'COGNITIVE INTERPRETATIONS FOLLOWING A MOTOR VEHICLE ACCIDENT AND THEIR ASSOCIATION WITH POST-TRAUMATIC SYMPTOMATOLOGY'

and

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Literature Review

COGNITIVE APPRAISAL AFTER A MOTOR VEHICLE ACCIDENT

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Abstract

Since Foa, Steketee and Olasov-Rothbaum (1989) highlighted the importance of cognitive appraisal in trauma there have been many research studies supporting this view. This review paper considers the role of cognitive appraisal, in both the development and maintenance of post-traumatic stress disorder, after a motor vehicle accident. Aspects of cognitive appraisal, where evidence supports current psychological theory and where more knowledge is required, are discussed.

Key Words: Cognitive appraisal; Road Traffic accident; Motor Vehicle Accident; Post-traumatic stress disorder.

Introduction

With the increased influence of cognitive psychology on the study of psychopathology, the perspective that people are disturbed, not so much by events as by the views they take of them, has been proposed as a framework for understanding the development and maintenance of emotional problems including post-traumatic stress disorder (P.T.S.D.). Various psychological models and empirical studies have addressed several cognitive factors that may explain a range of reactions to trauma. One of the most popular emotional processing models (Foa & Kozak, 1986) made considerable progress towards understanding how cognitive processes underlying P.T.S.D. operate, by applying Lang's (1977;1979) theory of fear structures and also incorporating an information processing architecture, within which some of Janoff-Bulman and Frieze (1983)'s and Horowitz's (1976) ideas about trauma violating social and individual assumptions could be included. Foa and Kozak (1986) proposed that reactions to trauma involve the development of cognitive schemas that are characterised by threat-related beliefs. These fear-based structures in P.T.S.D. are especially large and complex and because they violate previously held basic concepts of safety they may include more pervasive stimuli, are easily accessible and swiftly activated. In 1989, Foa, Steketee and Olasov-Rothbaum reviewed cognitive behavioural elements in P.T.S.D. and concluded that, although stimulus response theories could adequately account for fear and avoidance after a traumatic event other P.T.S.D symptoms were not accounted for, and cognitive appraisal (meaning) was central to explaining variations in P.T.S.D. symptoms. Evidence for the necessity of a theory to accommodate meaning concepts came from the finding that perception of threat was at least as important as actual danger in predicting severity of P.T.S.D., and that perceived threat to life in rape victims explained a percentage of the variance of the development of P.T.S.D. not explained by physical injuries.

In a later paper, Foa and Riggs (1993) proposed that if the presence of P.T.S.D. itself is perceived by a person as a sign of incompetence and inability to cope, then P.T.S.D. will be exacerbated as continuing symptoms are interpreted as something

negative about self, the world and the future. Recent theories and empirical studies of P.T.S.D. elaborate this area further and propose that persistent P.T.S.D. occurs when people process the traumatic event and its sequelae in a way that maintains a sense of threat. In Ehlers and Clark's model of P.T.S.D. (2000) cognitive appraisal is one of the key processes that can lead to a sense of ongoing threat. This literature review considers the role of cognitive appraisal in both the development and maintenance of P.T.S.D. after motor vehicle accidents (M.V.A.) as this form of trauma is the commonest cause of P.T.S.D. in the general population (Davidson & Fairbank, 1993; Norris, 1992). Areas where evidence supports current psychological theory, and where more knowledge is required, are highlighted.

The incidence and range of psychological sequelae after M.V.A.

The psychological consequences of M.V.A. are a major clinical problem with important personal, social, economic and health service implications. However, it has only been in the last decade that systematic research has been published on the psychological aftermath of M.V.A. and these studies show that although disperse in nature and small in size, M.V.A. are huge in totality (Mayou, Bryant & Duthie, 1993). Reported prevalence rates for P.T.S.D. after M.V.A. have varied widely between 1% (Malt, 1988) and 46% (Blanchard, Hickling, Taylor, Loos & Gerardi, 1994). It is likely that this wide range is due to methodological differences, particularly in recruitment and in assessment procedures. For example, in the United States the Blanchard and Hickling team (1994, 1995, 1996) reported the highest prevalence rates (39 - 46%) which were based on participants who had either sought medical help for complications or who had replied to advertisements. In contrast, prospective studies of consecutive attendees to an accident and emergency hospital report considerably lower rates: Mayou et al. (1993)'s initial sample had a P.T.S.D. rate of 11% (according to *D.S.M. III-R* criterion, 1987) and five years later (Mayou, Tyndel & Bryant, 1997) found the incidence of P.T.S.D. was approximately 10%. A similar study by the Oxford Group (Ehlers, Mayou & Bryant, 1998) assessed 967 consecutive M.V.A.

patients and identified 23.1% with P.T.S.D. at 3 months and 16.5% at one year (according to *D.S.M. IV*, American Psychiatric Association, 1994).

Epidemiological studies show lifetime prevalence of P.T.S.D. (Breslau, Davis, Andreski & Peterson, 1991) after a M.V.A. is around 11%. In a review paper Kuch, Cox and Evans (1996) conclude that about 10% of all M.V.A. survivors will develop P.T.S.D. in the first year but note that initial M.V.A research had tended to be retrospective, use different measures of P.T.S.D. and has not differentiated between acute stress disorder and chronic P.T.S.D. or other psychological problems. Acute Stress Disorder (A.S.D.) occurs in the first month after a trauma. Harvey and Bryant (2000) found A.S.D. in 14% of their initial sample of M.V.A. survivors, 73% of whom were diagnosed as having P.T.S.D. two years later. Additionally, although Brewin, Andrews, Rose and Kirk (1999) found A.S.D. strongly predicted P.T.S.D. in crime victims, more studies on the relationship between these two disorders after a M.V.A. is required.

Although many M.V.A. trauma victims, who develop P.T.S.D., recover spontaneously over time (Kuch et al., 1996) there is increasing evidence that the psychological sequelae of M.V.A.s are not limited to P.T.S.D. (Koren, Arnon & Klein, 1999). Recent studies show that driver and passenger travel anxiety is also common and associated with considerable distress and behavioural change unrelated to the progress of compensation claims (Bryant, Mayou & Lloyd-Bolstock, 1997; Mayou et al., 1997). Other notable psychological consequences of M.V.A. include depression. Depression rates after a M.V.A. vary from 18 - 41% (Blanchard et al., 1994; Mayou et al., 1993), depending on assessment measures and sample population, and show high co-morbidity with other symptoms of post-traumatic stress or physical problems including chronic pain (Hickling & Blanchard, 1992).

Thus, empirical studies show that individuals exposed to the same type of trauma can differ widely in their distress. A reason for this can be explained by the influence of cognitive appraisal on the development and maintenance of post-traumatic symptoms.

Cognitive appraisal and the development of post-traumatic symptoms

Factors influencing the development of post-traumatic symptoms tend to be linked to features of the trauma or the person, and their previous or existing circumstances, (McFarlane, 1989). They include:-

a) Actual danger and perceived threat to life.

Although there is evidence from research on other types of trauma to suggest that actual threat to life is an important risk factor for P.T.S.D. (March, 1993) the evidence for M.V.A. trauma is inconsistent. While it might be predicted that a major M.V.A. would produce an adverse reaction, some research shows that even minor crashes can also evoke marked distress. For example, a few studies have reported a significant correlation between injury severity and development of P.T.S.D. (Blanchard, Hickling, Vollmer, Loos, Buckley & Jaccard, 1995; Jeavons, 2000) but the majority have not (Bryant & Harvey, 1995; Taylor & Koch, 1995; Steil & Ehlers, 2000). Mayou et al. (1993) found in their study that P.T.S.D., mood disorder and travel anxiety occurred as frequently in the modestly injured whiplash group as in patients with multiple injuries and concluded that the consequences of an accident that attracts little or no medical attention can often be overlooked.

Some injuries may be more important that others in precipitating P.T.S.D. and this would be missed if one used only medical measures of injury severity. Scotti, Wilhiem, Northrop, Price, Vittimberga, Ridley et al. (1992) found that M.V.A. victims were more likely to develop P.T.S.D. if they (or others) sustained visible injuries such as major bruises or open wounds. Their findings suggest that if a M.V.A. victim suffers highly visible injuries or witnesses visible injuries in others, perception of threat to life increases and post-traumatic intrusions are more likely; although further research is necessary to confirm this.

Witness to death is an important risk factor for precipitating P.T.S.D. after trauma, however, fatalities in M.V.A. are fortunately rare, especially in comparison with personal injury and, although sample size was small, the death of someone in a

M.V.A. was not a significant predictor of P.T.S.D. in Bryant and Harvey's study (1995).

Research into other types of trauma indicates that perceived threat is at least as important in predicting the severity of P.T.S.D. as objective indicators of actual danger (Foa & Rothbaum, 1992). Kilpatrick, Saunders, Amick-McMullen, Best, Veronen and Resick (1989) found that rape victims who perceived the assault as life-threatening were more likely to develop P.T.S.D. than those who did not think their life was in danger. More studies are necessary to ascertain if perceived threat is as important as actual threat in predicting P.T.S.D. after M.V.A.

An aspect of perceived threat that has not been adequately addressed in the existing literature is that an individual's memory of how threatening an event was may change over time (Schwarz, Kowalski & McNally, 1993) and new information may be incorporated into the memories of perceived threat (Foa et al., 1989). For example, accident phobia or P.T.S.D. may worsen if the person comes to later evaluate the accident as more life threatening than he or she initially believed. This could happen if the person acquires additional threat relevant information such as learning that most people do not survive this type of accident or conversely may lessen if the person acquires information that the accident was not as dangerous as first thought (Taylor & Koch, 1995). In their model of P.T.S.D. Ehlers and Clark (2000) also suggest that delayed P.T.S.D. could occur when a later event gives the original trauma or its sequelae a much more threatening meaning. More research evidence in this area could help define how cognitive appraisal operates over time to influence perceptions of threat and therefore development or remission of post-traumatic symptoms.

b) Causal attributions.

People with P.T.S.D. who blame their own actions or inaction during a M.V.A. are reported to be less symptomatic initially, and recover more rapidly in the first six months, than those with P.T.S.D. who blame another party for the accident. For example, despite Delahanty, Herbermann, Craig, Hayward, Fullerton and Ursano's (1977) sample being predominantly male and Blanchard and Hickling (1997) having a

predominately female sample, both studies found that behavioural self-blame was more beneficial than blaming another person. Both groups also found that attribution of responsibility was a powerful predictor not of only initial reaction to the trauma but also of early remission of symptoms. Ho, Davidson, Van Dyke and Agar-Wilson (2000), in Australia, also found that blaming others for a M.V.A was associated with higher levels of psychological distress for both passengers and drivers. There is now 20 years of research, beginning with the pioneering work of Bulman and Wortman (1977) on spinal cord-injured accident victims, which generally supports the view that victims of traumatic events who accept responsibility for their actions in the trauma cope better with the aftermath than those who blame another or have characterological self-blame. The explanation for the beneficial effect of behavioural self-blame (e.g.' I was driving too fast') is thought to arise because a person can decide to change his or her own behaviour to prevent a future trauma, whereas if someone else is thought to be at fault, or the blame is perceived as inherent to self, there is less personal control.

c) Pre-existing beliefs and experiences.

Traumatic events can threaten a person's view about self and the world. Many theorists propose that this threat to basic inner beliefs is at the core of P.T.S.D, or of responses to trauma in general (Foa & Riggs, 1993; Horowitz, 1976; Resick & Schnicke, 1993, Ehlers & Clark, 2000). Janoff-Bulman and Frieze (1983) also hypothesise that psychological symptoms develop after a trauma if an individual's basic assumptions about the fairness and safety of the world are shattered. However, Resick and Schnicke (1993) point out that trauma may not only shatter previous beliefs, but may also confirm pre-existing maladaptive beliefs, and recovery can require not only the rebuilding of basic beliefs about self and the world but also the adaptation of previous dysfunctional beliefs.

People with exaggerated notions about danger, personal vulnerability or competence may be more likely to develop P.T.S.D. than individuals with more flexible schemata (Foa & Riggs, 1993). Individuals who tend to have an all-or-nothing view of events or favour cultural stereotypes (especially about gender role) are also at

risk of developing P.T.S.D. (Turner, McFarlane & van der Kolk, 1996). Therefore, although trauma can produce personal growth, changed priorities and raised self-esteem in some people, idiosyncratic fear structures can also trigger maladaptive beliefs relating to guilt, danger, helplessness and poor self-image.

Previous negative experiences or trauma may be linked to the new trauma and may give it additional meaning (Ehlers & Clark, 2000). Supporting evidence for the effect of prior beliefs, and experience, on cognitive appraisal includes findings that P.T.S.D. onset is correlated with previous psychological (affective and anxiety) problems (Koren et al., 1999; Blanchard, Hickling, Forneris, Taylor, Buckley, Loos et al., 1997) and stressful life events prior to trauma (Ursano, Fullerton, Epstein, Crowley, Kao, Vance et al., 1999). Childhood adversity is a potent source of meaning and has considerable power to explain differing reactions to stressful events (Stiles, Elliot, Llewelyn, Firth-Cozens, Margison, Shapiro et al., 1990), including later capacity to manage threat, if safety and trust assumptions have already been violated (Dodge, Pettit & Bates, 1997). Evidence for the accumulative nature of trauma, includes Sorenson and Golding (1990) and Ursano et al. (1999) who found that people with a history of previous P.T.S.D. are at risk of acute (and chronic) P.T.S.D. Kessler, Sonnega, Bromet, Hughes and Nelson (1995) also report that prior M.V.A experience predicts onset of P.T.S.D. after a subsequent M.V.A.

Overall, more research into the influence of beliefs and prior (or subsequent) experiences is necessary as both will influence not only cognitive appraisal in trauma but also available coping strategies.

d) Early coping responses and resources.

The context in which events occur, the existence of ongoing difficulties and the quality and perception of support from others, can influence and affect meaning. Tedeschi and Calhoun (1995) coined the term post-traumatic growth to describe potential positive changes following trauma including perception of self, reorganisation of priorities, relationships with others and philosophy of life. More data is needed on the contribution of this kind of adaptive cognitive appraisal and the

prevention of P.T.S.D. One variable found to be linked consistently to positive outcome in individuals exposed to traumatic events is social support (Flannery, 1990) and when others are perceived as negative or unhelpful during or after the trauma, increased incidence of P.T.S.D has been noted. (Keane, Scott, Chavoya, Lamparski & Fairbank,1985; Davis, Brickman & Baker,1991) although the direction of causality is unclear. In their review of the literature, Jones and Barlow (1990) also considered coping strategies to be an important variable moderating response to trauma with active-problem solving strategies linked to better outcome than avoidance or emotion-focused strategies such as dissociation and amnesia (Fairbank, Hansen & Fitterling, 1991). Mayou et al. (1993) suggest that amnesia and unconsciousness can reduce P.T.S.D. risk post-M.V.A., but do not always prevent the person from being traumatised by related stressors, such as visiting the grave of a friend killed in the same accident (McMillian, 1991). Coping resources and their relationship with subsequent appraisal necessitate further study.

Cognitive appraisal and the maintenance of post-traumatic symptoms

Many past research studies considered only the traumatic event and its corresponding effect on the onset of post-traumatic symptoms. However, recent studies consider factors affecting the maintenance of the disorder including Ehlers and Clark (2000), who propose that a sense of ongoing threat can also come from cognitive appraisal of the traumatic event sequelae;-

a) Cognitive appraisal of psychological symptoms following trauma.

Re-experiencing can take the form of images, thoughts, perceptions, flashbacks or dreams about the trauma and can cause significant distress and interfere with personal functioning. These intrusive recollections are often considered the hallmark symptoms of P.T.S.D. (Calhoun & Resick, 1993) and there is general agreement that re-experiencing is necessary for emotional processing and is thus to be expected in all traumatised people for a certain period after a trauma. However, people differ widely in the meaning that they assign to the occurrence of symptoms after a trauma.

Whereas some people may see them as a normal part of recovery others may interpret them in a more negative way: as an indication that they are going mad or are inadequate or weak. Ehlers and Steil (1998) found that negative interpretations about re-experiencing symptoms post-M.V.A. were important in explaining the maintenance of intrusive recollections, and P.T.S.D. in general, because they determined how distressing the intrusive memories were and the extent to which the person engaged in strategies to control the intrusions. In line with this assumption, predictive studies have found that the experience of intrusive recollections immediately after a trauma was not a good predictor of persistent P.T.S.D. (Shalev, 1992); however, intrusive re-experiencing that persisted for months predicted long-term P.T.S.D. symptoms (Baum, Cohen & Hall, 1993). This finding underlines the importance of distinguishing between factors that determine initial re-experiencing symptoms and those involved in their maintenance.

Fedoroff, Taylor, Asmundson and Koch (2000) found that fear of arousal-related sensations, and beliefs that these symptoms will have harmful consequences, were the main predictor of P.T.S.D. severity, independent of treatment-related changes. Steil and Ehlers (2000) looked at two studies of 159 and 138 M.V.A. survivors and found that negative idiosyncratic meaning of current P.T.S.D. intrusions (and cognitive strategies intended to control these intrusions) played a major role in maintaining P.T.S.D. independent of intrusion frequency. Additionally, McManus, Clark and Ehlers (1998) reported positive correlations between negative interpretations of P.T.S.D. symptoms and subsequent severity and persistence after M.V.A.

Current treatments of P.T.S.D. already include components that are likely to normalise symptoms (Resick & Schnicke, 1993), however, it is possible that further gains could be achieved through focusing on the idiosyncratic meaning of intrusions and re-experiencing directly by identifying idiosyncratic cognitive interpretations of the trauma and its sequelae that are linked to chronic P.T.S.D.

b) *Cognitive appraisal of chronic physical symptoms.*

An important aspect related to injury, and ongoing perception of threat, is whether or not a person suffers from persistent medical problems resulting from the accident. Mayou et al. (1993, 1997) and Blanchard et al. (1997) found that chronic P.T.S.D. was correlated with continuing physical problems and Ehlers et al. (1998) found that residual physical consequences were more important in the long-term at predicting P.T.S.D. than original injury severity. Therefore, it may be that differing results in the literature with respect to the relationship between injury and psychological consequences may depend to some extent on the length of time post-accident measures are taken, with injury becoming more important in the longer term (Jeavons, 2000). It is noted that chronic physical symptoms have high co-morbidity with chronic depression, P.T.S.D. and travel anxiety (Hickling & Blanchard, 1992). Headache is a common symptom arising after whiplash injury and Chibnall and Ducko (1994) found 29% of people with chronic M.V.A. related headaches had chronic P.T.S.D. One of the possible mechanisms for this relationship is that chronic physical problems may serve as constant reminders of the accident and thus trigger chronic post-traumatic symptoms (Ehlers et al., 1998). Alternatively negative appraisal can exacerbate physical symptoms (Ehlers & Clark, 2000) and more research is required to ascertain the relationship between physical ailments and post-traumatic symptoms.

c) *Persistent negative beliefs, emotional response and dysfunctional coping strategies.*

Ehlers and Clark (2000) state in their model of persistent P.T.S.D. that excessively negative appraisals of the trauma and its sequelae lead to a sense of ongoing threat. Such appraisal is thought to maintain P.T.S.D. by directly producing negative emotional response and encouraging dysfunctional coping strategies.

The nature of emotional response after an event depends on cognitive appraisal (Beck, 1976): appraisals concerning perceived danger lead to fear (e.g.'I am not safe'), appraisals concerning unfairness lead to anger (e.g.'Others should have helped'), appraisals concerning one's responsibility lead to guilt (e.g.'It was my fault') and

appraisals concerning loss lead to sadness (e.g.'My life is over'). Many people with chronic P.T.S.D. have a range of negative emotions as various appraisals can change over time (Ehlers & Clark, 2000). For example, the possibility of loss ('I can't drive') may be initially associated with anxiety, whereas perceived certainty of loss ('I will never drive') is associated with depression. Anger is also common and Ehlers et al. (1998) found persistent anger related cognitions at 3 months and 1 year correlated with P.T.S.D. diagnosis and severity at both time points. Some people suffer from guilt, anger, disgust and shame after trauma (Andrews & Brown, 1988). These emotions, if persistent, may reflect problematic rumination analogous to worry in Generalised Anxiety Disorder (Mathews, 1990; Wells, 1994). Further research remains necessary to determine if these emotional responses are forms of avoidance that prevent cognitive processing, or if emotional responses such as rumination mainly reinforce dysfunctional beliefs caused by negative appraisal of the event. The relationship between cognitive appraisal and emotional response is complex but may lead to an understanding of why some people maintain specific emotional disorders over time and others do not.

Why does negative cognitive appraisal persist? It is proposed by Ehlers and Clark (2000) that negative appraisals prompt a series of dysfunctional behavioural and cognitive responses that have the short-term aim of reducing distress, but have the long term consequence of preventing cognitive change and therefore maintaining the disorder. Since the pioneering work of Mowrer (1960), avoidance is the core construct used to explain maintenance of anxiety disorders. From differing theoretical perspectives, Horowitz (1976) and Foa et al. (1989) have both suggested that intrusive memories persist if emotional processing is incomplete due to avoidance strategies and failure to expose oneself to traumatic aspects of the event may lead to insufficient activation of the memory structure for the meaning to be adapted (Foa et al., 1989).

Avoidance strategies tend to be behavioural and cognitive. Behavioural processes that maintain P.T.S.D. include avoidance of similar situations, safety behaviours, refusing to discuss the event and alcohol/drug use. Supporting evidence

that avoidance behaviours prevent complete emotional processing of a trauma include the finding that safety behaviours predict persistent P.T.S.D. in assault victims (Dunmore, Clark & Ehlers, 1999). Feinstein and Dolan (1991) also found that people with high alcohol consumption had more risk of chronic P.T.S.D. Cognitive processes that maintain P.T.S.D. include suppression of memories and thoughts about the trauma and activation of emotions, and their corresponding cognitions, by rumination, attentional and memory biases. Although cognitive avoidance strategies seem common, Steil and Ehlers (2000) note that the role of cognitive avoidance in maintaining dysfunctional cognitive appraisal remains underinvestigated.

Conclusions

Most psychological therapies share a commitment to transforming the meanings that clients have attached to symptoms, relationships and life problems (Brewin & Power, 1977). People with adjustment disorders or P.T.S.D. struggle with questions about why such destructive events have happened to them and how they are to continue now that they can no longer rely on the world that they have previously taken for granted. Cognitive models of P.T.S.D. and current empirical evidence emphasise the role of cognitive appraisal in M.V.A. and its sequelae in determining both development and maintenance of post-traumatic symptoms. However, better distinction between those factors linked to the onset of P.T.S.D. symptoms and those determining their persistence would be useful. Additionally, although cognitive appraisal may be important in precipitating or maintaining the psychological consequences of M.V.A., the direction of causality between cognitive appraisal and other psychological factors (such as emotional response or symptom intensity) remains uncertain. More prospective studies are necessary to monitor people's appraisal over time, to ensure that negative cognitive appraisal is not merely a reaction to prolonged symptoms, dysfunctional coping or emotional response, and establish what types of specific cognitive interpretations are important indicators of short and long-term symptomatology after trauma.

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Major Research Project Proposal

COGNITIVE INTERPRETATIONS AFTER A MOTOR VEHICLE ACCIDENT AND THEIR ASSOCIATION WITH POST-TRAUMATIC SYMPTOMATOLOGY

Morag Osborne

Department of Psychological Medicine
University of Glasgow, Glasgow G12 OXH

Research supervisor: Dr Elizabeth Campbell
Department of Psychological Medicine
University of Glasgow

Prepared for submission to Ayrshire and Arran Health Board Research and Ethics Committee

APPLICATION FORM FOR ETHICAL APPROVAL

Ayrshire and Arran Research Ethics Committee

Notes: this application form must be typed not hand written. All Questions must be answered. It is not an acceptable answer to put see 'separate protocol'; 'not applicable' is a satisfactory answer where appropriate. Where a separate protocol exists, this should be submitted in addition to the application form.

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1. Name and status of Proposer
Morag Osborne, Chartered Clinical Psychologist

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2. Address for Correspondence
Consulting and Clinical Psychological Services (C.C.P.S.)
Strathdoon House
50 Racecourse Road
Ayr KA7 2UZ

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3. Employing Authority
Ayrshire and Arran Primary Care Trust

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4. In which hospital(s) or other location will the study be undertaken
C.C.P.S., Strathdoon House, 50 Racecourse Road, AYR

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5. Title of Project
Cognitive Interpretations after a Motor Vehicle Accident and their association with post-traumatic symptomatology.

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6. Has the proposed research been approved by any other committee on ethics?
No. Permission is being sought by both Ethics Committees of the Primary Care Trust and Ayrshire and Arran Health Board.

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7. Has the proposed, or similar research been carried out in any other centre?
To date no research has been carried out on cognitive interpretations after motor vehicle accidents. Computer searches include PsycLIT, MEDLINE, EMBASE and the Cochrane Library. Survivors of a Motor Vehicle Accident (M.V.A.) were chosen because M.V.A. is reportedly the most significant precipitant of Post-traumatic Stress Disorder (P.T.S.D.) in terms of frequency and severity (Norris, 1992) and despite the increasing yearly toll of road casualties, psychological sequelae of M.V.A. accidents have not been widely studied (Di Gallo et al., 1996).

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8. Please give a summary of the project, including the question to be answered, the procedures to be used, the measurements to be made and how the data will be analysed (please see question 15 for recording details of how consent is to be obtained):
The proposed study will aim to describe types of cognitive interpretations following motor vehicle accidents (M.V.A.) and investigate their role in the development of post-traumatic symptomatology. While it might be predicted that

severe M.V.A. would produce seriously adverse emotional reactions, there is evidence that minor crashes can also evoke marked distress (Mayou et al, 1993). The study will consider Foa et al's refined learning theory model (1989) that incorporates the importance of cognitive interpretation of events (meaning), and proposes that perceived threat predicts P.T.S.D. better than actual threat.

Aims of the project

The aim of the study was to identify and describe various cognitive interpretations after a M.V.A. and monitor their association with P.T.S.D. prospectively over a 4-6 month period.

Research Questions

1 What cognitive interpretations of events do individuals make after M.V.A.s ?

2 Are various categories of cognitive appraisal associated with specific post-traumatic sequelae?

3 Is cognitive interpretation of events a better predictor of P.T.S.D. than injury severity?

Plan of Investigation

Participants would be volunteers from South Ayrshire who respond to advertising in General Practitioner surgeries and the local media. People who had a M.V.A. in the past 1-3 months would be asked to contact the Psychology Department if they wished to participate in the study. The post M.V.A. interval was chosen so that the subjects could technically meet the criteria for P.T.S.D. (one month) according to *D.S.M. IV* (American Psychiatric Association, 1994). Participants would be screened to exclude those with head injury and learning disabilities.

Method Drivers and passengers of motor vehicles as well as pedestrians injured on roads would be asked to participate in a descriptive study of people's reactions following a M.V.A. Volunteers would then be asked to attend the Psychology Department to complete several psychological questionnaires and take part in a semi structured interview about their experience, including detailed information about the M.V.A., their reactions, physical consequences and coping resources. If consent was given these people would then be followed up prospectively by telephone at the 7 month anniversary of the event and repeat questionnaires would be given to ascertain psychological well-being in addition to any new information such as litigation status, physical health, new life stressors and if any treatment is in progress. Any person will be free to discontinue the interview at any stage.

Measurements Standardised psychological questionnaires would include the Hospital Scale for Anxiety and Depression (Zigmund & Snaith,1983), the Impact of Events Scale-Revised (Weiss & Marmar, 1995), the Clinician-Administered P.T.S.D. scale for D.S.M. IV (Blake et al.,1996) and the Post-Traumatic Cognitions Inventory (Foa et al., 1999) to assess the presence of depression, anxiety, P.T.S.D. and trauma-related beliefs respectively. As accident severity is expected to be at the milder end of trauma a simple rating scale noting type of injury and if hospital admission occurred will be used to measure accident severity.

Study Design This will be a descriptive study looking specifically at trauma related cognitions and their associated psychopathological correlates. Descriptive data will be generated from interview, post-traumatic cognitions will be elicited and standardised questionnaires will provide diagnostic caseness for P.T.S.D., depression or anxiety. Correlates of meaning, accident severity and post-traumatic symptomatology will be statistically analysed using the S.P.S.S data base.

9. Is the power of the study sufficient to answer the question that is being asked? Please indicate the calculations used for the required sample size, including any assumptions you may have made. (If in doubt, please obtain statistical advice)
Power analysis is not appropriate since this is a preliminary and exploratory study.

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10. What statistical tests will you apply to your results? Please give details of methods

A descriptive profile will be generated from the qualitative data. Appropriate statistical analysis will be selected, for example, t-tests (or non-parametric equivalents) for categorical variables and product moment correlations (or non-parametric equivalents) for continuous variables. Formal regression analysis may also be used.

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11. Scientific background to the study (Give a brief account of relevant research in this area with references)

With the increased influence of cognitive psychology on the study of psychopathology, the perspective that people are disturbed not so much by events as by the views they take of them has been proposed as a framework for understanding the development and maintenance of emotional problems including post-traumatic stress (P.T.S.D.). One of the most popular emotional processing models (Foa & Kozak, 1986) postulates that information relating to stimuli, responses and their meaning is processed and represented in memory in the form of fear structures. In P.T.S.D. these fear structures are thought to help the person escape from danger; they may include more pervasive stimuli, are easily accessible and swiftly activated. As trauma activates schemata which are relatively stable basic assumptions about how the world works, the person's position in it and ways to relate to others, after a traumatic event there will be variability in an individual's response (automatic thoughts, emotional status and behaviours) because of variability in schemata. Therefore, although trauma can produce personal growth, changed priorities and raised self esteem these fear structures can also trigger maladaptive beliefs relating to mistrust, guilt, over-estimation of danger, helplessness, shame and self image. A perceived change in one's self or life, associated with an overall feeling of alienation can impede natural recovery after a traumatic event and may be associated with psychopathology (Blanchard et al., 1996; Ehlers et al., 1998). Foa et al. (1989) refined learning theory to include the importance of cognitive appraisal (meaning) to the extent that they considered perceived threat to predict P.T.S.D. better than actual threat in female rape victims. This study will consider if this model is appropriate for people who have been in a road accident.

Key References

1 Blanchard, E B., Hickling, E.J., Taylor, A.E., Loos, R.W., Forneris, C.A. & Jaccard, J. (1996). Who develops P.T.S.D. from Motor Vehicle Accidents? *Behaviour Research and Therapy, 34*, 1-10.

2 Blake, D.D., Weathers, F.W., Nagy, L.N., Kaloupek, D.G., Gusman, F., Charney, D.S. & Keane, T.M. (1995). The development of a clinician-administered PTSD scale. *Journal of Traumatic Stress, 8*, 75-90.

3 Di Gallo, A. & Parry-Jones, W.L. (1996). Psychological sequelae of road traffic accidents: an inadequately addressed problem. *British Journal of Psychiatry, 169*, 405-407.

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5 Foa, E.B., Ehlers, A., Clark, D.M., Tolin, D. & F. Orsillo, S.M. (1999). The post-traumatic cognitions inventory (PTCI): development and validation. *Psychological Assessment, 11,* 303-314.
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8 Mayou, R., Bryant, B. & Duthie, R. (1993). Psychiatric consequences of road traffic accidents. *British Medical Journal, 307,* 647- 651.
9 Weiss, D.S. & Marmar, C.R. (1995). The impact of events scale-revised. In J.P. Wilson & T.M. Keane (eds). *Assessing Psychological Trauma and PTSD: A Handbook for Practitioners.* Chapter 15. New York:Guilford.
10 Zigmund, A.S & Snaith, R.P. (1983). Hospital anxiety and depression scale. *Acta Psychiatrica Scandinavia, 67,* 361-70.

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12. Please state whether there are any expected benefits to patient care and, if so, summarise

The study will provide greater insight into cognitive sequelae after M.V.A. The psychological treatment of choice for P.T.S.D. (Roth & Fonaghy 'What works for whom', 1996) is cognitive behavioural therapy. This study will identify dysfunctional cognitions to be targeted in the treatment of M.V.A. post-traumatic symptoms.

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13. Please state the likely duration a) of the project itself and b) for individual patients

a) The timescale of the project will aim for most data collection between January - July 2000, analysis of data to be completed by October 2000 and full study completion and submission by June 2001.
b) The length of first interview for subjects will be approximately 60 minutes with a follow up telephone call lasting 20 minutes six months later.

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14. Please state who will have access to the data and what steps will be taken to keep the data confidential.

Both my supervisor (Dr Elizabeth Campbell, Senior Lecturer, Department of Psychological Medicine, University of Glasgow) and myself will have access to the data. Data will be coded to protect anonymity and stored securely in a locked cabinet in the C.C.P.S base at Strathdoon House, Ayr. Data entered on the SPSS database will be unidentifiable to specific individuals.

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15. Please give details of how consent is to be obtained. A copy of the proposed consent form, along with a separate patient information sheet, written in simple, non-technical language, must be attached to this proposal form

Subjects will be volunteers. A information sheet and consent form is attached.

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16. Does the research involve additional invasive procedures over and above the normal treatment of the patient? If yes are there any hazards associated with the procedure?
No.

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17. Please state any other potential hazards to participants arising from the research, their estimated probability (if possible) and the precautions to be taken to meet them.
There are no known hazards.

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18. Please describe any procedures which may cause discomfort or distress to participants, the degree of discomfort or distress entailed and their estimated probability.
None.

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19. Who are the proposed participants in the research (and controls if appropriate), and how are they to be selected? Please give details of age, sex, numbers involved and any other relevant details.
Volunteers who have been in a Motor Vehicle Accident in the past 1-3 months will be screened on initial telephone contact to exclude people with a head injury or learning disability problem. Volunteers will be males and females aged 18 and over. A minimum of 100 subjects is envisaged.

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20. Give names, strengths, doses and route of administration of investigational drugs to be used.
Not applicable

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21. Are the drugs to be used subject to the terms of;-
A Product Licence
A Clinical Trial Certificate (CTC) or Certificate Exempt (CTX)
Is an unlicensed product, but is registered under the DDX Scheme
Not applicable.

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22. Are the drugs used being given in accordance with the Product Licence, with the agreed protocol (in the case of CTX or DDX) or with the CTC? If no, give details.
Not applicable.

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23. Which manufacturer is organising the trial or supplying investigational drugs?
Not applicable.

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24. If the trial is being undertaken in general practice and involves the supply of drugs, please state the arrangements for storage, labelling and dispensing.
Not applicable.

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25. Are questionnaires to be used? If yes, a copy must be attached to this application form.
Copies are attached.

26. How is the project to be funded?
The Psychology Department Endowments Fund is providing course fees (this research is to form part of the CPD Doctorate in Clinical Psychology). Application for further funding from the Trust Research and Development Fund is pending.

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27. Please state any interests, i.e. profit, personal or departmental, financial or otherwise, relating to the study. Details of payments per patient recruited, and/or any other remuneration details must be included.
None.

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28. Will the research have revenue consequences for the N.H.S.? If yes, please tick the box (es) applicable below:

Radiology	**Biochemistry**	**Pharmacy**	**Nursing**
Microbiology	**Haematology**	**Pathology**	**Medical Records**

Other (which)?.....

If you answered yes to any of these, please give details of revenue consequences.
The research will have no revenue consequences.

---

29. Please attach other relevant material: for instance; letters to subjects (which must be in simple non-technical language)
Copies attached.

The information supplied above is to the best of my knowledge and belief accurate. I have read the notes to investigators and clearly understand my obligations and the rights of the subject, particularly in so far as to obtaining freely given informed consent.

Date of Submission .....

Signature of Principal Investigator.....

Major Research Project

COGNITIVE INTERPRETATIONS AFTER A MOTOR VEHICLE ACCIDENT AND THEIR ASSOCIATION WITH POST-TRAUMATIC SYMPTOMATOLOGY

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Prepared for submission to *Behaviour Research and Therapy*

Word Count = 3752

Abstract

This study aimed to describe cognitive interpretations following a motor vehicle accident and investigate their role in the development of post-traumatic symptomatology. Foa, Steketee and Olasov-Rothbaum (1989)'s theory that perceived threat would predict post-traumatic stress better than more objective measures of threat, such as injury severity, was also considered. Sixty one volunteers were interviewed and given four standardised psychological questionnaires at two time points post-accident. The results described various post-trauma cognitions and their associated correlates with post-traumatic symptomatology, perceived threat and injury severity. Step-wise regression showed that perceived threat predicted post-traumatic stress better than severity of injury at 1-3 months post-accident. However, at 7 months post-accident, injury severity had become the better predictor of post-traumatic stress symptoms. When additional variables were added into the equation, negative cognitive appraisal was the main predictor of all post-traumatic symptomatology at 1-3 months and 7 months post-trauma. In conclusion, Foa et al.'s theory was applicable in the short term but findings overall support a more recent model of post-traumatic stress disorder (Ehlers & Clark, 2000).

Key words: Cognitive appraisal; Motor vehicle accident; Road traffic accident; Post-traumatic symptoms, PTSD.

Introduction

The psychological consequences of motor vehicle accidents (M.V.A.) are a major clinical problem with important personal, social, economic and health service implications. However, they have been greatly underestimated by researchers and clinicians who have tended to focus upon military trauma, natural and man made disasters or personal assault and rape when considering post-trauma reactions (Di Gallo and Parry Jones, 1996). It has been only in the last decade and especially in the past 5 years that there has been systematic research published on the psychological aftermath of M.V.A. and these studies showed that, although disperse in nature and relatively small in size, M.V.A.s are the commonest cause of post-traumatic stress disorder (P.T.S.D.) in the general population (Davidson & Fairbank, 1993; Norris, 1992; Mayou, Bryant & Duthie, 1993). In a review paper Kuch, Cox & Evans (1996) conclude that about 10% of all M.V.A. survivors will develop P.T.S.D. in the first year but note that more prospective studies are required as initial research on M.V.A. has tended to be retrospective, use different measures of P.T.S.D. and has not differentiated between acute and chronic P.T.S.D. or other psychological problems.

The perspective that people are disturbed not so much by events as by the views they take of them has been proposed as a framework for understanding the development and maintenance of emotional problems including P.T.S.D. Various psychological models and empirical studies have addressed aspects of cognitive appraisal that may explain a range of reactions to trauma, including Foa, Steketee & Olasov-Rothbaum (1989)'s theory, that perceived threat to life is more important than actual threat to life (based on rape victims). In M.V.A. research the classification of injury severity, as that of medical lethality, rather than actual threat to life is used, as some people can survive a road accident that could have been fatal (near miss accidents). However, despite evidence from research on other types of trauma to suggest that objective measures of threat to life are an important risk factor for P.T.S.D. (March, 1993) the evidence in M.V.A. trauma is inconsistent. Although a few studies have reported a significant correlation between injury severity and the

development of P.T.S.D. (Blanchard, Hickling, Vollmer, Loos, Buckley & Jaccard, 1995; Jeavons, 2000) the majority have not (Bryant & Harvey, 1995; Taylor & Koch, 1995; Steil & Ehlers, 2000). Mayou et al. (1993) found in their study that P.T.S.D., mood disorder and travel anxiety occurred as frequently in a less injured group as in those with multiple injuries and concluded that the consequences of an accident that attracts little or no medical attention can often be overlooked.

Recent research also implies that cognitive appraisal not only of the event but also its sequelae (including negative interpretations of symptoms), may be important in maintaining or changing the psychological consequences of a road traffic accident (Steil & Ehlers, 2000). In a new model of P.T.S.D. Ehlers and Clark (2000) expand on previous psychological theories and propose that excessively negative cognitive appraisal of the trauma and/or its sequelae can play a major role in the persistence of post-traumatic symptoms. This study planned to ascertain if aspects of Foa et al. (1989) and Ehlers and Clark (2000)'s theories of P.T.S.D. were applicable to people who had been in a M.V.A. by describing types of cognitive interpretations following motor vehicle accidents (M.V.A.) and investigating the role of negative cognitive appraisal, injury severity and perceived threat in the development of post-traumatic symptomatology.

Aim of research project

The aim of the research was to identify and describe various cognitive interpretations after a M.V.A and monitor their association with the development and maintenance of post-traumatic symptomatology prospectively over a 4-6 month period. Perceived threat to life, injury severity and post-trauma cognitions were considered according to Foa et al. (1989) and Ehlers and Clark (2000)'s hypotheses.

Research Questions

1 What type of cognitive interpretations do individuals make after a M.V.A?

2 Are various categories of cognitive appraisal associated with specific post-traumatic sequelae?

3 Is cognitive interpretation of events a better predictor of post-traumatic stress than injury severity?

Method

Participants were 61 volunteers mainly from South Ayrshire who responded to advertising in general practitioner surgeries, out-patient clinics and the local media. Drivers and passengers of motor vehicles, as well as pedestrians injured on the roads, were asked to participate in a descriptive study of people's responses following a M.V.A. The post M.V.A. interval of 1-3 months was chosen so that the participants could meet the criterion for P.T.S.D. (one month) according to *D.S.M. IV* (American Psychiatric Association, 1994). Participants were screened to exclude those with head injury and learning disability.

Procedure Volunteers were asked to attend the Psychology Department to complete four psychological questionnaires and take part in a semi-structured interview about their experience, including detailed information about the M.V.A., their reactions, physical consequences and coping resources. If written consent was given, these people were then followed up later at the 7 month anniversary of the event. Information on litigation status, physical health, new life stressors and if any physical or psychological treatment was in progress was recorded and the previous questionnaires repeated. Participants were able to discontinue the study at any stage.

Measures Four standardised psychological questionnaires were used to assess the presence of depression, anxiety, P.T.S.D. and trauma- related beliefs.

1 *The Hospital Anxiety and Depression Scale* (HADS; Zigmund & Snaith, 1983). This 14 item scale provides levels of caseness for anxiety and depression and is widely used

in physical health settings as it does not focus upon psychological problems that could have a physiological origin e.g. appetite disturbance.

2 *The Impact of Events Scale-Revised* (IOES-R; Weiss & Marmar, 1995). This scale is used clinically and in research as it provides subscores on post-traumatic symptoms of intrusions, avoidance and hyperarousal.

3 *The Clinician-Administered P.T.S.D. Scale for D.S.M. IV* (CAPS; Blake, Weathers, Nagy, Kaloupek, Gusman, Charney et al., 1995). As symptom cut-offs for the *D.S.M. IV* classification of whether a person fulfils criterion for P.T.S.D. can be arbitrary (Buckley, Blanchard & Hickling, 1998; March, 1993) and not all of the people in the study had suffered a psychological trauma according to the stressor criterion A of *D.S.M. IV* (American Psychiatric Association, 1994), the sum scores as well as caseness for P.T.S.D. were recorded.

4 The Post-Traumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin & Orsilla, 1999). The PTCI is a relatively new measure that assesses problematic appraisals of post-traumatic sequelae (see appendix 3.2). The 33 item PTCI has been shown to have good internal consistency and test/retest reliability, good sensitivity (0.78) and excellent specificity (0.93) in discriminating trauma survivors with and without P.T.S.D. (In comparison the World Assumptions Scale {Janoff-Bulman,1989} has a specificity of 0.26). The PTCI looks at various cognitions following a trauma and rates each item on a 7 point Likert scale (totally agree/totally disagree), therefore, high scores indicate stronger endorsement of negative cognitions. The following concepts are included:

a) perceived permanent change e.g. " I have permanently changed for the worse."

b) alienation from self and others e.g. " I feel isolated and set apart from others."

c) hopelessness e.g. "I have no future."

d) negative interpretation of symptoms e.g. "My reactions since the event mean that I am going crazy."

e) low self-trust e.g. " I can't trust that I will do the right thing."

f) distrust of others e.g. "People are not what they seem."

g) feeling unsafe in the world e.g. " The world is a dangerous place." " I have to be on guard all the time".

5 Perceived threat Perceived threat to life was rated on a 3 point scale according to the question "Did you feel your life was threatened/in danger?" similar to Jeavons, Greenwood & Horne (2000).

6 Accident severity. As accident severity was expected to be at the milder end of trauma a 4 point scale of road accident severity; no injury, mild injury not requiring hospitalisation, hospital admission and intensive care admission was used. The scale was therefore tied in part to physical injury severity and treatment and seemed clinically useful. Medical scales such as the Abbreviated Injury Scale (1985) were not used as these scales tend to focus more on severe injury. Ranking severity in terms of car damage can be compounded by the value and number of vehicles involved and therefore was also not used as a measure of accident severity.

7 Residual Physical Problems Physical outcome of the accident was assessed according to the categories back to normal, minor or major problems (Mayou, Tyndel & Bryant, 1997).

Finally, semi-structured questionnaires at 1-3 months (Appendix 2.2) and 7 months post-accident (Appendix 2.3) were used to ascertain the person's narrative of the event, accident and demographic variables, coping techniques and other responses.

Study design This was a descriptive study looking specifically at trauma-related cognitions and their associated psychopathological correlates following a M.V.A. using repeated measures. Correlates of perceived threat to life, injury severity and post-traumatic symptomatology were analysed. Predictors of post-traumatic symptomatology were then identified using step-wise regression on a Statistical Package for Social Scientists (S.P.S.S.) database.

Results

The study had planned to look at 100 people who had been involved in a M.V.A; however in the time available (January 2000 - January 2001) only 61 volunteers were recruited. A reason for this may be found in the Road Accident and Casualty Data, 2000 which reports that the number of M.V.A. victims seriously injured in South Ayrshire fell from 82 in 1999 to 74 in 2000 (a drop of 9.7%); this fall in serious road accidents is also reflected in national trends. At 7 months post-accident 37 people (61% of the initial sample) responded to verbal and written contact. Drop-out rate in this study was slightly better than in similar studies (Mayou et al., 1997). Comparisons between respondents and non-respondents showed no significance in respect of demographics, injury severity or post-trauma symptoms. The main findings are summarised and presented in Tables 1-7. Other findings not relevant to the research aims are included in Appendix 3.3. Perceived threat to life was either total (49.2%), partial (32.8%) or none (18.0%) and injury severity varied with 41% of people having no personal injury, 22.8% having a minor injury, 18.2% being admitted to hospital and 18% receiving intensive care treatment.

Insert Table 1

Standardised Measures of psychopathology (Table 1). At 1-3 months post-accident 26.2% of people reported caseness on the CAPS, 45.9% had caseness for anxiety and 16.4% caseness for depression. By 7 months post-accident CAPS caseness had decreased to 18.9%, anxiety to 27% and depression slightly to 16.2%. Descriptive statistics of the IOES-R (avoidance, intrusions and hyperarousal) and PTCI (negative cognitive appraisal) also showed overall reduction in scores over time.

Insert Table 2

Types of cognitive appraisal people make after a motor vehicle accident (Table 2). The majority of people at 1-3 months post-accident did not have negative cognitive appraisal as defined by the PTCI. Of those who did, the main post-trauma belief was 'feeling unsafe in the world' (45.9%). At 7 months post-trauma most types of negative appraisal had reduced from previous percentage levels recorded at 1-3 months. However, beliefs of 'perceived permanent change' (16.7%) and 'negative interpretations of symptoms' (23.3%) had increased slightly.

Insert Table 3

Association between perceived threat, injury severity and negative cognitive appraisal and post-traumatic symptomatology at 1-3 months post-trauma (Table 3). Negative cognitive appraisal post-trauma, as measured by PTCI total score, showed consistently higher correlations (all at the 0.01 level of significance) with post-traumatic stress, anxiety, depression, intrusions, avoidance and hyperarousal symptoms, compared to variables perceived life threat or injury severity. However, perceived threat also correlated at the 0.01 level of significance with post-traumatic stress, anxiety, depression and hyperarousal. Injury severity correlated ($p < 0.01$) with intrusions and ($p < 0.05$) with post-traumatic stress, avoidance and hyperarousal. Negative cognitive appraisal correlated highly with perceived threat ($p < 0.01$) but also correlated with injury severity ($p < 0.05$). Perceived threat and injury severity both correlated at the 0.05 level of significance.

Association between perceived life threat, injury severity, residual physical problems and negative cognitive appraisal with post-traumatic symptomatology at 7 months post-trauma. (Table 3). Negative cognitive appraisal post-trauma correlated consistently ($p < 0.01$) with post-traumatic stress, anxiety, depression and intrusions, avoidance and hyperarousal symptoms. Perceived life threat correlated with depression ($p < 0.01$) and injury severity correlated with intrusions and hyperarousal ($p < 0.01$). Residual physical problems correlated ($p < 0.01$) with negative appraisal, anxiety and hyperarousal, but interestingly not with injury severity.

Insert Tables 4 and 5

Types of cognitive appraisal associated with post-traumatic symptomatology

At 1-3 months post-accident all 7 subscores of the PTCI correlated ($p < 0.01$) with post-traumatic stress, anxiety, depression, intrusions, avoidance and hyperarousal. The cognition which had the highest correlation with post-traumatic stress, intrusions and avoidance was 'negative interpretations of symptoms'. The cognition with the highest correlation with anxiety was 'alienation' and the cognition with the highest correlation with depression and hyperarousal was 'perceived permanent change'. At 7 months post-trauma, correlations for the majority of negative cognitions remained significant with post-traumatic syndromes. The cognition at 7 months post-trauma which had the highest correlation with post-traumatic stress and anxiety was 'negative interpretations of symptoms'. The cognition which had the highest correlation with depression was 'perceived permanent change', the cognition which had the highest correlation with avoidance and hyperarousal was 'unsafe world' and the cognition which had the highest correlation with intrusions was 'alienation'.

Insert Tables 6 and 7

Predictors of post-traumatic symptomatology at 1-3 months post-accident using step-wise regression. (Table 6) Variables entered into the equation were based on previous research including Foa et al. (1989) and Ehlers and Clark (2000)'s hypotheses. Variables were converted into z scores to meet the parametric requirements of regression analysis.

1. When the variables entered were perceived threat and injury severity the first predictor of post-traumatic stress was perceived threat (24% of the variance) and the second predictor was injury severity (together explaining 33.2% of the variance).

2. When the variables entered were perceived threat, injury severity and negative cognitive appraisal (PTCI total score), the main predictor of post-traumatic stress at 1-3 months was negative cognitive appraisal (52.1% of the variance) and secondly injury severity (together explaining 58.2% of the variance). Negative cognitive appraisal was the only predictor of anxiety and depression explaining 63.6% and 54.9% of the variance respectively. Negative cognitive appraisal was the first predictor of intrusions (21.4% of the variance), avoidance (27.3% of the variance) and hyperarousal (40% of the variance) with injury severity the second predictor for these three measures.

Predictions of post-traumatic symptomatology at 7 months post-accident using step-wise regression (Table 7).

1.When the variables entered were perceived threat and injury severity the predictor of post-traumatic stress was injury severity with 16.7% of the variance.

2.When the variables entered were perceived threat, injury severity, residual physical problems and PTCI total score, the main predictor of post-traumatic stress at 7 months was negative cognitive appraisal (60.8% of the variance). Negative cognitive appraisal was also the main predictor of anxiety, depression, intrusions, avoidance and

hyperarousal explaining 60.5%, 50.2%, 47.4%, 37.8% and 41.2% of the variance respectively. The second predictor for anxiety and hyperarousal was residual physical problems and the second predictor for intrusions and avoidance was injury severity.

Discussion

This research looked at trauma after M.V.A. in a broad way and included several psychopathological syndromes including post-traumatic stress, anxiety and depression. The results showed that most (73.8%) trauma victims did not develop post-traumatic symptoms as a result of a motor vehicle accident. Of those people who had post-traumatic symptoms 7.3% recovered spontaneously over a 4-6 month period. When post-traumatic symptomatology occurred, anxiety and P.T.S.D were the most prevalent disorders at both 1-3 months and 7 months post-trauma. The ratings for P.T.S.D. in this study at 1-3 months (26.2%) and 7 months (18.9%) post-accident were similar to other studies (Ehlers, Mayou & Bryant, 1998, identified P.T.S.D. rates as 23.1% at 3 months and 16.5% at one year). Consistent with this study's rates of anxiety (45.9% decreasing to 27%) and depression (16.4% decreasing to 16.2%), anxiety levels have been found by other studies to decrease more quickly over time than depressive symptoms (Blanchard, Hickling, Taylor, Loos, Forneris & Jaccard, 1996). Anxiety ratings after a M.V.A. vary greatly (18 - 51%) as generalised anxiety and travel anxiety can be overlapping reactions (Ehlers, Hoffman, Herda & Roth, 1994) and therefore difficult to classify. Blanchard et al. (1995) note high levels of co-morbid depression (53%) with other symptoms of post-traumatic stress (although their study had a high number of females which may have biased the findings). However, Goldberg and Gara (1990) also report that post-trauma depression in people can increase over time and even outnumber those people with P.T.S.D. after one year. Not surprisingly studies using people referred for treatment have higher P.T.S.D. rates and more co-morbid problems including depression.

Several specific negative types of cognitive interpretations following a M.V.A. were described in the study. Although all categories of negative cognitive appraisal

correlated with post-traumatic symptomatology at 1-3 months, the cognitions 'negative interpretation of symptoms', 'perceived permanent change', and 'alienation' had the highest correlation with post-traumatic stress, depression and anxiety respectively at 1-3 months. At 7 months post-trauma 'negative interpretations of symptoms' remained the highest correlate with post-traumatic stress and 'perceived permanent change' remained the highest correlate with depression. 'Negative interpretations of symptoms' also had the highest correlation with anxiety symptoms at 7 months. The concept of an 'unsafe world' was the overall most reported cognition after a M.V.A. and although this (and most other negative appraisals) seem to diminish over time, continuing to 'feel unsafe in the world', 7 months after a M.V.A., was highly correlated with post-trauma avoidance and hyperarousal symptoms.

In support of some of these findings P.T.S.D is thought by several authors (Ehlers & Steil, 1995; Dunmore, Clark and Ehlers, 1999) to be maintained by negative interpretations of initial post-traumatic symptoms, and Ehlers, Clark, Dunmore, Jaycox, Meadows & Foa (1998) and Ehlers, Maercker & Boos (1998) suggest that an overall feeling of alienation and a permanent change in one's life impede recovery. However, more prospective studies are required to establish if different types of cognitive interpretations influence specific symptoms.

Differing factors regarding the prediction of those suffering trauma symptoms at 1-3 and 7 months post-accident were evident, with perceived threat predicting post-traumatic stress better than injury severity at 1-3 months (although both were relevant predictors) and injury severity as the better predictor of post-traumatic stress at 7 months post-accident. The difference in results over two time points indicates that it is important to distinguish between factors determining the development of initial symptoms and those involved in their maintenance. Thus, in this study Foa et al.'s theory (1989) was only relevant in the short term. Negative cognitive appraisal was the main predictor of all psychopathological problems (post-traumatic stress, anxiety, depression, intrusions, avoidance and hyperarousal) at both time points post-trauma .

Injury severity was the second predictor for intrusions and avoidance at 1-3 months and 7 months post-trauma suggesting that injury at the time of accident continues to have an effect on these symptoms over this time period. Residual physical problems were the second predictor for anxiety and hyperarousal at 7 months post-trauma suggesting that chronic physical symptoms exacerbate anxiety at this stage post-accident. It would be interesting to see if residual physical problems predict depressive symptoms, rather than the two anxiety indicators, over time as threat issues may become those of loss. The finding that, although victims' perceived life threat has some importance in the short term, actual injury and resultant disability become more relevant over time, is partly supported by Hickling and Blanchard (1992) and Blanchard et al. (1997) who found that persistent post-traumatic stress correlated with continuing physical problems. Ehlers et al. (1998) also reported that chronic physical consequences were more important in the long term than original injury severity. Neck pain and headache were the most reported residual physical symptoms in this study (see Appendix 3.3), correlating highly with anxiety symptoms at 7 months. However, one of the known difficulties of correlational research is direction of causality and as Balla and Iansek (1988) state it is not clear if post-traumatic stress is maintained by residual injury or if P.T.S.D. symptoms exacerbate residual physical symptoms. It should also be noted that both injury and residual physical problem variables used in this study were participant's own ratings and only 36.2 % had been admitted to hospital.

Overall, this research supports part of Ehlers and Clark's (2000) model of P.T.S.D. which states that excessively negative cognitive appraisal is a main predictor of post-traumatic symptomatology. Unlike most of the individuals who recovered naturally in this study, the people with persistent P.T.S.D. were unable to see the trauma as a time-limited event that did not have ongoing negative implications. Such appraisal is thought to maintain P.T.S.D. by facilitating negative emotions and encouraging individuals to engage in dysfunctional coping strategies that have the paradoxical effect of increasing P.T.S.D. symptoms (Ehlers & Clark, 2000).

There are, of course, certain limitations to this research and replication of the results with a larger sample over a longer time would be necessary to have confidence in the findings. It would also be useful with a larger sample to do further regression analysis to see if specific cognitive interpretations such as 'negative interpretations of symptoms' or 'perceived permanent change' predict specific post-traumatic symptoms over time. The sample was self-selective and many people were referred by their doctors, due to perceived coping difficulties. Consequently this study is not representative of all M.V.A. survivors. It would also have been desirable to assess the subjects at some fixed interval e.g. one month post-accident; however, such precision was impossible when recruiting out-patient volunteers. Finally, although the study found the PTCI to be a useful tool to elicit specific cognitions, there may be some problems of shared variance or likely bias as the PTCI was designed by using cognitive examples from clinical observation of people with post-traumatic psychopathology. Thus the fact that high scores on the PTCI correlate with post-trauma symptoms may be self-evident. Despite these limitations the results have given an interesting insight into the types of cognitive interpretations which people make following a M.V.A and their association with post-traumatic symptomatology. Clinical implications from the study are evident since if negative cognitive appraisal is most important in influencing post-traumatic symptoms, then people at risk can be identified and cognitive intervention to target dysfunctional cognitions will be effective in treating post-trauma symptomatology.

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Table 1

Standardised Measures

1-3 months Post -Accident (n = 61)	
Caseness on CAPS	
no	73.8%
yes*	26.2%
* All Criteria of DSM IV met	
Caseness on HADS (anxiety)	
no	54.1%
yes	45.9%
Caseness on HADS (depression)	
no	83.6%
yes	16.4%
Descriptive Statistics	
CAPS	
range	0-66
mean	22.7
standard deviation	21.7
IOES-R (total)	
range	0-90
mean	30.1
standard deviation	23.5

7 months Post -Accident (n = 37)	
Caseness on CAPS	
no	81.1%
yes*	18.9%
Caseness on HADS (anxiety)	
no	73.0%
yes	27.0%
Caseness on HADS (depression)	
no	83.8%
yes	16.2%
Descriptive Statistics	
CAPS	
range	0-66
mean	15.9
standard deviation	18.6
IOES-R (total)	
range	0-66
mean	15.6
standard deviation	19.2

Table 2

Percentage ratings of types of cognitions made after a motor vehicle accident using the PTCI

People who agreed with statements of:	1-3 months post-accident (n = 61)	7 months post-accident (n = 37)
1 perceived permanent change	16.4%	16.7%
2 alienation from self and others	18.0%	16.7%
3 hopelessness	18.0%	10.0%
4 negative interpretation of symptoms	21.3%	23.3%
5 low self-trust	16.8%	6.7%
6 distrust of others	17.9%	13.3%
7 feeling unsafe in the world	45.9%	36.7%

Table 3

Association of perceived threat, injury severity and negative appraisal with post-traumatic symptomatology and other variables at two time points

	1-3 months (n=61)			7 months (n=37)			
Variables	Perceived life threat	Injury Severity	PTCI total	Perceived life threat	Injury Severity	Residual physical problems	PTCI total
CAPS							
Post-traumatic stress	0.524**	0.326*	0.764**	0.279	0.246	0.434*	0.661**
HADS							
Anxiety	0.415**	0.183	0.813**	0.433*	0.237	0.496**	0.745**
Depression	0.339**	0.203	0.728**	0.502**	0.244	0.355*	0.673**
IOES-R							
Intrusions	0.275*	0.350**	0.553**	0.407*	0.443**	0.360*	0.563**
Avoidance	0.256*	0.301*	0.602**	0.306	0.428*	0.399*	0.532**
Hyperarousal	0.420**	0.316*	0.652**	0.353*	0.460**	0.484**	0.542**
Other Variables							
Perceived threat	---	0.263*	0.496**	---	---	0.225	0.336*
Injury Severity	0.233	---	0.264*	---	---	0.288	0.303
Residual physical problems	---	---	---	0.225	0.288	---	0.530**

* Spearmann's rho correlation significant at the 0.05 level (2 tailed)
** Spearmann's rho correlation significant at the 0.01 level (2 tailed)

Table 4

Post-traumatic cognitions and their association with post-traumatic stress symptomatology at 1-3 months (n=61)

Variables	CAPS PTSD	HADS anxiety	HADS depression	IOES-R intrusions	IOES-R avoidance	IOES-R hyperarousal
1 Perceived permanent change	0.766**	0.831**	0.770**	0.625**	0.616**	0.704**
2 Alienation	0.725**	0.840**	0.717**	0.591**	0.602**	0.667**
3 Hopelessness	0.654**	0.676**	0.702**	0.465**	0.462**	0.520**
4 Negative interpretations of symptoms	0.781**	0.789**	0.709**	0.628**	0.664**	0.681**
5 Low self trust	0.556**	0.664**	0.562**	0.436**	0.362**	0.494**
6 Distrust of others	0.703**	0.692**	0.615**	0.489**	0.491**	0.539**
7 Unsafe world	0.640**	0.717**	0.590**	0.542**	0.548**	0.625**

* Spearmann's rho correlation is significant at the 0.05 level (2 tailed)
** Spearmann's rho correlation is significant at the 0.01 level (2 tailed)

Table 5

Post-trauma cognitions and their association with post-traumatic symptomatology at 7 months (n =37)

Variables	CAPS2 PTSD	HADS2 anxiety	HADS2 depression	IOES-R2 intrusions	IOES-R2 avoidance	IOES-R2 hyperarousal
1 Perceived permanent change	0.541**	0.663**	0.558**	0.414*	0.325*	0.428**
2 Alienation of self and others	0.463**	0.592**	0.477**	0.434**	0.346*	0.422*
3 Hopelessness	0.420*	0.576**	0.412*	0.387*	0.314	0.405*
4 Negative interpretations of symptoms	0.585**	0.707**	0.547**	0.438**	0.372*	0.456**
5 Low self trust	0.297	0.500**	0.364*	0.305	0.235	0.376*
6 Distrust of others	0.392*	0.540**	0.425**	0.428**	0.347*	0.321*
7 Unsafe world	0.495**	0.570**	0.440**	0.434**	0.509**	0.458**

* Spearmann's rho correlation is significant at the 0.05 level of significance (2 tailed)
** Spearmann's rho correlation is significant at the 0.01 level of significance (2 tailed)

Table 6

Predictors of post-traumatic symptomatology at 1-3 months (n=61)

Variable z scores entered in step-wise regression equation	**1-3 months** Predictor(s)	Adjusted R square
a) Predictors of post-traumatic stress		
Perceived threat	1 Perceived threat	0.240
Injury severity	2 Injury severity	0.332
b) Predictors of post-traumatic stress		
Perceived threat	1 PTCI total	0.521
Injury severity	2 Injury severity	0.582
PTCI total score		
b) Predictors of anxiety		
Perceived threat	1 PTCI total	0.636
Injury severity		
PTCI total score		
c) Predictors of depression		
Perceived threat	1 PTCI total	0.549
Injury severity		
PTCI total score		
d) Predictors of intrusions		
Perceived threat	1 PTCI total	0.214
Injury severity	2 Injury Severity	0.298
PTCI total score		
e) Predictors of avoidance		
Perceived threat	1 PTCI total	0.273
Injury severity	2 Injury Severity	0.332
PTCI total score		
f) Predictors of hyperarousal		
Injury severity	1 PTCI total	0.400
Perceived threat	2 Injury severity	0.446
PTCI total score		

Table 7

Predictors of post-traumatic symptomatology at 7 months (n=37)

Variable z scores entered in step-wise regression equation	**7 months** Predictor(s)	Adjusted R square
a) Predictors of post-traumatic stress		
Perceived threat	Injury severity	0.167
Injury severity		
b) Predictors of post-traumatic stress		
Perceived threat	PTCI total	0.608
Injury severity		
Residual physical problems		
PTCI total score		
b) Predictors of anxiety		
Perceived threat	1 PTCI total	0.605
Injury severity	2 Residual physical problems	0.644
Residual physical problems		
PTCI total score		
c) Predictors of depression		
Perceived threat	PTCI total	0.502
Injury severity		
Residual physical problems		
PTCI total score		
d) Predictors of intrusions		
Perceived threat	1 PTCI total	0.474
Injury severity	2 Injury severity	0.545
Residual physical problems		
PTCI total score		
e) Predictors of avoidance		
Perceived threat	1 PTCI total	0.378
Injury severity	2 Injury severity	0.470
Residual physical problems		
PTCI total score		
f) Predictors of hyperarousal		
Injury severity	1 PTCI total	0.412
Perceived threat	2 Residual physical problems	0.522
Residual physical problems		
PTCI total score		

Small Scale Research Project

GENERAL PRACTITIONER AND PATIENT VIEWS OF A NEW ASSESSMENT/TRIAGE SYSTEM WITHIN AN ADULT MENTAL HEALTH PSYCHOLOGY SERVICE

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Abstract

Objectives: To evaluate General Practitioner and patient satisfaction levels after the introduction of a new assessment/triage system within an adult mental health psychology service. To compare current satisfaction levels with a similar General Practitioner and patient satisfaction study undertaken in 1995.

Design: Questionnaires similar to a 1995 audit were sent out to all General Practitioners in the area and to a random sample of 150 adult mental health patients who had attended from February 1999 - September 2000.

Setting: Ayrshire and Arran Health Board Area, West of Scotland.

Results: The results of the General Practitioner survey showed that there were good overall levels of satisfaction with the adult mental health psychology service in 2000. However, compared to 1995 measures, the satisfaction indicators for General Practitioners in 2000 were generally lower, due to perceived length of waiting times. The assessment/triage system was generally rated as good or fair by General Practitioners. The 2000 patient satisfaction survey showed that patients rated the service consistently higher than in 1995, the only exception being a slight decrease in satisfaction with clinic location. Patients in 2000 thought the new assessment/ triage system should remain and expressed more satisfaction with the waiting times than did patients in 1995.

Conclusion: The new assessment/triage system has been generally approved by General Practitioner and patient respondents to the survey. However, other service development issues have been identified and will be acknowledged in future service planning and focus.

Introduction

The Review of Psychology Services in Scottish Health Care (1) highlighted the national scarcity of trained psychologists and recommended a range of skills available from qualified (chartered) psychologists which could be applied to indirect National Health Service (NHS) work, such as advice, training, research and clinical consultancy. However, the potential contribution of psychology to the NHS in Scotland can only be realised if psychologists can find new ways of dealing with long waiting lists and direct patient care. In December 1998, as part of ongoing service development, the Psychology Department in Ayrshire attempted to address this problem, and increasing rates of referral, with the introduction of an assessment/triage system.

From 1999 the Department began to establish a team of cognitive behavioural therapy (C.B.T.) specialists, primary care counsellors, counselling psychologists, clinical psychologists and psychology assistants to provide skill mix and a range of therapies for people with mental health problems. All patients on the Primary Care waiting list (which ranged from a 4-30 week wait) were offered one initial assessment/triage appointment, from February 1999. The assessment/triage system allowed patients to be targeted to the most appropriate therapist and for more urgent problems to be prioritised (Figure 1). This assessment/triage appointment was offered within 9 weeks of referral thus allowing earlier expert psychological advice (including self help literature) to be given, and meant that people who only required one session (11% in 2000), or referral to a different service, received the appropriate service sooner. An opt-in policy screened out those who no longer wished to use the service by asking patients to confirm, by stamped addressed envelope or telephone call, that they would attend. This opt-in policy screened out approximately 25% potential non attenders in 2000. The clinicians felt that there were many benefits of the assessment/triage system and the Health Board target of an initial waiting time of 9 weeks was being met. However, it was unclear how either patients or their General Practitioner (G.P.)s felt about the assessment/triage system.

In 1995, an audit project had looked at both G.P. and patient levels of satisfaction with key areas of the adult mental health psychology service. The results in 1995 showed high levels of satisfaction overall, but a wish for a reduction in waiting times for adult psychological services was highlighted by the G.P.s. To measure G.P and patient satisfaction levels with the new assessment/triage system it was decided to compare previous levels of patient and G.P. satisfaction in 1995 with current levels of satisfaction in 2000.

The aims of this study were:

1 To measure G.P. and patient satisfaction levels with the assessment/triage system.

2 To identify generally how the adult psychology service is perceived by its two main user groups, G.P.s and patients, and if any changes would be recommended.

Method

Methodology and questionnaires from the 1995 study were repeated with a few changes in terminology, i.e. psychologist became therapist to acknowledge skill mix, and some specific questions were asked regarding the assessment/triage system.

G.P. Satisfaction Survey - As in 1995, every general practitioner in Ayrshire and Arran was sent a questionnaire (Table 1) asking about their views of the adult psychology service. They were asked to identify themselves but could choose to be anonymous.

Patient Satisfaction Survey - In 1995, a sample of 150 patients (who had used the adult psychology service from 1993 - 1995 and been discharged) was randomly generated from the departmental database. The 1995 postal survey was sent to these people. In 2000, all patients who had been referred to the adult psychology service between February 1999 (when the assessment/triage system began) and September 2000 had also been recorded on the departmental database. A computer generated random sample of 150 patients, was sent the Patient Satisfaction Survey (Table 2). A self addressed envelope was enclosed and patients were asked to return the questionnaire anonymously by post.

Results

To provide context the activity, waiting times, referral and staffing levels of 1995 and 2000 are included in Table 3.

Table 1 GENERAL PRACTITIONER SURVEY

	1995	2000
Response rate to survey	73%	50%
Do you refer patients to the adult psychology service?	96% yes 4% no	92% yes 8% no
Assessment and triage		
The system of assessment and triage was introduced in 1999		
a) were you aware of this?	not applicable	63% yes
b) if so, how would you rate it?	n/a	3% excellent 86% good/fair 11% poor
Opt-in system		
Were you aware of the opt-in system to attend for assessment?	n/a	28% yes 72% no
a) if so, how would you rate this for efficiency?	n/a	24% good/fair 76% n/a
b) if so, how would you rate this for user friendliness?	n/a	22% good/fair 2% poor 76% n/a
Waiting times		
Do you believe that waiting times have improved as a result of the assessment clinics?	n/a	24% yes 55% no 21% unsure
Quality		
How would you rate the quality of the adult psychology service your patients receive?	79% good/excellent 21% fair/poor	65% good/excellent 25% fair 10% poor
Patient needs		
To what extent does the adult psychology service meet your patients needs, as you see them?	84% very well/well 16% poorly	59% very well/well 38% poorly 3% not at all

	1995	2000
Efficacy		
Do you believe this service helps your patients deal more effectively with their problems?	91% always/usually 9% seldom	88% always/usually 12% seldom
Tranquillisers/Sedatives		
Do you find the service reduces the need to prescribe antidepressants?	80% yes 20% no	76% yes 14% no
Anti-depressants		
Do you find the service reduces the need to prescribe antidepressants?	62% yes 38% no	59% yes 41% no
Cost effectiveness		
Do you find this service reduces the number of G.P. consultations in relation to the referred problem?	68% yes 32% no	73% yes 27% no
Referral to other services		
Do you find that the service reduces the need to refer to agencies in relation to the referred problem?	67% yes 33% no	71% yes 29% no

The response rate to the 2000 survey was fair compared to similar studies (2) but lower than the 1995 response rate. The majority of G.P. respondents in 2000 made referrals to the adult psychology service. Many G.P.s (63%) were aware of the assessment/triage system and most of those G.P.s (86%) rated assessment/triage as good/fair. However, 72% of G.P.s did not know about the opt-in policy for patients to attend for assessment/triage and 55% did not think that waiting times had improved as a result of assessment/triage. In 2000, 65% of G.P.s rated the quality of the adult psychology service as excellent/good (compared to 79% in 1995) and 59% of the G.P.s in 2000 thought that the service met their patients needs very well/well (compared to 84% in 1995). Over both years, most G.P.s stated that the service showed efficacy, reduced the need to prescribe sedatives or anti-depressants and reduced the number of G.P. consultations and need to refer to other agencies regarding the referred problem. These ratings in 2000 were slightly lower or similar to 1995 levels. For most of the G.P. respondents in 2000, stated criticism of the service (Table 4) related to waiting times, but once treatment began the perceived service and quality of care was good.

Table 2 PATIENT SATISFACTION SURVEY

	1995	2000
Response rate to survey	32%	29%
Appointments		
How many times did you see a therapist before you were discharged?	once - 11% 2-6 times - 55% 7-10 times - 19% more than ten - 15%	2-6 times - 37% 7-10 times - 32% 10-15 times -14% more - 17%
Waiting times		
Was the waiting times satisfactory?		
a) for assessment	n/a	96% satisfactory/ very satisfactory
b) for treatment	81% satisfactory/ very satisfactory	93% satisfactory/ very satisfactory
Opt-in system		
People who commented that the opt-in system was fine as it is at present	n/a	95%
Assessment appointment		
How helpful did you find the first assessment appointment?	n/a	93% helpful/ very helpful
Convenience		
How convenient were the appointment times to see a therapist?	96% convenient/ very convenient	95% convenient/ very convenient
Location		
How convenient was the location of your appointments?	98% convenient/ very convenient	83% convenient/ very convenient
Satisfaction		
How satisfied were you with the treatment you received from the therapist?	85% satisfied/ very satisfied	95% satisfied/ very satisfied
Mood change		
Have you experienced a postitive change in your mood since seeing a therapist?	70% yes 30% no	90% yes 10% no

	1995	2000
Confidence		
Have you experienced a positive change in your confidence since seeing a therapist?	68% yes 12% no	83% yes 17% no
Ability to cope		
Has your ability to cope with the problem you were referred with changed since seeing the therapist?	77% much better/ slightly better	85% much better/ slightly better
Relationships		
Have you experienced a change in your relationships with other people since seeing a therapist?	53% much better/ slightly better	90% much better/ slightly better
Well-being		
How is your well-being since seeing the therapist?	77% much better/ slightly better	85% much better/ slightly better
Cost effectiveness		
Did seeing the therapist help reduce the number of visits to your G.P. in relation to the problem you went to the therapist with?	60% less visits	63% less visits
Reduction of medications		
Did seeing the therapist help reduce the number of visits to your G.P. for other reasons?	19% significant/ slight reduction	37% significant/ slight reduction
Recommendation		
Would you recommend the psychology service to a friend?	55% definitely	90% definitely

Although the response rate to the patient survey was low (29%) it was similar to the response rate in 1995. In 2000 the majority of patients found waiting times very satisfactory/satisfactory for both assessment/triage (96%) and treatment (93%). Interestingly, both waiting time satisfaction measures in 2000 were higher than the 1995 single measure of 81%. In addition, a high number of patients (95%) thought that the opt-in policy should remain as it is and the large majority (93%) found the assessment/triage appointment to be very helpful or helpful. The majority (95%) of patients in 2000 found that the appointment times were convenient but slightly less respondents (83%) found the location as convenient as in 1995 (98%) when more

psychologists were based in health centres or large G.P. practices. Satisfaction levels regarding the treatment given were slightly higher (95%) in 2000 and the number of people who perceived their mood (90%), relationships with others (90%), ability to cope (85%), general well being (85%) and confidence (83%) to be much/slightly better was consistently higher than 1995 measures. More people (63%) in 2000 believed that they had made fewer visits to the G.P. and had reduced their need for medication (37%) after attending the psychology service, compared to 1995 measures. One noticeable difference between the two surveys was the large majority (90%) of respondents in 2000, compared to 55% in 1995, who would definitely recommend the adult psychology service to a friend.

Discussion

Similar studies (3) indicate that a rate of between 30-40 % is usual from postal questionnaires but it is nevertheless acknowledged that a large number of people did not reply to the patient questionnaire and their views are unknown. Despite this, the introduction of the assessment/triage system has been approved by the majority of G.P.s and patients who did take the opportunity to express their views. Although nationally the level of public satisfaction with mental health services is low (4), patients satisfaction levels with the adult psychology service in Ayrshire appear high with satisfaction scores ranging from 83-96% compared to similar patient satisfaction studies. For example, Skaife and Paul (5) reported that 60% of patients rated the Salford psychology service as helpful with 80% saying that they would recommend the service to a friend and Laraway (6) reported that 46.2% of clients rated their problems as being mostly or very much resolved through counselling. In addition, as this study compared the 2000 results to a similar study undertaken in 1995, both the G.P. and the patient surveys demonstrate that the Ayrshire adult psychological service continues to achieve many improvements in patients' quality of life and is, in this sense, clinically effective.

Interestingly, the G.P.s in 2000 seem to be more concerned with waiting times than most patients who replied to the survey. It is noted that patients in 2000 wait a much shorter time (maximum 9 weeks) before assessment/triage and waiting times for secondary treatment remain long (but similar to 1995 waiting times for assessment and treatment) depending on priority rating (See Table 3). As patients in 2000 show more satisfaction, with both the waiting times for assessment and treatment, than similar patients in 1995, it may be that an early assessment/triage appointment addresses some issues for the patient who then does not mind a further wait (see Patient Comments; Table 4). The 1995 G.P. survey noted earlier dissatisfaction with waiting times but these levels of dissatisfaction appear to have increased in 2000, perhaps because the adult psychology service has, in the past two years, taken more direct referrals from psychiatrists and Community Mental Health Teams (C.M.H.T.). However, overall levels (58.6%-87.5%) of G.P. satisfaction with the Ayrshire adult psychology service in 2000 still compare favourably to similar studies including Corney (2), who reported only 52% of fundholding GPs and 40% of non-fundholding G.P.s were satisfied with the Greenwich primary care psychology service. From the G.P. comments it was noted that the comparatively higher levels of dissatisfaction and overall poor response rate of G.P.s replying to the 2000 survey could also reflect G.P. perceptions of their own increasing workloads (7) which are not helped by long waiting times for psychology. Areas for improvement highlighted in the surveys include better communication with G.Ps, who require more explanation about the opt-in policy, and dialogue with regard to waiting times.

The length of time patients wait remains one of the main visible measures of success of a service and an important quality indicator. There are many factors underlying long wait times for psychological services and examination of these raises fundamental issues about societal expectations of health care and the need to prioritise and apply evidence based intervention. It is likely that the secondary waiting time for treatment appointments would be even longer if there was no assessment/triage (as the opt-in policy screens out many potential non-attenders) but it is also possible that if the

secondary waiting list remains too long, patients' clinical problems and needs may change and the potential benefits of earlier triage assessment are lost. Lengthy waiting lists can serve as rationing systems (8) and if fewer G.P.s refer to the service their patients will be denied access to evidence based psychological care (9) as a means of coping with their problems. Reluctance of G.P.s to refer to psychological services can mean increased referral rates to other services and it may be useful to evaluate how the psychology service is viewed from the perspective of the C.M.H.Ts.

Consumer satisfaction has become an important element of service evaluation (10) and a number of governmental publications such as *"Designed to Care"* (11) later implemented by the Health Act 1999, advocate the use of surveys as a way of checking that services are meeting the needs of the service users. However, there are a large number of methodological problems with satisfaction surveys including low response rate (12), lack of user involvement in designing the questionnaire (13), social desirability effects (14), arbitrary definitions of satisfaction (15) and difficulties obtaining a representative sample (16). This study is not immune to these criticisms but by comparing previous levels of satisfaction in 1995 with present day levels it has been useful to monitor opinions of the service over time, including the new assessment/triage system, and perceptions of waiting times. In order to deal with some of the service issues raised by this service evaluation project, further discussion regarding service redesign, purpose and focus is ongoing.

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Figure 1

CCPS MODEL OF ASSESSMENT AND TRIAGE IN ADULT MENTAL HEALTH

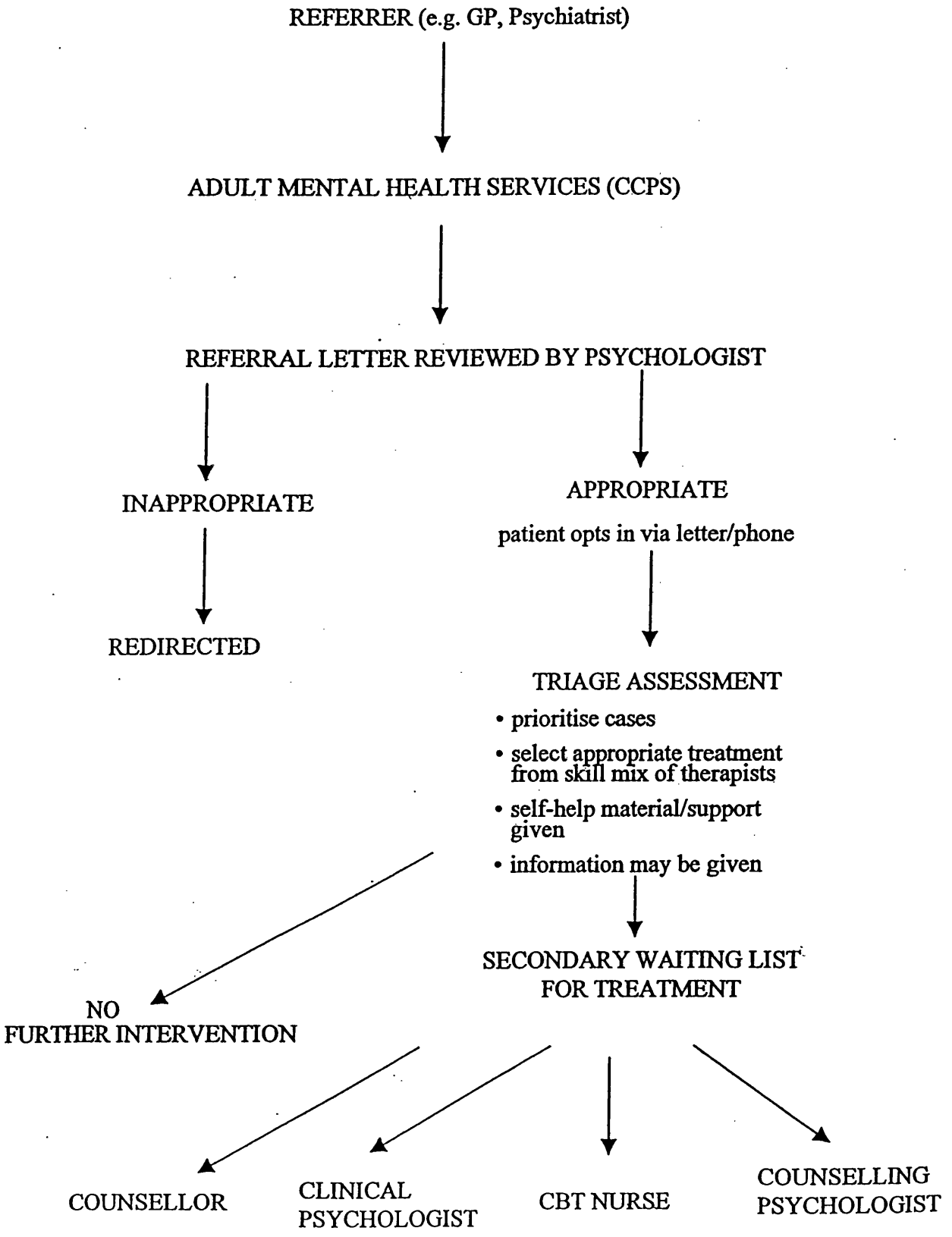

Table 3

Activity, referral and staffing levels

a) Activity and referral levels for Ayrshire Adult Mental Health Psychology Service in 1995 and 2000

	New Patients	Review Patients	G.P. Referrals	C.M.H.T/Psychiatry Referrals
1995/1996	1179	4200	95%	5% (approx.)
1999/2000	2160	8803	60%	40%

b) Staffing levels for Ayrshire Adult Mental Health Psychology Service in 1995 and 2000

	WTE psychologists	WTE counsellors	WTE C.B.T specialists
1995/1996	7.5	0	0
1999/2000	6.1	3	5

c) Mean waiting times for Ayrshire Adult Mental Health Psychology Services in 1995 and 2000

	First appointment/ Assessment	Treatment
1995/1996	4-30 weeks	no wait after initial appointment
1999/2000	1-9 weeks	1-30 weeks depending on priority and if other services were involved.

d) Number of GPs in Ayrshire and Arran Health Board Area

	Total Number
1995/1996	254
1999/2000	265

Table 4

Examples of Comments from General Practitioners and Patients

Comments from General Practitioners

1 Number of comments re waiting times = 55
The main problem is waiting times.
I feel the service is poor purely because of the waiting times. We carry the burden until they are seen.
All the negative comments noted above are as a result of the waiting time.

2 Number of comments re assessment clinic = 12
Too long a gap from referral to assessment to appointment.
Several months for initial assessment then months again for treatment renders the service virtually useless. Meanwhile we have to manage these people ourselves.

3 Number of comments about quality = 10
Quality fine but waiting list too long to be of use.
Waiting list last year was so long I stopped referring, service is good once they (patients) can access it.
Prolonged waiting times negates many potential benefits.
I think quality once patients attend is superb, I just wish the waiting time was less.

4 Number of comments about no longer referring to the service = 8
Time taken to be seen for appointment is too long and consequently I rarely refer to the service.
Because of long waiting times very few patients (compared to 5-10 years ago) now being seen; more psychologists are required.

5 Number of comments about using other mental health services = 6
Long waiting times have reduced my use of the psychology service, now go through C.M.H.T., health visitors or counsellors.
I tend to refer to C.M.H.T. first and view psychology as a tertiary service

Comments from Patients

I didn't think it (the triage/assessment appointment) would help initially because I had plenty of friends and relatives so I was surprised how much difference it made to me. I was put on the right road and sorted out a few things before I went back for treatment.

I thought that I was going mad.....I have now regained my self-confidence and can cope with relationships and life problems.

The therapist enabled me to return to work and gave me confidence to believe in myself.

Single n Case Study

THE ROLE OF PERSPECTIVE AND IMAGERY IN THE TREATMENT OF A PERSON WITH SEVERE DERMATOLOGICAL PROBLEMS AND ASSOCIATED SOCIAL ANXIETIES

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Prepared for submission to *Behaviour Research and Therapy*

Abstract

The role of perspective and imagery as outlined by Clark and Wells' (1995) model of social phobia was explored in a person with severe dermatological problems and associated social anxieties using a multiple baseline design. Results showed that perspective in imagery can significantly affect anxiety (as measured by pulse rate and subjective units of distress) and scratching behaviour. The role of imagery and perspective (observer versus field bias) enabled the person to engage in treatment and also facilitated a broader case conceptualisation.

Key Words: Imagery, Perspective-taking; Social anxiety; Dermatology; Cognitive behaviour therapy; Single n case.

APPENDICES

Appendix 1

BEHAVIOUR RESEARCH AND THERAPY incorporating BEHAVIORAL ASSESSMENT

Information for Contributors

Submission of Papers

Authors are requested to submit their original manuscript and figures with 2 copies. Manuscripts for the regular section should be sent to Dr. S. Rachman, Department of Psychology, University of British Columbia, Vancouver, British Columbia, Canada, V6T 1Z4. Manuscripts for the *Behavioural Assessment* Section should be sent to Dr. S. Taylor, Department of Psychiatry, 2255 Westbrook Mall, Vancouver, British Columbia, Canada, V6T 2A1.

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References should be prepared carefully using the *Publication Manual of the American psychological Association* for style as follows:

Birbaumer, N., Gerber, D., Miltner, W., Lutzenberger, W., & Kluck, M. (1984). Start with biofeedback and continue with behaviour therapy in migraine. *Proceeding of the 15th Annual Meeting of the Biofeedback Society of America* (pp 33-36) Albuquerque.

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Appendix 1 continued

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Ayr KA7 2UZ

Tel : 01292-285607

professional psychology in action

Ayrshire and Arran Primary Care NHS Trust

Appendix 2.2

Information Sheet

Thank you for responding to our advertisement. You are being invited to take part in a research study looking at various peoples reactions or cognitive interpretations following a road traffic accident. Please take time to read the following information carefully and discuss it with friends, family and your G.P. if you wish.

Psychologists are interested in people's thoughts, moods and behaviours and this study aims to look at the effects a road accident has had on different people.

The study will involve being interviewed by a Chartered Clinical Psychologist about your experience and reactions following the accident. You will then be asked to complete 4 questionnaires. The whole interview will take about 60 minutes. Information given will be confidential and you will be given the opportunity to ask questions. A follow up telephone call 6 months later may be offered to monitor your reaction over time.

This study has received Ethical approval from the Ayrshire and Arran Primary Care Trust and hopes to use the findings to help people who have difficulties coping after a road traffic accident.

Consent Form for psychological research

I,....., give my informed consent to take part in the research project entitled: 'Cognitive Interpretations after a Motor Vehicle Accident and their Association with Post-Traumatic Symptomatology'.

I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions. I understand that I will be interviewed for approximately 60 minutes about my experience during which time notes will be taken. In addition I will be asked to complete 4 Questionnaires and may be contacted for a follow up study, by telephone, in 6 months time.

All information will be confidential and I have the right to choose not to participate at any time without giving reason and without my medical or legal rights being affected.

Signed ..... Date .....

Appendix 2.3

COGNITIVE INTERPRETATIONS AFTER A MOTOR VEHICLE ACCIDENT AND THEIR ASSOCIATION WITH P.T.S.D.

Personal Details

I.D..... Age ..... Date of interview..... Male/Female

Marital Status - (Married, Divorced, Partner, Widow{er},Single)

Telephone Number ..... Date of Accident .....

Occupation ..... (F/T, P/T, Unemp, Home Maker, Retired)

1. **I would like to begin by asking a few questions about your life before the accident happened.**

Did you have any previous mental health problems?

(1= no problems) (2= GP) (3= Outpt) (4= Inpt) (5= Chronic)

In the past 2 years had you had any significant life events?

(1= none, 2 = one, 3 = two, 4= three, 5= more) re life events checklist)

Have you been in any previous Motor Vehicle Accidents?

self (1= none, 2= minor, 3= major)

close friend/family (1= none, 2= minor,3= major)

2. I am now going to ask some questions about the accident

Were you the driver or a passenger or pedestrian?

(1= driver, 2= passenger, 3= pedestrian)

Can you tell me what happened ? What went through your mind?

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Appendix 2.3 continued

What were your main feelings *at the time of the accident?*-

1 = Fear 3 = Shame 5 = Despair 7 = Anger towards other 9 = Relief
2 = Loss of control 4 = Guilt 6 = Anger towards self 8 = Amazement

Did you suffer any loss of consciousness? 1 = no, 2 = minutes, 3 = 5-10 minutes, 4 = 10-30 minutes, 5 = more.

Did you suffer any blow to the head? 1 = no, 2 = yes

Did you feel numb 1 = yes, 2 = partial, 3 = no or dazed? a = yes, b = partial, c = no

In your opinion what was the main cause of the accident? 1= alcohol/drugs, 2= speed, 3 = weather, 4 = self, 5 = other person, 6 = other.....

Did you feel helpless?1= no, 2 = partial, 3 = total

Did you feel your life was threatened/in danger? 1 = no, 2 = partial, 3 = total

Was anyone injured? (describe any injuries, what injuries could you see? .....)

self -1 = no injury, 2 = minor injury, 3 = whiplash 4 = hospital admission, 5= ITU

o*ther* -1= no one else, 2= not hurt, 3= minor injury, 4= hospital admission, 5= dead

vehicle-1= no damage, 2 = minor garage repair, 3 = major repair, 4 = beyond repair

Actual threat to own life due to accident? 1= none, 2= partial, 3= yes

Now that we have talked about the accident was there a vivid image at the point of impact? 1= no, 2= yes; visual, sound, somatosensory, smell, (describe)

What was your main thought at impact? (describe) a = death, b = illness, c = others, d = car, e= none

Did this image/thought remind you of another time in your past?1=no 2=yes(describe)

3 Finally I would like to ask some questions about life since the Accident

What is your litigation status? 1= insured, 2= not insured, 3= defender, 4= plaintiff

Life events since? 1= none,2= one,3= two, 4= three, 5= more re life events checklist

How has your physical health been since we last met?

1= worse (a = pain, b= headache, c= poor concentration, d= other specify.....)
2= no change, 3= better

Post trauma physical treatment?- *self* (1= no, 2 = GP, 3 = outpt, 4 = inpt 5 = DNA)
- *other*(1= no, 2= GP, 3= outpt, 4= inpt 5 = d.k.) List speciality if 3 or 4.....

Are you on any new medications?1= no, 2= yes, list drug.....

Post trauma psychological treatment? 1= no, 2 = GP, 3 = outpt, 4 = inpt 5= DNA

Are you driving now?1= yes 2= no, specify reason.....

If you are driving how has this been affected? 1= no change, 2= avoid motorways, 3= avoid accident area, 4= avoid driving, 5= avoid being passenger in car, 6= restrict speed, 7= travel anxiety, 8= other.....

Any change in alcohol use or other substances? 1= no, 2= yes, specify.....

Any concerns? 1= no, 2= physical health, 3= psychological health, 4= other .....

What has helped you to cope? 1= family, 2= friends, 3= belief, 4= time, 5= other.....

What are your main feelings about the accident *now*

1 = Fear 3= Guilt 5= Despair 7 = Anger towards other
2= Loss of control 4 = Shame 6= Anger towards self 8 = Amazement 9 = Relief

Looking back, was there any threat to your own life during the accident?

1= none, 2= partial, 3= yes

Perceived vulnerability now? 1= same, 2= less, 3= more

Can you tell me what has been the main effect(s) of the accident for you? .....

Can we contact you again by telephone in approx. 6 months time? Yes/No

Appendix 2.4

COGNITIVE INTERPRETATIONS AFTER A MOTOR VEHICLE ACCIDENT AND THEIR ASSOCIATION WITH P.T.S.D.

Follow-Up Interview at 6 months **I.D.**.....

Thank you for agreeing to take part in a follow-up study regarding the accident on ..... I would like to begin by finding out what has happened since we last met. Please circle the appropriate answers to the questions below:

Have there been any significant life events since the accident?
(1 = none, 2 = one, 3 = two 4 = three).....
Any road accidents? Any remaining insurance problems? Any remaining legal problems?(1 = no, 2 = self, 3 = other) (1 = no, 2 = yes.....)(1 = no, 2 = yes.....)
How has your physical health been since the accident?
(1 = worse, a = pain, b = headache, c = poor conc, d = other, 2 = minor problems, 3 = full recovery
How has your psychological health been since the accident?
(1 = worse, specify....., 2 = minor problems, 3 = full recovery.
- If worse, do these symptoms have any effect on the way you think about yourself?
(1= weak, 2 = inadequate, 3 = sign of damage, 4 = sign of madness, 5 = other.....
- If worse, how distressing are the symptoms? (extremely 1 2 3 4 5 slightly)
how uncontrollable are the symptoms? (extremely 1 2 3 4 5 slightly)
Are you on any new medications? (1 = no, 2 = yes.....)
Are you receiving any post trauma physical treatment?
(1 = no, 2 = G.P., 3 = outpt, 4 = inpt, 5 = DNA, 6 = other.....)
Are you receiving any post trauma psychological treatment?
(1 = no, 2 = G.P., 3 = outpt, 4 = inpt, 5 = DNA, 6 = other.....)
Has there been any change in your driving behaviour?
(1 = no, 2 = yes, a = travel anxiety, b = travel phobia, c = vigilance, d = restrict speed)
Have there been any delayed consequences of the accident for you?
(1 = none, 2 = physical, 3 = psychological, 4 = legal, 5 = financial, 6= other.....)
Any change in your alcohol use or other substances?
(1 = no, 2 = yes, specify.....)
Any other concerns? (1= no, 2 = yes, specify.....)
What is your main feeling about the accident now?
1 = Fear 3 = Guilt 5 = Despair 7 = Anger towards other
2 = Loss of Control 4 = Shame 6 = Anger towards self 8 = Relief 9 = None
Do you feel more at risk, or vulnerable in general? (1= no 2= yes)
Adjustment - work (1 = no problems, 2 = slight difficulty, 3 = sick leave, 4 = unemp)
-home (1 = no problems, 2= slight change, 3 = major change)
-interests (1= no problems, 2= slight change, 3 = major change)
-relationships (1= no problems, 2 = slight change, 3 = major change)
What has helped you to cope?
(1 = self, 2 = family, 3 = friends, 4 = time, 5 = work, 6 = other.....)
What has been the main effect of the accident for you?.....
Thank you for your help.

Appendix 3.1

BEHAVIOUR RESEARCH AND THERAPY
incorporating BEHAVIORAL ASSESSMENT
Information for Contributors

Submission of Papers

Authors are requested to submit their original manuscript and figures with 2 copies. Manuscripts for the regular section should be sent to Dr. S. Rachman, Department of Psychology, University of British Columbia, Vancouver, British Columbia, Canada, V6T 1Z4. Manuscripts for the *Behavioural Assessment* Section should be sent to Dr. S. Taylor, Department of Psychiatry, 2255 Westbrook Mall, Vancouver, British Columbia, Canada, V6T 2A1.

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Manuscript Preparation

General: Manuscripts must be typewritten, double-spaced with wide margins on one side of white paper. Good quality printouts with a font size of 12 or 10pt are required. The corresponding author should be identified (include a Fax number and E-mail address). Full postal addresses must be given for all c0-authors. Authors should consult a recent issue of the journal for style if possible. An electronic copy of the paper should accompany the final version. The Editors reserve the right to adjust style to a certain standard of uniformity. Authors should retain a copy of their manuscript since we cannot accept responsibility for damage or loss of papers. Original manuscripts are discarded one month after publication unless the Publisher is asked to return the original material after use.

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References should be prepared carefully using the *Publication Manual of the American psychological Association* for style as follows:

Birbaumer, N., Gerber, D., Miltner, W., Lutzenberger, W., & Kluck, M. (1984). Start with biofeedback and continue with behaviour therapy in migraine. *Proceeding of the 15th Annual Meeting of the Biofeedback Society of America* (pp 33-36) Albuquerque.

Gray, J.A. (1976). The behavioural inhibition system: a possible substratum for anxiety. In M.P. Feldman & A. Broadhurst. *Theoretical and experimental bases of the behaviour therapies* (pp 3-41) London: Wiley.

Appendix 3.1 continued

Taber, I.L., McCormick, R.A., Russo, A.M., Adkins, B.J., & Ramirez, L.F. (1987). Follow-up of pathological gamblers after treatment. *American Journal of Psychiatry, 144*, 757-761.

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Appendix 3.2
POST-TRAUMATIC COGNITIONS INVENTORY

We are interested in the kind of thoughts which you may have had after a traumatic experience. Below are a number of statements that may or may not be representative of your thinking. Please read each statement carefully and tell us how much you AGREE or DISAGREE with each statement. People react to traumatic events in many different ways. There are no right or wrong answers to these statements.

1	2	3	4	5	6	7
Totally Disagree	Disagree Very much	Disagree Slightly	Neutral	Agree Slightly	Agree Very much	Totally Agree

___ 1 The event happened because of the way I acted.
___ 2 I can't trust that I will do the right thing.
___ 3 I am a weak person.
___ 4 I will not be able to control my anger and will do something terrible.
___ 5 I can't deal with even the slightest upset.
___ 6 I used to be a happy person but now I am always miserable.
___ 7 People can't be trusted.
___ 8 I have to be on guard all the time.
___ 9 I feel dead inside.
___ 10 You can never know who will harm you.
___ 11 I have to be especially careful because you never know what can happen next.
___ 12 I am inadequate.
___ 13 I will not be able to control my emotions, and something terrible will happen.
___ 14 If I think about the event, I will not be able to handle it.
___ 15 The event happened to me because of the sort of person I am.
___ 16 My reactions since the event mean that I am going crazy.
___ 17 I will never be able to feel normal emotions again.
___ 18 The world is a dangerous place.
___ 19 Someone else would have stopped the event from happening.
___ 20 I have permanently changed for the worse.
___ 21 I feel like an object, not like a person.
___ 22 Somebody else would not have got into this situation.
___ 23 I can't rely on other people.
___ 24 I feel isolated and set apart from others.
___ 25 I have no future.
___ 26 I can't stop bad things from happening to me.
___ 27 People are not what they seem.
___ 28 My life has been destroyed by the trauma.
___ 29 There is something wrong with me as a person.
___ 30 My reactions since the event show that I am a lousy coper.
___ 31 There is something about me that made the event happen.
___ 32 I will not be able to tolerate my thoughts about the event, and I will fall apart.
___ 33 I feel like I do not know myself anymore.
___ 34 You never know when something terrible will happen.
___ 35 I can't rely on myself.
___ 36 Nothing good can happen to me anymore.

Appendix 3.3
Additional Results From Major Research Project

These results are mainly descriptive and show the range of participant responses after a motor vehicle accident.

A Demographic Variables (n = 61)

Age	
Range	18-59
Mean	37.9
Standard Deviation	11.5

Employment	
Employed	70.5%
Home Maker	11.5%
Unemployed	9.8%
Student	6.6%
Retired	1.6%

Previous Motor Vehicle Accident	
No	85.2%
Yes	14.4%

Gender	
Male	54.1%
Female	45.9%

Life Events In Past 2 years	
No	90.2%
Yes	9.8%

Previous Mental Ill health	
No	75.4%
Yes	24.6%

B Accident Variables (n = 61)

Damage To Car	
Total	49.2%
Major	24.6%
Minor	19.7%
None	6.6%

Thought At Impact	
None	31.1%
Death	19.7%
Damage to car	13.1%
Injury to self	8.2%
Others in car	8.2%
Others at home	6.6%
What is happening	4.9%
Why me	4.9%
Abandonment	1.6%
Being late	1.6%

Accident Mode	
Driver	62.3%
Passenger	26.2%
Pedestrian	8.2%
Cyclist	3.3%

Degree of Helplessness at Impact	
None	11.5%
Partial	31.1%
Total	57.4%

Survivor Guilt	
No	91.8%
Yes	8.2%

Dissociation (feeling dazed and numb)	
Yes	24.6%
No	75.4%

Main Feeling At Time	
Fear	26.2%
Anger at other	23.0%
Loss of control	21.3%
Amazement	9.8%
Despair	6.6%
Guilt	4.9%
Helpless	3.3%
Anger at self	4.9%

Appendix 3.3 continued

Causal Attribution	
Other Person	60.7%
Self	16.4%
Traffic speed	13.1%
Car	4.9%
Weather	3.3%
Bad luck	1.6%

Perceived Threat To Life	
Total	49.2%
Partial	32.8%
None	18.0%

Injury To Other Person(s)	
None	44.3%
Minor	24.6%
Hospital admission	19.7%
Dead	6.6%
Do not know	4.9%
None	6.6%

Injury Severity	
None	41.0%
Minor	22.8%
Hospital admission	18.2%
Intensive care	18.0%

Visible Injuries	
None	62.3%
Self (minor)	11.5%
Self (major)	13.1%
Other (minor)	3.3%
Other (major)	9.8%

Past Link	
None	62.3%
Road accident	9.9%
Bereavement	6.6%
Depression	4.9%
Sexual abuse	4.9%
Other	10.4%

C Post-accident variables at 1-3 months (n = 61)

Main Effect	
Psychological problems	19.7%
Vigilance when driving	14.8%
Physical problems	13.1%
Travel anxiety	11.5%
Off work	9.8%
Financial problems	8.2%
None	6.6%
Insurance problems	6.6%
Reprioritise lifestyle	4.9%
Anger	1.6%
Driving ban	1.6%
Improve car safety	1.6%

Coping Strategy	
Time	32.8%
Partner/Family Support	23.0%
Keep Busy/Active	19.7%
Alcohol	9.8%
Unknown	6.6%
Friends	3.3%
Physiotherapy	1.6%
Positive thinking	1.6%
Change lifestyle	1.6%

Change In Driving	
Anxiety when driving	41.0%
Slower driving	24.6%
None	19.7%
Anxiety as a passenger	6.6%
Driving ban	6.6%
Anger	1.6%

Perceived Vulnerability	
More	75.4%
Same	23.0%
Less	1.6%

Appendix 3.3 continued

D Post-Accident variables at 7 months (n = 37)

Physical Health	
Back to normal	37.8%
Minor problems	19.0%
Major problems	43.2%

Other Life Events Since Accident	
None	81.1%
Another M.V.A.	5.4%
Other life event	13.5%

Residual Physical Problems	
None	50.0%
Pain (back/neck)	27.8%
Headache	12.3%
Poor concentration	8.3%

Main Effect on Life	35.0%
None	18.9%
Psychological symptoms	16.2%
Physical symptoms	13.5%
Off work	10.8%
Driving ban	2.8%
Inconvenience	2.8%

Main Effect On Driving	
Travel anxiety	40.4%
Vigilance	27.0%
None	24.3%
Unable to drive	8.3%

Ongoing Treatment for Psychological Symptoms (medication)	
No	81.1%
Yes	18.9%

Main Belief about Residual Psychological Symptoms	
None	69.4%
Sign of personal damage	8.3%
Sign of madness	8.3%
Sign of own vulnerability	5.6%
Sign of own inadequacy	5.6%
Sign of weakness	2.8%

Psychological Health	
Back to normal	48.6%
Minor problems	27.1%
Major problems	24.3%

Main Coping Strategy	
Time	35.1%
Keep busy	24.4%
Family/Partner	21.6%
Physiotherapy	5.4%
Antidepressants	5.4%
None/Do not know	5.4%
Alcohol	2.8%

Main Feeling About Accident	
Relief	32.4%
Anger	29.7%
None	16.2%
Fear	13.5%
Despair	5.4%
Guilt	2.8%

Delayed Consequences	
None	44.4%
Psychological	11.1%
Financial	8.3%
Physical	25.0%
Legal	11.1%

Ongoing Treatment for Physical Symptoms	
No	70.3%
Yes	29.7%

Main Effect On Driving	
Travel anxiety	40.5%
Vigilance	27.0%
None	24.3%
Unable to drive	8.1%

Appendix 4

Health Bulletin

Notes for contributors

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Appendix 5.1

BEHAVIOUR RESEARCH AND THERAPY incorporating BEHAVIORAL ASSESSMENT

Information for Contributors

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Authors are requested to submit their original manuscript and figures with 2 copies. Manuscripts for the regular section should be sent to Dr. S. Rachman, Department of Psychology, University of British Columbia, Vancouver, British Columbia, Canada, V6T 1Z4. Manuscripts for the *Behavioural Assessment* Section should be sent to Dr. S. Taylor, Department of Psychiatry, 2255 Westbrook Mall, Vancouver, British Columbia, Canada, V6T 2A1.

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Manuscript Preparation

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Birbaumer, N., Gerber, D., Miltner, W., Lutzenberger, W., & Kluck, M. (1984). Start with biofeedback and continue with behaviour therapy in migraine. *Proceeding of the 15th Annual Meeting of the Biofeedback Society of America* (pp 33-36) Albuquerque.

Gray, J.A. (1976). The behavioral inhibition system: a possible substratum for anxiety. In M.P. Feldman & A. Broadhurst. *Theoretical and experimental bases of the behaviour therapies* (pp 3-41) London: Wiley.

Appendix 5.1 continued

Taber, I.L., McCormick, R.A., Russo, A.M., Adkins, B.J., & Ramirez, L.F. (1987). Follow-up of pathological gamblers after treatment. *American Journal of Psychiatry, 144*, 757-761.

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Appendix 5.2

Habitual Use of Imagery Scale (HUIS)

The statements given below describe ways of thinking and remembering that are true for some people and not for others. Read each statement and decide whether or not it is true with respect to yourself.

If you agree with the statement or decide that it does describe you, answer TRUE by circling the T. If you disagree with the statement or feel that it is not descriptive of you, answer FALSE by circling the F. Answer the statements as carefully and honestly as you can. The statements are not designed to assess the goodness or badness of the way you think. They are attempts to discover the methods of thinking you consistently use in various situations. There are no right or wrong answers.

Answer every statement either true by circling T, or false by circling F, even if you are not completely sure of your answer.

1 I often use mental images or pictures to help me remember things.	T	F
2 My thinking often consists of mental pictures or images.	T	F
3 I find it difficult to form a mental picture of anything	T	F
4 When remembering a scene, I use verbal descriptions rather than mental pictures.	T	F
5 I never use mental pictures or images when trying to solve problems.	T	F
6 I often enjoy the use of mental pictures when trying to solve problems.	T	F
7 I can close my eyes and easily picture a scene I have experienced.	T	F
8 I think that most people think in terms of mental pictures whether they are aware of it or not.	T	F
9 I can easily picture moving objects in my mind.	T	F
10 I don't form a mental picture of people or places when reading of them.	T	F
11 When someone describes something that happens to him, I sometimes find myself vividly imagining the events that happened.	T	F
12 I have only vague impressions of scenes I have experienced.	T	F
13 Listening to someone recount his experience does not usually arouse mental pictures of the incidents being described.	T	F