduring trauma symptoms, this study has not been able to identify a complete 'check list' of factors associated with PTSD symptomatology. However, there are areas to consider. Firstly, those participants who experience considerable symptomatology in the initial two weeks are more likely to continue to experience difficulties in the subsequent months. Secondly, the factor of predictability has been shown to be associated with PTSD symptomatology. The more predictable the RTA was, the more likely the individual was to develop PTSD symptomatology. Lastly, the clinician should be aware of 'other' life events and the potential impact that these can have on the development of PTSD symptomatology.

When considering factors associated with good psychological outcome following RTAs, there appears to be a beneficial effect of making sense of the RTA and allowing the individual to process and complete his/her story. If the
clinician is able to help the individual do this, then there may benefits in terms of decreased symptomatology. This observation provides support for the cognitive behavioural approach in working with people with PTSD.

This study has also highlighted the effects that PTSD symptomatology can have on the individual's family and friends. It was found that high levels of symptomatology at ten days were associated with low levels of social support at six months. Thus, the clinician must be aware of the potential reaction of the individual's family and friends and how this may impact upon the individual. Low levels of social support may be more evident in RTAs because an RTA is viewed as an 'every day' occurrence and the thought of someone developing PTSD after an RTA may be unrealistic to the lay person, especially if the physical injuries are minimal.

The area of driver phobia following RTAs is clinically very relevant. Two participants were still unable to drive their vehicles at six months. Even in participants who were able to begin driving again, they often experienced high arousal symptoms, avoidance or intrusions specific to that situation. For some of the participants, driving became a significant issue and it was having an impact upon their lives.

4.6 Suggestions for future research

- An expansion of this pilot study with increased participant numbers. The study would also need to standardise the trauma questionnaire in order to increase the reliability and validity of the factors being measured.

- A detailed prospective examination of social support and PTSD symptomatology. This would focus upon any changes in the supportive behaviour given to the individual over a six month period and would examine
the perceptions of both the individual and those identified as providing the support.

- Research examining the importance of the factor predictability in causing PTSD symptomatology in RTAs. This would seek to clarify whether predictability in RTAs is quantifiably different from predictability in other types of trauma.

- Lastly, an alternative stance could be taken considering the potential importance of individual differences and the support given to the interactive field model in this study. As it has been suggested that PTSD is caused by a multitude of complex factors, perhaps the best way forward would be to consider single case studies or research investigating broad concepts of causality, such as those highlighted by Wilson (1989), i.e. previous trauma, pre trauma personality, the traumatic aspects of the event, the environment and information processing abilities.
APPENDIX I: 
DSM IV - PTSD
DIAGNOSTIC CRITERIA FOR 309.81
POST-TRAUMATIC STRESS DISORDER

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

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

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

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

(i) recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions.

(ii) recurrent distressing dreams of the event.

(iii) 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).

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

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

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

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

(iii) inability to recall an important aspect of the trauma

(iv) markedly diminished interest or participation in significant activities

(v) feeling of detachment or estrangement from others

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

(vii) 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:

(i) difficulty falling or staying asleep

(ii) irritability or outbursts of anger

(iii) difficulty concentrating
(iv) hypervigilance

(v) exaggerated startle response

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

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

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

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

Specify if:
**Delayed onset:** if onset of symptoms is at least six months after the stressor.
APPENDIX II:
POST TRAUMATIC STRESS DIAGNOSTIC SCALE (PDS)
Part 1

Any people have lived through or witnessed a very stressful and traumatic event at some point in their lives. Here is a list of traumatic events. Put a checkmark in the box next to ALL of the events that have happened to you that you have witnessed.

☐ Serious accident, fire, or explosion (for example, an industrial, farm, car, plane, or boating accident)
☐ Natural disaster (for example, tornado, hurricane, flood, or major earthquake)
☐ Non-sexual assault by a family member or someone you know (for example, being mugged, physically attacked, shot, stabbed, or held at gunpoint)
☐ Non-sexual assault by a stranger (for example, being mugged, physically attacked, shot, stabbed, or held at gunpoint)
☐ Sexual assault by a family member or someone you know (for example, rape or attempted rape)
☐ Sexual assault by a stranger (for example, rape or attempted rape)
☐ Military combat or a war zone
☐ Sexual contact when you were younger than 18 with someone who was 5 or more years older than you (for example, contact with genitals, breasts)
☐ Imprisonment (for example, prison inmate, prisoner of war, hostage)
☐ Torture
☐ Life-threatening illness
☐ Other

3) If you marked Item 12, specify the traumatic event below.

IF YOU MARKED ANY OF THE ITEMS ABOVE, CONTINUE. IF NOT, STOP HERE.

Part 2

14) If you marked more than one traumatic event in Part 1, put a checkmark in the box below next to the event that bothers you the most. If you marked only one traumatic event in Part 1, mark the same one below.
☐ Accident
☐ Disaster
☐ Non-sexual assault/someone you know
☐ Non-sexual assault/stranger
☐ Sexual assault/someone you know
☐ Sexual assault/stranger
☐ Combat
☐ Sexual contact under 18 with someone 5 or more years older
☐ Imprisonment
☐ Torture
☐ Life-threatening illness
☐ Other

In the box below, briefly describe the traumatic event you marked above.

Below are several questions about the traumatic event you just described above.

15) How long ago did the traumatic event happen? (circle ONE)
   1 Less than 1 month
   2 1 to 3 months
   3 3 to 6 months
   4 6 months to 3 years
   5 3 to 5 years
   6 More than 5 years

For the following questions, circle Y for Yes or N for No.

During this traumatic event:
16) Y N Were you physically injured?
17) Y N Was someone else physically injured?
18) Y N Did you think that your life was in danger?
19) Y N Did you think that someone else’s life was in danger?
20) Y N Did you feel helpless?
21) Y N Did you feel terrified?
Part 3

Below is a list of problems that people sometimes have after experiencing a traumatic event. Read each one fully and circle the number (0-3) that best describes how often that problem has bothered you IN THE PAST. Rate each problem with respect to the traumatic event you described in Item 14.

0 Not at all or only one time
1 Once a week or less/once in a while
2 2 to 4 times a week/half the time
3 5 or more times a week/almost always

0 1 2 3 Having upsetting thoughts or images about the traumatic event that came into your head when you didn't want them to
0 1 2 3 Having bad dreams or nightmares about the traumatic event
0 1 2 3 Reliving the traumatic event, acting or feeling as if it was happening again
0 1 2 3 Feeling emotionally upset when you were reminded of the traumatic event (for example, feeling scared, angry, sad, guilty, etc.)
0 1 2 3 Experiencing physical reactions when you were reminded of the traumatic event (for example, breaking out in a sweat, heart beating fast)
0 1 2 3 Trying not to think about, talk about, or have feelings about the traumatic event
0 1 2 3 Trying to avoid activities, people, or places that remind you of the traumatic event
0 1 2 3 Not being able to remember an important part of the traumatic event
0 1 2 3 Having much less interest or participating much less often in important activities
0 1 2 3 Feeling distant or cut off from people around you
0 1 2 3 Feeling emotionally numb (for example, being unable to cry or unable to have loving feelings)
0 1 2 3 Feeling as if your future plans or hopes will not come true (for example, you will not have a career, marriage, children, or a long life)

How long have you experienced the problems that you reported above? (circle ONE)
1 Less than 1 month
2 1 to 3 months
3 More than 3 months

How long after the traumatic event did these problems begin? (circle ONE)
1 Less than 6 months
2 6 or more months

Part 4

Indicate below if the problems you rated in Part 3 have interfered with any of the following areas of your life DURING THE PAST MONTH. Circle Y for Yes or N for No.

Y N Work
Y N Household chores and duties
Y N Relationships with friends
Y N Fun and leisure activities
Y N Schoolwork
Y N Relationships with your family
Y N Sex life
Y N General satisfaction with life
Y N Overall level of functioning in all areas of your life
APPENDIX III
EYSENCK PERSONALITY QUESTIONNAIRE - REVISED
SHORT SCALE (EPQ-R)
INSTRUCTIONS: Please answer each question by putting a circle around the 'YES' or 'NO' following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the questions.

PLEASE REMEMBER TO ANSWER EACH QUESTION

1. Does your mood often go up and down?  
2. Do you take much notice of what people think?  
3. Are you a talkative person?  
4. If you say you will do something, do you always keep your promise no matter how inconvenient it might be?  
5. Do you ever feel 'just miserable' for no reason?  
6. Would being in debt worry you?  
7. Are you rather lively?  
8. Were you ever greedy by helping yourself to more than your fair share of anything?  
9. Are you an irritable person?  
10. Would you take drugs which may have strange or dangerous effects?  
11. Do you enjoy meeting new people?  
12. Have you ever blamed someone for doing something you knew was really your fault?  
13. Are your feelings easily hurt?  
14. Do you prefer to go your own way rather than act by the rules?  
15. Can you usually let yourself go and enjoy yourself at a lively party?  
16. Are all your habits good and desirable ones?  
17. Do you often feel 'fed-up'?  
18. Do good manners and cleanliness matter much to you?  
19. Do you usually take the initiative in making new friends?  
20. Have you ever taken anything (even a pin or button) that belonged to someone else?  
21. Would you call yourself a nervous person?  
22. Do you think marriage is old-fashioned and should be done away with?  
23. Can you easily get some life into a rather dull party?  
24. Have you ever broken or lost something belonging to someone else?  
25. Are you a worrier?
26 Do you enjoy cooperating with others?
27 Do you tend to keep in the background on social occasions?
28 Does it worry you if you know there are mistakes in your work?
29 Have you ever said anything bad or nasty about anyone?
30 Would you call yourself tense or 'highly-strung'?
31 Do you think people spend too much time safeguarding their future with savings and insurance?
32 Do you like mixing with people?
33 As a child were you ever cheeky to your parents?
34 Do you worry too long after an embarrassing experience?
35 Do you try not to be rude to people?
36 Do you like plenty of bustle and excitement around you?
37 Have you ever cheated at a game?
38 Do you suffer from 'nerves'?
39 Would you like other people to be afraid of you?
40 Have you ever taken advantage of someone?
41 Are you mostly quiet when you are with other people?
42 Do you often feel lonely?
43 Is it better to follow society's rules than go your own way?
44 Do other people think of you as being very lively?
45 Do you always practise what you preach?
46 Are you often troubled about feelings of guilt?
47 Do you sometimes put off until tomorrow what you ought to do today?
48 Can you get a party going?

**PLEASE CHECK THAT YOU HAVE ANSWERED ALL THE QUESTIONS**
APPENDIX IV:
PERITRAUMATIC DISSOCIATIVE EXPERIENCES
QUESTIONNAIRE - RATER VERSION (PDEQ)
INSTRUCTIONS: I'd like you to try to recall as best you can how you felt and what you experienced at the time the event happened, including how you felt the few minutes just before. Now I'm going to ask you some specific questions about how you felt at that time.

1. (At that time) Did you have moments of losing track of what was going on: that is, did you "blank out", "space out", or in some other way not feel that you were part of the experience?

2. (At that time) Did you find yourself going on "automatic pilot", that is, doing something that you later realised you had done but hadn't actively decided to do?

3. (At that time) Did your sense of time change during the event, that is, did things seem unusually speeded up or slowed down?

4. (At that time) Did what was happening seem unreal to you, as though you were in a dream or watching a movie or a play?

5. (At that time) Were there moments when you felt as though you were a spectator watching what was happening to you - for example, did you feel as if you were floating above the scene or observing it as an outsider?

6. (At that time) Were there moments when your sense of your own body seemed distorted or changed - that is, did you feel yourself to be unusually large or small, or did you feel disconnected from your own body?

7. (At that time) Did you get the feeling that something that was happening to someone else was happening to you? For example, if you saw someone being
injured, did you feel as though you were the one being injured, even though that was not the case?

8. Were you surprised to find out after the event that a lot of things had happened at the time that you were not aware of, especially things that you felt you ordinarily would have noticed?

9. (At that time) Were there moments when you had difficulty making sense of what was happening?

10. (At that time) Did you feel disorientated, that is, were there moments when you felt uncertain about where you were or what time it was?
APPENDIX V:
TRAUMA QUESTIONNAIRE
TRAUMA QUESTIONNAIRE

To be completed in collaboration with the interviewer.

Name: ____________________________

Date of completion: ____________________________

1. How much did you believe that you and/or a significant other (wife, husband, daughter, son, close friend etc.) were going to die as a result of the traumatic incident? Please put a mark on the line below according to your strength of belief.

0 100
Not at all Absolute belief

2. Please mark on the line below how much you felt in control of the incident.

0 100
In your control Completely out of your control

3. Please mark on the line below how much you felt the overall incident was predictable.

0 100
Very predictable Completely unpredictable
4. Please mark on the lines below how much you agree with the following statements:

(a) Before the traumatic incident occurred I believed that the world was very safe. I did not have any fears about injury or harm to myself or others. Now I believe that the world is very unsafe. I am now fearful of what may happen to myself or others in the future

<table>
<thead>
<tr>
<th>0</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>Completely agree</td>
</tr>
</tbody>
</table>

(b) Before the traumatic incident occurred I believed that the world was unsafe and dangerous. I would often be frightened of what may happen to myself or others in the future. Now I believe that these fears have been confirmed and proved true by the incident.

<table>
<thead>
<tr>
<th>0</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>Completely agree</td>
</tr>
</tbody>
</table>

5. Please mark on the line below how much you believe that you caused, were to blame, or made the incident worse in some way.

<table>
<thead>
<tr>
<th>0</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>Completely believe that you caused or made the traumatic incident worse</td>
</tr>
</tbody>
</table>
6. Please mark on the line below how much you believe that you could have done something whilst the trauma was occurring to help yourself, the situation and/or others.

0 100
Not at all Completely believe that you could have done something

7(a) Please tick the statements below which best describe the type of supportive or unsupportive behaviours experienced by yourself, excluding professional support, such as that received by doctors, nurses, physiotherapists etc. Please tick as many or as few as required.

- I have received practical support, such as help with the daily chores
- I have received emotional support, such as being comforted, receiving physical attention, others showing their concern etc.
- I have been encouraged by those close to me to seek professional services i.e. an appointment with my doctor.
- I have experienced emotional withdrawal i.e. my family and/or friends have backed off emotionally.
- I have been blamed by others for the incident.
- My family and/or others have been self-centred and not concerned about how I am or how I feel.
7(b) Considering these aspects of supportive and unsupportive behaviours, please mark on the lines below:

(i) The overall level of supportive behaviour you have received.

<table>
<thead>
<tr>
<th>0</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not supportive</td>
<td>Very supportive</td>
</tr>
</tbody>
</table>

(ii) The overall level of unsupportive behaviour received.

<table>
<thead>
<tr>
<th>0</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supportive</td>
<td>Very unsupportive</td>
</tr>
</tbody>
</table>

Please add any additional comments that you wish to make.

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

Many thanks for your co-operation. Your answers will be treated and kept in confidence.
APPENDIX VI:
PATIENT INFORMATION SHEET
About the research project

The purpose of this research is to follow through for 6 months, people who have experienced a potential life threatening incident. It is anticipated that this will provide important information about those people who are at risk of developing symptoms of Post Traumatic Stress Disorder.

It is believed that this research will produce benefits for society. The aim of this research is to produce a checklist identifying the risk factors associated with developing Post Traumatic Stress Disorder symptoms. This would be of great benefit to the NHS in aiding GP’s, nurses or other caring professionals identify those patients who are likely to develop PTSD symptoms, in order to begin preventative work.

What it involves for you

Participants who agree to take part in the research, will be asked to complete 3 interviews each lasting for approximately 1 to 2 hours. The first interview will occur within 10 days of the potential life threatening incident. The second interview will occur at 10 weeks and the third at 6 months. It is anticipated that all interviews will occur at the participants home, although this can be changed to suit the participants needs. The interview will consist of a structured discussion about the incident and the participant will be asked to complete 3 questionnaires.

Some participants may find that discussing their experience of the potential life threatening incident distressing. Nevertheless, research evidence does suggest that talking about the incident can be therapeutic and does have benefits in the long term.

As a way of ensuring that the participants' own mental health is maintained the researcher will conduct a psychological assessment at interview 2 and 3. If it is thought necessary and the participant consents an appropriate referral to a Clinical Psychologist will be made.

The participant can withdraw from the research at any stage without giving a reason and without incurring displeasure or penalty.

Please feel free to ask any more questions.

LOUISE HORNER
DEPARTMENT OF CLINICAL PSYCHOLOGY
DELANCEY HOSPITAL
CHARLTON LANE
CHELTENHAM
GL53 9DU
01242 272183
APPENDIX VII:
CONSENT FORM
CONSENT FORM

STUDY TITLE: TRAUMA STRESS SEVERITY: A PROSPECTIVE PILOT STUDY INTO SEVEN CAUSAL FACTORS.

Have you read the Patient Information Sheet? Yes / No

Have you had an opportunity to ask questions and discuss this study? Yes / No

Have you received satisfactory answers to all your questions? Yes / No

Have you received enough information about the study? Yes / No

To whom have you spoken? __________________________________________

Do you understand that you are free to withdraw from the study:

- At any time? Yes / No
- Without having to give a reason for withdrawing? Yes / No
- And without affecting your future medical care? Yes / No

Do you agree to take part in this study? Yes / No

Do you agree to the research interviews being audiotaped? Yes / No

Signed ___________________________ Date ___________________________

Name __________________________________________

Signed (Researcher) ___________________________ Date ___________________________

LOUISE HORNER
APPENDIX VIII:
CORRELATION MATRICES
CORRELATION MATRICES

(e) Perceived threat & symptom severity

<table>
<thead>
<tr>
<th>Variables/factors</th>
<th>Perceived threat at 10 days</th>
<th>Perceived threat at 6 months</th>
<th>Symptom severity at 10 days</th>
</tr>
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<tbody>
<tr>
<td>Perceived threat at 6 months</td>
<td>0.69**</td>
<td></td>
<td></td>
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<tr>
<td>Symptom severity at 10 days</td>
<td>-0.04</td>
<td>0.07</td>
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</tr>
<tr>
<td>Symptom severity at 6 months</td>
<td>0.08</td>
<td>0.24</td>
<td>0.54*</td>
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</tbody>
</table>

Note. * p<0.05; ** p<0.01; *** p<0.001.

(f) Uncontrollability & symptom severity

<table>
<thead>
<tr>
<th>Variables/factors</th>
<th>Uncontrollability at 10 days</th>
<th>Uncontrollability at 6 months</th>
<th>Symptom severity at 10 days</th>
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<tbody>
<tr>
<td>Uncontrollability at 6 months</td>
<td>0.69**</td>
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<td></td>
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<tr>
<td>Symptom severity at 10 days</td>
<td>0.15</td>
<td>0.32</td>
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<tr>
<td>Symptom severity at 6 months</td>
<td>0.003</td>
<td>-0.25</td>
<td>0.54*</td>
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</tbody>
</table>

Note. * p<0.05; ** p<0.01; *** p<0.001.

(g) Shattering & symptom severity

<table>
<thead>
<tr>
<th>Variables/factors</th>
<th>Shattering at 10 days</th>
<th>Shattering at 6 months</th>
<th>Symptom severity at 10 days</th>
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<tbody>
<tr>
<td>Shattering at 6 months</td>
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<td></td>
</tr>
<tr>
<td>Symptom severity at 10 days</td>
<td>0.14</td>
<td>-0.31</td>
<td></td>
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<tr>
<td>Symptom severity at 6 months</td>
<td>0.01</td>
<td>-0.25</td>
<td>0.54*</td>
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</tbody>
</table>

Note. * p<0.05; ** p<0.01; *** p<0.001.
(h) Causal attributions & symptom severity

<table>
<thead>
<tr>
<th>Variables/factors</th>
<th>Causal attributions at 10 days</th>
<th>Causal attributions at 6 months</th>
<th>Symptom severity at 10 days</th>
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<tbody>
<tr>
<td>Causal attributions at 6 months</td>
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<tr>
<td>Symptom severity at 10 days</td>
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<td>0.39</td>
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<td>Symptom severity at 6 months</td>
<td>0.24</td>
<td>0.45</td>
<td>0.54*</td>
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</tbody>
</table>

Note. * p<0.05; ** p<0.01; *** p<0.001.

(i) Unsupportive behaviour & symptom severity

<table>
<thead>
<tr>
<th>Variables/factors</th>
<th>Unsupportive behaviour at 10 days</th>
<th>Unsupportive behaviour at 6 months</th>
<th>Symptom severity at 10 days</th>
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</thead>
<tbody>
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<td>Unsupportive behaviour at 6 months</td>
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<td></td>
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<tr>
<td>Symptom severity at 10 days</td>
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<td>Symptom severity at 6 months</td>
<td>-0.32</td>
<td>-0.13</td>
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</tbody>
</table>

Note. * p<0.05; ** p<0.01; *** p<0.001.

(j) Dissociation & symptom severity

<table>
<thead>
<tr>
<th>Variables/factors</th>
<th>Dissociation at 10 days</th>
<th>Dissociation at 6 months</th>
<th>Symptom severity at 10 days</th>
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</thead>
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<td>Dissociation at 6 months</td>
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<td></td>
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<tr>
<td>Symptom severity at 10 days</td>
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<tr>
<td>Symptom severity at 6 months</td>
<td>0.08</td>
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<td>0.54*</td>
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</tbody>
</table>

Note. * p<0.05; ** p<0.01; *** p<0.001.
### (k) Extroversion & symptom severity

<table>
<thead>
<tr>
<th>Variables/factors</th>
<th>Extroversion at 10 days</th>
<th>Extroversion at 6 months</th>
<th>Symptom severity at 10 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroversion at 6 months</td>
<td>0.95***</td>
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<td></td>
</tr>
<tr>
<td>Symptom severity at 10 days</td>
<td>0.23</td>
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<td></td>
</tr>
<tr>
<td>Symptom severity at 6 months</td>
<td>0.41</td>
<td>0.36</td>
<td>0.54*</td>
</tr>
</tbody>
</table>

*Note. * p<0.05; ** p<0.01; *** p<0.001
REFERENCES


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