Coping and Psychological Morbidity After Road Traffic Accidents: The Development of a Coping Scale and An Examination of Stressor Variables, Coping and Social Support in Relation to Post Traumatic Stress Disorder.

A PORTFOLIO OF STUDY, PRACTICE AND RESEARCH

Submitted for the Doctor of Psychology (PsychD) in Clinical Psychology

Conversion Programme

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University of Surrey
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My greatest debt is to Walter Busuttil who helped me in so many ways to complete this research.
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SECTION ONE: Professional Audit and Introduction to Portfolio.

Professional Audit.

1. Overall aims and objectives:
Prime Aim: To attain greater professional competence in order to enhance the contribution of clinical psychology to health care.
Prime Objective: To produce a portfolio of study, practice and research that will demonstrate increased competence in each of these three areas.

2. Academic:

2.1 Aims:
To enhance academic competence in three specialist areas of clinical psychology so as to develop the services offered by the department or profession. To broaden the areas in which the department can offer professional expertise and thus provide a high quality service to its users over a wide range of specialist areas.
To increase knowledge in areas where current knowledge is lacking or in need of updating.

2.2 Objectives:
To complete three critical academic reviews, one for each of the three specialist areas.
To attend study days and workshops as appropriate to these aims and to the overall aim of enhancing professional knowledge and practice through continual professional development.
To develop specialist knowledge in three specific areas of Post Traumatic Stress Disorder in order to offer professional expertise in both service developments within the department and high quality care to service users and the community.
2.3 Rationale: The Trusts in which I work have been involved in major traumatic incidents which have drawn attention to gaps in service provision for staff, patients and the community. Government recommendations have called for the development of "Phase Two" emergency plans to deal with the psychosocial needs of people involved in major incidents. To develop a policy, training programme, and consultancy service for the Trusts which will provide a high quality service to both staff and the community, academic knowledge in the following three areas was identified as necessary:

**a) Post Traumatic Stress and Factors Relevant to the Study of Traumatic Events.**
The purpose of looking at this area is to improve knowledge of the likely psychological effects of traumatic events on the community. This may be helpful in order to assess the needs of any affected community and to assess whether there are issues which can be addressed in the planning stage to minimise the risk of psychological sequelae. An academic knowledge of this area may contribute to early identification of those recognised to be at risk and ensure prompt and appropriate psychological intervention for those who need it through appropriate targeting of limited resources.

**b) A Critical Review of "Psychological Debriefing".**
This technique has been widely advocated for use with affected individuals in the aftermath of a traumatic event as a form of crisis intervention. It has been claimed that it has the potential to minimise the risk of psychological distress. In order to assess its potential, a review of the literature was undertaken. This review was also useful in devising training programmes to teach the technique to staff likely to come into contact with individuals affected by traumatic incidents and was also useful in implementing a small scale research project to evaluate the effectiveness of the technique.
(c) A Critical Review of: "Psychological Models of PTSD and their Implications for Treatment of the Disorder".

The previous two reviews draw together academic knowledge relevant to planning for the psychological needs of those affected by a traumatic event and for crisis intervention in the aftermath of an event. Both reviews aim to inform psychological interventions aimed at minimising the psychological effects of such events. This review, studies models of PTSD, in order to assess the approaches to therapy available for those who do go on to develop PTSD.

2.4 Plan:

Critical review number one:
"Post Traumatic Stress; Factors Relevant to the Study of Traumatic Events".

Critical review number two:
"Psychological Debriefing; A Critical review"

Critical review number three:
"Psychological Models of Post Traumatic Stress and their Implications for Treatment of PTSD".

Study Days attended relevant to academic aims and objectives

1. Marketing. University of Surrey
2. Clinical Audit. University of Surrey
3. Interface between Neuropsychology and Health Psychology. University of Surrey
3. Clinical:

3.1 Aims:
To increase personal professional competence or to develop the services offered by the department or profession.
To develop guidelines for a phase two major incident policy and undertake other relevant clinical activities necessary to support the policy framework.

3.2 Objectives:
To develop guidelines for a phase two major incident response policy based on the psychological literature and in line with the recommendations proposed in government reviews and by professional bodies such as the British Psychological Society.
To develop teaching, and awareness programmes so that the policy is understood within the local health care trusts, and by other statutory and voluntary bodies likely to be involved in the response to any traumatic event. Furthermore to ensure that the skills necessary to implement the policy are available.
To organise a conference designed to promote consultation and collaboration with the community and other emergency services so that awareness of the need for planning a co-ordinated response is understood.

The policy guidelines and summaries of relevant support work undertaken will be presented in a dossier of clinical activity describing the service development undertaken, and highlighting its psychological framework.

3.3 Rationale:
Through involvement in local major incidents, professional groups within the local Trusts have raised the issue of planning for the psychological needs of those involved in major incidents. After a number of discussions it became clear that working to develop a policy to cover the complexity of the response required was the next appropriate step. The author will be involved in establishing the clinical
initiative and in writing and submitting the policy guidelines for approval to the senior management team of the trust. Because of the complexity of the response required in any major incident, a number of other clinical initiatives linked with the policy were also undertaken and these are also described.

This policy will be developed to link in with the phase one major incident policy currently being revised by the hospital's Trust. The aim of this being to provide an integrated and co-ordinated response in the event of a major incident.

The clinical initiative will develop professional skills in areas of professional competence I have previously had little opportunity to develop. Such areas include consultancy, teaching, liaison and some management skills. The clinical initiative also involves organising a conference and various forms of needs assessment, together with the preparation of information materials for affected individuals and professional groups and the organisation of training events so that the policy can be effectively implemented.

3.4 Plan:
The various clinical initiatives involved in developing the policy will be written up and included in the Psych D portfolio.

4. Research:
4.1 Aims:
To increase research competence so as to develop the services offered by the department.
To increase personal research competence by developing through a research project, a greater knowledge of issues involved in psychological measurement and scale construction.
To aim to examine the role of psychosocial variables within a "stressor experience" (road traffic accident), thereby increasing knowledge available to the profession.
4.2 Objectives:
To develop a research dossier, part of which will be the original MSc dissertation, which will either make evident increased research competence or will present a contribution to knowledge.
To develop a scale to look at coping style in road accident victims and its relationship with psychological morbidity in this group and to use appropriate statistical techniques to develop the scale.
To design a study using a questionnaire to examine the role of psychosocial variables in the stressor experience of road traffic accident victims.

4.3 Rationale:
Research in PTSD has often dealt with epidemiological issues and there has been less focus on evaluating the dimensions within the stressor experience and the way the individual deals with the traumatic event. There are psychological factors which may be important to assess in this context such as the role of coping style, the use of social support and the individual's appraisal of the event. It might also be argued that there has been too much of a focus on war and major disasters as opposed to the everyday traumatic events which lead numerous individuals to consult a psychologist. One area in which studies suggest there may be considerable hidden psychological morbidity is in road traffic accident (RTA) survivors. While this suggestion has been confirmed in individuals actually injured in an RTA, one of the main questions in this study will be to examine the hypothesis that appraisal of threat rather than actual injury sustained would be more predictive of psychological difficulties. This study, through looking at individuals with minor injuries or individuals discharged with no injury identified, will try to contribute new knowledge through the assessment of the psychological and physical factors outlined above.

The eventual aim of this work which will need to be developed beyond this period of study is to identify "risk factors" for those involved in traumatic events and use
them to develop a scale to identify individuals at risk of developing psychological difficulties so that appropriate help could be offered. The identification of risk factors may also lead to different forms of crisis intervention, (e.g modification of coping style associated with psychological problems), aiming to prevent morbidity. A risk-scale would be of particular use in situations where large numbers of individuals are traumatised and resources need to be targeted to those at greater risk of developing problems.

4.4 Plan:
Participants in the study will be recruited through the hospital's Accident and Emergency register. The design will involve the use of a postal questionnaire given the limited time available. The variables examined will include demographic variables, appraisal of the stressor experience through subjective and objective measures and assessment of loss including financial loss, loss of social support and loss of physical or mental well being. Measures of the social support available and the use of this support will also be undertaken.

The development of a coping scale for this population will attempt to develop a valid and reliable measure identifying five coping constructs: catastrophising, emotion focused coping, task oriented coping, avoidance coping and positive appraisal. The scale will then be used to assess the use of these coping approaches by RTA survivors and to examine coping and morbidity.

The study will be a correlational study with the forementioned variables being correlated with a measure of anxiety and depression (Hospital Anxiety and Depression scale) and a measure of Post Traumatic Stress (Impact of Events Scale).

Ethics committee approval for the study was obtained (February 1995) from the Wiltshire and Bath Ethics Committee.
SECTION ONE: PROFESSIONAL AUDIT

SECTION TWO: ACADEMIC

Critical Reviews:
1. Critical review number one: "Post Traumatic Stress: A Critical Overview of Factors Relevant to the Study of Traumatic Events".

2. Critical review number two: "Psychological Debriefing: A Critical review"

3. Critical review number three: "Psychological models of Post Traumatic Stress and their implications for treatment of the Disorder".

SECTION THREE: CLINICAL

A report on the development of a phase two major incident response policy and clinical work undertaken in association with the development of this initiative.

SECTION FOUR: RESEARCH

"Psychological morbidity after road traffic accidents: stressor variables, social support and the development of a coping scale".

SECTION FIVE: MSc THESIS

Summary of MSc course including original MSc thesis:
"Psychophysiological response to emotive imagery; the role of response training".

The aims and objectives of this portfolio were approved by Dr Ian Burgess, Head of Psychology Department, Victoria Hospital Swindon, and Mr Paul Devonshire, Tutor for Professional Development, University of Surrey.
SECTION TWO: ACADEMIC

CRITICAL REVIEWS
POST TRAUMATIC STRESS: A CRITICAL OVERVIEW OF FACTORS RELEVANT TO THE EXPERIENCE OF TRAUMATIC EVENTS.
The objective of this essay is to critically review the literature on post-traumatic stress reactions in order to ascertain some of the variables important in the study of traumatic stress. The review will necessarily be selective because of the wide number of variables which could potentially be explored and will focus on variables relevant to a model of traumatic stress initially proposed by Green, Wilson & Lindy (1985) and elaborated upon by Green (1993). This model proposes that the response of individuals and groups to the experience of traumatic events is best understood when personal variables, stressor variables and the social context of both the trauma experience and the recovery environment are taken into account.

In addition to providing a framework for understanding post-traumatic stress reactions, the review will have relevance for the clinical initiative described in section three of this portfolio. Consideration of variables affecting the processing of traumatic events may help in planning for the psychological needs of those affected by traumatic incidents. Knowledge drawn from a review of the literature may help in identifying which individuals may be vulnerable in which circumstances. It may furthermore inform interventions aimed at preventing or minimising psychological reactions or help in planning interventions for those in whom such reactions do develop.

**Development of the Understanding of PTS Reactions.**

The association between exposure to traumatic events and the experience of psychological distress is widely acknowledged. While it was not until 1980 that DSM-III (American Psychiatric Association, 1980) defined Post Traumatic Stress Disorder [PTSD] in the aftermath of the Vietnam war, literature throughout the centuries reflects the general understanding that psychological sequelae may follow exposure to traumatic events. Most introductory texts on PTSD list a number of references to classical and modern literature citing examples where PTS reactions have been documented through the centuries. For example, exposure
to war is associated with psychological distress in Homer's Iliad (Homer, ca 800 B.C. [Shay, 1991]) and in Shakespeare's Henry IV. Shakespeare's Lady MacBeth manifests symptoms of the disorder after the bloody murder of Duncan (Shakespeare, ca 1594 [Alexander, 1975]). The diary of Samuel Pepys (eds Latham & Matthews 1970 - 1983) in describing the reactions of the diarist to the Great Fire of London illustrates the psychological distress which can result from exposure to civilian disaster (Daly, 1983). Returning to the trauma of war, the war poets Siegfried Sassoon and Wilfred Owen describe most poignantly the effects of war on the minds of men (Hibberd, 1992).

While psychological sequelae have been reported in civilian contexts, it is in the context of war that post traumatic stress (PTS) reactions are most consistently documented. Experience of war led to mass psychological casualties being recorded. The history of military psychiatry records various diagnoses attempting to describe PTS including Nostalgia, coined by Hofer in 1688, (Gal & Manglesdorff, 1991), Irritable heart syndrome (Da Costa, 1871), Neurasthenia (Beard, 1869), Shell shock (World War I) and later, "lack of moral fibre" and combat fatigue in World War II (Symonds & Williams, 1942; 1943; 1944; Glass, 1975). What is surprising in reading the history of these descriptions is that understanding of these concepts does not appear to develop systematically; it appears that in every war PTS was rediscovered anew.

It is now widely recognised that PTS can occur after natural disaster, man-made disaster such as disasters of mass transportation, and traumatic events which occur at a personal level such as assault or road traffic accident.
What are the psychological sequelae associated with exposure to a traumatic event?

Acute and longer term post traumatic stress reactions have been described. Reference is made in the text to the current diagnostic criteria cited in DSM IV (American Psychiatric Association, 1994). These criteria are appended for reference (see appendix 1).

Acute Reactions.

Psychological reactions in the immediate aftermath of traumatic events are common. While for the majority of individuals these reactions gradually subside in the days after the event, this is not always the case. For the first time there is recognition in DSM-IV (A.P.A., 1994), that these symptoms may be of sufficient duration and severity to meet the diagnosis of Acute Stress Disorder (ASD).

Tyhurst (1950), proposed that psychological reactions in the aftermath of a traumatic event could be categorised as follows: Twelve to twenty-five percent behave calmly, fifty to seventy-five percent appear bewildered and describe feeling numb and a minority demonstrate incapacitating panic, hysteria and anxiety. Similar findings were noted by Weisath & Eitinger (1993), after a Norwegian paint factory explosion. Raphael (1986), in a review of the literature comments on "the disaster syndrome" described by many authors. It is characterised by an individual appearing dazed and passive, oblivious to the presence of others. The response is described as adaptive:

"a psychologically determined response that defends the individual against being overwhelmed by traumatic experience" (Raphael, 1986).

It may function in this way but as the described response may leave the individual incapacitated in a dangerous situation it is difficult to see that it is necessarily adaptive. The likelihood of the disaster response is reported to increase linearly
with intensity of exposure, (Wallace, 1956).

Individuals may therefore experience dissociative symptoms including numbing, depersonalization, derealisation and there may be an inability to recall aspects of the event. Re-experiencing symptoms are common, taking many forms including dreams, intrusive thoughts and flashbacks. Exposure to reminders of the event may cause distress leading to avoidance. This can take place at a behavioural level or at a cognitive level where thoughts and feelings are suppressed. Anxiety is the most frequently reported symptom and may present continuously from the event or develop later. Over eighty percent of those most directly involved in the Norwegian paint factory explosion reported an anxiety response within the first five hours of the event, (Weisath, 1983). Anxiety can present with sleep disturbance and impaired concentration or irritability. Increased physiological arousal is also reported to lead to symptoms such as shaking and palpitations. Other commonly reported symptoms include motor restlessness, hypervigilance and an exaggerated startle response.

Koopman, Classen, Cardena & Spiegel (1995), reviewed 15 studies which looked at symptoms reported by disaster survivors in the month after the event. While the disasters reported varied, the response of the survivors conformed to the pattern of dissociative and anxiety symptoms, with associated functional impairment.

When the acute symptoms persist and are severe, the diagnostic criteria for ASD may be satisfied. ASD is excluded where the symptoms may be due to a medical condition or to substance abuse. Where psychotic symptoms occur in response to the stressor, Brief Psychotic Disorder may be diagnosed. In addition to satisfying the stressor criteria (see appendix 1.), ASD is diagnosed when symptoms last at least two days, causing significant distress and impairment in important areas of functioning. If the symptoms extend beyond one month a diagnosis of PTSD is considered. Three out of five specified dissociative symptoms must have been
experienced together with at least one specified re-experiencing symptom and marked symptoms of avoidance, anxiety and arousal (see appendix 1.).

The finding in the review by Koopman et al. (1995) that those who went on to develop PTSD had all had ASD, raises the question of whether early identification of ASD might enable forms of crisis intervention to be effectively targeted to prevent long term psychological sequelae.

Long Term Psychological Effects of Exposure to Trauma.

When symptoms of re-experiencing, arousal and avoidance persist beyond one month a diagnosis of PTSD may be considered. In a review looking at the longitudinal course of PTSD, Blank, (1993), concludes that PTSD often has a delayed onset and frequently has a chronic course. He also suggests that there is evidence that PTSD may show intermittent, residual and reactivated patterns. Follow up studies of Australian bush fire-fighters (McFarlane, 1987), and survivors of the Buffalo Creek dam burst, who were followed up at 12 years (Green, Lindy, Grace & Gleser, 1990), provide support for the idea of delayed and recurrent PTSD, while noting a gradual improvement in the symptoms of most survivors over time.

Any discussion of the psychological sequelae of traumatic events inevitably focuses on the negative consequences. It is easy to ignore the fact, that for some individuals, the psychological sequelae may include positive elements. After the Piper Alpha oil rig disaster, Alexander (1993), described individuals becoming aware of hitherto unrecognised personal resources and strengths. The reaffirmation of relationships and the development of new ones was also described.
Prevalence of PTSD.

A number of difficulties exist in estimating the prevalence of PTSD. Firstly, the definitions of the disorder have changed with each new edition of the DSM. Secondly, there has been criticism of the methodology of the studies. For example, the widely cited study by (Helzer, Robins, & McEvoy, 1987), which demonstrated a lifetime prevalence of 1%, was criticised by Green (1994), for using a version of the Diagnostic Interview Schedule which was insensitive to PTSD. A third problem is that the longitudinal course of PTSD is known to fluctuate (Blank, 1993) and that different stressors are associated with different rates of PTSD. Recent studies suggest population prevalence estimates ranging from 7% to 9% (Davidson, Hughes, Blazer & George 1991; Breslau, Davis, Andreski & Peterson, 1991).

While detailed analysis of prevalence issues is beyond the scope of this review, research clearly demonstrates that traumatic experience is common, particularly if sexual abuse is included in the definition, (Norris, 1992). It also emerges that although traumatic events have been defined as those distressing to most people, they are not equally likely to befall all individuals. Young adults of lower socioeconomic groups were found to be more vulnerable to exposure (Breslau, Davis & Andreski, 1995).

Generalising across various traumatic events, Green (1994), concludes that given exposure to a traumatic event classifiable as an extreme stressor, approximately 25% of individuals go on to develop PTSD. These rates mask large variations including rates as high as 80% in rape victims and much lower rates, e.g. 12%, in populations such as accident victims (Breslau et al., 1991).
PTSD can exist co-morbidly with other disorders, depression being the most common. It is also important to remember that PTSD is not the only psychological disorder to result from exposure to traumatic experience. Anxiety, phobias, and depressive disorders may exist independently (Mayou, Bryant & Duthie, 1993; Raphael, 1986). There is the risk that an exclusive focus on what may be a fashionable diagnosis leads to other morbidity being minimised or overlooked.

There is another criticism that may be levelled at what may appear to be the over-medicalisation of PTS reactions and the emphasis on psychiatric classification systems. It is evident that while the full diagnostic criteria may not be met in many individuals, some may continue to suffer long term from distress and functional impairment.

**Attempts to define a psychologically traumatic event.**
Attempts at definition have been fraught with difficulty and often seem circular in that a traumatic event is defined not by specific features but by the fact that it has caused psychological distress.

DSM-III defined a traumatic event as outside the range of usual human experience and likely to evoke significant symptoms of distress in most people. There are attempts to incorporate objective and subjective dimensions of trauma however many criticisms could be levelled at the definition including arguments about what constitutes the range of usual human experience. War is tragically an all too common human experience as is child abuse, rape and even road traffic accidents. All are associated with high levels of PTSD and other psychological sequelae. This definition might be considered broad enough to encompass life experiences such as divorce which while often traumatic do not usually result in chronic symptoms of avoidance, re-experiencing and anxiety. Nor does this definition allow for indirect experience of trauma.
DSM-III-R (American Psychiatric Association, 1987), revised the definition stating that stressors are usually experienced with intense fear, horror and helplessness and allowed for vicarious traumatisation incorporating the possibility of witnessing or hearing about trauma into the stressor definition. The definition has again evolved in DSM-IV (A.P.A., 1994). It is now specified that the individual either experienced, witnessed or was confronted with an event that involved actual or threatened death, serious injury or a threat to the physical integrity of the self or others. In response to that event the individual must have experienced intense fear, helplessness or horror. This definition now specifies objective and subjective dimensions of the event.

Debate continues over the definition of the stressor criterion. While defining the nature of the stressor has specified some aspects of what makes an event traumatic and likely to result in psychological disturbance, research in this field is pointing to other psychosocial variables which appear to be important in understanding the impact of a traumatic event. Some of these will now be considered.

**Dimensions of traumatic events.**

Within the category of traumatic events it is recognised that some events lead to more psychological distress than others. There have been attempts to classify disasters according to various dimensions. Berren, Beigel & Barker (1982), propose that the event is classified in grid format incorporating variables such as degree of personal impact, type of disaster, potential for occurrence or reoccurrence, and control over future impact and duration. Other factors such as degree of warning or preparation for the event, degree of structural destruction and types of bereavement can be considered. The psychological literature would predict that many of these variables would influence the psychological impact of any event. Concepts such as preparedness and models such as information processing (Rachman, 1980) have obvious relevance.
From the literature tentative conclusions can be drawn relating trauma variables to risk of psychological sequelae. March (1993), reviewed nineteen studies which addressed the relationship between stressor intensity and outcome. It was found that 16 of 19 studies found a dose response relationship with psychological distress increasingly reported as intensity of exposure increased. This relationship was found to operate across a variety of stressors including natural disaster, combat and accidents. Whether sustaining injury increases psychological morbidity is unclear with some studies reporting increased risk, (Speed, Engdahl, Schwartz & Everly, 1989) and others reporting no such association (Green et al., 1989).

It is the author's contention that the subjective experience of injury needs to be assessed in order to clarify this relationship. There are some suggestions that losing consciousness during a trauma is associated with less psychological morbidity (Mayou et al., 1993). It might therefore be hypothesised that an intervening variable could be degree of perceived threat. Severe injury not associated with perceived threat perhaps because of unconsciousness or personal coping style would according to this hypothesis not lead to increased risk. Conversely the absence of injury or presence of minor injury may not inevitably be associated with less risk if the degree of perceived threat is high. Such hypotheses need to be explored and an attempt at exploring the role of threat appraisal will be incorporated into the research study included in this portfolio (see section 4.).

March (1993), in a review of risk factors, concludes that bereavement, participating in or witnessing atrocities, and witnessing or hearing about death were recognised in the majority of studies to be increased risk factors. Other risk factors reported include rape, torture, property loss and life threat.

Anecdotal reports from the literature would suggest that other risk factors could confidently be highlighted. Man-made disaster or events resulting from negligence or wilful intent are frequently cited as causing more distress. Incidents involving
injury, death or threat to children are universally reported as particularly traumatic. Psychological after effects may be less frequent where there is little loss of life or property and where there was some warning and time for preparation.

Stressor dimensions continued: Scale and spread of the trauma incident.
The physical dimensions relating to the scale and spread of a disaster may also influence the degree and extent of psychological sequelae. Parkes (1991) presents a model looking at these dimensions.

<table>
<thead>
<tr>
<th>TYPES OF DISASTER</th>
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<tbody>
<tr>
<td>SPREAD</td>
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<td>---------</td>
</tr>
<tr>
<td>SMALL</td>
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<tr>
<td>MEDIUM</td>
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<td>LARGE</td>
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The spread of the population affected, in addition to the scale of the event, will affect the planning of any psychological support service. After the Zeebrugge ferry capsized, survivors returned to homes throughout the U.K. Rescuers in Belgium also had needs. (Hodgkinson & Stewart, 1991). For planning purposes Parkes defines a small disaster as one causing less than 100 deaths, a medium disaster
causes 100-1000 deaths and a large disaster results in more than 1000 deaths (and or the equivalent destruction of property).

Small scale events are likely to be managed by local resources, medium events will require co-operation across local boundaries and large scale events are likely to require inter-governmental co-operation. While the model usefully focuses attention on scale and spread it is clear that disaster planning does not fall neatly into boundaries as the Zeebrugge example illustrates.

Models of traumatisation.
Models of traumatisation seek to predict groups at risk of psychological morbidity after exposure to a traumatic event. The concept of the "ripple effect" (Figley, 1985; Symonds, 1980), predicts that the psychological impact of an event could ripple outward affecting not only the survivors and bereaved, but others brought into contact with the event. Figley describes this occurring through a process of "emotional contamination" and primary, secondary and tertiary levels of victims are defined (Figley, 1992). In another model, Dudasik (1980), identified four levels of victims in a study of survivors of a Peruvian earthquake:

<table>
<thead>
<tr>
<th>1. Event victims:</th>
<th>who experienced trauma directly.</th>
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<tr>
<td>2. Contact victims:</td>
<td>lived in the destroyed community but were not directly affected.</td>
</tr>
<tr>
<td>3. Peripheral victims:</td>
<td>had strong links with the community through relatives or friends.</td>
</tr>
<tr>
<td>4. Entry victims:</td>
<td>includes those arriving to help victims or to search for relatives or friends.</td>
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</tbody>
</table>
Taylor & Frazer (1982), studied a community affected by the crash of an aeroplane in Antarctica and expanded the model yet further. Like Dudasik's model their first four victim levels are confined to the site of the event. On levels five and six they include those whose emotional state makes them vulnerable to being distressed about the event and those who could have been victims or are in other ways vicariously affected.

Early models of traumatisation tended to overlook the issue of hidden morbidity and may be criticised in relying on individuals to identify themselves through their emotional distress. Given that individuals acutely affected may be experiencing dissociative or avoidance symptoms, and that there is some evidence to suggest that this may lead to PTSD, the need to identify hidden victims is important.

Wright, Ursano, Bartone & Ingraham (1990), describe the "Disaster Community", a model based on degree of involvement rather than contact with the event. Wright argues for a model which acknowledges that victims may be hidden and also highlights the role that the global media network has in disseminating the impact of a trauma. This appears to be a valid point in that events are often portrayed graphically as they happen and the diagnostic criteria recognise that traumatisation can occur vicariously. Many television viewers reported distress at witnessing events unfold at the Hillsborough tragedy and during the rescue of the Zeebrugge survivors.

The disaster community concept described by Wright et al. (1990), was based on the experiences reported by a military community after the Gander air crash. The model is presented with five concentric circles. The inner two identify the next of kin and the bereaved, with rescue workers included in the third. The fourth circle includes support providers such as mental health workers, friends, family and local community. The outer circle recognises people brought into contact with the event through broader social systems including roles of authority and through mass
communication.

All the models presented appear limited as they present levels and circles of contact and involvement. It is likely that any model which truly addresses the complexity of the issue, would need to be multi-dimensional allowing for the individual and community variables which might modify the impact of any trauma allowing it to have a greater or indeed a lesser impact.

Groups at particular risk.

Emergency Workers.
Emergency workers are involved at the front line. They are at risk of developing psychological problems through their intense exposure to the horror of any incident. It is frequently forgotten that they themselves may become primary victims, as they are frequently required to confront personally dangerous situations in the course of their work. Paton (1992) comments that while their training equips them for practical tasks it does not necessarily prepare them for the psychological impact of being involved in such an event.

Studies of emergency workers have shown them to suffer increased psychological distress and an increase in physical health problems after being involved in a major incident. Mitchell (1983; 1989) described "Critical Incident Stress" in relation to the work of fire-fighters, suggesting it is equivalent to the combat stress reported in soldiers.

McFarlane (1987), reported PTSD rates as high as 32% in Australian fire-fighters four months after bush fires. After the Mount Erebus crash in Antarctica, Taylor & Frazer (1982), described the impact on emergency workers. They reported on difficulties described immediately, at four months and at twenty months. One week
after the event only 18% were symptom free. Over 50% were described as having symptoms of moderate severity. Eighty percent had sleep difficulties, 76% noted changes in appetite. Forty nine percent reported dazed feelings and 40% commented on changes in social functioning. At four months 20% had PTSD and 40% were suffering more general effects as a consequence of their experience. By 20 months 80% were reporting that the general symptoms had resolved but a constant core of 20% were still reporting symptoms of PTSD.

The British experience of disaster has also provided the opportunity to examine the psychological consequences of this work. Duckworth (1986), presented findings on the effects of the Bradford football stadium fire on 234 policemen who were involved at the scene. At one month 35% presented with four PTSD criteria and 21% reported three out of the four criteria. In addition to describing the psychological impact on the police involved in the Lockerbie incident, Mitchell (1990), also reported on physical illness. Short term illness was reported 37.5% more often and long term illness 22.5% more often in the year following exposure to the event. The incidence of off duty injury was reported to almost double and injuries occurring while officers were on duty rose by more than 300%. The costs in human and financial terms was high both for the individual and for the organisation.

Mental Health Workers.
Workers offering mental health support are at increased risk of suffering psychological sequelae through indirect exposure to trauma, (Raphael, 1986). Four published studies illustrate how the reactions of this group may mirror the responses of victims and front line helpers, (Raphael, Singh, Bradbury & Lambert 1984; Berah, Jones & Valent, 1984; Bartone, Ursano, Wright & Ingraham, 1989; Hodgkinson & Shepherd, 1994). Raphael found no differences between rescue, medical and support personnel on measures which included sleep, anxiety, depression or impact on life function. Psychological support workers did report
more feelings of helplessness, depression and frustration, possibly related to their poorer role definition, (Hodgkinson & Shepherd, 1994).

Families of Victims and Helpers.
Helpers' families can suffer increased morbidity (Paton, 1992). This can sometimes be exacerbated by attempts to cope by the most directly involved member, who often report difficulties sharing the uniqueness of their experience with anyone who was not directly involved.

Developmental issues.
Developmental stage may affect both the impact of a traumatic event and the way an individual copes with the event thereby having implications for planning interventions.

The Elderly.
It is not clear from the literature whether the elderly constitute a high risk group. Some studies suggest that older subjects are more at risk of psychological difficulties and others that younger age groups are more vulnerable and these studies are reviewed by Gibbs (1989). Livingston, Livingston & Brooks (1992), reported on 31 elderly survivors of Lockerbie commenting that rates of PTSD were comparable to a younger age group although the elderly had higher rates of co-existing major depression.

Reporting anecdotally on a group of elderly survivors of the Bradford football stadium fire, Hodgkinson & Stewart (1991) discuss how the fire appeared to reactivate memories of war trauma. They also discuss how the group would have found forms of intervention requiring expression of emotion humiliating. While not an empirical study, this highlights the fact that developmental issues and possibly also cultural factors, are relevant considerations in planning crisis intervention.
The issue of the reactivation of war trauma in the elderly is commented on by Wilson & Raphael (1993, p.213). Reviewing a series of studies they conclude:

"results are unequivocal in showing that in memory, dreams and daily activity, the effects of the events experienced during the war are very much alive and for many survivors emotionally troublesome".

Thus reactivation of unresolved issues may occur.

**Children.**

Children were, until recently, believed to be more resilient to traumatic experience however their reluctance to speak about traumatic events may occur in response to adults' unwillingness to hear them speak of these events (Gordon & Wraith, 1993). Children experience the full range of PTSD symptoms (Pynoos & Nader, 1993), although developmental stage may affect symptom presentation. Many authors have commented on the fantasy elements which occur in the testimonies of children describing things they would like to have done or outcomes they might have preferred (Pynoos & Nader, 1993). Reactions in children may be delayed and traumatisation can occur vicariously (Terr, 1979; 1987). The findings discussed suggest that there will be a high rate of hidden morbidity and an active outreach approach must be planned. This argument is especially strong because of the potential for trauma to impede developmental processes in children.

Developmental stage must be considered when planning intervention. While many of the techniques used with adults have been used with children, the usefulness of drawing and role play is highlighted in the literature (Pynoos & Nader, 1993). The same authors have proposed interventions involving schools and suggest techniques appropriate for particular developmental stages.
Individual vulnerability factors.
Diagnoses previously used to describe PTSD, such as "lack of moral fibre" reflect the view that PTSD is a sign of personal weakness. The evidence now points to the fact that as intensity of exposure increases there is an increasing likelihood of psychological morbidity suggesting that the majority of individuals could, given particular circumstances, suffer psychological sequelae. This is also likely if one accepts the view that in the acute phase the psychological symptoms are adaptive, (Mitchell, 1983; Raphael, 1986).

The literature has attempted to establish whether given exposure, some individuals are more likely to develop problems than others. Green (1994) reviewed the evidence summarising risk factors identified in several studies including: low education and social class, pre-existing psychological problems or a family history of such problems, prior trauma and being female. Green notes that these factors are not universally found to predict outcome, again perhaps pointing to the need to consider other factors such as personal coping style or stressor variables. This argues further against simplistic models of traumatisation.

The role of personality variables remains unclear. For example, a large retrospective study (Kulka & Schlenger, 1993), demonstrated interactive effects of premorbid personality traits with the traumatic stressor dose exposure. However the stressor dose intensity was found to be a better predictor than any one of eighty different pre-trauma characteristics including personality variables.

One prospective study found a predictive association between non-pathological personality traits pre-exposure and the development of PTSD post exposure, after the stressor dose was controlled for (Schnurr, Friedman & Rosenberg, 1993). MMPI items, hypochondriasis, psychopathic deviate, masculinity - femininity and paranoia predicted PTSD symptoms and depression, while hypomania and social introversion predicted diagnostic classification of the disorder. In commenting on
their study the authors note the importance of amount of exposure and feel that personality is best considered as one part of a multifactorial model.

It may be that focusing on personality is less useful than looking at specific individual coping styles. Military studies suggest that it is not possible to predict who will develop PTS reactions given exposure to an extreme stressor. It has been postulated that factors such as coping style and locus of control, while not able to predict the development of PTS reactions, do play an important role in determining recovery from post traumatic stress reactions or their subsequent progression to PTSD (Noy, 1991).

In attempting to evaluate the relevance of individual risk factors the literature is not currently very helpful. There is inconsistency in measurement and a lack of subtlety in the questions posed. For example in assessing the role of previous exposure to a stressor there is no attempt to distinguish between individuals who coped well versus those who did not and may therefore be vulnerable through denial or avoidance of unresolved issues (Moran & Britton, 1994). Marital status is used as an indicator of social support with no attempt to measure the quality of assumed support (Brooks & McKinlay, 1992). Exposure to a stressor is examined without reference to degree of involvement or perceived threat although there are emerging studies to suggest the importance of assessing these dimensions (Holen, 1993). Previous psychiatric history is referred to without acknowledging the differences between diagnoses (Green, 1994). It is therefore possible that measurement of variables will need to be more subtle and specific if individual risk factors are to be identified.

Factors which may decrease vulnerability are also a relevant consideration and some studies have shown a stress inoculation effect as a result of appropriate training (Weisath, 1993; Paton, 1992). Personal coping style was studied by Gibbs (1989), who found that an active coping style was helpful in the earlier stages with
expression of emotion more helpful later. Coping styles involving the perception of control, challenge, and personal meaning, (measuring "hardiness"), were found to be predictive of long term well being in mental health workers (Hodgkinson & Shepherd, 1994).

The recovery environment.
Several factors appear to be important. Social support has been studied, (Joseph, Andrews, Williams & Yule, 1992), with higher levels of received crisis support, found to be associated with better psychological outcome. Although the study was retrospective, crisis support was posited to be important in all measures of psychopathology and there was an interesting relationship observed between lower levels of social support and greater avoidance. The importance of social networks has been found to be of importance in bereavement studies (Raphael, 1986). The perceived need for social support after experiencing a traumatic event may be seen in the number of support groups which developed after all the major British tragedies since 1985, often initiated by survivors themselves.

The attitude of society to the trauma would appear to be an extremely important factor in morbidity. Green (1993) has argued that the meaning given by society to the event may influence all the other parameters. Evidence for the validity of this assertion can be illustrated in the complications which resulted for the Vietnam veterans who returned from the War to find a society unsympathetic to their plight. Survivors and bereaved relatives of the Marchioness river boat sinking have commented in the media on the additional distress caused to themselves by the attitude of society to their tragedy. Media coverage described the group on the boat at the time of the sinking, as a privileged group of revellers. This perception alienated public sympathy which was reflected in the fact that donations to a disaster fund were uncharacteristically low. Such attitudes may impede recovery processes.
Summary.

Exposure to traumatic events frequently leads to psychological morbidity, the extent of which appears under-recognised. Acute reactions to stress are common and while in the majority of cases these appear to resolve with or without treatment, some of these individuals will go on to develop long term problems including depression, PTSD, anxiety, phobias and substance abuse problems. Mitchell (1990), reporting on the police involved in the Lockerbie terrorist bombing, has drawn attention to how high the costs of this problem may be, both to the individual and to society.

The evidence presented here has examined a number of aspects relevant to the experience of a traumatic event and has identified a number of stressor variables which may place individuals at greater risk of developing psychological difficulties. Individual variables have also been considered including developmental stage, occupation and personal history. The context in which the traumatic event occurs and the "recovery environment" are also identified as important. There is therefore support for the model outlined by Green et al. (1985) and elaborated by Green (1993), with the reservation that all factors are unlikely to weigh equally in relation to outcome. The complexity of these variables, clearly cannot be accommodated by simplistic models and future research must refine attempts at measuring relevant variables if knowledge in this field is to progress. The epidemiological findings which were useful ten years ago, now need to be supplemented by more detailed analyses of stressor, individual, and social context variables. Prospective studies and those which look at the evolution of the disorder over time may be particularly useful. Research needs to move from epidemiological study and assess the role of personal psychological mechanisms in the aftermath of major incidents. Factors such as appraisal of trauma, coping style and concepts such as locus of control have been little studied especially in non-military populations. These may be important intervening variables which help to explain why some people develop post traumatic disorder and why others do not.
There are indications in the literature that intervention with traumatised individuals may have the potential to prevent long term problems (Joseph et al., 1992; Koopman et al., 1995). Again, through illustrating the complexity of issues involved, it is clear that single interventions to address the psychological sequelae of traumatic events are unlikely to succeed. The argument for well planned psychological support services to be offered in the wake of traumatic events needs to be considered. The numerous psychosocial variables influencing the experience of trauma can inform the planning of such interventions. This may lead to more effective interventions aimed at preventing, minimising the impact of, or treating the disorder.
References


CRITICAL REVIEW TWO

PSYCHOLOGICAL DEBRIEFING: A CRITICAL REVIEW
During the 1980s, descriptions started to appear in the traumatic stress literature, referring to techniques described as having the potential to reduce symptoms of PTS and possibly prevent the development of long term psychological difficulties resulting from exposure to a traumatic event. These techniques were attractive because of what they promised, because of their apparent simplicity and because they proposed a time limited, focused intervention requiring only one or two sessions. The techniques are known as Critical Incident Stress Debriefing (CISD), described by Mitchell (1983) and Psychological Debriefing (PD) described by Raphael (1986) and Dyregov (1989). They are similar forms of intervention and are recommended as techniques of crisis intervention after traumatic events both in the literature (Parkes, 1991; Raphael, 1986) and in policy documents (Disasters Working Group, 1991).

The objective of this review article is to describe the techniques as they have been proposed, and to critically assess evidence for their effectiveness. In addition an attempt will be made to look at psychological processes which may operate in a search for a psychological framework for the technique. Recommendations for future research will be made.

**DESCRIPTIONS OF PSYCHOLOGICAL DEBRIEFING**

Shalev (1994) points out that although PD has only recently been mentioned in the literature, a similar technique was introduced by Marshall during World War II and the current techniques described have traced their origins to military interventions during wartime. The three forms of debriefing discussed in the literature are now described.

**Critical Incident Stress Debriefing (CISD)**

Mitchell (1983; 1988; 1989), described CISD as a crisis intervention technique for workers in the emergency services [EMS] (e.g. fire and ambulance services). It was
asserted that CISD could:

"alleviate the acute stress responses which appear at the scene immediately afterwards and will eliminate or at least inhibit delayed stress reactions" (Mitchell, 1983, p:36).

Critical incidents are defined as any situation resulting in intense, overwhelming reactions in those involved. CISD is described by Mitchell as a group technique although there is the suggestion that it may be useful for individuals.

Mitchell (1983), refers to four types of debriefing. These could be seen as a continuum of intervention however in later references to CISD they tend to be presented as alternative forms. The four debriefing formats described are:

1. **The Near Scene Debriefing.**
   This is the briefest form and usually led by a mental health worker who functions as an observer and advisor and monitors the development of acute stress reactions in EMS workers. The leader offers support and identifies those needing rest or a change of duties. Those resting are encouraged to ventilate feelings.

   The technique does not have an empirical basis. Mitchell anecdotally cites work from Israeli Army studies to support the idea of a near scene debriefing by referring to the effectiveness of "front line" (i.e. at the scene) interventions in battle. No particular reference is given. Caution must be exercised in using military studies to support the validity of CISD. There are studies which show the effectiveness of front line interventions in reducing acute combat stress reactions however concern has been raised in Israeli army studies that eventual rates of PTSD were not lowered and may even have been higher (Solomon & Benbenishty, 1986).
Two other points should be made. Military interventions are based on the principles of proximity, immediacy, and expectancy (Solomon & Benbenishty, 1986). Although there are some similarities to CISD, the two approaches are not identical. It is also worth pointing out that combat stress as a traumatic experience is not the same as the stresses usually faced by EMS workers.

2. Initial Defusing.
This is the second form of CISD described by Mitchell. It occurs within hours of the incident, is commonly led by a team leader or may happen spontaneously, perhaps while other tasks are undertaken. The atmosphere should be supportive and positive without criticism and encouraging of free expression. The preferred format is described as a mandatory meeting lasting about one hour as soon as possible after the incident.

3. The Formal CISD.
The meeting, described as mandatory, is led by a mental health professional 24-48 hours after the incident. Unlike an incident critique, the atmosphere is uncritical, supportive and confidential.

A structured format is followed:

**Introduction.** The CISD is described and the group make a "pact with each other to be silent forever" regarding the details of the debriefing (Mitchell, 1983, p:38)

**Fact phase.** The facts of the incident are ascertained.

**Symptom phase.** Current reactions and those which occurred at the time are discussed, together with the way these reactions are currently affecting the workers' life both at home and at work.
Teaching Phase. The leader teaches the group about common responses to abnormal stress.

Re-entry Phase. Loose ends are addressed and ways to address outstanding questions are decided. Additional help is sought if needed.

It is specified that three to five hours are needed to carry out this form of CISD (Mitchell, 1983), although subsequent papers suggest that two and a half to three hours may be sufficient (Robinson & Mitchell, 1993).

4. Follow up Debrief.
This may take place weeks or months after an event although it is suggested that it is not always necessary. Its main purpose is to resolve outstanding issues. It may take place with an individual or with a group. It is described as being the most difficult form of CISD as it is most like therapy. It may need more than one session.

Timing of implementation of CISD is crucial according to Mitchell. If introduced too early, emergency service workers are cognitively and emotionally not ready to process the event. If too late the benefits are lost.

Individuals: "respond remarkably well to this supportive crisis intervention format if the intervention takes place early. Within 24-48 hours is the ideal time for intervention" (Mitchell, 1983, p:37).

As time from the incident progresses it is said that the effectiveness of the intervention decreases until at six weeks after the event the effects of the technique are reported to be minimal.
No empirical evidence is cited in support of the technique or the timing of intervention. No theoretical psychological framework is proposed or evaluated.

**OTHER DESCRIPTIONS OF TECHNIQUES OF PSYCHOLOGICAL DEBRIEFING**

Raphael (1986), describes the psychological debriefing of mental health workers after the Granville Rail Disaster. The aims of the technique are again described as preventative and a group technique is described. This is summarised in the diagram below from Raphael (1986).

**PSYCHOLOGICAL DEBRIEFING**

<table>
<thead>
<tr>
<th>G</th>
<th>*initiation into disaster role</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>*workers own experience of event including perceptions and reactions</td>
</tr>
<tr>
<td>O</td>
<td>*review of negative aspects and feelings</td>
</tr>
<tr>
<td>U</td>
<td>*review of positive aspects and feelings</td>
</tr>
<tr>
<td>P</td>
<td>*relationships - other workers, family</td>
</tr>
</tbody>
</table>

**WORKERS + HELPERS EXPLORE:**

<table>
<thead>
<tr>
<th>P</th>
<th>*empathy with others</th>
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<tbody>
<tr>
<td>R</td>
<td>*disengagement from disaster role</td>
</tr>
<tr>
<td>O</td>
<td>*integration of disaster experience</td>
</tr>
<tr>
<td>C</td>
<td>*distance and retrospect</td>
</tr>
</tbody>
</table>

50
There is only brief reference to the psychological basis of the technique where Raphael states that PD:

"promotes the process of integration and mastery of the disaster, defining it concretely and at a feeling level" (Raphael 1986, p: 286).

Only anecdotal evidence is given in evaluation of PD. One month after the event those debriefed were coping well but one worker who had not attended the group was described as having major difficulties. Without objective evaluation it is not known whether this individual had pre-existing difficulties. Raphael nonetheless concludes that PD ensures that an individual "will not forget the experience but neither is he likely to retain an ongoing stressful burden from it" (Raphael 1986, p: 286).

Dyregov (1989), also outlines a technique described as PD. This is very similar to the formal CISO described by Mitchell (1983). It does however give more emphasis to developing enhanced recollections of the experience through focusing separately on sensory experience, thoughts and feelings, as the event is recalled. A development is that it is proposed for use with other traumatised groups and not just emergency workers. It is described as a group process although there is reference to implementation with individuals.

"A PD is a group meeting to review the impressions and reactions that survivors, bereaved or helpers experience during or following critical incidents, accidents and disasters. The meeting aims at reducing unnecessary psychological after-effects" (Dyregov, 1989, p: 30).

It is proposed that PD should be mandatory, integrated into normal emergency routines to facilitate implementation. No empirical evidence is presented by
Dyregov to support the use of this technique yet in the absence of this, proposals that PD should be mandatory are made and several conclusions are drawn:

"Psychological debriefings accelerate the recovery of normal people experiencing normal reactions to abnormal events." ....the PD "format is a very useful method when employed in crisis intervention on an individual level" (Dyregov, 1989, p: 30).

In the same article (p:30), PD is also described as having "low potential for doing harm" if used by sensitive, knowledgable personnel. Some of these conclusions will be explored more fully in the following sections.

These are the three main models of debriefing discussed in the literature. Further modifications and applications of PD continue to be published (Armstrong, O'Callaghan & Marmar, 1991; Williams, Miller, Watson & Hunt, 1994). Most are based on the models described and the studies are descriptive. Evaluation if any, is anecdotal. None presents a rationale based on psychological theory to support the use of PD interventions.

EMPIRICAL EVIDENCE FOR THE EFFICACY OF PD /CISD.

Given the widespread promotion and adoption of PD since 1983, (Mitchell, 1988), it might be anticipated that a body of research would now be starting to emerge to inform practice. This is not the case as two recent review articles have highlighted (Bisson & Deahl, 1995; Raphael, Meldrum & McFarlane, 1995). These reviews comment on the fact that little empirical evaluation of the technique has been undertaken at all and the studies that have been undertaken have severe methodological flaws. Both review articles refer to literature published on related but not identical techniques e.g.: Raphael's article refers to military studies, Deahl's article refers to support work with road traffic accident survivors.
Both articles appropriately call for research into PD based on sound methodology. Deahl describes the methodological flaws apparent in studies of PD including an absence of prospective studies, small sample sizes, and the fact that only one published study has a control group. Even this study does not address the need to randomly allocate subjects. Assessment of confounding variables is absent. The authors might also have included in their criticism the need for objective outcome evaluation, using valid and reliable measures before and after PD.

Rather than presenting another general overview of the literature on PD, leading to the inevitable and now accepted view that "more research is needed", this section will consider four studies in more depth, with the aim of eliciting what tentative conclusions can be drawn from the literature on evaluation of PD. In addition, attempts will be made to highlight the research issues raised by these studies in order to draw attention to questions which need to be addressed if this technique is to be critically evaluated.

In what Raphael has described as the nearest to a controlled study that we have in this area, psychological morbidity was studied in a group of 62 British soldiers who had served in the Gulf War (Deahl, Gillham, Thomas, Searle & Srinivasan, 1994). Their duties included body handling of allied and enemy soldiers. Of the subject group, 69% received one PD on completion of their duties. Nine months later assessment on the GHQ 28 and the IES, led to suggestions that 50% of the group had evidence of psychological disturbance which was suggestive of PTSD. Professional help with these difficulties had been requested by 18% and over a quarter were experiencing relationship difficulties. It was suggested that neither prior training nor PD was effective in preventing PTSD.

Several problems exist with this study. The abstract states that the study evaluated the effectiveness of "brief counselling and PD" (Deahl et al., 1994, p:60).
It is not clear what the brief counselling component was. The methodology section describes a session describing possible symptoms and discussion about obtaining further help but these components are usually incorporated into a PD anyway and do not obviously come across as brief counselling. The use of the term counselling is confusing in this context as it is usually seen as a therapeutic endeavour. Raphael, Mitchell and Dyregov all specify in their descriptions of PD that the technique is not to be confused with therapy.

Another problem with this study is that there are variations in the time at which PD was offered. Some soldiers were debriefed in the Gulf after the war. It is not clear whether this occurred outside of the ideal time period described by Mitchell. Mitchell specified that the timing of PD was critical if protective effects are to be established (24-48 hours). Other soldiers were only debriefed after return to the U.K and after some weeks of disembarkation leave. This would inevitably have meant that the PD took place outside of the recommended time and perhaps even outside of the time (6 weeks) where Mitchell proposes that the PD would have little effect.

In describing CISD, Mitchell described a technique designed to help EMS workers cope with the stress of emergency work. Typically these workers would be involved in distressing but discrete time-limited events. In combat situations, the stress is chronic, the time frame unknown and personal vulnerability is high as the intention of the enemy is to kill. In the Gulf war, vulnerability was increased with the threat of non-conventional weapons, including germ and chemical warfare. The question might be raised as to whether one PD can help an individual to process and integrate weeks or months of traumatic experience, possibly incorporating a number of discrete traumatic events. Research into PD needs to evaluate the nature of the stressor and assess individuals' appraisal of the event. This may help to ascertain what type of event PD is useful for and indeed what type of intervention is necessary. It may be, for example, that ongoing trauma requires
ongoing PD if any benefit is to be obtained (Busuttil & Busuttil, 1995). This might, for example, require the adoption of all four types of CISD in an ongoing process throughout the period of traumatic exposure.

In this context it is worth noting the findings of a study rarely cited in the literature evaluating PD. Alexander & Wells, (1991), reported findings on police officers involved in body retrieval duties after the Piper Alpha Oil Rig Disaster. The retrieval process took some time and did not therefore consist of one discrete traumatic event. No increase in psychological morbidity was reported. These officers were offered regular nightly debriefing in addition to organisational support. At three year follow up (Alexander, 1993) the positive findings remained and in addition several officers reported that they had positively benefitted as a result of their involvement in the disaster. These findings are therefore robust and stable. The studies incorporated a pre-disaster baseline, from a psychological occupational health assessment co-incidentally conducted weeks before the disaster which included the Hospital Anxiety and Depression Scale and the Eysenck Personality Inventory. The study also incorporated a control group and a longitudinal design. The results are particularly worthy of analysis given the regularity with which negative psychological consequences are reported after body handling duties in the literature (Jones, 1985).

To summarise the point being made, it may be that, as the authors found, PD is not a technique which protects soldiers from the risks of longer term psychological sequelae after exposure to combat. Other authors have also reported the ineffectiveness of brief interventions in such a group (Solomon & Benbenishty, 1986). Alternately it may be that a technique reported to be effective for single stressor experiences has to be ongoing where there is longer term exposure to stress for there to be beneficial effects and perhaps part of a supportive organisational response.
It may be important for the PD leader to have credibility with the group if honest ventilation of feeling is to take place. In the Piper Alpha study, (Alexander & Wells, 1991) the police officers were debriefed by police team leaders. This was not the case in the Deahl study where welfare and mental health professionals were used. It is often reported that individuals feel that only those who have experienced the event can fully understand their experience and they resist interventions from outsiders. Research into the efficacy of PD may need to address issues which may impinge upon group processes in PD and the credibility of the PD leader may be one such issue.

Deahl et al. chose a cut off score of 12 on the IES, (Impact of Events Scale, Horowitz, Wilner & Alvarez, 1979), to indicate "caseness", suggestive of PTSD. It is unclear why this cut-off score was chosen. The usual cut-off scores are derived from McFarlane (1988), where a score below 19 is defined as low distress, 20-29, moderate distress and 30 or over is defined as high distress. Using the commonly accepted cut off score of 30, the caseness group is reduced from 50% to 27%. It may be that even this score is over inclusive. In a cross validation study in a British civilian and military sample, a cut off score of 35 on the IES was recommended (Neal, Busuttil, Rollins, Herepath, Strike & Turnbull, 1994). Other studies have used a cut off score of 40, (Yule & Udwin, 1991), to identify children at high risk of having PTSD.

In Deahl's study there are no baseline measures and therefore it is not known what percentage of this high risk group may already have had problems. The only assessment was carried out nine months later with no assessment of intervening stressor experiences which might confound results. Interview evaluation would have enabled a more thorough assessment including subjective appraisal of threat. This may be an important variable as it was found that those who perceived themselves under threat of death were more likely to have raised IES scores.
Given that PD took place weeks after the trauma for some soldiers, it may have been possible to diagnose PTSD at this stage in which case PD was not being assessed as a preventative technique but as a therapeutic technique to treat an established condition.

While describing a control group, random allocation did not take place. It is also the case that debriefing did not take place for "operational reasons" and it is possible that this may have masked other group differences such as a less supportive management structure.

The authors acknowledge that it is not possible on the basis of these findings to distinguish distress from disorder and they acknowledge the fact that PD was not standardised in content or timing, nonetheless in three recent reviews it is suggested without criticism that the study is evidence that PD may not be useful in preventing psychological morbidity (Robbins, 1995; Raphael et al., 1995; Bisson et al., 1994). It may be the case that PD does not prevent PTSD in this population, however the methodological limitations of this study limit the confidence which can be placed in its findings. The study highlights some of the complexities which need to be addressed in future research if PD is to be adequately assessed.

In another study (Stallard & Law, 1993) which highlights the need for careful research, two sessions of PD were undertaken with seven adolescent survivors of a mini-bus crash. This study therefore assessed PD in a group of primary victims not professional helpers and in children not adults. Pre and post debriefing measures were used and the PD process is outlined but without reference to any particular model. Assessing anxiety, depression, and intrusion and avoidance measures, the authors conclude that significant reductions in symptomatology were demonstrated at the follow up assessment, three months after the PD.

While this study may appear to support the use of PD in preventing psychological
morbidity a closer appraisal of the study again cautions against premature conclusions.

A major criticism is that the PD was not carried out until six months after the accident. In the first assessment, the IES scores are highly suggestive of PTSD in three of the five children who completed the study. PD is therefore being assessed as a treatment technique not as PTSD prevention.

Assessment of the PD was not carried out until three months after the debriefing, raising the question of confounding variables. Robinson & Mitchell (1993) have suggested two weeks after PD is an appropriate time for evaluation.

Analysis of the results reveals issues of interest in PD research. It is noted that the significant reduction in IES scores obtained three months after the debriefing is entirely attributable to reductions in the intrusion sub-scale. The finding that PD can result in reductions in symptoms of intrusiveness has been previously reported, again in a study with traumatised children (Yule, 1992).

It should be noted that the results also showed that in 3 subjects identified as "high risk", avoidance symptoms were increased in two. This finding was not significant across low and high risk groups but raises the important question rarely addressed that PD may be a technique which could exacerbate problems for some individuals. This issue will be further explored later.

In conclusion this is a useful study in that it highlights issues that research in PD must address however there is a small sample size, no control group and confounding variables were not controlled for. The design of the study means that PD is examined in treatment not prevention.

The fourth study described illustrates the anecdotal nature of much of the research
in PD. Robinson & Mitchell (1993) detail results from evaluations completed by 60% of a population of 288 emergency, welfare and hospital workers who were debriefed after routine traumatic events encountered at work. Ratings of the individuals' perception of the perceived usefulness of the debriefing revealed that PD was of "considerable value". The mean group rating was 3.8 on a five point scale. For welfare and hospital workers it was found that the more stressful the event the more highly the PD was rated. In the literature generally, PD is presented as being viewed positively by those who participate. This is usually reported anecdotally but positive findings are not always the case as the previously cited study by Deahl et al. (1994) shows where only 50% felt PD was helpful. The 40% who did not respond to this survey may have felt less positive about the PD.

The study states that 96% of emergency workers and 77% of welfare and hospital staff reported reductions in stress which they partially attributed to PD. No measures were employed to objectively evaluate this reduction which is disappointing as the authors make clear that the assessments were carried out over a period of years and several revisions to the assessment protocol took place during this time.

The study asked the workers what aspects of the PD were most helpful. Sharing the experience with others who had been through the same thing, hearing others had found it hard, and talking about the event were reported to be helpful. Reported criticisms levelled against debriefing were few and minor, for example asking for more time.

This paper, while reporting positively on PD provides no objective evidence to demonstrate symptom reduction associated with use of the technique. Without a control group it is not known whether, for example, a chance for workers to discuss an event together without the structured format of PD might be equally effective. The study does raise the important issue of what the useful components of PD
might be.

In order to explore this issue further, the next section draws on psychological theories which may help to contribute to an understanding of the psychological processes which may operate in PD. Through placing PD within a psychological framework, hypotheses emerge which if incorporated into future research may contribute to a more comprehensive assessment and understanding of the technique.

PSYCHOLOGICAL THEORY: ATTEMPTS TO EXAMINE THE PSYCHOLOGY IN PD.

In only one publication to date is there any serious attempt to explore the psychological components of PD (Shalev, 1994). Several theories are discussed, many from a psychodynamic perspective. Shalev summarises the work which has proposed that traumatic memories are stored as iconic recollections rather than as verbal ones (Greenberg & Van der Kolk, 1987). The authors postulated that verbalisation may be an important healing component allowing the emotional processing which would otherwise be precluded if iconic memories persist.

Other theories not considered by Shalev may have considerable potential for the further analysis of debriefing.

Rachman (1980) discusses a theory of emotional processing. This is regarded as a process "whereby emotional disturbances are absorbed and decline to the extent that other experiences and behaviour can proceed without disruption". Rachman also draws attention to the fact that successful processing of distressing events often leads to benefit for individuals, a finding also documented by Alexander (1993).

Rachman's theory postulates that where an emotional disturbance is not processed
satisfactorily there are symptoms which become evident. These are likely to recur intermittently. The symptoms described are signs of incomplete emotional processing and include nightmares, phobias and inappropriate expressions of emotion. Rachman asserts that it is easier to identify the failures of emotional processing as opposed to the successes. However ways to test for successful processing are proposed including the use of "test probes". This involves assessing an individual's capability of talking about, seeing, or being reminded of the emotional event without this resulting in distress or disruptions. Rachman proposed that techniques should be developed whose main therapeutic aim is "facilitating the desired emotional processing". PD might be studied as one such technique. One of the advantages of looking at PD in the context of such a theory is that understanding is likely to be furthered through testing the predictions which emerge. For example, Rachman proposes that there are four groups of factors which may give rise to difficulties in emotional processing. These include state factors such as high arousal or fatigue, personality factors such as neuroticism, stimulus factors which describe the nature of the traumatic event and associated activity factors such as concurrent stressors.

Conversely this also predicts factors likely to facilitate emotional processing. Rachman states that the transformation of emotion provoking stimuli is likely to be facilitated by repeated presentations, by stimuli presented for minimal durations, piecemeal presentations, minimising distractions and inducing low levels of arousal. Ignoring these conclusions drawn from the behavioural literature could impede emotional processing and this has implications for the possible dangers of PD advocated without reference to an understanding of the psychological literature.

Advocates of PD have asserted somewhat weakly, that research is difficult because of the nature of traumatic events (Robinson & Mitchell, 1993). Analogue studies looking at PD in a theoretical framework may lead to useful findings and
there is the advantage that variables are open to direct experimental manipulation.

Another theoretical framework which may be useful in the study of PD is Lang's "bioinformational theory of imagery processing", (Lang, 1979; 1985; Lang et al., 1983). This theory has been discussed fully by the author in the MSc thesis submitted in section five of this portfolio. As one of the core symptom clusters of post traumatic stress reactions feature intrusive and repetitive images, further study of imagery may be useful. PD also involves working with individuals' memory images of the event.

Lang proposes that an emotional image is the result of input to the individual and results in output from the individual including words, behaviour and physiological response. Lang proposes that the image is processed conceptually and as a motor programme. The emotional image is seen as a finite organisation of specific propositions which are of three types. Stimulus propositions feature descriptive elements of the stimulus features in an event. The response propositions refer to behavioural reactions to the stimulus features. The third set of propositions refer to relational meaning information which attempts to make sense of the event. Theoretically then, a particular stimulus will elicit a network of stimulus and response propositions together with meaning information resulting in measurable output which occurs even when the possibility of action is blocked. This is because the image is coded both as semantic information and as part of a motor programme. Fear information is thus stored in a way which facilitates behavioural, cognitive and physiological responding.

Imagery is seen as an active response process which Lang describes as a preparatory set to respond. Lang suggests that when imagery is used in therapy, to be successful, it must aim to access the whole of the propositional network. An affective network is considered to be accessed and run as a programme when a sufficient number of its propositions are instigated by external input.
According to the model, as images are always processed with a view to responding, the aim of therapy is to reprocess the image in a way which allows modification of the affective character of the response elements. The model allows that propositions may be added or removed over time.

In PD, especially in the model proposed by Dyregov (1989), there is a detailed focus on the facts, feelings and sensory features experienced by the individual during the traumatic event, in addition to detailing the actions of the individual and why they did what they did. It might be argued that this full description of the event is most likely to successfully access the whole of the propositional network allowing the individual to process the material in the fullest way possible as stimulus and response propositions are accessed, together with relational meaning information. Foa & Kozak (1986) have indeed proposed that pathological anxiety can only change when all three elements of the fear network are accessed and are subsequently exposed to corrective information. Furthermore these authors have proposed that it is valid to use psychophysiological measures to document emotional processing. It is possible to envisage analogue studies which could assess the importance of this component of the debriefing process, for example separating stimulus and response propositions and assessing psychophysiological measures or other outcome measures such as intrusiveness. It seems particularly important to look at this area given that a consistent finding appears to be that intrusive symptoms decline following debriefing and theories of emotional processing would predict this. Other related although somewhat tangential support may come from the fact that PTSD sufferers were found in one study to have a heightened imagery/hypnotisability ability (Stutman & Bliss, 1985).

Other theoretical predictions might also be explored, for example, the assertion that the key to emotional processing involves ensuring that at least partial response components of the affective state must be present if an emotional state is to be modified.
Further components of PD which may have a therapeutic or preventative effect have been discussed by Busuttil & Busuttil (in press) and include the role of information and group support factors. Numerous other theoretical models could be drawn on in studying the processes involved in PD including the literature on Coping, (Lazarus & Folkman, 1984), Locus of control (Rotter, 1966) and Social support (Joseph, Andrews, Williams & Yule, 1992).

It is therefore argued that a psychological framework for the study of psychological debriefing may not only help to ascertain whether or not it is useful in the prevention or treatment of post traumatic stress reactions but may also help to clarify which components if any are of benefit. What does become clear when theoretical models are considered is that there are predictions that PD would need to meet certain criteria to be effective and indeed that PD has the potential to be harmful if not carried out with reference to knowledge drawn from the literature.

THEORETICAL RISKS OF PD.
Dyregov (1989) suggested that PD should be mandatory after traumatic incidents and also suggested that PD had a low potential for causing harm. Current knowledge does not enable this assertion to be supported and indeed findings from the literature and predictions from theoretical models would caution against this.

PD is clearly composed of a number of components and there are no guidelines as to how long each part of the debriefing should take. What is becoming clear is that the descriptions of PD in the literature are describing a shorter process. Original descriptions discussed PD requiring 3-5 hours, (Mitchell, 1983). More recent descriptions suggest 2-3 hours (Mitchell & Dyregov, 1993) or even 90 minutes, (Armstrong, 1991). There may be a danger that if the facts and emotions phase is too short, this provides insufficient time for arousal to decrease. In theory this could not only lead to PD not being effective but PD may actually serve as a
further sensitising experience and potentially make symptoms worse.

Other theoretical models would predict that this phase needs to be tackled carefully e.g. to sufficiently allow for complete accessing and processing of fear imagery. Rachman (1980), drawing on findings from the behavioral literature, stated that emotional processing would be impeded by brief presentations, unduly large inputs or excessively high levels of arousal. In only one paper are guidelines given regarding the timing of components (Armstrong, 1991). In this paper a model for the debriefing of people involved with multiple stressors is proposed and while commendable for drawing attention to the fact that multiple stressors may be a different problem, the paper in its content fails to address the issue. The facts and presumably the introduction phase of the PD are prescribed 20 minutes out of a total of 90 minutes. The groups contain up to twenty individuals not all having experienced the same events. Whether this format enables the individuals concerned to adequately process the multiple stressors each has been exposed to in any theoretically meaningful way is questionable but this cannot be assessed as no outcome data are presented. Future research may demonstrate that the most useful components are related to other factors such as coping or social support and of course the objections raised here would not then be meaningful.

PD was originally described as a technique beneficial to emergency services workers. It has now been extended to other groups such as primary victims and extended to other age groups such as children. Emergency workers are usually trained for the job they undertake. There is in theory, through this training and through previous exposure to events of a traumatic nature, the possibility of a stress inoculation effect. There is even the suggestion in the literature that emergency service workers may be a self-selected group, more "hardy" by nature (Everly, 1988). In addition such workers commonly work closely with each other in teams, developing social support networks and an "esprit de corps". A short term intervention like PD for this group of workers may be sufficient to prevent long
term reactions (even though there is as yet no empirical evidence for this). Whether a focused and time limited intervention like PD is appropriate for other groups such as primary victims again has not been proven but on intuitive grounds must be questioned.

Primary victims often have nothing in common with each other, other than the trauma. Prior training for traumatic experience is not routinely provided and there cannot be the assumption that members of the group share the social support derived from a shared past, present and ongoing future relationship.

It is possible that bringing people together who are unused to dealing with trauma and then letting them experience vicariously through PD, the traumatic experiences of other individuals, may serve to make the traumatic experience worse. Their memories of the event may now incorporate added traumatic content. Studies by Loftus (1979) illustrate this potential risk. After presenting subjects with new information shortly after an event, new memories could be introduced into the recollection including modified visual images. Modified memories have the potential to persist for years and after modification constitute the subjects true memory of the event. This theory highlights both the possible benefits but also the risks of PD.

The fact that Avoidance scores were raised on the IES for high risk subjects in the study previously cited by Stallard & Law (1993) provides some support for the argument that PD cannot be assumed to be of benefit for all. The same study might also raise the question as to whether PD is necessarily the most appropriate form of crisis intervention with all age groups. It has been proposed that crisis intervention with children should be appropriate to the developmental stage of the child (Pynoos & Nader, 1988) and this raises the question of whether mixed age group PD is the most appropriate form of crisis intervention with children. Similar arguments have been raised about the appropriateness of this technique with the elderly (Hodgkinson & Stewart, 1991).
CONCLUSIONS AND FUTURE DIRECTIONS

PD was introduced more than ten years ago. According to one of its pioneers, by 1988, 4,500 debriefings had been carried out (Mitchell, 1988), yet there have been few attempts to assess the effectiveness of the technique. It is interesting to speculate why PD has been so widely adopted across a number of situations and by a number of professional groups.

Traumatic incidents evoke widespread sympathy and a great desire to reach out to those caught up in the event. Professional groups are perhaps not immune to the feelings of helplessness evoked by major trauma. They too wish to help but there is the not unnatural fear of becoming enmeshed in the overwhelming horror of the event. Mitchell reflects this when describing the follow-up PD as the most difficult of all four CISD formats, highlighting the difficulties of longer term involvement. PD is a time-limited, structured, and apparently simple technique, all the more attractive in the confusion and chaos of a major crisis. It is intuitively appealing because traumatised individuals often need to talk about what has happened. It promises to deliver good and do no harm in the process. At present the most convincing evidence that PD may be of benefit in prevention is where it was incorporated into a system of ongoing support (Alexander, 1993).

The need for ongoing support systems may be of even greater importance where primary victims are concerned. Here the traumatic experience is likely to be complex involving components such as loss, bereavement, financial loss, loss of social support and even physical impairment or disability. The ability of any "one-off" technique to deal with the complex and evolving nature of psychological reactions to such trauma is likely to be inadequate. A recent working party of the British Psychological Society (1990) has also questioned the benefit of single interventions in disaster work.

The appropriateness of medical models in this field has sometimes been rightly
questioned. In considering PD, the medical model may be useful in that there is generally a period of caution and trial before any new intervention is embraced or would be considered "mandatory". During this time, contra-indications and side-effects are reported on. Good practice in Psychology has also stressed the need for interventions to be based on empirical work and evaluation. PD is offered to groups of individuals at their most vulnerable. In such circumstances there is an even stronger mandate to ensure that careful evaluation of any intervention should be undertaken before it is widely recommended.

Future evaluation must consider whether the technique achieves what it claims and for which groups it is effective. PD has been proposed for use with individuals, the validity of this needs to assessed. Whether it is best carried out by members of the traumatised group or by mental health professionals is not currently known. Research needs to address whether it is suitable just for acute trauma or for chronic ongoing events and whether in the latter case ongoing debriefing is the appropriate model. The role of the technique in prevention and treatment of PTSD are two separate research issues. The therapeutic components of this multi-faceted intervention need to be isolated and it may be possible to ascertain which forms of intervention contribute to the prevention of which symptoms. The risks of PD must be assessed. Even if PD emerges as a technique which is useful in treatment or prevention, it is likely that it will need to be considered as only one part of a response by an organisation to a traumatic incident affecting an individual or group of individuals.

Researchers may find that knowledge is best advanced if PD protocols are adhered to and if assessment batteries are prepared in advance as Yule (1991) has devised for children. Analogue studies can be used to address theoretical issues and to inform practice. In addition to addressing the need for prospective, controlled and objectively evaluated research, the adoption of a psychological framework to study PD may result not only in a greater understanding of PD but
of the processes involved in Post Traumatic Stress responses generally.
References


CRITICAL REVIEW THREE

MODELS OF POST TRAUMATIC STRESS DISORDER: IMPLICATIONS FOR TREATMENT.
This review will consider some of the main psychological models for PTSD proposed in the literature and briefly review treatment approaches drawn from these models. Based on the literature review some general principles for treatment will be proposed. Biological models of PTSD have been reviewed by Van der Kolk & Saporta (1993) and will not be covered in this review.

**Psychodynamic Model.**

The model proposed by Horowitz (1973; 1974; 1986) is one of the most widely referred to in the field of PTSD studies. It is drawn from psychodynamic theory although close parallels with cognitive, emotional processing models will become apparent in a later section.

Central to Horowitz' theory, is the notion that individuals are motivated towards a "completion tendency" and actively process incoming information until the reality of a situation and an individual's own cognitive models of the world can match. Matching may occur if a particular situation terminates or it may require that the cognitive model adapts in order to accommodate new information. Traumatic events can cause problems because they can result in "information overload", a situation in which information cannot be processed. This is more likely to occur in traumatic events where overwhelming amounts of information, both internal and external, are generated. As cognitive schemata do not generally incorporate the experience of unexpected and overwhelming traumatic events, there may be difficulty in accommodating such information. The model predicts that information overload will result in symptoms featuring the experience of ideas, images and emotions which have not been integrated or "processed" within these existing schemata.

Where there is incomplete processing, the unprocessed information is avoided and kept from awareness. The completion tendency ensures that attempts to complete information processing continue. Symptoms such as nightmares, flashbacks and
intrusive thoughts are manifestations of this process. Repressed material is continually re-presented in an attempt to facilitate processing and to achieve integration of this material, with the individual's own cognitive models.

The distress caused by traumatic memories is not expected to immediately abate and is seen as likely to result in further avoidance or denial which results in what Horowitz describes as an oscillation between intrusion and denial until information processing is completed.

This model has implications for therapy. The goal of therapy is to facilitate information processing. Horowitz suggests that this will be achieved through helping the individual achieve an optimal emotional state which allows processing to occur. Where too much traumatic material is brought into awareness at once, this leads to over-arousal and results in denial, but if insufficient material is accessed then no processing can take place. The aim is therefore to access tolerable amounts of material and emotion which allows processing to occur (Horowitz, 1973). If processing is completed, the information is no longer in an "active state", the experience is no longer a separate entity but is integrated with the individual's view of himself and the world.

In later work, Horowitz (1986), proposes that there are stages in information processing:

1. Massive stress leads to crying out / stunned reaction.
2. Avoidance (denial and numbing)
3. Oscillation period.
4. Transition
5. Integration, completing processing of information.

It is also proposed that the therapist may modify therapeutic interventions
according to clues derived about the individual's coping and cognitive mechanisms.

Evaluation.

The model is helpful in that it accounts for symptoms and provides a treatment rationale. In its assumption that PTSD is essentially the failure of an adaptation process it may not account for emerging findings in the literature. It would predict that PTSD is more likely with increasing stressor intensity. This finding has been reported in most studies (Shore, Vollmer & Tatum, 1986; Helzer, Robins & McEvoy, 1987; Goldberg, True, Eisen & Henderson, 1990) but not all (McFarlane, 1989a). In a review of studies examining this question, it was found that sixteen out of the nineteen studies surveyed reported such a relationship but the relationship was not ubiquitously found (March, 1993). It is also established that even where there is intense exposure to horrifying events the majority of individuals do not go on to develop PTSD (March, 1990). The model would therefore have to allow for successful processing to occur in the majority of individuals even under conditions of extreme information overload. It may be that exposure to a stressor is necessary but not sufficient and that other vulnerability and environmental factors should be considered as discussed in the first review in this portfolio. Many could be seen as contributing to the processing of information (e.g. social support) or inhibiting this process (e.g. avoidant coping style).

The model has face validity in that it closely relates to the subjective experiences described by PTSD sufferers unlike, in some instances, the behavioral model. The introduction of "stages" may not be helpful if this is taken to predict that individuals will progress linearly. The notion of an optimal emotional state may be difficult to define and is probably best understood as an individual variable. In incorporating the idea of other individual variables such as coping style it might be envisaged that the treatment approach might be more individualised than some of the apparently mechanical descriptions outlined in more behavioral approaches and
therefore more likely to achieve engagement. This may be an important factor in PTSD where engagement in treatment is notoriously difficult (McFarlane, 1989b).

**Cognitive Appraisal Models.**

These models, like the information processing models, focus on the constructs which individuals hold about themselves and the world and on which beliefs and behaviour are based. Exposure to traumatic events may result in an individual finding that the constructs no longer hold true and a chaotic period of fear and uncertainty results where it seems predictions cannot safely be made.

Two authors are associated with these models and there is considerable overlap in their writings, (Janoff-Bulman, 1985; Epstein, 1990).

Janoff-Bulman describes a schema framework comprised of three fundamental beliefs. These are the belief in personal invulnerability, the perception of the world as meaningful and comprehensible and the view of the self in a positive light. The traumatised individual may find that these beliefs are shattered by exposure to a stressor experience. It may be difficult to maintain a belief in personal invulnerability when this has been threatened. The individual may no longer hold the view that "it won't happen to me", as it is now known that the unlikely can happen. It is no longer easy to hold to the belief that the world is predictable and fair, when it is clear that external events do not conform to this internally held belief. It is also difficult for many individuals to maintain a positive view of self after a threatening experience. This may be because of distress about things done or not done which might have led to a different outcome or because the self-view may be negative where PTS symptoms persist and the individual sees this as a sign of personal weakness.

Epstein (1990), proposes that individual theories of reality may be subdivided into
world-theory and self-theory. It is proposed that the theories serve four functions: to maintain a favourable pleasure pain balance over the future, to assimilate reality data in a manner that enables this to be cope with, to maintain self esteem and to achieve the need to relate to others. Problems are assumed to occur in traumatic events where theories of reality cannot integrate trauma experiences. As with the information processing model, the intrusive symptoms of PTSD are seen as an indication that accommodation has not taken place. PTSD is viewed as the result of a threatening event which deeply invalidates these fundamental organising beliefs.

In support of the model, Epstein cites a study carried out by Wilson & Krause (1985), with a group of Vietnam Veterans. Factor analysis of symptoms identified that the largest factor was existential in nature and had four clusters relating to loss of meaning, loss of self esteem, disturbance in pleasure-pain balance and disturbances in relationships with others.

Evaluation.
Again this model is useful in drawing attention to and providing a framework for studying the existential issues that clearly feature in the presentation of many individuals with PTSD and which are not fully addressed in behavioural models. The importance of these issues are rarely reflected in the treatment literature but are common in the presentation of affected individuals as in a quote from a war veteran cited by Smith (1986, p.22):

"Even now, edging past middle age, few of us, I believe, awake in sweat because of the German civilians whom we have blasted. If war dreams disturb us, it is because they replay old fears from which we wake to ward off our own deaths, not the deaths of others..."

The appraisal models, both allow for a continuum of normal to pathological
responses to trauma and may account for the fact that symptoms sometimes subside only to re-emerge later if the individual is subsequently traumatised. For example it may be that accommodation of one traumatic event, provides the individual with a model of the world which allows that trauma is possible but a "one-off", an unlucky event, not likely to happen again. In this case subsequent accommodation of further traumatic events may be more difficult. This might account for the fact that individual experience of prior trauma has been cited as a risk factor for PTSD (Yehuda, Kahana, Schmeidler, Southwick, Wilson & Giller, 1995). The model might also predict that certain cognitive coping styles would be more adaptive than others and thus have implications for treatment. The model probably has most value in treatment where it is combined with other approaches involving direct or indirect therapeutic exposure. Evidence will be presented later to suggest that this is a central feature in successful outcome.

Learning Theory.
Keane, Fairbank, Caddell, Zimering & Bender, (1985), present a model of PTSD derived from learning theory. It is derived from Mowrer's two-factor learning model which in essence proposes that fear responses may be learnt through classical conditioning and maintained through instrumental conditioning as individuals avoid the conditioned cues which provoke anxiety (Mowrer, 1960). Several concepts are integrated into the model proposed by Keane in order to account for the complexity of the disorder.

Conditioned cues may be internal e.g. thoughts, or external e.g. places, times. Cues may elicit responses in accordance with the principle of patterning (Dollard & Miller, 1950). The concept of stimulus generalisation is considered to be extremely important in this theory. Stimuli resembling conditioned cues may elicit the conditioned response. Original work by Dollard & Miller (1950) also indicates that verbal labels may become conditioned cues so it might be predicted that where a novel stimulus acquires the same verbal label as the traumatic event (e.g.
"threat") it is possible that the fear response may generalise to the novel situation.

Higher order conditioning is the concept used to explain symptoms of arousal. Stimuli associated with the conditioned stimulus (CS) may acquire the potential to evoke fear. It is suggested that an enormous number of stimuli may become associated with the traumatic event in this way, resulting in the individual being continually confronted with stimuli which evoke the conditioned response (CR) and thus rendering the individual in a constant state of high arousal. This state of high arousal makes it difficult for the individual to attend to other duties relating to home and family and thus secondary symptoms occur. In explaining secondary features of the disorder, principles of negative reinforcement are also drawn upon. Negative reinforcement predicts that any behaviour likely to result in the reduction of aversive stimuli will be more likely to occur. Drug and alcohol abuse may be reinforced in this way together with primary symptoms such as numbing and avoidance because they reduce the aversive state of heightened arousal and distress.

The theory also attempts to account for maintenance of the disorder and for the fact that while there is constant exposure to the CS extinction does not occur. Keane proposes that extinction occurs only when there is exposure to all conditioned stimuli within the memory. It is stated that this is important as otherwise unexposed stimuli within the traumatic memory can serve to recondition anxiety to the stimuli where anxiety has been extinguished. Incomplete exposure is said to result for a number of reasons: there is the avoidance of aversive and painful memories, a wish to deny and forget and thirdly, it is posited that there is negative reinforcement for competing emotions and behaviour such as anger. Keane suggests that positive reinforcement of competing emotions and behaviours may also result in incomplete habituation, for example, in that a survivor stance may be positively reinforced. Incomplete habituation is also the result of affective state dependant storage of memories. This would predict that complete accessing
of material can only occur in a state of high arousal.

**Evaluation.**
Keane's theory has strengths in that it is based on a strong theoretical framework and it is known that learning theory can demonstrate the processes described. However it is somewhat parsimonious in accounting for some of the symptoms of PTSD such as its reliance on higher order conditioning to account for arousal. If higher order conditioning did account for this, it might be expected that anxiety associated with these stimuli could be extinguished through exposure. In PTSD, it is not always possible to achieve habituation of anxiety in this way (Solomon, Bliech, Shoham, Nardi, & Kotler, 1992a; Solomon, Spiro, Shalev, Bliech, & Cooper, 1992b; Solomon, Shalev, Spiro, Dolev, Bliech, Waysman, & Cooper, 1992c) Confronting memories of the initial traumatic event may also be necessary.

It might also validly be counter-argued that a residual state of high arousal is conditioned to other unconditioned stimuli (UCS). This aspect of the theory also does not appear to coincide with the subjective accounts of individuals. Some will report that "everything reminds them of the event" and therefore induces anxiety. However, others report that their arousal is important, almost a choice. They want to be in a state of preparedness and ready for the unlikely events they now know can happen. Others report that they are aroused because of the fear of intrusive symptomatology. The subjective experience of individuals appears to be different in some respects from the anxiety reported by individuals with phobias or a generalised anxiety state which fits more easily with the behavioural model.

The theory fails to address higher order constructs such as attribution and meaning of the traumatic event. The theory does not account for the fact that even in the most traumatic events the majority of survivors will not go on to develop PTSD. Intensity of trauma in a learning model might be expected to predict more PTSD and this is not always found as previous discussion has illustrated and as
discussed by other authors (Yehuda & McFarlane, 1995). It again seems important to address the role of coping style and environmental factors such as social support.

Keane et al. (1985), acknowledge that other factors are likely to be important in treatment of the disorder. The role of social support is referred to and in an outcome study comparing implosion therapy with a cognitive stress management programme, it is predicted that both therapies would complement each other. Keane also endeavours to highlight the central importance of the therapeutic relationship in PTSD treatment.

Learning theory of PTSD has recently been reviewed in a paper by Hacker-Hughes & Thompson (1994). In a review of behavioural and cognitive-behavioural studies, it is concluded that information processing accounts add little to early Pavlovian ideas about the classical conditioning of fear response. The "CEASE" model is said to explain the phenomenology of PTSD. In essence the proposal is that there is arousal through stimulus generalisation of the fear structure (described by the authors as the "engram") formed in the initial traumatic conditioning pairing which successful treatment must extinguish. CEASE represents: Conditioning pairing, Engram formation, Arousal, Stimulus generalisation and Extinction. The CEASE paradigm is said to account for the effectiveness of behavioural and cognitive behavioural techniques. Published research based on the CEASE model includes psychological debriefing in the method suggesting ambivalence about the importance of information processing (Thompson, Charlton, Kerry, Lee & Turner, 1995).

Integrative models are now more commonly reported in the literature as illustrated by the following models.
Cognitive Behavioral Model.

Foa, Steketee & Rothbaum (1989), develop an earlier theoretical model (Foa & Kozak, 1986), integrating concepts of information processing to form a cognitive-behavioural model of PTSD. The experimental literature on anxiety disorders is extensively drawn upon. Foa considers that behavioral theories can account for the acquisition, generalisation and maintenance of fear in PTSD but argues that the meaning of the event, with particular reference to aspects such as predictability and control needs to be addressed if experimental findings are to be accommodated. Such findings include the fact that perceived threat has been demonstrated to be a better predictor of PTSD symptoms than actual threat (Sales, Baum & Shore, 1984). Central to this theory is the fact that formerly held basic concepts of safety have been violated so that stimuli and responses which previously signalled safety have now become associated with danger. The world is perceived as less predictable and controllable and in the absence of safety signals the individual lives in a chronic state of fear. Many parallels are drawn with other anxiety disorders such as phobias, however PTSD is recognised to differ in the intensity of the response, the size of the fear structure and the ready accessibility of the structure. According to this theory, it is the pervasiveness of the stimuli, the intensity of both physiological and behavioural responses and the low threshold for activation of the fear structure which makes PTSD such a disruptive disorder.

In explaining the symptoms of PTSD many stimuli are seen to be able to activate the fear structure resulting in arousal manifested by startle and re-experiencing. Attempts to avoid this fear include numbness, behavioural avoidance and depersonalisation which are only partially successful resulting in further symptoms of arousal.

The model has clear implications for treatment. Firstly, that the fear memory must be activated and secondly that cognitive and affective information must be
presented to form new memory. This new information must include some elements which are incompatible with those existing in the fear structure. Conversely, exposure to information which is consistent with the fear memory containing no elements which are incompatible, is expected to reinforce the fear memory.

Evidence that corrective information is delivered during exposure may be demonstrated by changes which occur, possibly reflecting emotional processing. The evidence for this, cited by Foa, is that patients verbally report and demonstrate physiological change indicative of fear during exposure (Kozak, Foa & Steketee, 1988), reactions decrease gradually and tend to habituate within an exposure session and fear reactions to the CS decrease across sessions. The fact that habituation occurs within sessions serves as information which changes the fear structure because the absence of fear in the presence of the CS weakens the fear structure, being inconsistent with the propositions it contains. Changes in the response patterns are thereby achieved and also in the meaning propositions which have to accommodate that arousal does not only decrease through avoidance.

A second proposed therapeutic mechanism is the alteration of negative valence. Anxious subjects fear that arousal once induced will persist indefinitely. Negative evaluation of internal discomfort leads to avoidance therefore exposure should lead to modification of the degree of "badness" associated with arousal.

The theory also attempts to account for the fact that not all who are exposed to traumatic events actually develop PTSD by suggesting that the fear structures of those with PTSD differ from those whose fear responses are short lived. The authors draw on studies of rape victims which have shown that individuals raped in "safe" places e.g. home, tend to develop more symptoms of PTSD (Schepelle & Bart, 1983). It is suggested that for those who develop PTSD, the fear structure contains many more "safe" stimuli which have become associated with a fear
response. Unlike most individuals who perceive that situations are safe in the absence of signals of danger, the PTSD sufferer assumes that all situations signify danger in the absence of specific safety signals. Situations are therefore ambiguous leading to less predictability and control and therefore maintaining arousal.

Maintenance of the disorder is also addressed by the theory. It is proposed that for fear responses to resolve, many more stimuli will need to be matched or emotional processing will not be able to occur. Accidental exposure to stimuli would fail to achieve this unless exposure was of sufficient duration to allow for habituation. It is also suggested that if arousal does occur in the situation it may be too intense to allow the individual to attend cognitively therefore leading to incomplete processing. Cognitive or behavioural avoidance will also maintain symptoms.

**Evaluation.**

This theory is more comprehensive than the behavioural theory in addressing variables such as meaning. It also provides implications for treatment of the disorder and presents hypotheses which are testable. There are criticisms which can be raised. While distinguishing between phobias and PTSD the model then largely ignores salient differences. For example there is increasing work to show that at a biological level the fear responses of individuals with PTSD and those with other forms of anxiety are different. This work is discussed by Yehuda & McFarlane (1995) with the implication that treating the two as similar may hinder developments in the understanding of PTSD.

In phobias, by definition, the fear response is irrational. Life is not necessarily threatened and it is the fear of fear which maintains the disorder. It is often not possible to trace the origin of the fear to a conditioning pairing. In PTSD, again by definition, anxiety is in response to an emotionally overwhelming event where there
was actual threat to the survival or integrity of the sufferer. The anxiety, at least in the acute stage, is rarely irrational. There is undoubtedly an overlap in that fear of confronting fear maintains the disorder and phobias do often exist as co-morbid symptoms. However as appraisal models suggest, existential issues are frequently a great concern in PTSD. In phobias fear of losing control, of embarrassing oneself or of "going mad" are more frequently reported.

The DSM has also continued to debate over whether "survival guilt" should be retained as a defining symptom and while this has been discounted because it is not a distinguishing symptom it highlights the fact that there are issues in the treatment of PTSD which rarely feature in phobias or generalised anxiety. Frequently individuals fear confronting the memory of the event not just because of the arousal generated but because of the need to integrate the way they behaved with how they might wish to have behaved. The traumatic event has also frequently resulted in losses which need to be addressed in addition to the threat component of the experience. The cognitive-behavioral model accounts for many of the symptoms of the disorder but as a treatment model it does not necessarily address the subjective experiences consistently reported by many individuals. Other authors have also pointed to the limitations of the anxiety concept (and indeed PTSD) in understanding post-traumatic sequelae (Turner, 1993).

This model is a step forward in its attempts to address issues such as meaning but it does not incorporate individual coping style, social support or appraisal. There is evidence to suggest that these variables influence the development of the disorder, if only in as much as they affect other behaviours such as avoidance (Joseph, Andrews, Williams & Yule, 1992). These variables may also help to account for the fact that previous exposure to trauma may increase the risk of developing PTSD.

It has also been reported in the literature that many individuals cope with trauma
through avoidance and denial. According to the cognitive behavioral model this should result in continuing problems with anxiety failing to resolve, however this does not always seem to be the case. For some, it appears that this strategy works well without the anxiety of the initial trauma generalising to other stimuli. Horowitz has stated that in many individuals the terror of the original event was so great that denial may be the most adaptive way of coping (Horowitz, 1986). Where fear is the rational response to a life threatening stimulus it may be non-adaptive for the individual to habituate totally to the stimulus and thus generalising from models appropriate to phobias may not address all the issues in PTSD. Perhaps further studies with those who successfully integrate the experience of trauma may lead to fuller understanding through studying the normal in addition to the abnormal. Longitudinal studies would have particular value in this respect.

The fear response is a core feature in PTSD but clinical experience suggests it is not the only feature individuals wish to address in therapy. Individuals successfully treated by behavioural measures may need to go on to address other secondary symptoms such as depression, anger with authority figures, fragmentation of social relationships and sense of fore-shortened future. Appraisal models might predict this from the violation of the world theory held by the individual.

Studies rarely address the subjective within trauma experience. Thompson (1991) has discussed dimensions of threat and loss. It might be hypothesised that threat might lead to more symptoms of anxiety and loss to more depression. It may be that treatment needs to be more closely tailored to the individual traumatic experience of the individual. Traditionally individualised treatment approaches were one of the strengths of psychological therapies based on assessment techniques such as behavioural and functional analysis, but this does not come across in the treatment literature in PTSD. The high drop out rate reported by many authors (McFarlane, 1989b), may reflect the fact that the treatments on offer are not tailored to the individual needs of patients but too rigidly adhere to theoretical
constructs.

**Psychosocial Model.**
A theory of PTSD which integrates many of the relevant psychosocial variables, is proposed by Green, Wilson & Lindy (1985). This model accommodates variables such as stressor intensity and duration of the trauma and whether there was time to prepare for the event. Issues such as bereavement, loss and displacement are addressed together with issues faced by the community in which the stressor occurred. Exposure to death is considered, as is destruction and combat stress in the context of war.

The role of the individual in the actual event, whether passive or active, is identified as important. Issues relating to moral conflict are considered relevant. The potential for the stressor to recur is also an important consideration.

**Evaluation.**
The model integrates many aspects of current knowledge relating to vulnerability. It is complementary to other models such as the behavioural model and addresses many of the complexities of the disorder. Perhaps it can be criticised for being so inclusive that it becomes difficult to ascertain the relative importance of factors in causation or indeed treatment. It does account for the fact that some individuals develop PTSD while others do not and has better face validity in this respect than the previous two models. The interactive nature of the numerous factors which comprise the experience of trauma is better addressed.

**Integrating Theory and Practice.**
In assessing how these models have been applied and in attempting to evaluate outcome a number of difficulties are encountered.

1. While thousands of publications on PTSD have been spawned since 1980, the
majority of studies are descriptive. Few describe treatment approaches. Those that do have severe methodological problems which limit the conclusions which can be drawn.

2. While much of the epidemiological research is methodologically sound (for example incorporating long term follow-up) the same cannot be said of the treatment literature where anecdote abounds, single case studies and small group sizes predominate (Vaughan & Tarrier, 1992), and controlled studies are rare (Thompson et al., 1995). It has been reported that of the 255 treatment studies included in the literature up to 1991, only 11 were randomised studies using DSM criteria (Solomon, Gerrity & Muff, 1992).

Further criticisms of methodology would include the fact that in some studies assessment of PTSD is not rigorous. It is not always clear that the stressor reported satisfies diagnostic criterion A of DSM IV and many do not refer to standardised assessment procedures pre and post treatment. This raises the question of whether the individual actually has by definition suffered PTSD and whether this then is the focus of treatment (Richards & Rose, 1991). It is not being argued that PTSD as currently defined, encapsulates fully the psychological sequelae of exposure to trauma, but if knowledge in this field is to be furthered, it is important that attempts to replicate findings can be made and this can most easily occur where researchers adopt a common and scientifically rigorous framework.

3. Outcome studies lack long-term follow up. Where follow-up is incorporated it is rarely beyond six months (Vaughan & Tarrier, 1992; Richards & Rose, 1991). While acknowledging the difficulty of incorporating this, it is an important consideration in PTSD where relapse is known to occur.

4. The treatment literature predominantly features survivors of war experience,
particularly Vietnam. The experience of these individuals may not be directly applicable to other trauma survivors e.g. socio-political factors deeply affected Vietnam Veterans and appear to have exacerbated their situation.

5. The treatment literature appears to fail to report negative findings. PTSD is frequently described as a difficult condition to treat (McFarlane, 1989b; Thompson, 1995). The treatment literature does not reflect this and one could almost conclude that it is a relatively simple condition to treat, responding well to wide range of therapeutic interventions. The high drop out rates of treatment techniques are rarely highlighted (e.g. Vaughan & Tarrier, 1992). The negative effects of treatment, while an uncomfortable issue to address, also need to be considered.

6. Outcome studies do not appear to accurately reflect therapeutic intervention in PTSD. McFarlane (1994) cites studies which suggest that while behavioural studies dominate the outcome literature, the majority of interventions are not based on behavioural or cognitive-behavioural techniques. There is a paucity of outcome research on other forms of intervention.

Bearing the above criticisms in mind, the next section will briefly examine how therapeutic methods drawn from some of the models described have been applied in treating PTSD. The bias towards the description of behavioural interventions reflects the bias which exists in the literature itself. Not all models have been evaluated in treatment and evaluating models such as the psychosocial model or the appraisal model is difficult as relevant studies have not been undertaken or these models are seen as complementary to other approaches. Further difficulties are posed by the fact that many studies involve treatment packages and the contribution of different components to therapeutic outcome is not addressed (Busuttil, Turnbull, Neal, Rollins, West, Blanch, & Herepath, 1995).
Behavioral Therapies in the Treatment of PTSD.

Behavioural treatments, as in the treatment of phobias, focus on confronting the avoidance which is seen to maintain the disorder and achieving the habituation of anxiety symptoms. Various behavioural approaches have been reported as successful in treating PTSD symptoms.

Techniques based on Implosion.

Implosion (or "flooding" when this is carried out in-vivo), is the most widely cited behavioral technique reported in the literature, most commonly with war veterans but also with civilians (Black & Keane, 1982; Saigh, 1986; Grigsby, 1987). The technique is generally reported with positive and sustained outcome (Hacker-Hughes & Thompson, 1994) although the methodological limitations previously discussed must be borne in mind.

In one study, implosion within sessions was augmented by practice at home using audiotapes of the sessional material (Richards & Rose, 1991). Four case studies were reported and subjects included two survivors of violent assault, a crush survivor and the survivor of an explosion. All responded to imaginal exposure even where in-vivo exposure had previously failed. This finding will be discussed further in a later section. An average of 7-8 treatment sessions in addition to homework practice was required.

Vaughan & Tarrier (1992), used implosion in an uncontrolled study of 10 subjects who had chronic PTSD. Individuals were asked to generate verbal descriptions of their trauma which were then taped so that patients could continue exposure as homework between sessions. Six patients were reported to have significantly improved, two subjects showed moderate improvement and two showed minimal benefit. Improvement was maintained at six month follow up. Measures used included the I.E.S and measures of anxiety and depression. Based on the results from this study of ten patients, the authors also suggest criteria contra-indicating
this treatment approach including abuse of alcohol, high levels of arousal or irritability and low levels of intrusive symptoms.

The use of implosion techniques appear to have value in the treatment of the disorder however Pitman, Altman & Greenwald (1991), caution that such treatments may have negative effects for some.

**Systematic Desensitisation.**

Schilder (1980) reported success using this technique to confront imagery from nightmares in a war veteran. Celluci & Lawrence (1978) reported the superiority of systematic desensitisation (S.D.) over discussion groups and self recording in 29 subjects who suffered nightmares. Subjects were randomly allocated to groups. Improvement was maintained at seven months follow up.

Keane et al., (1985) describe the successful use of S.D. with Vietnam Veterans. Individuals composed a hierarchy of traumatic memories and rated these for associated arousal. Subjects were then taught relaxation before traumatic cues were presented. After termination of the scene the subjects again used relaxation techniques. Exposure continued until no more arousal occurred.

**Behavioral Treatment Packages.**

Several studies combine imaginational exposure through systematic desensitisation and implosion, with in-vivo exposure. McCaffrey & Fairbank (1985), used a combination of these techniques with two survivors of multiple transport traumas. Avoidance and intrusive phenomena were successfully treated and improvement maintained at one year follow up. Richards & Rose (1991), in the study cited previously, found that adding in-vivo exposure sessions provided rapid further benefit for some of their four patients. Follow up data were not available for all subjects but improvement was maintained for three of the subjects at 3-6 month follow up.
Cognitive Behavioural Studies.
Veronen & Kilpatrick (1983), have reported the successful treatment of six rape survivors using stress inoculation training. Cognitive approaches are most commonly combined with behavioural strategies.

Deblinger, Mcleer & Henry (1990), reported the successful use of cognitive-behavioural techniques with nineteen girls who had been sexually abused. Cognitive behavioral techniques are also reported as successful in the treatment of 45 rape survivors by Foa, Rothbaum, Riggs & Murdock (1991). This randomised study evaluated the effectiveness of three treatment approaches in the treatment of PTSD compared to a waiting list control group. The treatment approaches used were imaginal exposure (similar to implosion), stress inoculation training and supportive counselling. Subjects were reassessed at four months. It was reported that stress inoculation training was initially the most effective form of treatment followed by implosion. At four months this finding was reversed with the group treated by implosion having the better outcome. Foa suggests that these findings may be explained by the fact that implosion initially results in elevated levels of arousal but then leads to more durable changes in the traumatic memory. Stress inoculation required the subjects to continue using these techniques after treatment for the benefit to be maintained and this did not happen.

Psychodynamic Approaches.
As has already been stated there is considerable overlap between some cognitive approaches and approaches described as being based on psychodynamic models as these generally employ approaches designed to facilitate emotional processing. There has been little systematic study of the psychodynamic approach relative to descriptive articles although psychodynamic approaches have been described as amongst the most popular with clinicians treating PTSD (McFarlane, 1994).
Treatment Reports Without Clear Theoretical Underpinning.

Other treatment approaches without a clear theoretical basis have featured in the literature. Such techniques include Rewind (Muss, 1991) and rapid eye movement desensitisation and reprocessing [EMDR] (Shapiro, 1989a; 1989; 1991; 1995). Both involve the individual confronting the traumatic incident in a particularly detailed way and both are techniques involving imagery. The rewind technique requires the individual to go through the sequence of events comprising the traumatic incident, scene by scene, as if running a film and then to rewind the film to the point just before the event. Both techniques have claimed success but there is a lack of empirical work to support these assertions.

The introduction of EMDR has been controversial. This approach requires individuals to recall the traumatic incident and to focus intently for periods of several seconds on traumatic material from that scene while the therapist rapidly waves a hand laterally in front of the individuals eyes. Remarkable success, sometimes after only one treatment session and even in individuals who suffer chronic PTSD has been reported with this technique, although mostly in single case studies (Thomas & Gafner, 1993; Spector & Huthwaite, 1993; McCann, 1992).

Robbins (1995), in a brief review of larger studies of EMDR points to the lack of empirical rigor which prevents conclusions from being drawn about the effectiveness of the technique. One relevant criticism of these studies is the lack of adequate measures of psychopathology. It is important that these are incorporated into studies of EMDR, as one study incorporating such measures has reported on the marked residual symptomatology which remained in over half of their eight patient sample although all subjects were assessed to have improved on measures of PTSD symptomatology (Forbes, Creamer & Rycroft, 1994).

Attempts have been made to elicit the important components of the technique by
including a treatment phase excluding REM (Montgomery & Ayllon, 1994). It was reported that incorporating rapid eye movement facilitated the reduction of anxiety in five of six patients who showed no reduction in anxiety without the eye movement sequence. Shapiro herself has reported that she has achieved success using the presentation of auditory stimuli or through rapid tapping on the arms of a chair (Shapiro, 1995). The role of the repetitive stimuli is unclear, perhaps heightening arousal and thus facilitating recall of state dependant memories or perhaps as Shapiro has suggested enabling the individual to feel anchored in the present.

Accommodating New Therapies Within Existing Theoretical Approaches.
How do such reports add to our theoretical understanding of treatment issues? Can they be accommodated by current theoretical perspectives or do they require the consideration of additional constructs?

EMDR and "rewind", if stripped of their dramatic and perhaps distracting framework of waving fingers and rewinding films require participants to do one thing and that is to review the traumatic incident in detail and confront its most traumatic elements. Shapiro requires that individuals focus on each individual traumatic memory scene by recalling visual memories, body sensations and thoughts. McCann (1992), in his single case study asks his patient to focus on an event, its associated emotions and body sensations and related thoughts. By referring back to the discussion of Lang's (1979) psychophysiological theory of fear imagery (critical review 2 of this portfolio) it may be considered that encouraging recall in this way allows the most complete accessing of the fear network. By continual presentation of the image it may be that anxiety habituates, extinction occurs and thereby the meaning cues in the fear network are modified. Patients certainly do report reductions in anxiety where this technique works and this is in line with behavioural theories. One striking difference reported in many studies is the way that previous often apparently unconnected traumatic memories are spontaneously
recalled in a way which has not been consistently reported previously in the literature in treatments based on the habituation of anxiety. EMDR case reports consistently feature such images and clinical experience with exposure based therapies for PTSD suggest that individuals working with traumatic memories are indeed re-processing the events of their lives trying to accommodate what has happened to them into an understanding of themselves and of the world which will enable them to move forward.

A case originally reported by McCann (1992), was described in more detail (Butler, 1993). The report describes an individual who was severely disabled in an explosion. During EMDR, while recalling the traumatic incident in which he was badly burned, the individual found that what is described as a tangentially related image arose, an earlier near fatal accident. After reaching a state of deep calm the man who was not a religious man described how he had come to a realisation that:

"there were other dimensions in the universe...things don't just end here. The treatment made me look deep, very deep into my own existence Now I see clearly the fragility of human existence and what it means to me" (p. 20).

Shapiro has commented on the spontaneous recall of prior threatening life events (Shapiro, 1995). The fact that interpretation and appraisal are not components of the therapeutic package make the consistent reports of such processes more compelling, even though caution must be exercised in the evaluation of anecdotal material.

Behavioral theories alone do not easily accommodate such findings without resorting to complex chains of higher order conditioning and hypotheses which become almost untestable.
Rewind" (Muss, 1991), in addition to facilitating prolonged exposure to traumatic material which may allow the habituation of anxiety also allows the individual to organise snippets of traumatic material into a meaningful sequence thereby making some sense of apparently disconnected elements. Clinical experience suggests that this is important and perhaps habituation of anxiety cannot take place until this as been achieved. One of the first PTSD patients treated by the author using systematic desensitisation actively challenged the notion that the process was successful because of the habituation of anxiety. It was stated that traumatic memories burst into consciousness like bingo balls popping out of a random generating machine. Fear of what these balls might represent resulted in attempts to "push them back in" (avoidance) against the force that was trying to push them out. Therapy was described by the individual as encouraging her to look at the balls" and focus on what was there. This allowed "the numbers on the balls to be seen" and they could then be "filed away in order". The horrific memories associated with the traumatic event contained could never be emotionally neutral and for this reason the individual was surprised that anxiety extinction was seen as the central component in therapy, as if this was denying the tragedy of the situation, and the humanity of the individual.

Conclusions which can be drawn from Treatment studies.
Solomon Gerrity & Muff (1992), in reviews of several treatment approaches including medication, cognitive therapy, psychodynamic therapy, hypnosis and behavioural treatments reach some tentative conclusions. It is suggested that behavioural techniques involving exposure appeared to be useful but could cause complications especially in patients with co-morbid disorder. Medication produced some therapeutic gains. Other studies have suggested that other therapeutic approaches may be of benefit but methodological limitations prevent firm conclusions from being drawn. Given the number of different techniques reporting success in the treatment of this disorder it is possible that different theoretical approaches are addressing important components of the disorder from different
perspectives or alternatively that placebo or non-specific therapeutic effects may be of importance. Keane et al. (1985), have stressed the importance of the therapeutic relationship. It is also possible that most techniques if only in the assessment interview will include a detailed review of the traumatic incident resulting in a form of "psychological debriefing". This technique may have a role in the treatment of PTSD as well as in prevention (Stallard & Law, 1993; Busuttil et al., 1995).

In a comprehensive review of behavioural and cognitive-behavioural studies, Hacker-Hughes & Thompson (1994) compare and contrast different treatment approaches. It is concluded that techniques involving direct therapeutic exposure such as in-vivo or imaginal desensitisation and flooding have demonstrated their effectiveness in reducing symptoms of arousal and intrusiveness while graded exposure, flooding and SIT tend to reduce symptoms from the avoidance cluster. These may be appropriate generalisations although the literature suggests that there are many exceptions to this rule. Exposure to images alone has been shown to treat avoidance (Vaughan & Tarrier, 1992), and avoidance symptoms have been described as responding well to dynamic psychotherapy (Brom, Kleber & Defares, 1989).

There are also indications from the literature, perhaps in accordance with appraisal models, that therapeutic gain through exposure based on treatment in-vivo, is not always successful unless the individual is first of all encouraged to confront traumatic memories of the stressor. The Koach project offered a group treatment approach to Israeli combat veterans with established PTSD (Solomon et al., 1992a). This one month residential treatment programme, in addition to offering extensive group support and coping skills training, incorporated behavioural measures designed to tackle the avoidance which behavioral theories predict maintain PTSD. Despite positive appraisal by group members and therapists and in spite of improvement on measures such as phobias and social relationships no
Improvement was found in measures of PTSD, and at two year follow up the treated group were rated as having worse symptoms of PTSD than a no-treatment control group (Solomon et al., 1992c). The treatment approach incorporated a:

"Deliberate refusal, shared by all the therapists, to allow working through of past war experiences" (Shalev, Spiro, Solomon, Bliech & Cooper, 1992, p.214).

If behavioural and cognitive behavioural theories could fully account for PTSD it might be expected that the exposure treatment featured in the Koach project would allow for the closest matching of the fear network and with new meaning cues, allow for modification of the fear structure. Richards & Rose (1991), conclude from their four case reports of patients who underwent combinations of in-vivo and imaginal exposure that where in-vivo exposure was tried first it was either ineffective or only partially effective". Although a later study failed to confirm this finding (Richards, Lovell & Marks, 1994), it may be that theories relying purely on anxiety habituation models only partially account for treatment components in PTSD and that appraisal or information-processing models do add something to our understanding of the disorder (Busuttil, 1996).

An uncontrolled study featuring a group treatment approach with a number of similarities to the Koach project but including a psychological debriefing component was reported by Busuttil et al. (1995). This reported that 85.3% of the treatment group of 34 no longer fulfilled the criteria for diagnosis of PTSD at one year follow up. Furthermore the authors suggest that:

"Most symptomatic improvement appeared to have occurred on completion of the personal account phase with arousal and re-experiencing symptoms suddenly diminishing in severity" (p501).
There was no direct "in-vivo" exposure phase, systemic desensitisation or implosion.

The apparent importance of appraisal of the event in treatment has received indirect support in another recent study. Rape narratives were studied before and after an implosion treatment approach (Foa, Molner & Cashman, 1995). It was proposed by the authors that the natural recovery process from trauma would involve organising memories. It is predicted that those who do not recover, i.e. show chronic PTSD, have disjointed, partially processed memories and that treatment promotes cohesiveness of the memories. It was found that after treatment, rape narratives were longer and contained more utterances relating to thoughts and feelings about the event. Decreases in fragmentation of memories were highly related to outcome. Increase in attempts to make sense of the event was associated with less depression. Foa concludes that these results support assertions made by Harber & Pennebaker (1992) who conclude that, in trauma survivors, the need to make sense of their experience is of vital importance.

GENERAL GUIDELINES
A number of theoretical perspectives and treatment approaches appear to have potential to assist the understanding and treatment of PTSD. At times there is the impression that as in the well known eastern fable a number of blindfold sages are describing an animal from different but relevant perspectives each insisting that their one view is right. Integration of the perspectives may provide a more accurate picture.

For those seeking to treat individuals suffering from PTSD there are a number of principles which do emerge from the literature. Some are general to a number of disorders and others are more specific to PTSD. These proposals are made cautiously in the knowledge that the literature which informs them has numerous methodological flaws such as a small sample of subjects (Richards & Rose, 1991).
Some of the comments made are drawn from clinical experience. The literature in PTSD urges caution in this respect. McFarlane (1994) cites the Koach project as an example that even where an intervention is based on sound theoretical knowledge and is appraised positively by both therapist and patient, careful psychometric evaluation may reveal short and long term negative effects after intervention. With these reservations borne in mind seven general principles are proposed by the author which may be summarised as the seven C's.

1. Control
2. Confide
3. Confront
4. Co-ordinate
5. Create
6. Challenge (avoidance)
7. Coping

**CONTROL.**

Individuals suffering from PTSD may need to achieve control over co-morbid symptoms before they are ready to engage in therapy. This is particularly true if the individual is abusing alcohol or drugs (Vaughan & Tarrier, 1992; Thompson et al., 1995). An alcohol or drug treatment programme may be an appropriate first step in the treatment of PTSD. Co-morbid symptoms emerging in the course of treatment e.g. depression may need to be addressed specifically.

Pharmacotherapy may have a role in helping the individual to achieve control of symptoms which might otherwise prevent participation in individual, behavioural or group therapies (Friedman, 1988), although medication is rarely sufficient to treat PTSD alone.

There may be symptoms of such severity (e.g. marked avoidance), which prevent the individual from engaging in therapy. Techniques to give the individual
confidence that they can cope with the anxiety that therapy may involve, may be necessary to facilitate engagement (McFarlane, 1994).

CONFIDE.

It appears to be important for the patient to be able to have a trusting relationship where all the details of a traumatic event can be fully explored including painful issues such as acts of commission or omission. The patient is said to be helped in this if there is confidence that the therapist is able to deal with the painful material presented by the patient (McFarlane, 1994). Full exploration of traumatic material appears to be necessary if re-experiencing phenomena are to resolve (Busuttil et al., 1995).

The therapeutic relationship has been identified as important in therapy (Keane et al., 1985), but group support may also be beneficial (Busuttil et al., 1995; Shalev, 1994). This is especially true in PTSD where there is the commonly expressed belief that the experience of the individual was so terrible that only someone experiencing something similar could possibly understand it.

Social support factors have been found to be important in recovery from PTSD (Joseph et al., 1992), and as therapy progresses it is important to encourage the individual to rebuild appropriate social supports which may have fragmented in response to the event.

CONFRONT.

The argument suggesting that individuals need to confront the traumatic details of what happened has already been made. A number of techniques have been detailed which facilitate this including traditional behavioural techniques such as implosion and newer therapies such as EMDR. Imagery techniques, involving repetition, appear to facilitate both the integration of the trauma experience (Foap et al., 1995), and anxiety reduction through habituation. Complete extinction of all
anxiety, depending on the nature of the experience may be an unrealistic goal. Horrific experiences might be expected to be associated with an anxiety response and it may be biologically non-adaptive for complete extinction to occur. Having said this it is important that when encouraging a patient to recall traumatic material sufficient time is allowed for the associated anxiety to habituate in the majority of cases where extinction is possible. This may reduce the risk of re-traumatisation.

Vaughan & Tarrier (1992) suggest that emotional preoccupations with elements of the trauma may function as cognitive avoidance strategies which enable the actual traumatic memory to be avoided. Such issues may also have to be confronted.

CO-ORDINATE.
Recent work (Foa et al., 1995; Harber & Pannebaker, 1992) has suggested the importance of the individual being able to emotionally process the event, to make sense of what happened and to establish "connections" between fragmented memories and perhaps fragmented schema relating to self and world view. This may not be a direct goal of therapies based on behavioural models however it seems to occur as a result of confronting traumatic memories and may be why techniques such as psychological debriefing have been reported as helpful by those taking part (Robinson & Mitchell, 1993).

CREATE.
Co-ordination of memories enables the individual to move on to create an understanding of the event. This sometimes challenges previously held views of the event or sometimes more dramatically, views of life. The search for purpose is often important and can be seen in the desire to set up support-groups, charities, things which give meaning to otherwise senseless suffering and perhaps a feeling of control. Foa et al. (1995), noted that the rape narratives of those benefitting least from exposure treatment contained more negative feelings, particularly helplessness.
Creating an understanding of what has happened also means establishing an understanding of PTSD symptoms in relation to the event. Education about PTSD is therefore often helpful. Symptoms are less likely to be seen as a sign of individual weakness or a permanent state. Therapeutic goals involving processing the event emotionally, reducing the anxiety and confronting avoidance then make sense.

CHALLENGING AVOIDANCE.
By confronting memories of the event and creating an understanding of what happened, individuals may learn that the anxiety they feared so much did not overwhelm them. For some, the reduction in anxiety associated with confronting the feared event in itself appears to reduce avoidance symptoms without incorporating an in-vivo exposure treatment phase (Vaughan & Tarrier, 1992; Foa et al., 1995). Other studies suggest that the incorporation of an in-vivo exposure phase will lead to rapid resolution of residual avoidance (Richards, Lovell & Marks, 1994). For some individuals in-vivo exposure may not be possible e.g. war trauma. In such cases exposure to elements of the trauma may be useful (e.g. recorded gun-fire).

COPING AND FUTURE COPING.
Consideration of coping strategies and future coping strategies may be beneficial. Some patients who have responded to treatment may nonetheless find that some symptoms briefly return at points in time. Triggers for such events may be anniversaries, inquests or the occurrence of a similar event e.g The Gulf war resulted in the return of symptoms in some ex-soldiers who had been symptom free for years. Awareness that this may occur and instruction in self help strategies can prevent unnecessary distress. Even after successful treatment many individuals are not totally asymptomatic and coping strategies which help them live with residual symptoms can be useful. An example would be a patient who occasionally experienced intrusive symptoms of low severity. A cognitive coping
strategy might be helping the individual to avoid catastrophising ('one flashback does not mean the treatment has failed and all my other progress will slip back').

CONCLUSIONS:
This selective review of theoretical models has illustrated the wide range of theories which have attempted to explain the symptoms of PTSD and to inform treatment approaches. The paucity of good empirical research limits firm recommendations about treatment being made, however a study of the literature, including case reports, enables tentative proposals to be made about seven core elements which appear to be important in treatment. It seems important that future research should address the "within subject" experience of treatment in addition to evaluating outcome. It may be that such work will contribute more fully to theoretical understanding and clarify the relative importance of the many psychological models which appear to contribute to the understanding of PTSD and its treatment.
References


The clinical initiative described in this report came about through an increasing awareness of the need for psychosocial planning in the aftermath of major incidents reflected in the report of the Disasters Working Party (1991).

This review will outline the contribution of the psychology service in the development of a "phase two" (psychosocial) plan for major incidents. This is being developed jointly for Swindon and Marlborough Hospitals Trust and East Wiltshire Health Care Trust. The initiative was developed with reference to the literature on response to disaster and in accordance with recommendations made by the Disasters Working Party (1991). Particular consideration was given to the British experience of major incidents and on the lessons learnt after recent large scale events.
CLINICAL INITIATIVE. PSYCHOLOGICAL CONTRIBUTIONS TO THE DEVELOPMENT OF A PHASE-TWO MAJOR INCIDENT POLICY.

OVERVIEW:

Stage One: Recognising the need to develop a policy.
1. Introduction: an argument for the need for phase-two plans to address psychosocial issues in the aftermath of critical incidents.
2. History of the local response to critical incidents.

Stage Two: Developing policy guidelines.
3. Summary illustrating stages in the development of the policy guidelines and illustrating the role of the psychologist.
4. Guidelines for the development of a phase two policy presented to the senior management team of the Trust based on conclusions drawn from the literature review.

Stage Three: Starting to implement the policy.
5. Training staff support counsellors. Summary of three training workshops and an update workshop. Developing a staff trauma counselling service.
6. Training of core workers. Two day introductory training for core team workers.

Stage Four: Community awareness raising and liaison.
8. Other liaison work.

Stage Five: Support materials for those working to implement the policy.
9. Information materials adapted for use with survivors, staff, G.P.'s and relatives.
10. G.P. study.
STAGE ONE: RECOGNISING THE NEED TO DEVELOP A POLICY.

1. Introduction: An argument proposing the need for phase two planning to address psychosocial issues in the aftermath of Critical Incidents.


**The need for phase two planning.**

Since 1985 several major disasters have occurred in the United Kingdom. The possibility of such events had been anticipated by medical services nationwide and "phase one" major incident plans were operated by most Accident and Emergency hospital departments, designed to effectively manage the treatment of large numbers of medical and surgical emergencies. However little consideration had been given to the need for planning for the psychosocial needs of those involved in traumatic events (phase two planning), even though an increasing awareness of the psychological impact of exposure to such events had been brought about through the recognition of post traumatic stress. The diagnostic and statistical manual of the American Psychiatric Association recognised PTSD for the first time in 1980, and increased attention and research effort especially in the context of civilian disaster led to improved understanding of psychological responses to major incidents (DSM-III, APA, 1980).

Reports of the British experience of coping with disaster reveal a vacuum in planning for the psychological needs of those involved (Disasters Working Party 1991; Turner, Thompson & Rosser, 1993). Several problems can be identified in assessing reports of responses to these events:

**(A) Organisational issues.**

The attempts to provide a response in the wake of British incidents demonstrated
the large numbers of individuals who were affected in any incident. It is reported by Hodgkinson & Stewart (1991) that after the Hillsborough tragedy over 1,600 requests for counselling were received through a helpline. Other disasters report a large demand being placed on those attempting to provide a response (Rosser, Dewar & Thompson, 1991).

Those trying to address the needs of survivors, relatives and staff involved in events had not only to do this work but also had to struggle with organisational issues. For example reports documenting the psychosocial response to the Kings Cross fire (Rosser et al., 1991) illustrate how lack of an organisational framework impeded relief efforts. Inter-professional boundaries had not been established before-hand resulting in confusion as to which of the numerous agencies who inevitably felt they have a responsibility in such a situation, was responsible for any particular task.

(B) Poor targeting of resources.

Other problems can occur such as certain tasks being duplicated leaving gaps in service provision elsewhere. Hodgkinson & Stewart (1991), cite the case of a survivor of the Clapham rail crash who received no less than six offers of counselling in one day before finally being approached by a member of the official disaster response team. This woman rejected any offer of help and it can be imagined how insensitive and intrusive such approaches must appear at a time of personal crisis. Such overlap may waste resources which might be better targeted and the lack of a coordinated response risks overwhelming some individuals with offers of help while the needs of others may be overlooked.

(C) Leadership conflict.

Conflicts about leadership can evolve, especially as major incidents attract large amounts of publicity and different agencies or individuals may have a vested interest in raising either group or personal profiles.
(D) Finance.
Lack of planning means that the financial implications of providing an effective response to an event are not addressed. This caused difficulties in the response to the Herald Tragedy where telephone helplines were closed in response to lack of finance rather than in response to decreased clinical need. Attention was also drawn to financial implications of planning in the reports of the phase two response to the Kings Cross Fire, (Turner et al., 1993). While some cost may be involved in providing a planned phase two response, this cost must be balanced against the cost of not having a policy. In addition to the personal and organisational costs illustrated in the previous essay (Mitchell, 1990), employees, including the police officers involved in the Hillsborough tragedy, are suing their employers claiming compensation for stress suffered. A plan which considers the needs of staff may limit the psychological distress caused to staff and also the employers liability.

(E) Timing.
The other issue raised by lack of planning is that valuable time is wasted. It will later be argued that early intervention may be able to reduce and prevent psychological morbidity. Time wasted in the early stages on organisational tasks which could have been anticipated may therefore have implications for increased cost in both financial and psychological terms at a later date. This point can be illustrated by the fact that even though a large amount of good will existed after the Herald disaster psychosocial support for survivors was only established some ten weeks after the event, largely due to administrative difficulties (Hodgkinson & Stewart, 1991).

(F) Iatrogenic effects?
The risk of iatrogenic effects of interventions which have not been properly planned with adequate reference to research in the field of psychological trauma must also be considered. There has been suggestion that short interventions which are not based on an understanding of trauma information processing, may actually
serve to re-traumatise individuals (Rosser et al., 1991), and thus interfere with what may have been a normal recovery process.

(G) What should be done, by whom, with whom and when?
There is insufficient consideration of what intervention should be offered to whom and at what point in time. This partly reflects lack of controlled research in this field and the fact that in many instances lack of planning has meant that research and evaluation has not been built in to the interventions which were carried out.

Properly structured phase two planning has the potential to avert chaotic, insensitive and poorly targeted interventions which may inadvertently be harmful. It allows for the various groups who have a potential contribution to make to come together without the immediate pressure of responding to an event. It should allow time for key groups to define their roles and to develop an understanding of each others contribution, thus developing inter professional alliances. It may allow for the planning of interventions which are based on experimental findings or at least psychological theory about the response to trauma. Research considerations can be built in at the outset. Such considerations may have little priority when the initial task is to respond to distress but where interventions have been planned in advance evaluation can be built in, and it may then be possible to address research issues.

Consideration can be given to issues such as the training of those who will be involved, the role of managers and the financial costs. A major incident is usually unexpected. It is impossible to anticipate every event and therefore gaps in any plan are likely to be exposed. Nevertheless it is argued that lessons can be learnt from the tragedies that have occurred and the literature that has amassed dealing with the psychological sequelae which may occur in the aftermath of a major incident.
Local Developments in Phase Two Disaster Response Planning.

The Gulf war in 1990 focused attention on the need to provide a local psychosocial response to the expected mass casualties (Stevens, 1991). Several military bases exist locally as does a military hospital. Awareness of PTSD was also raised at a local level as this hospital was responsible for the retrieval and debriefing of the British hostages and their families in 1991 (Turnbull, 1992). British soldiers returning from the Falklands war had previously reported psychological sequelae which had also affected their families. These factors, and a society made more aware of PTS through popular culture (e.g. films such as *Platoon*), resulted in local agencies coming together to discuss how they could co-operate in providing a response.

Agencies involved included health and social services but also groups from the voluntary sector such as CRUSE and the Samaritans. Chaplains from different religious denominations were also involved. Guidelines for responding to casualties of war based on knowledge drawn from the psychological literature were produced by the British Psychological Society (1990) and plans were made in accordance with these recommendations.

When the anticipated mass casualties did not emerge many groups were left feeling that while the skills and knowledge learnt for this event were thankfully not needed, an increased awareness now existed that individuals could experience symptoms of varying degrees of severity in response to exposure to a traumatic event. There was also an awareness that traumatic events did not only occur during war time and that the skills taught in preparation for the Gulf response could be applied more widely and with possible benefit to staff, survivors and families involved in more everyday but nonetheless traumatic events.

Unfortunately turnover of staff and lack of impetus meant that goodwill was not translated into action. Initial discussions were started and led to the formation of
a co-ordinating group. In the spring of 1994, the author who had also contributed to the formation of the co-ordinating group, became the clinical psychology representative to the group which became known as the "Disaster Response Team".

Impetus for the initiative to continue came with awareness that two recent local major incidents were continuing to have long term effects not only on primary vict­tims but also on staff who had been involved in dealing with these events (Hungerford shootings, and the Akers Way road traffic tragedy).

It was felt that the way forward would be to develop a policy, based on local, (Wessex Regional Health Authority, 1993) and national (Disasters Working Party, 1991) guidelines, linking the responses of the two Health Trusts in the event of a major incident. If the phase one hospital policy was called into operation this would automatically result in the triggering of a phase two policy which would be intended to address the psychosocial needs of patients, staff relatives and other members of the disaster community.

The previous literature review argues clearly for the need for an outreach pro­gramme. Some aspects of outreach could be addressed by the hospital alone e.g. through communication with G.P.s, however it was acknowledged that effective outreach would be most effective through liaison with Social Services and indeed they are identified by the Disasters Working Group (1991) as the lead agency in co-ordinating the response to the community. Initially, lack of interest in co-ordinating the response was shown by Social Services however it was felt that significant progress could be made in defining the response of the Trusts and this response could then be linked with Social Services planning as this evolved.
STAGE TWO: DEVELOPING POLICY GUIDELINES:

1. Summary illustrating stages in the development of the policy.

2. The role of the psychologist.

3. Conclusions drawn from the literature review integrated into guidelines for the development of the policy. These guidelines formed a discussion document at a presentation to the senior management team of the Trust whose approval is necessary for any policy to be written.
SUMMARY ILLUSTRATING THE STAGES INVOLVED IN DEVELOPING A PHASE TWO POLICY

1. Gap in service provision identified: planning group set up to develop phase two plan.

2. Relevant literature studied: planning group evolves into disaster response team.

3. Phase one and phase two planning linked by developing joint planning team:
   Tasks undertaken:
   - Incident audit
   - Audit of groups at risk
   - Identification of key worker groups
   - Identification of planning stages
   - Identification of resources needed
   - Identification of roles for key worker groups

4. Policy guidelines written based on psychological literature, and national and regional guidelines.

5. Presentation of these recommendations to senior management team led to approval.

6. Guidelines written up in draft policy: conference arranged to inform and consult with other agencies.

7. Training programmes arranged in accordance with policy.

8. Survey of G.P.s awareness of PTS.

9. Health of the Nation funding secured for information and self help literature and a study to evaluate this.

10. Identification of further work to be carried out to make the policy workable including further training, liaison with social services, and finance.

DEVELOPMENT OF THE POLICY.

The major phases in the development were as follows:

1. Gap in service provision identified.

2. Psychology and staff support raise the issue of phase two planning at the Professional affairs group.

3. A working group is set up as a result of this. The group initially consists of Clinical Psychologist, Staff Support co-ordinator, Mental Health Manager, Consultant Psychiatrist. Invitations extended to Social Services, Accident and Emergency Consultant, Trauma Unit Business Manager, Hospital Chaplain and Trust Management Representatives. Liaison with the Voluntary Services was established through Cruse and Samaritans.

4. Initial tasks undertaken included an audit of major incident risk factors in the local area. Acknowledging the unforeseen nature of incidents like Hungerford, more obvious risks were noted such as having a number of military establishments locally, and the fact that the town is situated between two junctions of the M4 motorway.

5. Identification of groups at possible risk and therefore in need of service provision was established using information from the first critical review. These groups are illustrated in the flow chart on page 140.

6. The identification of groups who would have a role to play in providing services to those who had been traumatised was carried out with the recognition drawn from the literature review that consideration would also need to be given to the psychological needs of these helpers (Raphael, 1986). Debriefing the debriefers (Talbot, Manton & Dunn, 1992) or secondary debriefing was seen as one option.
7. Consideration was given to the type of help that should be offered. This was the reason for the second literature review. While much had been written about the needs of those involved in traumatic events there was little to indicate which interventions were useful for whom and at what stage during the evolution of the reaction to the trauma event.

8. It became clear that in developing a policy it was important to consider the phases that would be involved. The development process had to include consideration of issues prior, during and after the event.

9. Issues which would become important prior to the event included:

(a) Obtaining approval from the trust to have a written policy by presenting a document outlining policy guidelines to the Senior Management Team.

(b) Developing a programme of Management Awareness so that Post Traumatic Stress (PTS) could be recognised as an issue which could affect any health worker at any time. PTS needed to be recognised as an issue which needed to be addressed and one which could be raised by staff without the likelihood of stigma being attached. It would also be necessary to see that PTS was dealt with in training both in raising it as an issue that staff should be aware of, recognising that certain techniques such as stress inoculation training could have a preventative effect and recognising that management structures could also be modified to help in prevention. Examples of this include the facilitating of debriefing at the end of shifts, arranging adequate rotation of staff, etc.

(c) Training of key workers in core skills.
The role of the clinical psychologist in developing the Phase Two Policy.

One of the initial tasks of the planning group was to try to establish which key services would be involved in the event of a major incident and to try to define roles in order to make the most appropriate use of skills available, trying to prevent the overlap/gaps in service provision which have occurred after other recent national incidents. Each service represented on the planning group was asked to define its role and these definitions were used in preparing the framework of the policy. The size of the clinical psychology service placed constraint on the services that it could offer however roles in the following areas were proposed based on discussions with colleagues.

Prior to an incident.

1. The psychology service was seen to have a role to offer in developing a policy based on psychological theory and relevant research literature.

2. The service was seen to have a role to offer in raising awareness of the issue of PTS both with frontline staff and management. Certain groups of staff e.g. Accident and Emergency staff and I.C.U. staff had already asked for input from the psychology service, thereby facilitating this process of education.

3. The service was seen as having a role in advising on procedures and policies to be used in the event of traumatic incidents to minimise the likelihood of psychological distress in staff.

4. The service was seen to have a role in helping to train individuals to carry out these procedures and policies and to assist in their supervision where appropriate. Initially, this would occur through the training of staff support counsellors but it was envisaged that training for community care staff might also be requested.
5. The service was seen to have a role in helping to prepare information and self-help literature for staff and patients coming into contact with the Trusts during an incident. It was also felt that this literature could be used for more every day traumatic events thereby helping to raise awareness amongst both staff and patients.

**During an incident.**

1. The limited availability of psychologists for one to one work with staff precluded planning for direct clinical intervention in most cases. It was decided that training Staff Support counsellors in techniques of defusing and psychological debriefing (Mitchell, 1983) with supervision by the clinical psychology department was one model which might make the most effective use of resources. Individuals requiring clinical intervention would be referred on to the psychology department or to medical services as appropriate.

2. It was envisaged that the planning team would continue to meet during the incident to monitor the response to the event and to adapt the policies according to need. The service was seen to have a role in this process, particularly in assessing the areas and scale of staff needs and in judging the timescale for intervention.

3. Depending on the availability of staff, the service might also help in the secondary debriefing of community care staff who would be involved in direct work with survivors and their families.

**After the incident.**

1. The need for outreach to an affected population was demonstrated in the previous essay. While much of this work may be carried out by other agencies, as a contribution to this process, the service developed standard letters to be sent to the G.P. of any patient on the Trusts database to raise awareness that the
individual has been involved in a traumatic incident and might be at risk of psychological sequelae.

2. All major incidents in recent years have shown the need for long term support for individuals involved in any such event (Disasters Working Party, 1991). The service would continue to be involved in the planning team which would meet after the event and at times known to result in an exacerbation of distress (e.g. inquest or anniversaries) and thereby contribute to service provision as appropriate.

3. Individuals requiring psychological assessment or treatment of PTS syndromes can be referred to the service.

Author’s role in developing the Phase Two policy.

Research.
Developing policy guidelines involved researching the area of PTS and summarising relevant findings.

Teaching.
The training of the staff support team in post traumatic stress reactions and PTSD including training in the technique of psychological debriefing. The training included three half day sessions and an update session, which was also attended by co-ordinators of Cruse and the Samaritans. Advising on the appropriate training for other staff including devising a training programme for nurses, counsellors and members of Cruse and the Samaritans. The training programme for up to fifty key workers, volunteers and managers was also organised by the author. Guidelines for selection of counsellors were suggested by the author (see p. 150). Counsellors had all previously undertaken counselling training.

Supervision.
Supervision was provided for clinical work undertaken in the context of PTS. This
included secondary debriefing for counsellors and clinical supervision of casework where appropriate.

Presentations.
Various presentations were made as part of this initiative including summarising research findings for the planning team, presentations to the senior management team and a presentation at the conference organised as part of this initiative. Further presentations to management and clinical staff are planned as part of a programme to raise awareness of PTS.

Organisation of a conference.
A conference was organised with the Staff Support Co-ordinator on behalf of the planning team to inform relevant agencies of the existence of the Trusts' phase one and phase two major incident policies, to raise awareness of the need for agencies to work together, and to encourage delegates to look at the issue of PTS within their own organisations.

Consultancy.
Consultancy work was carried out in advising the police on the development of peer support networks and psychological debriefing after traumatic incidents.

Liaison.
Development of the policy required liaison with a number of individuals and organisations in addition to the planning group representatives. Liaison work was undertaken with the Chairperson of the Trust and Chief Executive, Social Services, representatives of the Emergency Services, the media and voluntary agencies. Liaison included attendance of a multi-agency desk top exercise co-ordinated by the police but involving all emergency services, and council planners.
Paper presented to the Senior Management Team of the Trust.

The following 11 pages (pages 136 to 146) consist of policy guidelines written by the author which formed the framework for the policy and which were presented to the Senior Management Team for approval.
East Wiltshire Health Care and Swindon and Marlborough Hospitals.

Joint Plan for Phase Two Disaster Response

These draft policy guidelines have been prepared based on the research literature available, regional and national guidelines and the work of the Disaster Response Team.

This document is subdivided as follows:-

1. Introduction and Definitions.

2. Proposed Phase Two Response illustrated using a flow chart. This highlights the transfer of care from acute services and includes planning for follow up care.

3. Training requirements including setting minimum standards and establishing provision for skills update and maintenance.

4. Education and Awareness raising within and outside the organisation, including team briefings, educational leaflets and a proposed Conference Launch in Spring 1995.

5. The identification of resources required to implement the Policy.


7. References (now included at the end of this section).
INTRODUCTION

What is Phase Two Disaster Response Planning and why is it needed?
The need for Major Incident planning is widely recognised and the many tragedies which have occurred in Britain since 1985 including Hillsborough and the Bradford and King's Cross fires to name but three have highlighted the importance of this "phase one" response, designed to deal with medical and surgical emergencies. The psychological consequences of major incidents have recently received more attention as the concept of "Post Traumatic Stress" has become more widely understood. It is now known that various groups are at risk from short-term or in some cases long-term, psychological disturbance. This may include a number of disorders including anxiety, depression and PTSD.

Who is at risk?
The groups of individuals at risk will vary to some extent according to the nature of the event. The risk to individuals has often been discussed in terms of a "Ripple Effect". Those most closely involved in the event such as survivors, relatives and witnesses may be at greatest risk, however emergency workers, hospital staff and members of the community may also experience stress reactions. The levels of P.T.S. experienced by individuals tends to be "dose-related", that is the greater the exposure to intense trauma the higher the risk of developing a post-traumatic stress reaction.

What percentage develop Post Traumatic Stress Reactions?
The nature of the event will affect the percentage of reactions and therefore prediction of numbers is difficult. Research after other major incidents suggests that about 10% suffer no observable disturbance, up to 80% will experience acute stress responses that slowly resolve over time. At least a further 10% may go on to develop the more severe post traumatic stress disorder. In staff a similar picture tends to emerge.
The percentages quoted here are conservative estimates based on research findings.

**What can Phase Two planning hope to achieve?**

This aims to meet some of the psychosocial needs of those involved. It commonly involves practical support, e.g. help finding accommodation for displaced individuals. From a psychological viewpoint it provides the opportunity to implement "Crisis Intervention" strategies and there is some evidence that certain techniques such as psychological debriefing may ameliorate P.T.S. and prevent the development of P.T.S.D. Survivors relatives and frontline staff may benefit. Providing information about possible symptoms, methods of self-help and sources of further advice also appears to be of value.

The Phase Two plan can also aim to prevent P.T.S. through addressing organisational, management, and training issues which are relevant.

It may be asked whether if the majority of these reactions resolve spontaneously, intervention is necessary at all? This reasoning fails to acknowledge the severity of post traumatic stress reactions and the personal and occupational cost. Furthermore a legal precedent was recently set where an employee successfully sued his employer for a six figure sum for their negligence in not addressing the issue of P.T.S.

In Swindon there has been some recent experience of small-scale events in the aftermath of the Hungerford Shootings and the Akers Way tragedy. Such incidents have heightened the awareness of the need for a Psychological Phase II Disaster Response. A joint working party (The Disaster Response Team) has met to plan a local response in accordance with national and regional guidelines.
Some Definitions

Post Traumatic Stress:
Intense initial emotional reactions to trauma are considered "normal". They are perceived as understandable reactions to abnormal events. Increased anxiety, re-experiencing of the events in dreams or flashbacks and avoidance of reminders are characteristic. Depression, disturbed sleep and disruption of personal, social and occupational function also commonly occur. Increased use of nicotine, caffeine and alcohol may occur as a response to stress. When this distress does not resolve and symptoms remain severe for over a month Post Traumatic Stress Disorder may be diagnosed. Current diagnostic criteria for PTSD are appended (updated after DSM-IV was published, see appendix 1).

Critical Incident Stress Debriefing/Psychological Debriefing:
These are simple psychological techniques designed as early intervention strategies which aim to prevent PTS reactions through encouraging individuals to talk through their personal experience of the event/s in a structured way.

Assessment:
Assessment in this situation aims to identify both the immediate and long term needs of individuals. It aims to identify those coping well needing little support, those who would benefit from some intervention either at a personal or organisational level and those who need referral for a full psychiatric assessment. Standardised psychological measures may be used to assist this process.

DRT: Disaster Response Team:
This team is responsible for planning and co-ordinating the Phase II Response. It includes the Trauma Unit Business Manager and Senior Consultant, Psychiatric Consultant, Mental Health Services Site Manager, Chaplain, Staff Support Co-ordinator Senior Manager and Clinical Psychologist.
Illustration of the Integration of a Phase One/Phase Two Response to a Major Disaster

Major Disaster declared by Ambulance Service.
PHASE ONE RESPONSE ACTIVATED

PHASE ONE RESPONSE
Disaster Response Team Convened

ADMINISTRATION
Identification and registration of all involved
Inform EWIIC Mental Health Manager
Activate telephone help line

Mental Health/On-call Manager/Deputy alerted
PHASE TWO RESPONSE ACTIVATED
Disaster Response Team alerted

KEY WORKERS for AT RISK GROUPS ACTIVATED
Mental Health Team
Chaplains and Nursing staff
Outreach helpline
Managers staff support and Psychology
Voluntary Agencies Nursing staff and Chaplains

AT RISK GROUPS
Injured Survivors
Survivors Walking wounded
Unidentified affected e.g. witnesses
staff Relatives
THREE TASKS ARE DEFINED:

Task One: Immediate aftermath

AIMS:

1. General Comfort and Support.

2. Assessment by Key-Workers:

<table>
<thead>
<tr>
<th>POSSIBLE OUTCOMES</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Reaction (rare)</td>
<td>Refer for Psychiatric Assessment</td>
</tr>
<tr>
<td>PTS Reaction (majority)</td>
<td>Debriefing Indicated (but initial task is to support and provide information).</td>
</tr>
<tr>
<td>No obvious distress</td>
<td>Defusing and Debriefing, Support and Information.</td>
</tr>
</tbody>
</table>

Task Two: Reactive phase

1. Support and debriefing service offered by accredited personnel. This may be accepted or rejected by individuals. In all cases information and self help leaflets may be given which will also detail contacts for follow up help or advice:

2. Reactive support may continue for months / years.

Task Three: Outreach

1. G.P.s contacted through written information to highlight awareness of PTS.

2. Standardised letters to G.P.s of individuals on data base.

3. All individuals on data base contacted. Short/long term help arranged as necessary.
Other Points:

1. At regular intervals the DRT will reconvene to assess the adequacy of the response and to prepare for any long term needs: e.g., memorial services, anniversaries, inquests, etc.

2. DRT should also meet for an official stand-down. An evaluation of the response to any incident is necessary and the plan should be revised according to experience and new developments.

3. For a phase two plan to work, a co-ordinated response from a number of agencies is essential. This, however, does pose the difficulty of bringing together groups of people used to working in different ways. Confusion adds to work stress. Therefore it will be helpful if leadership roles are clearly assigned and roles for key workers defined.

4. Lack of information also causes stress and rumour thrives. Where information is available it must be disseminated quickly and clearly.

5. Rotation of staff is essential and provision for rest and recuperation (e.g., breaks for food/drink) should be organised.

6. The identification of groups at particular risk is important, including the elderly and children. The expertise of professionals from these disciplines should be incorporated.

7. It is essential that key workers should have "secondary debriefing" arranged. Key workers may be vulnerable to PTS as a result of their experience.
Training requirements

Many key workers and volunteers will need to be trained to an acceptable minimum standard. These standards should be established jointly by key workers through their representatives on the DRT, but it would be expected that the standards would be similar to those defined in the "Guidelines For Working With Volunteers", while acknowledging the professional skills already acquired by certain groups.

Each group of key workers would be responsible for keeping and updating their own register of volunteers prepared to be called upon in the event of a phase II alert.

Training need not be a high cost exercise by maximising use of the expertise available within the Trusts. A precedent has been set whereby the Psychology Department has trained and provided back up to Staff Support Counsellors in Debriefing Skills and reactions to acute stress. The debriefing service has been successfully in operation for some months now.

Training must address the need for key workers to have skills update sessions in which revision of material and the acquisition of new knowledge and skill can take place. This will also allow for the re-training of individuals to replace those who move out of the Trust.

Education

An education programme to raise awareness of the policy among Staff, Managers, G.P.s and Community Staff is necessary. Liaison with Emergency Services, such as Fire/Ambulance/Police is also important. There are a number of ways in which this could be achieved, including Managers disseminating information, the circulation of information leaflets relevant to the policy and a proposed conference to launch the policy in Spring of 1995.
Resources

1. Staff and volunteers prepared to be on a register of key workers.

2. Administrative support, phone lines and an appropriate data base system.

3. Physical space to see people.

4. Financial resources for:
   - training budget
   - publicity
   - expenses incurred in resourcing the policy

5. The provision of relevant literature (draft copies available from A Busuttil, Department of Clinical Psychology) and a place to store this literature where it can be readily accessed.

6. Provision of identity cards for those on the key worker register. It has been suggested that individuals exposed to multiple agencies after experiencing psychological trauma may be re-traumatised by brief interventions. While individuals would obviously be free to accept/reject any intervention which was offered as part of the policy or to arrange their own support, the Trust could clearly not be responsible for interventions carried out by other agencies.

7. The opportunity to rehearse policy in conjunction with a Phase One Major Incident Policy Practice would allow the opportunity for an assessment of the policy and a chance to consider adjustments that may need to be made.
The Role of Voluntary Organisations.

Some voluntary organisations have expressed an interest in linking with hospital services to contribute to the phase II disaster response. It is perceived that as in previous recent tragedies, voluntary organisations could have a valuable contribution to make. This is an attempt to start a process of consultation and dialogue regarding ways of:

(a) formalising links between the hospital and voluntary organisations, and,
(b) establishing safeguards for the protection of both the counsellors who may wish to work with the hospital, the survivors and relatives and also the Hospital Disaster Response Team which is organising its response in accordance with regional guidelines.

It is envisaged that volunteers who satisfy "requirements" established by agreement between the hospital and voluntary organisations would be included on a register. The register would be held by the organisation in question and would be activated by the organisation if required in the event of a major incident.

Criteria for inclusion on the register (for discussion).

1. Recognised voluntary organisations could nominate counsellors. It is understood that voluntary organisations would have screened candidates through basic selection procedures. It may be useful to formalise the criteria for selection in order to protect both the needs of the counsellor and survivor or relative.

2. Counsellors would be expected to have undergone basic training in counselling and have experience in dealing with distressed individuals or groups. It may be useful to suggest a minimum period of experience.

3. Counsellors would be expected to have undergone training in Post Traumatic Stress Reactions and Psychological Debriefing. This may be in conjunction with training organised by the hospital but this need not be the case. The counsellor...
would be expected to have knowledge of:

a] Stress Response Syndromes and be able to differentiate these from "normal" stress responses.
b] Debriefing and defusing techniques.
c] When to refer on and which agencies to refer to.
d] Post Traumatic Stress Disorder: risk factors, co-morbid phenomena, and complications.

4. As research in this area grows it is possible that training requirements will change. For this reason the above guidelines may have to be modified. It is also for this reason that counsellors would be expected to maintain a current knowledge through personal revision and by attending an annual update training session possibly organised by the Hospital Disaster Response Team or by their own organisation.

5. Secondary debriefing for counsellors is strongly recommended. It is anticipated that this would be arranged within the voluntary organisations, possibly through the adaptation of existing support networks.

6. Volunteers would be asked to be responsible for removing their name from the register if they were no longer willing to be included or felt unable to satisfy the inclusion criteria. If volunteers were assessed as not meeting the criteria agreed in the set minimum standards then their supervisors would be expected to remove their name.

7. After major incidents intrusion by the media has sometimes caused problems. While it is understood that strict confidentiality would be observed it is also recommended that as with hospital staff, counsellors approached by the media should refer any enquiries to the hospital press officer.

Comments and additions to the above proposals are very welcome.
The guidelines were approved after they were presented to the Senior Management Team of the Trusts by the author. This is a copy of the front page of the draft policy.

Draft (February 1995)

EAST WILTSHIRE HEALTH CARE

MAJOR DISASTER RESPONSE PLAN

Intent

East Wiltshire Health Care regards the proper management and control of a major disaster as one of its prime responsibilities as an employer and as a health care provider. It expects the support and co-operation of managers and staff at all levels in the organisation to maintain this responsibility. Managers must ensure both existing staff, and any new members of staff, are made aware of the provisions and procedures contained in this policy.

The organisation will, pay particular attention to:

* Ensuring that the Trust is able to respond in an effective and appropriate manner to an event which is defined in this Plan as a disaster effecting its employees, patients, residents, visitors and members of the public.

* Arrangements for ensuring proper measures are taken to manage the disaster, and provide whatever agreed assistance to assist Swindon and Malborough Hospitals and other agencies.

* The provision of information, instruction, training, supervision, and monitoring to ensure the provision given within this Plan are carried out.

THIS PLAN HAS BEEN DEVELOPED IN CONJUNCTION WITH THE SWINDON & MALBOROUGH HOSPITALS HEALTH NHS TRUST PHASE ONE DISASTER RESPONSE PLAN.

Chief Executive

East Wiltshire Health Care

This Plan must be reviewed at intervals of not more than two years.
STAGE THREE: STARTING TO IMPLEMENT THE POLICY.

This stage involved the development of a staff trauma counselling service, and includes:

1. A summary of three training workshops in Post Traumatic Stress and Psychological Debriefing.

2. Summary of annual update workshop.

3. Organisation of a two day workshop for key workers and managers aimed at training staff to be prepared to respond to the needs of primary victims and relatives in the event of a major incident (with Staff Support Service).
Training carried out in relation to this initiative.

Two training programmes were planned. The first training programme involved training a group of counsellors from the staff support service with the aim of having a group of counsellors who would deal with the needs of staff after a major incident. It was also understood that this group of counsellors would be able to use the skills taught after more every day traumatic events involving staff and indeed the work evolved into the development of a staff critical incident debriefing service which is now an integral part of the Staff Support Service.

The second training programme involves the training of other members of the mental health team and also representatives of the voluntary services. These individuals will be involved in more direct contact with affected individuals and their families.

Training programme for staff support counsellors:

Aim:
To train counsellors to respond to the psychological needs of staff involved in major incidents. The ability to respond appropriately to the needs of staff in this situation defined as requiring a knowledge of post traumatic stress, techniques of crisis intervention (Aguilera, 1990) and the ability to assess when it is necessary to refer an individual for specialist intervention.

Objectives:
1. To provide training for a group of staff support counsellors in Post Traumatic stress so that counsellors felt confident in identifying Acute stress disorder and post traumatic disorder as well as being aware of the common psychological reactions which occur after involvement in a major incident.

2. To train counsellors in techniques of crisis intervention including psychological debriefing.
To train staff to recognise when individuals would benefit from structured specialist assessment and intervention.

To achieve the above aims and objectives a training programme was developed involving three half day workshops and an annual update workshop to ensure that developments in this evolving field are integrated into the knowledge base and clinical practice of the counsellors.

Selection of counsellors for training.
Staff to be trained were selected by the staff support co-ordinator with advice in accordance with the previous literature review to select those with experience and to screen for individual vulnerability factors such as unresolved issues from previous trauma which may leave counsellors vulnerable to developing psychological problems themselves (Hodgekinson & Stewart, 1991).

Six counsellors and the staff support co-ordinator underwent the initial training programme. Two nurse tutors with considerable clinical experience and another senior nurse took part. The group included a hospital chaplain and two other counsellors. All members of the group had completed accredited training in counselling.

Development of the training programme.
The workshop programme was developed with another clinical psychologist (R. C), whose contribution is gratefully acknowledged. In this section an outline of the training programme is given. As the programme involved two psychologists, where the unique contribution of a colleague is referred to this is highlighted.
Teaching Plan

The aim of the first workshop was to introduce the participants to:

1. The emotional experience of those caught up in traumatic events.
2. To describe symptoms of the stress response syndrome including a discussion of the current diagnostic criteria for post traumatic stress disorders.
3. To present the model of the disaster community highlighting in particular the issues of post traumatic stress reactions in staff who may be affected as secondary / tertiary victims.
4. To examine what could be done to prevent PTS in different contexts studying interventions which were possible prior to, during or after a major incident.
5. To introduce the technique of Psychological debriefing.

Programme

The programme used to try to achieve the above teaching goals was as follows. It included didactic teaching, group discussion, a visualisation exercise, video and role play. Teaching materials also included the use of overhead projectors and handouts.

1. Introductory exercise to facilitate the group working together involving personal introductions and clarification of what individuals hoped to learn through participation in the training programme.

2. Visualisation exercise asking individuals to participate as themselves in an imaginal scene involving a major traumatic event. The exercise was intended to highlight the fact that these events occur out of the blue, usually in situations
previously experienced by the individual as safe and therefore for many result in a questioning of other previously held assumptions about the world being a safe and predictable place. The use of personal experience also enabled the workshop leaders to highlight the "unfinished business" that often complicates grief reactions in cases of sudden death. (R.C. led this exercise).

3. Using information drawn from the above exercise post traumatic stress reactions were discussed distinguishing between "normal" and abnormal reactions. A discussion of the symptoms of PTS followed, drawing on the above exercise and linking the four main diagnostic criteria in a model simplifying the disorder but facilitating comprehension of how the symptoms were possibly linked. The mnemonic S.A.R.A. (i.e. stressor, arousal, re-experiencing and avoidance) was presented to facilitate memorisation of the four main symptom clusters. Co-morbid symptoms were highlighted with specific attention drawn to the risk of the disorder being overlooked. A handout was given summarising basic facts about the disorder including history of the disorder, symptoms, and conclusions drawn from various studies relating to prevalence and risk factors (A.B.).

4. The concept of the disaster community was discussed in the context of the "ripple effect" and Figley's model of victim levels was presented to convey the importance of addressing the psychological distress caused to those indirectly caught up in any major incident (R.C.).

5. The concept of prevention of the disorder was introduced, discussing interventions with the potential to minimise psychological distress after "Stressor" incidents. Lessons learnt in combat settings were presented and it was illustrated that these could be adapted in NHS and community settings. The overheads used in this presentation are included on the next pages. It was illustrated that consideration needed to be given to interventions, prior to, during and after a major...
6. In discussing the potential to minimise psychological distress after a major incident the technique of Psychological debriefing was introduced. Stringent research evaluating the usefulness of this technique was acknowledged to be lacking however studies suggesting that it may have the potential to prevent or minimise PTS were briefly discussed (e.g, Alexander & Wells, 1991), (A.B.).

7. The technique was discussed in outline and then a video and role play exercise was introduced designed to illustrate experientially some of the aspects of PTS discussed earlier in the workshop. The exercise was also designed to let the counsellors experience a debriefing session as participants in order to help them understand the process and the issues they would later need to address as debriefers themselves (A.B. & R.C.).

Counsellors were assigned roles as characters in a video clip. They were then asked to watch the video clip and appraise the event from the perspective of their character. The clip showed a traumatic event in which a child fell into a swimming pool unnoticed and was rushed to hospital.

A psychological debriefing was then enacted led by the workshop co-ordinators. The debriefing was then discussed in detail by the participants.

Information material summarising the stages involved in debriefing was given to the group. A copy is enclosed in the following pages (A.B.).

**Evaluation**

The workshop was evaluated highly with requests being made for more experience in psychological debriefing. This had already been planned for the next workshop.
Examples of Teaching Materials used in Workshop 1.

1. Content of overheads.

2. Handout for Psychological Debriefing.
PRIOR TO INCIDENT

* Developing policies for emergencies.

* Training including practice.

* Selection of key personnel.

* Stress inoculation training for staff at risk.

* Co-ordination of services.

* Establishment of Psychological social support: including LONG TERM EDUCATION ABOUT:

PTS Reactions:

NORMAL

TRANSIENT
DURING THE INCIDENT

Maintaining Discipline in confusion

1. Good Leadership <
   Transmitting Information

2. Establishing a Cohesive Group:

   * Individuals know each other personally.

   * Individuals well trained.

   * Know what doing and why.

3. Rotation of Troops - important

4. Creature Comforts - Food/Sleep/Breaks

5. Mood of Operation:  
   Winning: Number of cases decreased
   Losing: Number of cases increased

6. Knowledge support exists if problems develop for individuals.

7. PTSR & PTSD RECOGNISED BY CHAIN OF COMMAND AND BY STAFF THEMSELVES.
AFTER THE INCIDENT

* CRITICAL INCIDENT STRESS DEBRIEFING (CISD)

  PSYCHOLOGICAL DEBRIEFING (PD)

  EVALUATION OF TECHNIQUE LACKING.
  GENERALLY REPORTED AS HELPFUL

* ABILITY TO IDENTIFY THOSE NEEDING MORE INTENSIVE SUPPORT

* PROVISION OF MORE INTENSIVE SUPPORT LONG TERM IF NECESSARY

* OUTREACH ESSENTIAL, MANY UNABLE / UNWILLING TO ASK FOR HELP

* EDUCATION AND SUPPORT FOR FAMILIES OF HELPERS & PRIMARY SURVIVORS
This handout is not intended as a do it yourself guide, but rather as a reminder of key points for those who have undergone training in PD.

Please do not copy without permission.

See reference list for key references. Copy available today of "Caring for helpers in disaster situations: Psychological Debriefing". by Dyregov, A. from Disaster management vol 2 no.1. 1989. This article describes the technique.

EFFECTIVENESS OF PD

Controlled evaluation of this technique has yet to be undertaken, however there are indications from the literature that it is generally perceived to be useful and helpful by those who participate. Those leading debriefing sessions have the opportunity to evaluate the technique and to contribute to knowledge about the effectiveness of the technique.

AIMS OF PD

1. To allow individuals involved in a traumatic event to process their experience together.

2. To allow individuals to piece together different parts of the event.

3. To normalise their experiences and reactions where appropriate.

4. To mobilise further support or action where necessary.

HOW IS IT CARRIED OUT

A PD is carried out in a group setting and should be facilitated by a leader who is credible to all participants. It has been suggested that to be most effective the PD should be carried out as soon as possible after the event and ideally within 48 hours.
THE STRUCTURE OF A PD

1. INTRODUCTION
2. EXPECTATIONS AND FACTS
3. THOUGHTS AND SENSORY IMPRESSIONS
4. EMOTIONAL REACTIONS
5. NORMALISATION / ANTICIPATORY GUIDANCE
6. FUTURE PLANNING AND COPING
7. DISENGAGEMENT

INTRODUCTION

Introduce yourself stating your relevant background and experience. Explain that the aims of the PD are to help individuals in the group to work through their recent experience in a way designed to minimise the impact of the event on themselves. Acknowledge that their training and experience will play a part in this but that it has been found helpful for individuals to talk through the FACTS of the event as it unfolded, their EMOTIONS as they experienced the event and remembering and expressing the SENSATIONS experienced at the time.

There are certain rules it is helpful to observe. These should be made explicit:

1. No-one is required to speak except to say where they were when they saw or heard what was happening and to say what they did.

2. Confidentiality. It should be stressed that no information heard in the group should be imparted to others who are not group members, apart from negotiated others such as group leaders or when it is agreed that further action needs to be taken.

3. The main focus should be on the here and now, what is felt about what happened and is happening.

A PD IS NOT COUNSELLING OR THERAPY. IF THIS IS REQUIRED BY INDIVIDUALS THEY CAN BE GUIDED APPROPRIATELY.
PROCEDURE

Ask each person in turn:

How did you hear about the event?
What were you doing at the time?
Where were you?

EXPECTATIONS AND FACTS

The above set of questions should lead to the facts as perceived by the group members.

ASK:
What did you expect to happen?
What did in fact happen?
What were your thoughts at the time?
How prepared were you for what did happen?
How were you treated?
Did you have the information you needed to make sense of what was happening?
Might other members of the group have information to answer questions about the event that you still have?

THOUGHTS AND SENSORY IMPRESSIONS

The previous questions lead onto questions about thoughts and sensations experienced at the time.

ASK:
What were your thoughts when this happened?
What did you decide to do and why?
What did you hear, smell, touch, see, and taste?
What are your memories of these experiences?
Has anyone said anything that is new to you?
EMOTIONAL REACTIONS

The previous section should lead to questions about feelings and emotions

ASK:
What did you feel at the beginning, at later stages?
What did you feel about important people and perhaps belongings?
How did you feel about going back home?

Feelings which may be accessed include fear, anger, helplessness, frustration, guilt, sadness, self-blame. The PD may obviously not be the appropriate place for each individual to express such feelings however talking about them allows individuals to consider their own reactions and process their own feelings about events. Worry, a sense of unreality, loss, emptiness, senselessness, feelings of conflict may be other emotions accessed. Talking about such feelings again normalises the experience and gives individuals tacit permission to have such feelings without having to feel guilt or a sense of personal weakness for doing so.

ASK:
Did you cry, swear, become angry? Where and when did you do so?
Did you feel out of control? Why me?
What were your feelings about others in the team?

Feelings after the event.

ASK:
What happened when you went home?
What were the reactions of family?
How did they treat you and how did you respond?
What questions were you asked?
Were the press / media involved and how did you feel about this?
In what ways were others helpful or unhelpful?
Are there any positive aspects of the event to highlight?

Feelings now.

ASK:
How do you feel about the event as you sit here now?
What are your main worries now?
NORMALISATION
Where appropriate stress that what has been experienced is normal given the nature of the event. A leaflet describing common reactions and self help advice has been prepared and may be helpful. Encourage participants to refer back to this even if they do not feel immediately ready to deal with the information now.

Stress that while there are negative reactions to being involved in such events there are also positive ones and these may become more apparent in time.

FUTURE PLANNING AND COPING
This provides an opportunity for the group to look towards the future. It is a chance for individuals to consider whether they need to mobilise resources to help them cope, and for the group as a whole to consider further action it may be helpful for them to take. This might for example include a review of a policy if something didn't work as well as it might or it might involve finding out how a transferred patient is progressing if this has been an issue for the group.

ASK:

What are your plans for the next few days weeks?
What are your main worries and concerns?
What help or support might you need?
Who can help? Individuals, organisations?
How will you handle difficult people and situations?
How can others from this group help?
Can your employer help?
Are there positive self help measures you can take yourself, acknowledging that this has been a time of stress e.g. consider sleep, dietary intake exercise and relaxation.

CONCLUSION

* Stress confidentiality

* Provide a contact number for individuals who may need to raise issues they could not discuss in the group or who may need to be referred on for further help.

* ARRANGE SECONDARY DEBRIEFING FOR YOURSELF.

WORKSHOP 2.

Teaching plan

(A). The aim of the second workshop was to give the participants experience in conducting a Psychological Debriefing (PD), to clarify what a debriefing should attempt to achieve and what it should not and to explore the role of the leader.

(B). Given that the group were being trained to debrief members of staff, consideration was given to problems which may be present within the group e.g confidentiality, interpersonal conflict, hierarchy, fear of revealing personal weakness.

(C). Aware of the literature suggesting mental health workers may become affected themselves (Raphael, 1986), the other aim of the workshop was to stress the importance of secondary debriefing. The workshop leaders carried out the secondary debriefing with individuals who had led the debriefing.

Programme

The programme for the second workshop devoted more time to role-play in order to give most members of the group experience of leading a debriefing. Group discussion and some didactic teaching was also used and teaching materials included a handout of an article written by staff at a hospital who were involved in a national major incident and who had written about how this experience had affected them.

1. The group were introduced to the aims of the days workshop.

2. The main points of the previous workshop were summarised particularly highlighting the effects on staff involved in major incidents. As all the participants had a nursing or caring profession background most were able to relate cases
where they themselves had been affected by an incident or had known colleagues to be affected. This led to a group discussion. A handout illustrating the positive and negative effects of such experiences was used to facilitate discussion. The handout consisted of a report written by staff after the Purley train crash.

3. The rest of the workshop was devoted to giving practical experience of debriefing. First the main points about PD were covered stressing that it is not a form of counselling and has specific aims directed at facilitating information processing. The role of the leader was discussed in detail and the objectives the leader should have. Practical suggestions were also offered e.g using a crib card with the main points in headings.

4. A video clip and other case vignettes were used as material for the debriefings. These were written to highlight the organisational and interpersonal factors which may affect the group and thus impinge on the debriefing session.

5. Feedback was given to individuals who had led the PD by the group and by the workshop leaders. Discussion of the case vignettes helped to inform the debriefer of the impact of organisational and interpersonal issues. Secondary debriefing was also carried out individually to illustrate the aim of this procedure. Workshop leaders debriefed counsellors who had led the mock debrief.

6. The use of case vignettes to illustrate personal and organisational issues proved powerful and led to further group discussion including questions about the validity of "individual debriefing".

**Evaluation**
Evaluation was positive and no problems with presentation, content or relevance were noted.
Examples of Teaching Material for Workshop Two

Case Vignettes: highlighting organisational and personal issues.

**Vignette 1.**
You are the paediatric registrar on call to the Accident and Emergency Department. You are coping with a busy job, and having to study hard in your own time. You are having some doubts about whether to continue in paediatrics because of the stresses involved, particularly working with children who are dying.

You have recently discovered that you are three months pregnant.

The Royal Wiltshire is a busy District General Hospital serving a population of 1.75 million. The accident and emergency unit is particularly busy. The department is frequently called to deal with accidents occurring on the 2 motorways which intersect the district. This week, being half term, is very busy with an influx of child casualties. You have just been called to attend to a 10 year old child who has sustained serious injuries in an accident.

**Vignette 2.**
You are the anaesthetist registrar on call to the Accident and Emergency Department. You are coping with a busy job, and having to study hard in your own time. You particularly enjoy working in theatre - the side of your job which is relatively organised and predictable. You feel less at ease when involved in emergency resuscitation.

You find it difficult to talk about your feelings. When confronted with stress, your tendency is to cope by becoming jokey.

The Royal Wiltshire is a busy District General Hospital (.....as above).

This afternoon, the A & E department has been particularly stressful. In the last hour you have had to deal with a 39 year old woman pregnant for the first time who has just gone to surgery with an ectopic pregnancy; a child whose face was badly bitten by a dog; a collies' fracture and no orthopaedic doctor available, now the telephone has just gone preparing you for the imminent arrival of a 10 year old who has sustained serious injuries in an accident.
Vignette 3.
You are a recently qualified nurse on duty in the Accident and Emergency Department. You are enjoying the job but when you were a student and worked with the sister who is now in charge, she gave you what you feel was an unfair report. Because of this you do not feel fully at ease with her and find her difficult to get to know. You generally cope with the pressure of work but you find dealing with trauma to children a strain. During your childhood your own sister died when she ran out in front of a car.

The Royal Wiltshire is a busy District General Hospital (....as above)

This afternoon, the A & E department has been particularly stressful. In the last hour you have had to deal with a 39 year old woman pregnant for the first time who has just gone to surgery with an ectopic pregnancy; a child whose face was badly bitten by a dog; a collies' fracture and no orthopaedic doctor available, now the telephone has just gone preparing you for the imminent arrival of a 10 year old who has sustained serious injuries in an accident. When the child's father arrives at the hospital, you are asked to wait with him.

Vignette 4.
You are the sister in charge of the Accident and Emergency Department. You are experienced and respected by your colleagues, however you have been increasingly frustrated by conflict with management, particularly over their refusal to appoint an A & E Consultant. Instead you are left in charge of a busy department with a succession of SHO's whom you feel you have to keep an eye on. The latest SHO seems "wet behind the ears". In addition to the pressure of work your eight year old son went away camping this half term, this is his first time away from home and he has been on your mind constantly.

The Royal Wiltshire is a busy District General Hospital (.....as above).

This afternoon, the A & E department has been particularly stressful. In the last hour you have had to deal with a 39 year old woman pregnant for the first time who has just gone to surgery with an ectopic pregnancy; a child whose face was badly bitten by a dog; a collies' fracture and no orthopaedic doctor available, now the telephone has just gone preparing you for the imminent arrival of a 10 year old who has sustained serious injuries in an accident.
Vignette 5.
You are a junior doctor, now doing a six month job in Accident and Emergency as part of your GP training. The first three weeks in this busy department have not been easy. You have been feeling out of your depth and working with highly experienced nursing staff heightens your awareness of how much you have to learn. At a time you would appreciate support on the homefront your long term girlfriend, Debbie, is pressurising you into a long term commitment and has been telephoning you at work detailing the flats she has been viewing.

The Royal Wiltshire is a busy District General Hospital (.....as above).

This afternoon, the A & E department has been particularly stressful (.....as above).

Vignette 6.

You are the surgical registrar on call to the Accident and Emergency Department. You are coping with a busy job and having to study hard in your own time. You have few problems at work but organising your personal life presents more problems.

You have moved 3 time in the last 3 years in order to further your career and so social support for you is intermittent. Your social life revolves around drinking too much on your free evenings in the doctors Mess and you are currently facing a police charge of driving without due care and attention.

The Royal Wiltshire is a busy District General Hospital (..... as above).

This afternoon, the A & E department has been particularly stressful (.....as above).
WORKSHOP 3.

Teaching plan
1. The aims of this workshop were to provide more practical training in PD as this had been specifically requested in the evaluation of the previous session.

2. The previous session had tried to bring about awareness of how organisational and interpersonal factors might impinge on the debriefing process. The case vignettes used in this teaching session aimed to illustrate the fact that individuals would bring their own personal coping styles to deal with the experience and that this would affect their presentation in the debriefing session. The case vignettes also attempted to illustrate the fact that some individuals would be manifesting symptoms of post traumatic stress. Other realistic elements were built into the vignettes such as feelings of anger, guilt, excitement and practical issues such as intrusion by the media.

Programme
1. The accident scenario used for this session together with the case vignettes are included on following pages.

2. Secondary debriefing was carried out by the workshop leaders in role-play.

3. Two counsellors had actually carried out debriefing sessions with staff groups since the last debriefing session. These debriefings together with the secondary debriefing and supervision carried out by the psychology service were discussed.

4. Wider issues concerning PD were raised including Mitchell's (1988) acknowledgement that not everyone would benefit from PD and his recommendation that more intensive support should be arranged for other individuals. Other issues raised included whether PD should be built in as a
mandatory part of the end of shift debrief which already takes place after other incidents.

5. Discussion of assessment of individuals after debriefing and during counselling for PTS took place and the use of rating scales such as the Beck Depression Inventory and the Impact of Events scale was considered.

6. Discussion of further needs of the group were arranged. The importance of secondary debriefing was highlighted and a provisional date was proposed for the annual skills update.

Evaluation
The third workshop was evaluated highly and again no particular problems were identified in content, presentation or relevance.
Examples of Teaching Material for Workshop Three

Vignettes for role-play exercise designed to highlight importance of individual coping styles.

GENERAL INFORMATION FOR DEBRIEFERS

You are at home watching the 6 pm news and you hear that earlier today a major accident occurred in fog on the motorway at junction 15. The accident was obviously serious; a school minibus and five other vehicles were involved in a pile-up on a stretch of the motorway where there was a 50mph speed restriction because of a road widening programme. Three fatalities have been reported so far and several people have sustained serious injuries including an ambulanceman called to assist at the scene who was hit by a car.

Some time later the telephone rings and you are asked to conduct a debriefing for the accident and emergency shift who have been involved in dealing with the incident. You arrange to conduct the debriefing with a colleague you know and trust as soon as can be arranged with the staff concerned.

Vignette 1.

RECEPTIONIST

You coped well with a difficult job, but for the last few nights have found it impossible to sleep because of nightmares. When you wake you find that you are having intrusive thoughts about incidents which took place. One incident which keeps coming back is the fact that the 14 year old who died asked you to contact her mother, but you had to make phone calls to call in some extra staff. The girl's mother arrived in A & E ten minutes after she died. You see the girl's face asking you to call her mother again and again.

The incident has made you wonder whether you should consider early retirement.

Did you get your priorities right?

Would a younger person have done your job better?

You regret your rudeness to a rugby player with an ankle injury who tried to insist on being seen just as the call was taken.

You enjoy a regular tipple, but you find you have been drinking more heavily "to help you sleep".
Vignette 2.

**NURSE**

I've been so tense since it happened. Everytime the phone goes, my heart starts pounding. I think "is it another call...?" "Am I prepared...?" "What have I got to face this time?"

It's been so hard to sleep. I'm just on edge all the time. My flatmates can't understand, even though they are nurses. They weren't there that day.

I haven't been able to relax in a car since it happened. I'm just waiting for something awful to happen.

"Jurassic Park" and dinosaurs are everywhere and everytime I see a dinosaur I see the girl who wore the Jurassic Park tee-shirt. She really suffered. It's so unfair, she was only 14. I had to go and see the vicar to try and make sense of it all. I've always believed in God, but how can he allow this to happen? What is life all about? Why bother to marry and do everything for your kids if it can all be wiped out in a moment? I'll never forget how that mother screamed when she saw her child.....

Vignette 3.

**CASUALTY SHO**

I'm so ***** angry since it happened. ***** waste of young life, so much unnecessary suffering and what for.....because the idiot in the Porsche thought he had X-ray vision and could do 70mph when visibility was down to a few metres. I really hate him. I've never felt so much hate. He survives as one of the walking wounded and I'm left to piece together broken children. It's me who has to tell the parents the child who left home excited this morning, about a holiday she'd saved for a year, is never coming back. Why can't I be angry in this job?

I wanted to scream with that mother. I want to scream at God. I want to scream at Sister who screwed up by failing to notice the old guy was going off. Another waste of a life. WHY CAN'T I SAY WHAT I THINK? I'm living in a world of idiots. Everything seems so pointless, then I'm supposed to play rugby tonight - what for? Another pointless activity. I won't go. And this ***** debrief, another waste of time......
Vignette 4.

PORTER

Good job I'm a coper - I thought I'd seen it all, but it was awful in casualty that day - so many injured kids and no parents to comfort them. Still, it makes you appreciate your own kids, even though they are a pain in the neck at that age. That poor girl though, kept asking me to get her mother. What could I say to her? I like to have a joke, I've always got something to say, but she was in such a mess and she knew.....I'm sure she knew she was dying, she just wanted her parents with her. Then 2 days later my daughter comes home with a letter about a school trip.... Better not to mention all this to the wife. It would just upset her. Keep it to yourself, it's the best way. I think she feels a bit jealous that I've been in the limelight. There was that pretty young journalist who chased me to the car park when the wife came to pick me up, asking for my story. There's no way she would have handled it if I told her the truth.

Good job I'm a coper.

Vignette 5.

NEW STAFF NURSE

Just your luck. 3 weeks into the job and you were really put to the test. Did you cope? Did you play your part in the team? Why couldn't you have had more time with the girl who was dying? You felt that you formed a close relationship with her in those short few minutes and then she was rushed screaming in fear to crash and died surrounded by strangers - and then the man who had the extradural haematoma, he should have received more attention. Did sister make a mistake? He was conscious. His neuro observations were missed. Should you say anything? It was really exciting though - what an awful thought.

You've gone out every night since the event and filled in every minute when you haven't been working. It's easy not to think about how awful it was if you don't give yourself time to think about it. Keep busy, that's the answer. Other staff seem to be handling it. You will too if you just keep going.
Vignette 6.

SISTER

The team worked well and there is satisfaction to be derived from this, but there was that one mistake - why didn't I ask the staff nurse to do the neuro obs every 10 minutes? It was clear the gentleman who died had a head injury but he was conscious, he was talking and then I was called to assist the cardiac arrest. He was so grateful and I let him die! Why did he have to look like my dad? The team know I've messed up. I've tried to talk to my husband, but how can a civil engineer have any idea of the pressure I'm under in that situation? He can't understand just how awful it was. What do the team feel about me now? I wonder what's being said when I'm not there? I pass a school on the way home and hear kids shout, it brings back the sound of those poor kids screaming in pain.

I wonder what became of the 11 year old boy transferred to the Oxford Neurology Department with severe head injuries....?
WORKSHOP 4: SKILLS UPDATE SESSION

The session was organised and led by one psychologist (A.B.). It was attended by members of the original group and the co-ordinators of Cruse and Samaritans. A counsellor who had joined the staff support service and who wished to train for inclusion on the register attended as introductory training.

Aims
The aim of this session was to act as a refresher course, to discuss development of the staff support debriefing service and its place in the overall phase two plan and to improve theoretical knowledge concerning developments in the field of post traumatic stress.

Programme
1. Introductions and discussion of mornings programme incorporating suggestions from participants.

2. Discussion of debriefings carried out by the team and of issues raised in individual cases seen for PTS.

3. Research update covering recent papers evaluating the effectiveness of PD (including Deahl, Gillham, Thomas, Searle, & Srinivasan, 1994).

4. Presentation of the revised diagnostic criteria for PTS syndromes according to DSM IV and discussion of the significance of Acute Stress Disorder in predicting later distress.

5. Outline of the proposed phase two disaster response plan and the role of the staff support service and debriefing team in these proposals.
6. Presentation on secondary debriefing.

7. Proposal to evaluate the PD work carried out by the counsellors.

**Evaluation**

The workshop was rated highly by participants.

**Examples of Teaching Material for Workshop Four**

**Summarised lecture notes for secondary debriefing component.**

**Introduction**

Ask participants who have been involved in debriefing about issues which surfaced as a result for them. Try to elicit examples of:

1. Organisational conflicts.
2. Role conflicts.
3. Wanting to go beyond the debriefing model.
4. As far as is "safe" within the group, briefly touch on personal issues that can be raised.
5. Cite own experiences where helpful.

**Define aims of secondary PD**

Clarify that while some elements are similar to PD the overall aims are broader:

1. Review of the experience of work.
2. Examining relationships of the workers.
3. Own integration of the experience.
4. To heighten awareness of the psychological factors operating and to be able to intervene in the knowledge of these.
5. Providing space to attend to both the "personal and professional self".
Summarise the above points as:

1. Review of those affected and their groups.
2. Review of debriefers professional role.
3. Review of personal issues raised for debriefer.

**Reasons to carry out secondary debriefing.**


2. There are specific aspects of crisis intervention work after major incidents which make the work particularly stressful.

3. Urgency, immediacy, unpredictability of the situation and therefore increased difficulty in respect of role definition for those wishing to offer support.

4. Often work is of an outreach nature and therefore there may not be existing support relationships for the debriefer.

5. Generally this results in a perception by the debriefer that there is less control.

**Other points to highlight:**

- No notice.
- Little time for preparation.
- Limited time for individual interventions - role conflict.
- Volume of work.
- High intensity of emotions, sometimes individuals regressed and more difficult to contain.
Secondary Debriefing and Supervision in Relation to This Initiative.

In addition to offering secondary debriefing some supervision was offered where counsellors had anxieties about an individual they had debriefed.

The letter overleaf is not typical of the work carried out but is included to illustrate that this component was built into the training programme.
Dear

I enclose the handouts I promised to send you when we spoke on the telephone. I have also enclosed a copy of the Impact of Event Scale which may not be particularly useful in the case we discussed, but generally can provide an indication of when to refer on. A score of 30 and above after one month may be indicative that the individual ought to be assessed for PTSD.

In the case we discussed it may be that because of the nature of the incident and the vulnerability factors apparent in the lady's history, the risk of identifying possible anxiety/depression for delayed grief reactions will be more permanent than focusing just on PTS.

If I can be of any further use do contact me, the main idea of secondary debriefing not being clinical supervision in particular, but to provide somewhere to talk through any issues raised for the person carrying out the debriefing.

Best wishes,

Yours sincerely

Angela Busuttil
Clinical Psychologist - Adult Health Specialty.
SUMMARY

To summarise this section, the trusts now have a group of counsellors trained in the recognition of normal responses to stress and able to recognise symptoms of post traumatic stress syndromes. The counsellors are trained in techniques of crisis intervention including defusing and psychological debriefing. The counsellors are aware of the limitations of these techniques and are able to recognise when to refer individuals for specialist assessment or intervention. The counsellors are using this skills regularly in the course of their usual workload but are also available on a register of trained debriefers available to respond to the needs of staff in the event of a major incident. The need for secondary debriefing has been acknowledged and built into this programme to provide for the psychological needs of the counsellors themselves. The need for ongoing training has also been built into their training programme. Supervision and evaluation have also been built in and a small scale research study is underway.

Funding was obtained for a second training programme which has now been carried out. Fifty key workers including managers and representatives from social services and voluntary services took part in a two day workshop.
STAGE FOUR: INFORMING AND INVOLVING THE COMMUNITY.
THE ORGANISATION OF A CONFERENCE.

This section includes:

1. Aims of the Conference

2. Organisational Tasks Undertaken

3. Outline of Conference Programme

4. Conference Evaluation
CONFERENCES

Organised by the author and the Staff Support Service Co-ordinator.

After the draft policy was approved by the senior management team it was felt that a consultation day with various agencies in the community served by the Trusts would be beneficial. The aims of the conference were as follows:

(a) To raise awareness of the need for phase two planning and build the basis for a co-ordinated response.

(b) To enable the planned proposals to be discussed and any revisions suggested by other agencies to be incorporated into the revised version of the policy.

(c) To start a process of collaboration bringing different agencies together to consider their roles or the roles of their agencies in the case of a major incident.

(d) To raise the issue that PTS should be addressed in the case of less newsworthy events and to invite, agencies to consider how the issue applied to them in their line of work and whether the issue ought to be addressed formally within their agencies.

(e) To identify work to be done to ensure that in the event of a major incident the response discussed could be implemented.

Tasks Undertaken to Organise the Conference

(These tasks were carried out with a colleague [J.L.])

1. Obtaining Sponsorship.
2. Organising the Venue.
3. Arranging Speakers and a Programme.
4. Obtaining PGEA approval to encourage GPs to attend.
5. Drafting Advertising Literature
6. Deciding on Circulation List.
CONFERENCE PROGRAMME

MORNING SESSION
10.15 REGISTRATION AND COFFEE
10.45 INTRODUCTION FROM THE CHAIR.
   MRS J. WESTON. EWHCT. (Chairwoman of Trusts)

11.00 POST TRAUMATIC STRESS SYNDROMES. HISTORICAL
   PERSPECTIVES AND CURRENT DIAGNOSTIC CRITERIA
   DR G. TURNBULL. (Consultant Psychiatrist)

11.30 THE DISASTER COMMUNITY; INTERVENTIONS IN THE
   PREVENTION OF POST TRAUMATIC STRESS
   SQN. LDR. DR. W. BUSUTTIL. (RAF Consultant Psychiatrist)

12.10 THE ROLE OF SOCIAL SERVICES IN THE AFTERMATH
   OF A MAJOR INCIDENT.
   MR. K. FRANKLIN. (Director of Adult Services, Wiltshire Social Services)

12.40 LOCAL EXPERIENCES; WORKING WITH CHILDREN AND
   FAMILIES AFTER MAJOR TRAUMA.
   MR JOHN SPANTON. (Nurse Therapist, Marlborough Children's Hospital)

1.10 LUNCH

AFTERNOON SESSION
2.00. INTRODUCTION TO AFTERNOON: SESSION FROM THE CHAIR:
   MRS J. WESTON. EWHCT. (Chairwoman of Trusts)

2.10 THE HOSPITAL PHASE ONE PLAN
   MRS ZOE WOODS. (Trauma & Orthopaedic Unit Business Manager)

2.25 DEVELOPING A PHASE TWO POLICY
   ANGELA BUSUTTIL. (Clinical Psychologist EWHCT)

2.45 THE ROLE OF THE MENTAL HEALTH TEAM
   DR. N. BEST. (Consultant Psychiatrist)

3.00 THE ROLE OF THE STAFF SUPPORT SERVICE
   MRS JAN LONG. (Staff Support Service Coordinator)

3.15 THE ROLE OF THE MEDIA
   MR. S. MILNE (Managing Director, BBC Wiltshire)

3.30. QUESTIONS AND DISCUSSION.

4.00 CLOSE

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INTRODUCTORY PAPER GIVEN TO DELEGATES

TO INTRODUCE POLICY GUIDELINES AND INVITE COMMENT
PSYCHOSOCIAL PROVISION AFTER A MAJOR INCIDENT: DEVELOPING A LOCAL PHASE TWO RESPONSE.

CONSULTATION DAY. THURSDAY MARCH 9th. HILTON HOTEL SWINDON.

Swindon and Marlborough Hospitals Trust and East Wiltshire Health Care Trust recognise that in the event of a major incident, their patients, staff and the community at large will have special needs. Swindon and Marlborough Hospitals Trust are rewriting their Phase One Major Incident policy incorporating considerations for psychosocial needs. East Wiltshire Health Care Trust are revising a draft policy to address psychosocial issues after such an event. This Consultation day has been organised to raise awareness of the issues that might be involved, to invite the community to consider how they as individuals or as organisations have a role to play, and to encourage agencies to work together in organising an effective response.

The material presented here is based on the research literature, regional guidelines and the work of the disaster response team.

Some of the material is protected by copyright. A. Busuttil.

University of Surrey, 1995.
CONFERENCE EVALUATION

Evaluation forms were given to the delegates. The results were collated and circulated to managers, sponsors, the D.R.T. and delegates who had expressed an interest.

PLANNING FOR A PHASE TWO RESPONSE TO A MAJOR INCIDENT: FEEDBACK FROM CONFERENCE MARCH 9th 1995.

The conference was held by the Swindon and Malborough Hospitals Trust and East Wiltshire Health Care Trust's Disaster Response Team. This is a multidisciplinary working group with members representing clinicians and management, who have been working together to try to establish policies for dealing with major incidents.

The current phase one policy which deals with medical and surgical emergencies is being revised and in line with national recommendations a phase two policy is being devised to respond to the psychosocial needs of individuals who may be caught up in any major incident. The aim is to provide a co-ordinated response from the Trusts which will attempt to meet the needs of Staff, Patients and other members of the community brought into contact with the trusts in any such event.

In line with national recommendations the responsibility for co-ordinating the response to the community rests with Social Services and the policies drawn up by the Trusts are seen as only one part of such a response. Previous major incidents have highlighted the need to provide a co-ordinated response in the event of a major incident and the planning group are committed to the principle of linking with other agencies to provide an effective response. The Trust's disaster response team would welcome further discussions with Social Services to co-ordinate the Trust's policies with Social Service plans for a major incident.

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The conference was organised with the following aims:

1. To raise awareness of:
   (a) Post Traumatic Stress
   (b) members of the community at risk of PTS
   (c) the possibility of preventing or minimising morbidity through appropriate planning.

2. To present the draft plans of the Trust’s policy to encourage comment and criticism.

3. To encourage those attending to consider how the agencies they represent deal with the issue of Post Traumatic Stress both in the context of major incidents but also after more common traumatic events.

Attendance
The conference was attended by 104 individuals drawn from a number of agencies including health and social services, the police, fire and ambulance services, the armed forces and voluntary agencies such as Cruse and the Samaritans. Nursing and medical staff were also well represented, with nursing staff attending from both general and mental health specialties. The doctors who attended were from General Practice and Psychiatry. Management were also represented with several attenders involved in emergency planning and others representing the health service. Clergy were also represented by the Archdeacon of Swindon.

Feedback
All those attending were asked to complete a conference evaluation form before leaving and 98 of the 104 who attended did so. Venue, organisation, speakers, content and relevance were evaluated on a six point scale with 1 defined as poor and 6 as excellent. The following figures indicate the mean ratings given:
<table>
<thead>
<tr>
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<th>Mean Rating</th>
<th>Standard Deviation</th>
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<tbody>
<tr>
<td>1</td>
<td>Venue</td>
<td>5.47</td>
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<tr>
<td>2</td>
<td>Organisation</td>
<td>5.28</td>
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<tr>
<td>3</td>
<td>Speakers</td>
<td>4.78</td>
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<tr>
<td>4</td>
<td>Content</td>
<td>4.94</td>
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<td>5</td>
<td>Relevance</td>
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All mean ratings were above average. May delegates commented very positively on the contribution made by the two guest speakers. Criticisms were made of the public address system and the fact the projector provided by the hotel was inadequate for the size of the room. Time for questions after each speaker would have been preferred rather than the discussion time allowed for at the end.

Delegates were also asked to comment on other issues such as the relevance of the conference to their own sphere of work. Budget holders were asked about their willingness to release funds or staff to develop training initiatives and other staff were asked whether they would be prepared to commit time or expertise. From the comments made the following information was drawn:

1. Seventy-one percent of delegates indicated that they had related issues discussed to their own sphere of work.

2. Twenty-three percent indicated an intention to change elements of their own or their organisations' working practices.

3. Twenty percent indicated awareness of gaps in their services.
4. Fifteen percent asked for more training for themselves.

5. A high number of delegates expressed commitment to the initiatives discussed; 68% were prepared to commit time and 9.6% were prepared to commit money (the majority of delegates were not budget holders).

Sixty six percent expressed a commitment to joint work and 88% asked to be informed about further developments.

Conclusions
1. In general, evaluation of the conference was positive with the material presented perceived as relevant.

2. The conference was well attended by professional, management and voluntary groups and delegates were drawn from those working both at ground level and in management positions.

3. There appears to be a widespread awareness that working to address the issue of PTS in the event of a major incident and also after more everyday traumatic events is an important issue often neglected.

4. There is also a willingness by individuals to commit time and money to relevant initiatives. Informal feedback confirms that the commitment to change indicated by the evaluation forms is being put into practice; information from the conference was used by one agency to change the way it handled the response to staff to a recent traumatic event with positive results.

5. Numerous delegates expressed the concern that while there were praiseworthy initiatives being undertaken within organisations or by individuals there appeared to be a lack of co-ordination of these efforts by the appropriate authorities.
6. There was widespread general support for the policies outlined with only minor amendments suggested e.g., more emphasis being placed on the needs of children involved in incidents.

In conclusion the overall aims of the conference would appear to have been met with delegates keen to support the initiative and indicating an increased awareness of the issues. The issue of how best to integrate the policies of the Trusts and co-ordinate the efforts of others who wish to develop their role needs to be addressed. This role is seen as being beyond the remit of the Trusts' working group.
Further Development of the Initiative

(A) By the Trusts:
1. Revisions to the draft policy are currently being undertaken.
2. Training of those key workers prepared to be included on the register.
3. Action cards for groups of professionals involved in Phase Two response.
4. Provision for database and telephone lines needs to be considered.

(B) As part of the regional response:
The policy of the Trusts will help in providing a speedy, co-ordinated and effective response in any major incident in accordance with national and professional guidelines. It is envisaged that parts of the policy can also be adapted to deal with more everyday traumatic events which affect staff and patients, as has happened over the last year with the development of the staff support/psychology "psychological debriefing" service.

To prevent the lack of co-ordination, confusion and gaps in service provision that have happened in other recent national major incidents, the Trust policies will work most effectively if linked with Social Service provision. A joint meeting to discuss roles in the light of recent national guidelines (1), may be a useful next step.


A. Busuttil. BSc (hons) MSc. C.Psychol.
Chartered Clinical Psychologist
STAGE FIVE: OUTREACH

Outreach has been highlighted as an essential phase of any plan if vulnerable individuals are not to be overlooked. Stage Five attempted to start to address this need through the preparation of support and information materials:-

For general practitioners:
1. G.P. study and report.

For patients:
2. Developing self-help and information literature.
3. Information for G.P.s.
4. Obtaining funding from "Health of the Nation" Initiative to produce and evaluate the leaflet.

For staff
5. Raising awareness through insertion in staff handbook about debriefing service.
6. Handout for staff on Critical Incident Stress.
POSTAL SURVEY:
LOCAL GENERAL PRACTITIONERS EXPERIENCES OF PTS.

It is assumed that individuals experiencing psychological sequelae after the experience of a traumatic event would use their G.P. as the first source of help. It was not known whether G.P.s felt able to recognise these psychological sequelae.

The staff Support Co-ordinator and the author collaborated in a postal survey of local general practitioners asking them about their training and recent experiences in Post Traumatic Stress. All local surgeries were contacted by letter and through the local G.P. consultative group explaining the purpose of the survey. A short questionnaire was appended. As this questionnaire was not the work of the author it is not included. The role of the author was to collate and report on the results. The report circulated to the DRT and to G.P.s through the G.P. consultative group is included overleaf.

The study was also seen as a means of highlighting the risk of psychological sequelae after traumatic events and to raise awareness of the Trusts' policy.
Post traumatic stress disorders are recognised as disorders with considerable hidden morbidity, the effects of which can cause long term difficulties with considerable disruption to personal, family, occupational and social functioning. Whereas Post traumatic stress (PTS) was previously discussed in the context of war or disaster it is now understood that more every day traumatic events e.g road traffic accidents or personal assault can have similar psychological consequences. Given that in some instances it may be possible to reduce the risk of long term psychological sequelae early recognition of this disorder is important.

It is recognised that one of the core symptoms of PTSD is avoidance resulting in the individual trying not to talk about the event and avoiding reminders of it. When individuals present themselves to a General Practitioner reporting distress, this may not be linked with the traumatic experience. In addition to the active avoidance carried out by some patients there are also those bewildered by the change they perceive in their own functioning who do not understand the link with their previous experience of trauma. There is the added complication that many of the symptoms presented e.g sleep disturbance, anxiety, depression, alcohol and drug abuse are symptoms commonly presented independently of PTS. This appears to result in under recognition of the disorder.

East Wiltshire Health Care Trust and Swindon and Marlborough Hospitals Trust have been working jointly to develop Major incident policies addressing the
psychosocial and medical needs of individuals involved in major incidents and
other traumatic events. Local incidents such as the Hungerford shootings and the
Akers Way tragedy have shown the need to address the issue at a local level.

While certain information can be given to individuals through information leaflets
and telephone helplines, for many individuals in distress, the first call for help will
be to their G.P. In view of this and given the difficulties inherent in recognising
PTS, it was felt that it would be useful to survey the views of local GPS, asking the
frequency with which they had encountered patients who had experienced
traumatic events in the last month and asking whether they felt they would
recognise the disorder.

RESULTS
Thirty five local general practice surgeries were contacted and their general practi-
tioners invited to complete a short questionnaire. Questionnaires were returned
from twenty three practices a response rate of 66%. Although many practices sent
a reply on behalf of a number of partners unless the number of partners was
specified then one response was recorded. The replies of thirty G.P.s are therefore
reported.

1. Training.
Ten per cent of those who replied stated that they had been trained to recognise
the symptoms of PTS, and 6% had also received training in treatment of PTS.

2. Confidence in own ability to recognise this disorder.
Forty per cent of G.P.s felt confident that they would be able to recognise
symptoms of the disorder and a further 40% felt that they might be able to
recognise the symptoms. Fifty three per cent of G.P.s felt that they were aware of
the risk groups for the disorder and another 13% said that they were possibly
aware of risk groups.

3. Incidence of individuals suffering traumatic events presenting to the G.P.
Of the 23 practices which responded, all but three reported having seen individuals within the last month who had experienced events which might satisfy the criteria of a traumatic event likely to place the individual at risk of developing psychological sequelae. The practices reported an average of four patients experiencing such trauma in the previous month and a total of 81 incidents.

4. Support offered to these patients.
In 9% of these cases patients were offered psychological debriefing and in other cases more general support was described e.g. counselling. Some G.P.s indicated some frustration with a lack of resources complaining of long waiting lists to get patients referred for psychological help.

5. Role of the practice counsellor.
While 91% of practices employed a counsellor none of the G.P.s knew whether the counsellor would be able to offer psychological debriefing, a technique which claims to be helpful as a form of crisis intervention after traumatic events.

Discussion of Results
Many G.P.s indicated uncertainty about whether they would be able to recognise the symptoms of PTS and only 40% indicated confidence that they would. Only 10% of the G.P.s surveyed had received training in recognition of the disorder. The policy being developed to deal with major incidents proposes contacting the G.P. of all patients attending PMH as a result of a traumatic incident in addition to providing self help and information literature for patients. It appears that this may be useful both in raising awareness of the problem of PTS generally and also to alert the G.P. to the fact that a particular patient may be at risk of developing
PTSD, but may not draw attention to the incident, while presenting with what may appear to be unrelated symptoms.

More discussion about the incidence of PTS in relation to more "everyday" traumatic events may facilitate recognition of the disorder.

Surgeries reported an average of 4 traumatic incidents per month presenting to the G.P. There is some experimental evidence to suggest that the technique of psychological debriefing may help to prevent longer term psychological problems. The technique usually takes one session and is easy to learn although appropriate training is highly recommended. Most surgeries now employ a counsellor and if counsellors are willing to take on this role, this might be one of the ways of obtaining early referral for patients. Most G.P.s were not aware of whether their counsellor could offer this service and it may be that training may need to be considered.

DEVELOPING INFORMATION AND SELF HELP LITERATURE

& OBTAINING FUNDING FOR THIS INITIATIVE
Regional guidelines recommended the provision of self-help and information leaflets for distribution to individuals and staff involved in major incidents.

In addition it was felt that the information from the G.P. study supported the use of a letter to the G.P. of affected individuals to raise awareness of the risk of post traumatic stress syndromes as a result of their involvement in an incident. This component of the Phase Two policy was seen as part of the outreach programme recommended by researchers who have been involved in other major incidents (Rosser et al., 1991).

It was also considered that it would be useful to develop literature for use with staff involved in major incidents or for the everyday incidents which sometimes cause distress. For this reason information was produced for the staff information booklet and general information sheets were also developed which could be given to staff. This information was seen as raising awareness of the need to address post traumatic stress within the everyday working practice of the Trusts as well as being prepared to deal with any major incident which might occur.

1. A Self Help and Information Leaflet for Affected Individuals and Relatives.
Various leaflets have been produced after major incidents most based on an information leaflet produced by the Prince Henry's Hospital Community Outreach Service, Victoria, Australia by Dr. P. Valent, Dr. E. Berah and Dr. J. Jones. The leaflet written as part of this initiative was also developed from the Australian leaflet but specific changes were made. Changes included an attempt to address the developments in understanding Post Traumatic Stress Syndromes, e.g., the concept of an acute stress reaction. Other changes were made to avoid the risk of patients attributing physical illnesses to their traumatic experience. A copy of the
leaflet is appended.

2. An Information Letter For General Practitioners.
The letter produced for G.P.s is appended and is self explanatory.

3. Information for Staff.
The information published in the staff booklet is appended. Content was limited by the space available in the publication. A leaflet for staff was also produced detailing information about possible reactions to critical incidents. It was intended that these would be used mainly by the staff support services in addition to information given at psychological debriefing. A draft if this leaflet is appended. This has been produced as an A5 double faced leaflet printed in colour to improve presentation and make the information more accessible.

Financial Support.
Information material needs to be available immediately and available for distribution to Accident and Emergency and Ward areas. As stated previously one of the aims of Phase Two planning is to address the financial costs of any proposals. Producing information materials in the quantities that might be required needed financial support.

An application was made to the Health Commission of Wiltshire and Baths Directorate of Public Health for funding through the Health of the Nation initiative under the Mental Health Target. This application was approved.

Evaluation.
While many recommendations have been made suggesting the value of self help and information literature in this context, little is known about how useful the information is perceived to be by the individuals receiving it or whether it promotes adaptive behaviour in dealing with the event. In order to evaluate the usefulness
of this information one study is currently under way looking at individuals involved in road traffic accidents.
INFORMATION & SELF-HELP LEAFLET

FOR PATIENTS/CLIENTS

Funding Approved by Health of the Nation, May 1995
Try to:

- Take every opportunity to review the experience by yourself and with others.
- Be with a group who care.
- Sleep, rest, be with close family and friends.
- Work out your needs and express them clearly to friends, family and officials.
- Let your children talk to you and express their feelings in games and drawing if they are young.
- Let children resume school and their normal activities.
- Drive carefully and take extra care at home to avoid accidents.

Try not to:

- Bottle things up - it doesn't help.
- Avoid talking about the event.
- Expect memories to go away - it will take time.
- Forget that children will experience similar feelings to yourself.

When to seek professional help for you or your family:

- If you cannot handle intense feelings.
- If emotions do not start to settle after a time.
- If physical symptoms, poor sleep or nightmares continue.
- If you continue to feel numb or have to keep active in order not to feel numb.
- If there is no person/group to share feelings with.
- If work or relationships continue to suffer.
- If you need alcohol/drugs to cope.

Where to find help

Your General Practitioner
Samaritans Swindon
(01793) 537373

Cruse Bereavement Care
Swindon (01793) 619933

For Health Care Staff
The Staff Support Service (01793) 436116

Sponsored by the Wiltshire and Bath Health Commission, part of Health of the Nation Mental Health Target

Written by A Busuttil, C. Psychol., Department of Clinical Psychology, Victoria Hospital, Swindon, based on a leaflet by Drs Berah & Jones (Australia)

Coping with a Traumatic Event

Common Reactions

Ways to help yourself

When and where to seek help

Please keep this leaflet. You may not feel ready to read this now, but it may be helpful to refer to later.
The crisis you are experiencing is a personal one and you will react to it in a personal way. Individual reactions differ, but those often reported are described. It is possible that you yourself will experience many of these feelings and this is considered normal. If you do, it does not mean you are "losing control" or "breaking down". In the vast majority of cases these reactions will gradually but steadily improve. This can manifest itself in many ways. Sometimes this can be very difficult to handle. If so, be extra careful as accidents may be more common. These feelings can be especially intense if in the event:

- **Fear**
  - Of damage to self or loved ones.
  - Of separation from loved ones.
  - Of being alone.
  - Of breaking down/losing control.
  - Of a similar event happening again.

- **Helplessness**
  - Crises often reveal human powerlessness as well as strength.

- **Sadness**
  - For deaths, injuries, losses of many kinds.

- **Longing**
  - For what has gone.

- **Guilt**
  - For things done or not done.
  - For being alive or whole when others are dead or injured.

- **Shame**
  - For feeling weak, helpless or needing others.

- **Anger**
  - At what happened, at whoever caused it, or allowed it to happen.
  - At the injustice of it all.
  - At inefficiencies and lack of understanding by others.
  - Why me?

- **Arousal**
  - Increased feelings of agitation and anxiety are common. You may find that you are extra jumpy and feel unable to relax. This agitation can affect your mental performance - you may find your concentration and memory are impaired.

Common reactions include:

- **Numbness**
  - Initially you may feel as if what is happening is unreal, like a dream. Your mind only gradually allows you to accept what has happened. Others often wrongly perceive this as "being strong" or uncaring.

- **Re-experiencing**
  - You may find that you feel as if you are re-living parts of the event. Sometimes this can be very vivid with sensory experiences, such as hearing/smelling/feeling part of what happened. Dreams about the event may also occur.

- **Avoidance**
  - Initially some people want to avoid reminders of the event. This can manifest itself in many ways - keeping so busy that there is no time to think, or avoiding situations/people which remind one of what happened.

Your emotional feelings may be very strong and feel overwhelming at times. Common feelings include:

- **Fear**
  - Of damage to self or loved ones.
  - Of separation from loved ones.
  - Of being alone.
  - Of breaking down/losing control.
  - Of a similar event happening again.

**Reality**
Confronting the reality, eg. inspecting losses, attending a funeral, returning to the scene, may help you start to come to terms with the event.

**Re-living**
As the event registers there is often a need to think about it and talk about it, even to dream of it, over and over again. Children may draw the event or act it out in play.

**Support**
Physical and emotional support from others can help, as can sharing with others who have had similar experiences.

**Ways to help yourself**

If you are able, try to continue with your everyday activities. Try to eat well, it is easy not to eat and feel "run down". When you are ready, talk to someone you can trust about the event and your feelings about it. Choose someone who can give you as much time as you need.

**Activity**
It sometimes helps to be active, but don't let this divert attention from help you may need for yourself.

**Privacy**
You may need time to be alone or just with those closest to you.

**Family and Social Relationships**

Crisis may bring people together, but at times they can place a strain on relationships. You may feel that those closest to you should be able to understand what you feel and sometimes it seems they don't. Some people do not want those closest to them to be upset and therefore avoid sharing their distress. The family may then feel alienated. It may seem that people seem to offer too little, too much, or just the wrong things.
Dear Doctor,

We are writing to inform you that your patient

Name: ____________________________ D.O.B: ________________________
Address: ________________________________

was recently directly/indirectly involved in a major traumatic incident. It has been found that in some cases this may place an individual at risk of increased psychological morbidity in the short or long term.

Acute stress reactions are common and most will resolve spontaneously over the days that follow the event. If symptoms persist for the individual and start to interfere with their personal, social or occupational functioning early referral for psychological help is advised. Because some of the symptoms of stress include numbing and avoidance or the individual presenting with physical symptoms referral is sometimes delayed. In many cases the individual may not link their difficulties with this traumatic event. It is worth highlighting that the response in some cases may be delayed by weeks or even years. In some cases the patient's family may also be affected and show symptoms.

Your patient should have received a copy of the leaflet "facing a traumatic event" which offers information, self-help guidelines and advice about when to seek further help. A copy is enclosed for your information.

Yours Sincerely
Dear Angela

Re: Health of the Nation, Mental Health

I refer to your application and write to confirm that I have approved funding for the following:

    Phase Two. The Psychological Response to Major Trauma.   £1310

The funding is on a non-recurring basis and I have informed **** from the Finance Directorate to make funds available immediately.

For this purpose I am sending a copy of this letter to ****, your Director of Finance.

I will require from you:

a. an outline of how your initiatives have concluded
b. a written evaluation as to how the benefits or otherwise of your initiative.

May I take this opportunity to wish you every success with your initiative and should you have any queries in the meantime, please do not hesitate to contact me.

Yours truly,

Public Health Manager

cc Finance

   Director of Finance, East Wiltshire Healthcare Trust
   Manager, Mental Health, East Wiltshire Healthcare Trust.
SUBJECT

CRITICAL INCIDENT DEBRIEFING
(PSYCHOLOGICAL DEBRIEFING)

What is involved:
Critical Incident Debriefing takes place after the occurrence of distressing incidents which may be considered to be "outside the range of normal experience". Examples might include a hospital major incident or an incident involving an individual staff member, such as an assault. During the debriefing, individuals talk through what happened in a structured way which facilitates coming to terms with the experience.

It is to help ordinary people to cope with their "normal" upsetting reactions to traumatic events.
Staff may experience critical incidents in the course of their work. Professional training and workplace procedures can protect staff from some of the emotional impact, however, it has been found that short term stress reactions and longer term problems can occur in ordinary individuals. There is increasing evidence to suggest the Critical Incident Debriefing may have a protective effect and may decrease the risk of such reactions, particularly if carried out soon after the event.

For further information and advice (including written information), staff are encouraged to approach:

Co-ordinator
Staff Support Service
1.The Mall
Swindon
SN1 4JA  Tel: 436116

Department of Clinical Psychology
Adult Specialty
Lethbridge Road.
Swindon.
SN1 4BY  Tel: 436383

Staff trained to facilitate Critical Incident Debriefing are also available.
STAFF HANDOUT

(now reprinted in A5 double leaf format)
CRITICAL INCIDENT STRESS

After experiencing a critical incident the following reactions are common and regarded as normal. It may be that you experience some of these reactions or all of them. Some people experience none at all but this is rare. THESE REACTIONS ARE NOT SIGNS OF WEAKNESS OR INABILITY TO COPE. They are reactions to an abnormal event and reflect the way one's mind works to come to terms with what has happened.

Not all of the reactions are likely to occur simultaneously and the reactions that do occur are likely to be stronger at some times than others. GENERALLY THE REACTIONS ARE TRANSIENT AND WILL START TO DISSIPATE SLOWLY AFTER ABOUT A WEEK. If you find that after a month the reactions have not resolved, then it may be wise to seek further help to enable you to resolve your reactions and a point of contact is mentioned at the end of this leaflet.

Normal feelings you may experience:

* Sadness
* Helplessness
* Guilt
* Anger
* Shame
* Reactivation of memories of personal loss
* Complete numbness
* Irritability

It is important to find a way of expressing your feelings and crying particularly can bring relief.
Psychological Reactions:
* Tiredness
* Inability to concentrate
* Memory problems
* Feeling that ordinary activities seem pointless
* Depression and anxiety
* Sleep disturbances and nightmares
* Experiences of reliving the past
* Difficulties with interpersonal relationships, especially with those closest to you.

Physical Reactions:
* Dizziness
* Palpitations
* Shakes
* Choking sensations
* Indigestion, Nausea, Diarrhoea
* Increased muscle tension that produces pain: e.g. headaches
* Menstrual disorders
* Increased use of alcohol, tobacco & caffeine
Ways to help yourself cope:

1. Express your feelings. You may find that you only want to do this with others who have also experienced the event.

2. Don't avoid reminders of the event.

3. Take time to rest, to sleep, to think about what has happened and to be with those who are close to you.

4. Aim to stick to your normal routine as far as possible.

5. If you feel it would be helpful, use your staff support scheme. They have trained counsellors who can help you deal with your feelings.

WARNING: Take extra care at home and on the roads. Accidents are more common after severe stress.

Where to get further help:

A. Staff Support Scheme - 1, The Mall, Okus Road.

B. Through your G.P.

C. Angela Busuttil
   Clinical Psychologist.
   Clifton House
   Lethbridge Road
   Swindon, SN1 4BY. Telephone No: 436383
SUMMARY

At the point of concluding this report the final version of the Major Incident Phase Two Policy is being written. Through the training programmes carried out as part of this initiative there is now a Staff Support Trauma Counselling Service, with counsellors trained to recognise Post Traumatic Stress, provide psychological debriefing and refer on where necessary. The process of evaluating the effectiveness of the techniques being used is underway.

A second training programme to teach key workers involved with primary victims and relatives was organised with the Staff Support Service.

Close links have been forged with the voluntary services and shared training helps to ensure a co-ordinated approach.

The need to consider secondary debriefing, supervision and evaluation together with a commitment to Skills Update Sessions has been inbuilt into training. Organisational issues such as finance, setting up a data base and registration of trained staff are being addressed at an appropriate level. As a result of the initiative the Trusts will be better prepared to deal with the psychosocial needs of staff, survivors and relatives in the event of a major incident.

Attempts to address the need for an outreach approach have been built into proposals. The need for G.P.s to be aware of PTS if patients are to benefit from early intervention techniques is essential. The G.P. survey and letter may help raise awareness as did the conference attended by a number of local G.P.s.

The need for the Trusts to address the issue of PTS within the organisation has been tackled through attempts to raise management awareness and through information and support materials designed for staff.
The conference helped to inform the community served by the Trusts that a policy was being developed and integrated their feedback.

The conference enabled representatives from the local community including: Fire, Police, Ambulance, Emergency Planners, Medical Staff, G.P.s., Clergy, and Health and Social Service Managers, to come together. Links were forged and ideas shared. Links with Social Services were renewed and discussions about developing an integrated policy with Social Services are now re-opened at an appropriate level.

Further organisational work needs to be undertaken to ensure that a co-ordinated approach can take place (e.g. database), however this is beyond the remit of the psychologist.

The DRT has also taken seriously the need to rehearse and revise the Phase Two response regularly. Phase One Major Incident "Exercises" are to be regularly conducted and it is intended that Phase Two plans will be rehearsed in tandem. Appropriate revisions can then take place where necessary.

Education about the risks of PTS is now part of the education programme given by Staff Support in basic nurse training. It is intended to continue with management awareness training again through Staff Support.

The previous literature review revealed the difficulties involved in responding to major incidents. By their very nature, these incidents are unexpected, overwhelming and distressing. It would be both dangerous and naive to presume that having a policy means that the Trusts can respond to any incident. There has however been an attempt to develop a policy which is flexible, able to adapt to different circumstances and committed to regular practise and revision. Parts of the policy are being put into practice through small scale traumatic events and thus
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**Critique.**

Phase II planning is a relatively new concept. Some support exists for the importance of early intervention (Alexander and Wells, 1991) but there is a need for further evaluation to assess whether the large amount of time and work involved in developing such approaches is worthwhile. Does the delivery of early help for those involved in traumatic events actually prevent the development of psychological sequelae?

The adherence to National and BPS guidelines facilitates the replication of Phase II plans nationwide although variations in implementation may reflect local needs or the availability of local resources. For example the author's work was greatly helped by the existence of the Staff Support Service and pre-established links between the Trusts and Cruse and the Samaritans. While specific training was carried out by the author in Post Traumatic Stress Disorders and early intervention, all counsellors had previously undergone counsellor training and screening for their suitability to conduct this type of work.
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SECTION 4: RESEARCH.

Coping and psychological morbidity after road traffic accidents: The development of a coping scale and an examination of Stressor variables, Coping and Social Support in relation to PTSD.

ABSTRACT

Objectives: Previous studies have documented psychological morbidity including PTSD in survivors of road traffic accidents (RTA), who have sustained moderate to severe injuries. Psychological models of PTSD would predict that PTSD could also occur where survivors do not sustain serious injury or escape injury. This study examines psychological morbidity in RTA survivors where the majority have sustained only minor injuries and studies the role of various stressor variables including perceived threat in relation to morbidity.

In addition to considering the role of stressor variables, the study considers a theoretical model which views the development of PTSD as also involving individual and recovery environment variables. A number of variables are studied in this context including personal coping style and social support. In order to examine the relationship between coping style and morbidity the study develops an inventory to assess coping style.

The study also reports on the perceived usefulness of self-help and information literature for survivors of RTA.
Design: A cross sectional design employing a postal questionnaire was used and correlational analysis employed to examine relationships between variables. Multiple regression analyses were undertaken to develop models of prediction of post traumatic stress symptoms.

Method: The hospital accident emergency register was used to contact 347 subjects between one and four months post-accident. Measures used were the Hospital Anxiety and Depression Scale and the Impact of Events Scale. Eighty two subjects were randomly selected to evaluate information and self-help literature.

Results: In line with predictions of the study the levels of psychological symptoms reported were found to be comparable to groups of RTA survivors who had sustained serious injuries. A valid and reliable coping scale was developed for use with this population. Regression analysis supported a model viewing PTSD as being influenced not by stressor variables but by individual and recovery environment variables (social support). Coping was found to account for the highest proportion of variance in IES scores. Information and self help literature was perceived to be potentially useful for RTA survivors.

Conclusions: Prevalence of psychological morbidity as a result of RTA has been underestimated. Early intervention is recommended to prevent chronic morbidity and self help information may have a role in this. Social support and coping style are associated with symptom presentation. Prospective and longitudinal studies are needed to establish the nature of this relationship which may have further implications for work aimed at prevention.
INTRODUCTION

The research literature on post traumatic stress disorder is strongly biased towards the study of war and large scale disaster (Wilson & Raphael, 1993). Such events attract widespread interest, concern and funding and provide an opportunity to study psychological response to major trauma. However, research looking at the psychological effects of more commonly occurring traumatic events such as physical assault, rape and road traffic accidents also indicates that "every-day" traumatic events may be associated with significant and sometimes chronic psychological morbidity including post traumatic stress disorder (Breslau, Davis, Andreski & Peterson 1991; Kilpatrick & Resnick 1993; Mayou, Bryant & Duthie, 1993). While the psychological sequelae associated with such events have received scant attention in the literature it is possible that these traumatic events account for the highest incidence of post traumatic stress reactions given the frequency with which they occur (Mayou et al., 1993).

It is argued that road traffic accident (RTA), as an example of a commonly occurring traumatic event, is a worthwhile area of study for several reasons:

1. Studies which have been carried out suggest that there is considerable hidden acute and chronic psychological morbidity which is a cause for concern (Kuch, Swinson & Kirby, 1985; Burnstein, 1989; Goldberg & Gara, 1990; Feinstein & Dolan 1991; Mayou et al., 1993; Andersson, Dahlback & Allebeck, 1994; Bryant & Harvey, 1996).

2. Every-day trauma has been largely neglected in the study of PTS reactions and therefore the literature has a bias which needs to be addressed. This may partly be a result of the DSM III-R definition of PTSD (APA, 1987), which specified that the stressor must be an event outside the range of usual experience.
3. The focus on war and major disaster may mask subtle differences in the experience of trauma. For example, Yehuda & McFarlane (1995) have discussed the way socio-political factors have influenced the way research in PTSD has been conducted and the type of questions asked.

4. Research into PTSD often cites the disaster or war situation as a reason for having to compromise on empirical standards (Solomon, Mikulincer & Benbenishty, 1989). Everyday trauma occurs all too frequently and in more predictable patterns therefore providing an opportunity to conduct planned, relevant and potentially meaningful research. It is an opportunity to start to undertake the longitudinal and prospective research that may not be possible in disaster type situations where there are numerous other priorities to address.

5. Every-day traumatic events also provide an opportunity to look at the possibility of predicting and preventing psychological morbidity and assessing the potential of different levels of intervention.

ROAD TRAFFIC ACCIDENTS AS TRAUMATIC STRESSORS.
Motorised transport increasingly dominates everyday life and the mortality and morbidity rates associated with RTA remain high in spite of increased road safety measures. It is reported that RTA is the largest cause of death in those under 30 (Department of Health, 1993). Accident figures for 1994 state that in the U.K there were over 240,000 reported road traffic accidents resulting in 3,800 deaths and 320,000 individuals maimed or injured (Royal Society for the Prevention of Accidents, 1995). It is argued that the majority of these incidents are likely to satisfy the DSM IV definition of a stressor and thus have the potential to result in significant psychological morbidity including PTSD. It is also suggested that the risk of psychological morbidity is under represented in such data as a number of
accidents which meet the DSM IV stressor criteria are not reported.

Epidemiological studies which have been carried out to try and assess the extent of exposure to serious traumatic events suggest that RTA is the second most commonly occurring traumatic event after exposure to tragic death and the single most traumatic event in terms of the severity and frequency of trauma (Norris, 1992). In this American study, which examined traumatic events in a community sample, 23% reported exposure to road traffic accident with associated injury. It is worth noting that the absence of injury does not mean that RTA cannot satisfy DSM IV stressor criteria. Of course, exposure to traumatic events does not imply that all individuals will then develop serious psychological sequelae so it is important to assess rates of PTSD given exposure. A lifetime prevalence of 12% after RTA has been reported, (Breslau, Davis, Andreski & Peterson, 1991) and a point prevalence of 12% (Norris, 1992). PTSD is not the only psychological problem identified after RTA. Other psychological sequelae have been reported including the difficulties of psychosocial adjustment to injury and disability, (Andersson, Dahlback & Allebeck, 1994) as well as phobias and mood disorders Mayou et al. (1993).

Despite these figures, few studies have systematically studied the psychological consequences of being involved in road traffic accidents. This is in spite of Department of Health initiatives such as "Health of the Nation". Here one of the key target areas is Accidents and it is stated that:

"the overall objective is to reduce injury and ill health as well as deaths". (Department of Health, 1993 p.85)

Psychological morbidity is not specifically addressed by this initiative in relation to accidents. It will later be shown that there is emerging evidence to suggest that the psychological sequelae of RTA can be severely disabling. One of the expressed
Aims of this health of the nation initiative is tertiary prevention, that is:

"activity taken after an accidents occurrence to reduce the severity or lasting effect on health of an accidental injury" (Department of Health, 1993, p. 81).

If this aim is to be realised, studies which raise awareness about the psychological morbidity associated with RTA are needed.

The next section will briefly review the evidence that is available from some of the studies which have addressed this issue.

Road traffic accidents and psychological morbidity.

Sampling variations have led to differing estimates of the prevalence of PTSD in RTA survivors. Bryant & Harvey (1996), review these reports and suggest that studies which rely on individuals seeking compensation or psychological assistance, lead to biased estimates with cited prevalence figures ranging from 0% to 50%.

Retrospective studies have suggested that road traffic accidents may result in psychological sequelae. A postal survey (with a response rate of 30%) three years after a road traffic accident reported that psychological symptoms were persistent with 18% of the sample reporting anxiety associated with driving (Interministerial Task Force, 1981).

A telephone survey of 84 individuals who sustained moderate to severe injuries in road traffic accidents was carried out between 18 months and two years after the accident (Andersson et al., 1994). In this sample, 57% had been or were still suffering psychological distress after the accident. The authors note that this excluded what they defined as minor distress such as increased anxiety in traffic
situations.

Studies of symptoms of PTSD and anxiety were reported in 114 injured RTA survivors within two weeks of admission to hospital. Approximately one third reported "extreme levels" of symptoms of PTSD (p. 226) and high levels of anxiety. The authors report that the levels of distress observed were at similar levels to those reported by survivors of major traumatic events such as bush fires and a multiple shooting (Bryant & Harvey, 1996).

One of the best studies to date involved a prospective study of the psychological consequences of being involved in RTA (Mayou et al., 1993). One hundred and eighty eight survivors aged between 18 and 70, who had sustained multiple injuries or whiplash, and who were unconscious for no more than 15 minutes, were included in the study which incorporated follow up, repeating baseline measures at three months and at one year. Outcome measures included present state examination "caseness", assessment of post traumatic stress disorder, travel anxiety and the effects of the accident on being a passenger or driver.

A number of variables in addition to demographic features were assessed at baseline including the type of accident, previous driving behaviour, social adjustment in the month prior to the accident and injury severity ratings. Personality variables were assessed using the Eysenck personality inventory and current mood state assessed on the Beck depression inventory and the Spielberger anxiety scale. At follow up other variables were included, such as involvement in litigation, ratings of disability and assessment of symptoms of PTSD.

Three months after the accident, 41% of the sample reported anxiety or depression at clinically significant levels. This was higher in the group with multiple injuries. Eighteen percent of the sample were reported to suffer from an acute distress
syndrome. This was characterised by the presence of anxiety and depression symptoms above the normal range together with what were described as horrific intrusive memories of the accident. This disorder would appear to be similar to the "acute stress disorder" subsequently defined in DSM IV. Correlational analysis suggested that this syndrome was associated with neuroticism and with not being unconscious during the accident. At one year follow up it was found that most of this group were still symptomatic with only five of the original sample of 31 having no persistent complications. Of the other 26, 13 suffered from anxiety or depression, 13 reported phobic travel anxiety and 9 were diagnosed as having post traumatic stress disorder.

Emotional distress was reported to decrease during the year after the accident and the majority of patients were described as reporting a good psychological outcome. Nonetheless, using the present state examination, it was assessed that 10% of patients were suffering mood disorder at one year, a figure estimated to be twice that occurring in the general population and a figure significantly higher than would have been predicted from the assessment of functioning one month before the disorder. The commonest disorder reported was anxiety. It appears that assessment of function at three months may be a useful predictor because considerable continuity in emotional distress was reported between the two follow up assessments and no new cases were recorded at 12 months. Correlations were noted with continuing medical problems and social problems including those involving work, leisure and finance. Mayou et al. note that the symptoms of anxiety and depression were similar in frequency to those occurring after major physical disorder.

In addition, two post traumatic syndromes were noted which were described as specific but overlapping. During the period of assessment 11% of subjects satisfied DSM III-R criteria for post traumatic stress disorder. Of these, eight had the disorder at three and twelve months, five at three months only and six at twelve
months only. The other post-traumatic syndrome is described by the authors as travel anxiety. At one year 26 subjects satisfied present state examination for phobic anxiety.

In summary almost a quarter of the sample described psychiatric problems one year after the accident. There was an overlapping symptom pattern but nonetheless three types of disorder were identifiable. Mood disorder at one year appeared to be predicted by evidence of previous vulnerability to psychological problems, neuroticism scores on the E.P.I. and the degree of initial distress. In contrast to this finding, PTSD was not found to be associated with neuroticism, a previous history of psychological problems or baseline depression. For this group the strongest predictor was the presence of horrific intrusive memories at initial assessment. Predictive factors for the travel anxiety group were similar to the PTSD group.

The authors conclude that their study provides evidence that there is considerable and persistent psychological morbidity associated with being involved in a road traffic accident. They highlight the fact that post traumatic stress symptoms were associated with

"very considerably impaired quality of life, impairment which was often prolonged and disabling" (p.650).

They also conclude that the presence of such problems has been greatly underestimated and suggest that their findings are applicable to the range of road traffic accident survivors possibly including those who escape injury. This hypothesis has not to date been tested. Goldberg & Gara (1990) retrospectively recorded symptoms from one hour unstructured interviews with patients involved in what were described as minor incidents and reported that depressive symptoms in their sample of 55 patients outnumbered symptoms of PTSD by a ratio of 3 to
1 (24 versus 8). The sample was assessed some months after their accidents. The majority of subjects were assessed for legal reasons. These serious methodological problems make interpretation of their findings difficult to generalise.

Another British prospective study of the psychological sequelae of sustaining traumatic injury has been reported in the literature (Feinstein & Dolan, 1991; Feinstein, 1993). While the study examined psychological symptoms after a range of traumata resulting in admission to hospital, over one third of this sample involved injuries sustained in motorcycle accidents (29.2%) or in motorcars (6.3%). Forty-eight subjects with injuries of similar severity and who had not sustained head injury were assessed on a number of measures at baseline (on the hospital ward), at six weeks and at six month follow up. In addition to collecting demographic data and data on the nature of the accident such as responsibility for the trauma and ratings of "life-threat", subjects completed a number of self rating scales. These scales included the General Health Questionnaire, the Clinical Interview Schedule, the Impact of Events Scale, and the Standardised Assessment of Personality. Measures were repeated at six weeks excluding the S.A.P. but including a self rating scale to assess symptoms of PTSD according to DSM-III-R criteria, the Beck Depression Inventory and the Spielberger State-Trait Anxiety Scale.

At initial assessment, 62.5% (n=30), were rated as psychiatric cases using a cut off score of 14 on the CIS. Those rated as "cases" at initial assessment were more likely to be female, and to have had what were perceived as "life-threatening" accidents. "Cases" included all the patients in the sample group with a previous psychiatric history (n=4).

At six weeks four patients refused to continue with the study. Of those completing the assessments 27.3% (n=12) were defined as "cases" at this point. The scores of six patients on the BDI suggested moderate to severe depression. Anxiety state
levels were reported to be higher than anxiety trait levels. Twelve (25%), patients were classified as suffering from PTSD. These patients had higher scores on all other measures assessed at six weeks.

At six months five more patients had dropped out including two of the patients rated positively for PTSD. Only 10 (25%) patients were now defined as "cases" using the CIS. Seven patients (14.6%) were stated to be suffering from PTSD. Five patients had moderate to severe depression.

Results from this study tend to support the picture of psychological sequelae occurring in the minority of patients but nonetheless in a significant proportion. The results again suggest that for most patients psychological sequelae diminish over time. The two thirds identified as cases decreased to 27% at six weeks and 25% at six months (assuming those who had dropped out of the study were well). However the picture is more complex than it appears. A stable situation had not been reached by six weeks. For example anxiety state scores decreased over time but trait scores at six months were significantly higher than at six weeks suggesting subjects were functioning at a higher general state of arousal at the six month point. Feinstein (1993), concludes that while for the majority, post traumatic psychological sequelae diminish over time there is a small sub-group in which symptoms appear to run a fluctuating course and another group where symptoms appear to be delayed. Similar findings were reported by Mayou et al. (1993) and this finding is not new in the traumatic stress literature. The DSM IV allows that post traumatic symptoms may be acute, delayed or chronic and Horowitz's information processing model of PTSD (Horowitz, 1986), suggests that there may be an oscillation of avoidance and intrusive symptoms resulting in different presentations of symptoms at different times.

A study carried out on a similar population of mixed accident survivors (53% of the 61 subjects were RTA survivors), reported that at six months 25.5% met the
diagnostic criteria for PTSD (Shalev, Peri, Canetti & Schreiber, 1996).

Case studies have also documented post traumatic psychological sequelae in RTA survivors (de L Horne, 1993), and have supported the pattern of findings including mood disorder, post traumatic stress disorder and travel anxiety/phobia, reported by Mayou et al. (1993).

De L Horne describes a series of seven patients whose symptoms appeared to fall mainly into two groups, phobic anxiety and PTSD. Despite the fact that the phobic group patients (n=4) were not offered treatment for many months (range 7-45 months) and that co-morbid problems such as depression were a feature in two patients from this group, all patients were reported to respond rapidly to cognitive behavioural interventions.

The PTSD group (n=3) were not referred for treatment until almost two years after the accident. This group also reported clinical improvement although the cases described were complicated by issues such as head injury. While cognitive behavioural treatment resulted in improvement, residual problems remained at the point of discharge. This series of case studies is very small but confirms the previous finding of overlapping "syndromes" and highlights the fact that the psychological sequelae appear to be responsive to psychological treatment measures. It also raises the question of whether early psychological intervention may have prevented or at least reduced psychological morbidity had it been possible to identify individuals at risk at an earlier stage.

Summarising the above findings it emerges that RTA is a commonly occurring traumatic event. Given exposure to this stressor, it appears that severe acute psychological distress featuring symptoms of PTSD and anxiety may occur. Prospective work suggests that up to two-thirds of individuals will experience psychological difficulties and while symptoms will spontaneously resolve in the
majority of RTA survivors, a significant minority will continue to suffer from psychological morbidity which may be chronic, distressing and disabling. Continuing psychological symptoms are likely to involve mood disorder, phobic anxiety and PTSD.

While it is apparent that those developing long term problems are in the minority and that most survivors appear to make a good psychological recovery, there are also indications that for those who do not, therapeutic intervention can be effective. The question is then raised as to whether early forms of intervention could reduce or prevent serious problems from developing. But a dilemma emerges because it would not be an appropriate use of resources to assess every RTA survivor and indeed given the current backlash against what might be viewed as "counselling", this may indeed be unwelcome (Raphael, Meldrum & McFarlane, 1995).

Through the study of RTA survivors and their patterns of psychological morbidity it might be possible to identify risk factors for developing psychological sequelae in those exposed to RTA. This might enable a brief screening questionnaire to be developed with the purpose of identifying and targeting resources to those most at risk. The previous literature reviews of this portfolio have highlighted various factors which may play a part in the development of PTSD. The review of RTA survivors above, also raises questions about possible risk factors and further study of this issue appears warranted to try and understand more about this population. In studying potential risk factors in individuals with symptoms (and individuals who do not develop symptoms and may be resilient to developing this disorder), useful information for screening and therapeutic interventions may emerge.

The next section will review potential risk factors which have emerged from the general literature on PTSD, or from the limited research which has been conducted on RTA survivors. Variables which appear to merit further investigation in this population are highlighted.
Factors which may be associated with increased psychological morbidity in survivors of RTA.

Injury Severity.
In common with other studies, Mayou et al. (1993), reported that injury severity was associated with greater psychological distress but not necessarily PTSD as the more severely injured group were more likely to have lost consciousness and to have amnesia for the RTA. Injury severity was associated with greater distress in the accident survivors studied by Feinstein (1991; 1993). Other studies have not always found a clear association between injury and PTSD (Green, 1994; Bryant & Harvey, 1996).

Demographic Features.
Gender.
It has been reported in a number of studies reviewed by Green (1994), that being female is associated with increased reporting of psychological symptoms after traumatic events and this was also reported to be the case in the accident population reported by Feinstein et al., (1991).

Education and Social Class.
Lower educational levels and lower social class are frequently associated with higher levels of psychological morbidity after traumatic events (Green, 1994; Shalev et al., 1996). It is also worth noting that traumatic events are not randomly occurring events equally likely to happen to any individual. Breslau, Davis & Andreski, (1995) report that traumatic events more commonly occur in certain groups including those with lower education levels.

Age.
It has been suggested that children and younger adults may be at greater risk of developing psychological problems given exposure to major trauma (McFarlane
Younger adults are over represented in road accidents and therefore age may be a vulnerability factor in the population of RTA survivors.

**Marital Status.**

It is likely that the relationship between marital status and outcome will not be clear. Higher levels of social support have been shown to be associated with less post traumatic psychological morbidity in some studies (Joseph, Andrews, Williams & Yule, 1992), but it cannot be assumed that being involved in a relationship necessarily provides this. In addition PTSD is well known to be associated with relationship difficulties with spouses often reporting that they feel excluded and the survivor reporting a difficulty in sharing memories or feelings about the event. In essence the symptoms of the disorder (such as avoidance and arousal) may mean that the use of social support is diminished especially in close relationships where there is often a desire to protect loved ones from sharing the horror of a particularly distressing event.

Support for the complexity of this relationship is illustrated in a study where office workers were assessed after a multiple shooting (Creamer, Burgess, Buckingham & Pattison, 1993). It was found that at four and eight month assessment stages those subjects who were married had more psychological symptoms although this effect had disappeared at the 14 month follow up. The authors used similar arguments to those posited above to explain this unexpected finding.

**Involvement in Litigation.**

Controversy has existed over the relationship between involvement in litigation after an accident and both physical and psychological morbidity. This has been particularly true in the case of whip-lash injury and the debate over "compensation neurosis" (Weighill, 1983), continues. Recent studies have questioned the validity of the assumption of compensation neurosis in finding no association between involvement in litigation and outcome in RTA survivors (Mayou et al., 1993). In the
wider area of PTSD it is reported that those involved in litigation after the Buffalo-Creek disaster, actually reported lower levels of distress than those not seeking compensation, (Gleser, Green & Winget, 1981).

**Prior Experience Of Stressor.**

Prior exposure to a stressor has been reported to result in either a stress inoculation effect or in increased vulnerability to psychological sequelae (Solomon, Mikulincer & Jakob, 1987). These apparently contradictory findings appear to make sense when it is understood that resolving and coming to terms with a prior stressor may offer protection against future exposure possibly through enhancing belief in self efficacy. Conversely, if the prior trauma resulted in a number of unresolved issues for the individual, possibly including unprocessed emotional material, then the subsequent traumatic experience serves to reactivate these issues and the prior trauma may be seen as a sensitising experience which leaves the individual vulnerable (Shalev, 1994). Prior traumatic experience would therefore have the potential to be a risk factor but it is suggested that this is more likely where an individual recalls that event as having caused feelings of intense horror, fear or helplessness as this variable is more likely to result in difficulties in the emotional processing of the event (Horowitz, 1986).

There has been one attempt to look at the role of prior exposure to RTA in a population of RTA survivors and this was not found to be a significant predictor of variance in IES scores (Bryant & Harvey, 1996). However it is important to note that this study did not assess whether prior involvement in RTA involved the experience of intense fear or threat, which may lead to interference with emotional processing and thus increase vulnerability to future development of PTSD. This issue needs to be further explored in this population.

Green (1994), argues that few studies have attempted to address the issue of exposure to multiple traumatic events although there appears to be increasing
evidence to suggest that multiple exposures are more common than previously thought. It appears that this complex issue is important to address as research evidence increasingly points to prior traumatic experience as a vulnerability factor (Bremner, Southwick, Johnson, Yehuda & Charney, 1993).

**The Current Stressor Experience.**

While a number of individuals may experience a traumatic event, even the same event, it cannot be assumed that subjective experience is the same, even though objectively the event may appear to have impacted equally on those involved.

It is firstly hypothesised that those events experienced by an individual as causing intense fear place the individual at risk of developing psychological morbidity. The literature has debated whether stressor intensity is the determining variable and while most studies support this relationship, (Chemtob, Baner & Neller, 1990; Barrett & Mizes, 1988), others have failed to find such a relationship (McFarlane, 1989; Shalev, Peri, Canetti & Schreiber, 1996). The reason that contradictory findings have emerged may relate to the fact that measures of stressor intensity have tended to use combat-exposure scales or stressor scales which only assess the objective dimensions of intensity (Lund, Foy, Siprelle & Strachan, 1984). It is suggested that an assessment of the subjective intensity of the stressor experience may indicate a clearer association between the experience of trauma and subsequent psychological morbidity. Only one previous study was found which specifically attempted to look at both the objective and subjective dimensions of the trauma (Creamer et al., 1993), although others have addressed the concept of threat (Solomon et al., 1989). Creamer's study reported on the aftermath of a multiple shooting in an Australian office block. Objective measures of exposure to the stressor were not found to be a predictor of high symptom levels when subjective indices were included. In a retrospective study one year after involvement in the Lebanon war, Solomon et al. (1989) reported that threat appraisal was the best predictor of PTSD; reported threat, and negative emotions
experienced at the time accounted for 31% of the variance in PTSD scores using regression analysis.

A recent study partly addressed this issue in looking at acute distress in RTA survivors and found that reported fear was the most significant variable accounting for 17% of the variance in IES intrusion scores and 16% of variance in avoidance scores on the IES (Bryant & Harvey, 1996). It is unclear from the methodology how "fear associated with the MVA" (motor vehicle accident) was measured. There are references to individual reports of accidents which may have been used to rate fear and also to a Likert scale measuring fear of future RTA but it is unclear what measure is being reported as significant. It is argued that further research is needed to examine the subjective experiences of a stressor in RTA survivors (and indeed in stressors generally) and to explore the experience of these stressor dimensions in relation to PTSD.

*Dimensions of threat and loss.*

Thompson (1991), has discussed dimensions within the trauma experience and refers to experiences of threat and loss. These within-trauma variables are likely to moderate or accentuate the impact of any event. Some of the generic dimensions of threat which cut across different traumas have been delineated by Green (1993), and include threat to one's life or bodily integrity, severe physical harm or injury, receipt of intentional harm, exposure to the grotesque, witnessing or learning of violence to loved ones, learning of exposure to a noxious agent, and causing severe harm or death to another.

As has previously been proposed in this portfolio, the perception of threat of injury or death, either to self or others may be an important intervening variable especially if this involves the experience of intense helplessness fear or horror.
Loss.
Various dimensions of loss can be considered including financial loss, bereavement, disability, disfigurement, perception of loss of physical well being and perception of loss of mental well being. It is likely that although a population sample might include a number of individuals involved in a similar event, these mediating variables will contribute to whether the event is perceived as traumatic or not. It may be useful to assess dimensions of loss in trying to understand which elements of traumatic experience may result in increased risk of psychological sequelae.

Attribution of Blame.
Attribution studies have found that where an individual perceives there to be internal and controllable attributions relating to traumatic experience, psychological outcome is worse (Joseph, Brewin, Yule & Williams, 1991). The authors report their findings to be consistent with a proposal by Foa, Steketee & Rothbaum (1989), that symptoms of PTSD would be worse where there was the perception of unexercised control.

In general it has been found that the more blame for a traumatic event that the individual attributes to themselves or others, the poorer their adjustment to the event tends to be (Downey, Silver & Wortman, 1990). It has also been reported in a number of studies that blaming another for the event is associated with even poorer adjustment than when the self is blamed (Bulman & Wortman, 1977). Two points must be raised here; firstly that much of this research is correlational and may therefore reflect the influence of other factors, secondly it should be borne in mind that perception of blame does not always reflect actual responsibility for the event as it is often easier to attribute blame elsewhere. Blame may be a useful variable to assess in studying risk factors for psychological morbidity after RTA.
**Social Support.**

The "recovery environment" (Green, Wilson & Lindy, 1985), and the social context in which the trauma occurs are important variables in how individuals adapt psychologically to a traumatic event. There are indications that social support (referring to the emotional, social and practical support received through the individuals social network), may be an important intervening variable mediating the traumatic impact of any stressor. The role of social support has been studied in relation to physical and psychological morbidity, with findings suggesting that social support can reduce morbidity (Haynes & Feinleib, 1980). The role of social support appears to be an important issue for PTSD research.

Attention was drawn to the possible role of social support when the psychological morbidity associated with two major tragedies were compared. The Buffalo Creek disaster involved the bursting of a dam which devastated a local community. In Aberfan in Wales a mining community was devastated by a landslide. A similar proportion of mortalities were sustained and the socio-economic status of both communities were similar. Whereas the Aberfan survivors remained in their community and drew on support from each other and remaining support networks, the Buffalo Creek survivors were separated and left their town thus fracturing the community. The rates of psychological morbidity were found to be higher amongst the Buffalo Creek survivors and it has been suggested that this may have been as a result of the destruction of social networks in the latter case (Parkes, 1991).

**Types of social support.**

This variable is difficult to measure. Distinctions have been made between practical and emotional support (Power, Champion & Aris, 1988). Further distinctions are also made between received and perceived support which may be subject to the potential bias of individuals' emotional state, and to the separate issue of whether individuals are receiving the particular support they feel they need. Different support needs may be required at different times.

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In the assessment of social support there are further complexities as this variable is likely to interact strongly with individual variables such as personality, ability to form supportive relationships with others and indeed ability and willingness to use the social support that may be available.

*Mechanisms of social support.*

The mechanisms of social support have also been subject to different proposals. In one perspective, the buffering or stress specific hypothesis, social support is seen as selectively operative, a resource which exerts its positive influence through being mobilised in times of stress. This view would predict that those with higher levels of support would have better outcome than those with low levels of support.

The absence of social support may operate as a stressor (Singer & Lord, 1984), bringing about negative effects and the loss of a social support may in itself constitute a stressor.

The Universal effect model (Cohen, 1988), proposes that the presence of good social support even in the absence of any stressor has health promoting properties and this model has also received some empirical support.

From the above discussion it is clear that there are a number of ways in which social support may have an impact. It is clearly a complex variable to address, further hampered by the fact that standardised, validated research tools to assess social support in the context of trauma do not exist (Creamer et al., 1993), and that studies assessing the role of support have tended to devise their own measures possibly tapping into different dimensions of social support.

*Social support and PTSD.*

Studies which have looked at the role of social support in the context of traumatic
stress suggest that it will be a fruitful area for further research. In a study which examined the interaction between levels of combat exposure and the degree of social support experienced after combat it was found that those receiving high levels of social support reported fewer symptoms of PTSD and fewer physiological symptoms (Barrett & Mizes, 1988). In multiple regression analysis it was reported that social support loaded first and accounted for 34% of the variance. Social support also loaded first for general symptomatology and also for depression. In another study examining social support and PTSD in a military population (Solomon, Mikulincer & Avitzur, 1988), greater levels of perceived social support were reported to be associated with less intense PTSD two and three years after the war. Social support and emotion focused coping at two years after the war were reported to explain 33% of the variance in PTSD scores, this decreased to 22% at three years after the war with social support at this point failing to reach significance.

In a study in a civilian context, the use of social support was also reported to be associated with lower rates of post traumatic symptomatology with those needing and using social support in the early post-trauma period reporting fewer symptoms (Creamer et al., 1993). In addition, those who perceived that support to be helpful reported fewer symptoms.

In another study which examined social support in the context of civilian disaster, attempts were made to clarify the relationship between received social support and perceived social support in relation to outcome (Joseph, Andrews, Williams & Yule 1992; Joseph, Yule, Williams & Andrew, 1993). Higher levels of social support were associated with better psychological outcome and both received support and satisfaction with support were related to outcome. It appeared that actual crisis support was more important than satisfaction with support in predicting variance in symptoms. Specifically crisis support was found to be predictive of later avoidance symptomatology.
There is therefore good reason to consider that the social support which an individual receives in the context of recovery from RTA may be an important variable to address. To date the role of social support has not been addressed in any detail in this population although Andersson et al. (1994) have highlighted the psychosocial needs of RTA survivors. The quality of social support may be particularly important to address. If for example an individual is able to use a social support network to process the facts, emotions and relational meaning information of the RTA this may allow the closest matching of fear networks and full information processing (Lang, 1979). This may be one of the processes occurring in psychological debriefing (Busuttil & Busuttil, in press), a technique which has been described as having the potential to prevent PTSD after Stressor events.

**Individual Variables.**

In addition to variables within the Stressor experience there are also individual variables which may affect the psychological impact of any traumatic event. Coping style may be useful in understanding why some individuals develop PTSD and others do not.

**Coping style.**

Coping style has been proposed as a variable which moderates the impact of a stressor on an individual and is brought into operation in response to a stressor, (Folkman, Lazarus, Gruen & De Longis, 1986). It is proposed that stressors are first appraised by individuals as potentially threatening and then appraised in relationship to the individuals perceived ability to cope with them. Threat appraisal is shaped by personal beliefs (Folkman, 1984). Individuals are perceived to draw upon a range of different coping responses to deal with stressful or traumatic experiences (Billings & Moos, 1981) and it has been proposed that optimal coping depends on drawing from the largest possible repertoire of coping responses. Coping style is a term which refers to both the behavioural responses and the thought processes used by the individual to deal with situations.
Two types of coping strategy are generally described. Problem-focused coping involves the individual engaging in activity to try to do something about the source of the stress, whereas emotion-focused coping is aimed at reducing the emotional impact of the stressor, (Folkman & Lazarus 1985). The authors state that successful coping requires both forms.

Coping style involving both cognitive and behavioural responses may be conceptualised as involving approach or avoidance. Examples of thought processes involving these two approaches are thinking about a situation positively for example or deciding not to think about it. Likewise behavioural responses may indicate approach or avoidance; one can aim to act in a way to change a difficult situation or one could avoid the situation.

In that coping style appears to be an important modulator of stress it may be presumed to have an association with psychological disorders both in relation to aetiology and in maintenance of disorder. Different mechanisms have been proposed as to how this may occur. For example, avoidance has been hypothesised as the means through which phobias (de Silva & Rachman, 1984) and other anxiety disorders such as panic disorder (Salkovskis, 1991) are maintained. Some support for the hypotheses that individuals with phobias use more avoidant coping strategies and conversely that there is an inverse relationship between the use of threat devaluation coping strategies and reports of phobias and fears has been reported, (Davey, Burgess & Rashes, 1995). The fact that avoidant coping styles were reportedly used by subjects with phobias, across a range of stressors raises questions about whether specific coping styles may predispose one to be more susceptible to anxiety based disorders. It also raises the question as to whether coping style might be a useful focus for therapeutic intervention, perhaps through the use of threat devaluation strategies and encouraging individuals to confront initial anxieties by challenging avoidance.
Few studies have looked at coping style in relation to PTSD after a traumatic incident and none have been traced which have looked specifically at coping in the context of RTA. Most of the coping studies in the area of PTSD are retrospective and have been conducted in a military context. One study which did examine social support and coping in a civilian context presented results suggesting that crisis support was predictive of symptoms over and above attributional style and coping style (Joseph, Williams & Yule, 1992). However the study was retrospective with subjects rating these factors almost eighteen months after the event. In addition the subjects studied, while having moderately high IES scores, did not have scores suggestive of PTSD. A further criticism is that coping items were almost all behavioural.

There are indications from the literature that coping style may be a useful focus for research, not only in identifying individuals at risk of developing PTSD and other psychological sequelae but as suggested above, coping style may be subject to modification and thus also form a focus for therapy. The study of those who adapt well to traumatic experience may illustrate which coping strategies are beneficial in the context of adapting to trauma.

As with social support the assessment of coping style is fraught with difficulty. It has to be considered that disorders may themselves impact on coping style and that the relationship between coping style and outcome may not be one-way or causal. Care must also be exercised in using evaluative terms such as good or bad coping style which confuse coping behaviour with outcome. Situational factors are likely to determine that different strategies may be good or bad in different situations. There is increasing evidence to suggest that individuals use a wide range of coping styles to deal with different aspects of stressors and that a range of coping styles may be associated with good outcome (Kennedy, Lowe, Grey & Short, 1995). Coping style can also change over time and in response to different situations although there is some evidence that individuals perceive themselves
to have habitual coping styles (Joseph, Williams & Yule, 1992).

Coping style and Locus of Control.
Another psychological concept which may have the potential to affect outcome in PTSD is locus of control (Rotter, 1966). This may be important in that it affects appraisal of threat and coping style. It has been proposed that primary appraisal of a stressor, whether it is seen in terms of harm, loss, threat or challenge, is shaped by an individual’s cognitive set. This in turn is influenced by perceptions of control. Those tending to have an internal locus of control are described as more likely to perceive a stressor as a challenge and to use more problem focused coping strategies. Conversely those who show external locus of control are seen as more likely to perceive a stressor in terms of threat, to display more emotion such as anxiety and fear and thus to use more emotion focused coping styles (Lazarus & Folkman, 1984, Folkman 1984). The concept of locus of control has been shown to be relevant in other areas of mental health with those showing an internal locus of control found to be less prone to severe mental illness, especially depression (Abramson, Seligman & Teasdale, 1979). Like coping style it may be possible to modify locus of control through training (Novaco, Cook & Sarason, 1983) or therapy.

Studies have examined the relationship between locus of control and coping in the context of PTSD. It has been suggested that the relationship of locus of control to PTSD is not a direct one but is mediated by coping style (Solomon et al., 1988; Solomon et al., 1989). In the first study Solomon et al., report that locus of control was found to be correlated to PTSD but was also correlated with emotion focused coping. Removing social support and coping strategies contribution to the variance in PTSD scores cancelled the contribution of locus of control. The authors argue that this supports the findings of other workers who have found that those with internal locus of control use more instrumental strategies to deal with problems and engage in less self pre-occupation and propose that coping strategies are a
reliable mediator of locus of control and PTSD.

In the second study it was reported that greater appraisal of threat, more negative emotions and more emotion focused coping predicted increased symptoms of PTSD. In low threat situations, those with external locus of control were more likely to develop symptoms of PTSD than those with internal locus of control. This was felt to be due to the indirect effects of locus of control operating through threat appraisal (Solomon, Mikulincer & Benbenishty, 1989). In high threat situations these relationships were not confirmed and the authors suggest this provides support for Folkman’s hypothesis that the relationship between control expectancy and symptoms will depend on situational factors (Folkman, 1984).

Other studies have suggested that emotion focused coping is associated with PTSD although most of the studies have been carried out in a military context. It was reported that Israeli soldiers who developed combat stress reaction (similar to acute stress disorder as defined in DSM-IV [APA, 1994]) and went on to develop PTSD, showed higher rates of emotion focused coping compared to those who developed a combat stress reaction but whose symptoms resolved (Mikulincer & Solomon, 1988). Similar findings in combat veterans have also been reported by Noy (1991).

OVERVIEW.
The present study is a preliminary investigation into the variables associated with symptoms of PTSD after involvement in a road traffic accident and will attempt to examine the role of some of the postulated risk factors described in the previous section. It also provides the opportunity to examine rates of psychological morbidity for the first time, in RTA survivors who have not sustained serious injury. The specific focus of the study is PTSD but symptoms of anxiety and depression will also be studied. Phobic anxiety will not be addressed here.
The first objective of the study is the development of a coping scale to examine coping style in RTA survivors and to look at the relationship between coping style and outcome in this population.

A second objective is to examine and further develop the psychosocial framework of post traumatic stress disorder (Green, Wilson & Lindy 1985; Green, 1993), which attempts to understand the development of PTSD by considering individual, stressor and situational variables. This second objective also provides an opportunity to look more closely at the stressor criteria defined in DSM-IV (APA, 1994) which have not been objectively studied to date (March 1993). Specifically these state that:

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

(b) The person's response involved intense fear, helplessness or horror.

The final objective is to begin to examine the possibility of early intervention by examining the response of RTA survivors to a self-help and information leaflet. While information leaflets have been used before in crisis intervention, there have been few attempts to evaluate their acceptability and perceived usefulness and no such attempt has been described in this population.

This study is seen as a first step towards the development of a scale which, (although beyond the remit of the current study), might eventually be used to identify those at most risk of developing psychological sequelae after RTA. Traumatic events by definition cause distress but the majority of individuals adapt without intervention. It would be useful to learn more about the variables associated with the development of long term psychological sequelae in order to target resources appropriately. Some researchers have pointed to the usefulness of the Impact of Events Scale (Horowitz, Wilner & Alvarez, 1979), in screening,
suggesting that raised scores predict longer term morbidity (Feinstein et al., 1991; Shalev et al., 1996). However the use of the IES alone would appear to lead to over inclusion because IES sores may also be high initially, in a large proportion of subjects who go on to make a good psychological recovery (Shalev, 1992). Some researchers have argued that it is not the stressor intensity which is most predictive of later PTSD, but high initial distress which may be indicative of an individuals failure to master the event (Feinstein et al., 1991). This failure might be expected to increase with stressor intensity but suggests that a focus on coping style might be fruitful in identifying risk factors. The fact that this study will focus on RTA survivors with less severe injury provides a greater focus on coping style.

The identification of risk variables may also provide useful information for crisis intervention and therapeutic endeavours which aim to prevent or ameliorate the symptoms of PTSD.

A "risk scale", on the basis of findings in an RTA population, may be of relevance to other populations. For example, in incidents where large numbers of individuals are traumatised, it may be of use in identifying hidden risk factors and would again be of use in targeting limited resources.

**Methodological considerations in relation to the objectives of the study.**

A number of coping scales exist with good psychometric properties. An attempt to develop a new scale is made because few address cognitive and behavioural coping together or where they do the items were not so relevant to RTA. There was also a particular interest in catastrophising as a coping style. Some existing questionnaires were considered too lengthy to be used here and few studies have examined coping in this population so there is no scale standardised on this group. The coping scales previously defined for use on trauma populations (Horowitz & Wilner, 1980; Green, Lindy & Grace, 1988; Joseph, Williams & Yule, 1992), do not address the variables of interest in sufficient depth. The scale in this study also
uses items worded to address current coping and not retrospective or intended coping.

A prospective study would have been the method of choice in examining the objectives outlined but this was not possible and a correlational study was decided upon using questionnaires to gather information.

The measures chosen to assess symptoms of psychological distress are the Hospital Anxiety and Depression Scale (HAD) and the Impact of Events Scale (IES). The HAD (Zigmond & Snaith, 1983), is a 14 item, self-report, rating scale which assesses the presence of symptoms of anxiety and depression. Good reliability and validity have been reported (Lewis & Wessely, 1990), and this scale was felt to be an appropriate measure in the population to be studied as its authors claim it is unaffected by physical symptomatology. Suggested cut-off scores on this scale are 8-10. The IES (Horowitz, Wilner & Alvarez, 1979), is a 15 item rating scale, widely used in the assessment of PTSD, which assesses subjective distress featuring symptoms of intrusion and avoidance. It yields avoidance and intrusion subscales and also yields a total IES score. Total scores of over 30 (McFarlane, 1988), or 35 (Neal, Busuttil, Rollins, Herepath, Strike & Turnbull, 1994), have been found to be strongly suggestive of a diagnosis of PTSD.

Subjects were contacted within a specific time period between three weeks and four months after their accident. This time period was chosen because according to DSM-IV criteria, a period of at least one month must have elapsed since the experience of the stressor before a diagnosis of PTSD can be made. The four month cut off was chosen because there is a body of evidence pointing to the fact that while PTSD resolves in a significant proportion of individuals this becomes less likely if symptoms are present at four months (Taylor & Frazer, 1982; McFarlane, 1989; Rothbaum & Foa 1993). There is some evidence to suggest that
the same is true in RTA survivors. Mayou et al., (1993) reported that psychological sequelae present at three months after RTA were highly predictive of mental state at one year. Burstein (1989) also found that those who did not respond to early intervention by four months had symptoms which followed a more chronic course. It might also otherwise be argued that the coping responses and social support factors which are to be studied in this research project might have changed in response to the presence of persistent or chronic psychological sequelae.

Potential subjects are excluded if there is evidence of head injury or loss of consciousness or if the patient was admitted to the intensive care unit. There are potential psychological sequelae associated with artificial ventilation and head injury and loss of consciousness has been reported as a factor which may reduce the likelihood of PTSD, (Mayou et al., 1993; Bryant & Harvey,1996).

The research objectives have been stated. Research questions and predictions which are to be studied in association are now specified.

A. **Personal Variables.**

1. Coping which features behavioural and emotional confrontation is predicted to show less association with PTSD, anxiety and depression. Conversely emotion focused, avoidant and catastrophic approaches are predicted to show stronger association with morbidity.

2. Prior exposure to RTA involving the experience of intense fear, accompanying threat will be associated with higher PTSD symptoms in line with information processing models discussed previously.

3. Lower education, being female, and higher attribution of blame will be associated with higher IES scores as found in other studies.
4. A previous history of anxiety and depression will be associated with more reporting of depression and anxiety. Unlike other RTA studies it will also be associated with higher IES scores as it is predicted that those with previous anxiety and depression may be more sensitive to threat under low threat conditions, and use less effective coping.

B. Stressor Variables.

1. Psychological morbidity is associated with RTA involving moderate/severe injury. In line with the DSM IV stressor criteria, it is predicted that similar rates of morbidity will be found after RTA in the absence of such injuries but where threat is perceived.

2. Greater perceived threat will be associated with higher anxiety and PTSD symptoms. Perceived loss will be associated with greater reports of depressive symptoms (Thompson, 1991).

3. Green's hypotheses (1993), relating generic dimensions of threat across stressors will be shown to need to address differing strengths of relationships with PTSD. Dimensions reflecting greater threat to self will show strongest association with PTSD symptoms.

C. Situational Variables (recovery environment)

1. Litigation will not be associated with more PTSD symptoms in general but will be associated with greater intrusion and anxiety. This hypothesis is based on clinical experience.

2. Greater social support will be associated with lower rates of all morbidity measures. This will be true across a number of dimensions including perception of social support and use of social support. Low social support will be associated with greater avoidance (Joseph et al., 1993).
3. It is predicted that the ability to discuss feelings in addition to discussing the facts of the RTA will be associated with fewer PTSD symptoms in line with Lang's theoretical propositions (Lang et al., 1983).

4. It is predicted that the information and self help leaflet will be perceived as useful by those with PTSD symptoms.
Subjects.
The subjects recruited for this study were 361 road traffic accident survivors who had attended the accident and emergency department of the Princess Margaret Hospital in Swindon. Subjects aged between 17 and 70 were contacted between three weeks and four months after the accident. This time period was chosen for reasons detailed above. Potential subjects were excluded if there was evidence of head injury or loss of consciousness or if the patient was admitted to the intensive care unit, again the reasons for this have been detailed. The only other reason for excluding subjects was if the entry in the hand written accident and emergency register was incomplete or illegible.

Procedure.
All subjects were contacted by post and received an explanatory letter detailing the purpose of the study and inviting them to participate. A questionnaire was enclosed together with a pre-paid envelope. The items on the questionnaire were written on the basis of information about Post Traumatic Stress reactions drawn from the literature and also based on clinical experience. Eighty two subjects randomly selected received self help information to evaluate.

Questionnaire.
The questionnaire, (see appendix II) was subdivided into sections which requested information in the following areas:

*Demographic variables.*
Information was obtained in relation to the following demographic variables: age, sex, marital status, occupation and educational level. A crude measure of previous psychological problems was obtained in asking subjects to detail if they had previously consulted a doctor because of anxiety or depression.
While beyond the scope of this study to screen for all possible previous stressors individuals were asked whether they had previously been involved in a road traffic accident. If so subjects were asked to indicate whether physical injuries to self or others occurred and further questions ascertained whether the previous accident satisfied the DSM IV stressor criteria.

Recent accident.
Detailed questions were asked about the subject's experience during the recent road traffic accident. The time since the accident was noted and information requested to establish whether the recent accident meets the DSM IV stressor criteria. Subjects were asked whether the accident was perceived as avoidable and whether blame for the accident is apportioned to self or others. Fear of injury to self or others and actual injury to self or others is assessed separately as is threat to the life of self or others.

Loss.
Dimensions of loss were rated separately. Perceptions of financial loss, permanent disability, disfigurement, loss of physical well being and loss of mental well being were recorded.

Social Support.
The following aspects of social support were rated in this questionnaire: the presence of social support, perceived social support, satisfaction with social support and use of social support. As a crude measure of the quality of social support used, subjects were asked to indicate whether they were able to talk about the facts of the accident and whether they were able to talk about their feelings in relation to the accident.
Coping Scale.
A sixty item coping scale was devised based on information drawn from the coping literature and with reference to published coping scales. It was predicted that five factors would emerge from the scale related to coping and that a sixth factor relating to locus of control would also emerge. The five coping factors predicted to emerge were: catastrophising, emotion focused coping, task oriented coping, avoidance, and positive appraisal.

Rating Scales.
Subjects were asked to complete two rating scales; The Hospital Anxiety and Depression Scale (HAD) and the Impact of Events Scale (IES). These scales have been described in the introduction.

SELF HELP AND INFORMATION LITERATURE.
After completing the questionnaire, a sub-group of 82 subjects was asked to read a self-help and information leaflet enclosed in the pack and to rate the leaflet on various dimensions. The leaflet is detailed on pages 202 and 203 and the rating scale is appended (appendix III).

The self-help leaflet was adapted from an information sheet written by Australian disaster workers which has also been used by the Red Cross. It describes common physical and psychological reactions after traumatic events, gives general self help advice and lists sources of further help should this be necessary.

The evaluation leaflet appended is self explanatory and includes ratings on whether the leaflet was easy to understand, whether it was helpful in explaining reactions and whether it was felt likely to be helpful to others. Readers are also asked whom they feel the leaflet should be available for and whether they are likely to modify their coping behaviour as a result of reading the leaflet.
RATINGS.
Questionnaire items were all rated on a four point Likert scale. While a 5 or 7 point scale would have been preferable it was felt that to maximise the likelihood of response it was necessary to keep the scales simple and that this was especially important given the length of the questionnaire and the fact that this study relied on sending unsolicited questionnaires. The IES and HAD are both four point scales and the choice made allowed for continuity. The fact that the study is in essence a pilot study reinforced the decision as it was felt important to cover a wide number of potentially important areas and sacrifice some possible depth in order to maintain breadth. The form of the questionnaire was decided in a small pilot study (n=10) where using different rating systems for different sections was found to increase response times and to create confusion.
This section will present the statistical analysis of the study. As the results section addresses several research questions incorporating a number of variables, the findings will be presented in sections as follows:

The first section will present statistics which describe the sample studied and will therefore include the response rate, demographic features, and accident variables.

Section two describes the development of the coping scale and includes the factor analysis and measures of reliability relating to the scale.

The third section presents statistics describing the patterns of morbidity and co-morbidity reported by the sample. The results of mean comparisons examining demographic and background variables and morbidity are also presented in this section.

In section four, correlational analyses examine the relationship between coping and measures of morbidity.

Section five again presents the results of correlational analyses, this time exploring the relationship between accident variables and morbidity variables. Both accident background variables, (e.g. previous RTA) and within accident variables, (e.g. perception of threat) are included in the analyses.

In the sixth section correlational analysis explores the relationship between social support variables and morbidity.

Section seven considers the development of models of prediction of PTSD symptoms. Multiple regression analyses assess the predictive values of coping factors and social support variables. A further multiple regression analysis is
undertaken combining these two variables and other accident and background predictor variables in a full regression analysis.

The final section presents results from the study assessing the reactions of subjects to self help and information literature.

Section One: Description of the Sample.

Response rate.
Of the 361 questionnaires sent out, eleven were redirected back to the sender or returned "not known at this address". A further two were returned as inappropriate, e.g. one individual had fallen from a stationary bus and another was injured as a pedestrian. One other questionnaire was returned blank. Therefore from the original 361 therefore the possible response rate (assuming that the other questionnaires were received and by individuals who had been involved in true RTAs) was 347. The actual number of questionnaires received fully completed was 124, a response rate of 36%, comparable to the previous postal survey of RTA survivors described earlier which reported a response rate of 30%.

Demographic characteristics of responders.
The Accident and Emergency Department register enabled the collection of information about some of the demographic characteristics of the total accident sample. Given that the response rate is just over one third, where information for the total sample is available it will be given, in order to gain some impression about how representative the sample who responded were.
Gender.

Table 1: Breakdown of the sample according to gender.

<table>
<thead>
<tr>
<th></th>
<th>RTA total group (n=361)</th>
<th>RTA responders (n=124)</th>
</tr>
</thead>
<tbody>
<tr>
<td>male</td>
<td>59.7%</td>
<td>57.3%</td>
</tr>
<tr>
<td>female</td>
<td>40.3%</td>
<td>42.7%</td>
</tr>
</tbody>
</table>

The male:female ratio of those who responded to the questionnaire is therefore seen to be broadly representative of the total accident group sample. It should be borne in mind that there is a slight tendency for female accident survivors to be over represented in the obtained results and a slight tendency for males to be under represented.

Age.

Table 2: Sample breakdown according to age.

<table>
<thead>
<tr>
<th></th>
<th>RTA total group (n=361)</th>
<th>RTA responders (n=124)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-25</td>
<td>40.1%</td>
<td>22.6%</td>
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<tr>
<td>26-35</td>
<td>29.0%</td>
<td>33.1%</td>
</tr>
<tr>
<td>36-55</td>
<td>26.0%</td>
<td>37.9%</td>
</tr>
<tr>
<td>56-70</td>
<td>2.2%</td>
<td>6.4%</td>
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</tbody>
</table>

These results suggest that RTA survivors in the youngest age group were least likely to respond to the questionnaire. Caution must therefore be exercised in interpreting the results of the study particularly in generalising the findings to this age group.
**Occupational Group.**

The information given by those who responded was coded according to census and population survey groupings, the skilled occupations include manual and non-manual as it was not always possible to make this distinction from the questionnaire responses.

Table 3: Sample breakdown by Occupation

<table>
<thead>
<tr>
<th>Occupational Group:</th>
<th>(n=124)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional occupations</td>
<td>12.1%</td>
</tr>
<tr>
<td>Managerial &amp; Technical</td>
<td>11.3%</td>
</tr>
<tr>
<td>Skilled occupations</td>
<td>23.4%</td>
</tr>
<tr>
<td>Partly skilled occupations</td>
<td>31.5%</td>
</tr>
<tr>
<td>Unskilled occupations</td>
<td>17.7%</td>
</tr>
</tbody>
</table>

Of those who responded, 4% were unemployed.

**Marital Status.**

Table 4: Sample breakdown by Marital Status

<table>
<thead>
<tr>
<th>(n=124)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
</tr>
<tr>
<td>Living with partner</td>
</tr>
<tr>
<td>Married</td>
</tr>
<tr>
<td>Widowed / Divorced / Separated</td>
</tr>
</tbody>
</table>
Highest Level of Full Time Education.

Table 5: Sample breakdown by level of Education
(n=124)

<table>
<thead>
<tr>
<th>Level</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>44.4%</td>
</tr>
<tr>
<td>College</td>
<td>37.9%</td>
</tr>
<tr>
<td>University</td>
<td>16.9%</td>
</tr>
</tbody>
</table>

History of Anxiety or Depression.
Twenty five percent of the sample who responded to the questionnaire reported that they had previously consulted a doctor because of anxiety and depression.

Accident History.
A majority of the subjects, approximately 95% returned questionnaires within four months of their accident.

Table 6: Time Since the Accident

<table>
<thead>
<tr>
<th>Time Since Accident</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than one month</td>
<td>3.2%</td>
</tr>
<tr>
<td>One month</td>
<td>23.4%</td>
</tr>
<tr>
<td>One to four months</td>
<td>68.5%</td>
</tr>
<tr>
<td>More than four months</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

Of the subjects who responded to the questionnaire, 27.4% reported that they had previously survived a road traffic accident and in 59.6% the RTA satisfied the DSM IV stressor criteria in that intense fear, helplessness or horror were experienced and the incident involved actual or perceived threat of injury or death to the self or another. Of those who had survived a previous RTA, these stressor dimensions were reported by 59.6% and 62.3% respectively.
Returning to consideration of the recent RTA, 68.6% of the sample reported RTA which satisfied the DSM IV criteria. It was observed that 56.5% of the sample were likely to be involved in litigation relating to the accident.

**Within Accident Variables.**
Factors within the individuals' own experience of a road traffic accident which may affect psychological sequelae are now considered.

**Attribution of Blame.**
Table 7: Sample Breakdown by Blame Attribution

Accident unavoidable, no-one to blame: 20.2%

Of the 80% who did apportion blame:

<table>
<thead>
<tr>
<th>Blamed self a little/moderately</th>
<th>11.3%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blamed self considerably/lot</td>
<td>15.3%</td>
</tr>
<tr>
<td>Blamed others a little/moderately</td>
<td>17.7%</td>
</tr>
<tr>
<td>Blamed others considerably/lot</td>
<td>62.1%</td>
</tr>
</tbody>
</table>

The percentages do not total 100% as a few individuals attributed partial blame to themselves and to others.

**Indication of Injury Severity by Outcome.**
Information on this variable was available for the total sample and this is therefore indicated in the following table.
Table 8: Sample Breakdown According to Injury Severity

<table>
<thead>
<tr>
<th></th>
<th>n=124</th>
<th>n=361</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not injured (attended for &quot;shock&quot;)</td>
<td>2.4%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Discharged after assessment/treatment</td>
<td>66.9%</td>
<td>64.0%</td>
</tr>
<tr>
<td>Discharged. Follow up by G.P.</td>
<td>7.3%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Follow up at hospital clinic</td>
<td>13.7%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Admitted to ward</td>
<td>9.7%</td>
<td>7.0%</td>
</tr>
</tbody>
</table>

The majority of the actual and obtained samples are therefore seen to have sustained mild to moderate injuries. This partly reflects the purpose of the study which was to study psychological sequelae in those less severely injured and also reflects the studies need to exclude patients who sustained head injuries or those who were admitted to intensive care.

The injury severity of those who returned questionnaires would appear to be broadly representative of the total sample of the RTA survivors who met the inclusion criteria although those followed up by their general practitioner were less likely to reply and those treated in hospital slightly more likely to reply.

Having considered demographic and more specific accident related features of the sample, the next section will consider the development of the coping scale used in the study.
Section Two: The Coping Strategies Inventory.

Scale structure.
The data obtained on the coping scale were subject to factor analysis. Six Factors were hypothetically expected and six emerged. All had eigen values greater than 1.74. One factor (factor five) was later dropped as it had a low alpha coefficient, yielded four items and accounted for only 3% of the variance. The sixth factor therefore became factor five. The factors derived from this analysis were used to generate scales and the reliability of these scales is illustrated in the following table which includes the alpha coefficient. The derivation of these scales is reported below.

Table 9: Psychometric Analysis of the Coping Scales

<table>
<thead>
<tr>
<th>FACTOR</th>
<th>ITEMS</th>
<th>EIGEN VALUE</th>
<th>MEAN</th>
<th>S.D.</th>
<th>ALPHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONE</td>
<td>19</td>
<td>13.02</td>
<td>36.31</td>
<td>13.11</td>
<td>0.93</td>
</tr>
<tr>
<td>TWO</td>
<td>13</td>
<td>7.40</td>
<td>33.99</td>
<td>7.16</td>
<td>0.82</td>
</tr>
<tr>
<td>THREE</td>
<td>7</td>
<td>2.70</td>
<td>17.53</td>
<td>5.32</td>
<td>0.76</td>
</tr>
<tr>
<td>FOUR</td>
<td>7</td>
<td>2.30</td>
<td>17.73</td>
<td>4.33</td>
<td>0.68</td>
</tr>
<tr>
<td>FIVE</td>
<td>6</td>
<td>1.74</td>
<td>12.05</td>
<td>4.20</td>
<td>0.78</td>
</tr>
</tbody>
</table>

The Pattern matrix illustrates the underlying structure of the factors and identifies the items in each factor which account for the most variance.
Table 10: Pattern Matrix of the Coping Scale

<table>
<thead>
<tr>
<th>ITEM NO:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.29</td>
<td>0.10</td>
<td>-0.05</td>
<td>0.57</td>
<td>0.14</td>
<td>0.05</td>
</tr>
<tr>
<td>2</td>
<td>0.44</td>
<td>0.15</td>
<td>-0.25</td>
<td>-0.04</td>
<td>0.30</td>
<td>0.05</td>
</tr>
<tr>
<td>3</td>
<td>0.50</td>
<td>-0.11</td>
<td>-0.38</td>
<td>0.08</td>
<td>0.10</td>
<td>0.03</td>
</tr>
<tr>
<td>4</td>
<td>0.47</td>
<td>0.26</td>
<td>0.12</td>
<td>-0.05</td>
<td>0.20</td>
<td>0.17</td>
</tr>
<tr>
<td>5</td>
<td>-0.15</td>
<td>0.03</td>
<td>-0.05</td>
<td>0.18</td>
<td>-0.11</td>
<td>-0.60</td>
</tr>
<tr>
<td>6</td>
<td>0.11</td>
<td>-0.01</td>
<td>-0.32</td>
<td>0.30</td>
<td>-0.20</td>
<td>-0.10</td>
</tr>
<tr>
<td>7</td>
<td>0.24</td>
<td>0.10</td>
<td>-0.16</td>
<td>-0.07</td>
<td>-0.01</td>
<td>0.53</td>
</tr>
<tr>
<td>8</td>
<td>0.32</td>
<td>-0.00</td>
<td>-0.09</td>
<td>-0.18</td>
<td>-0.62</td>
<td>0.21</td>
</tr>
<tr>
<td>9</td>
<td>0.14</td>
<td>0.37</td>
<td>0.07</td>
<td>0.13</td>
<td>0.64</td>
<td>-0.14</td>
</tr>
<tr>
<td>10</td>
<td>-0.33</td>
<td>-0.01</td>
<td>-0.51</td>
<td>0.07</td>
<td>-0.13</td>
<td>0.20</td>
</tr>
<tr>
<td>11</td>
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<td>0.16</td>
<td>-0.22</td>
<td>0.37</td>
<td>-0.37</td>
<td>-0.19</td>
</tr>
<tr>
<td>12</td>
<td>0.45</td>
<td>-0.22</td>
<td>-0.35</td>
<td>0.04</td>
<td>0.06</td>
<td>0.06</td>
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<tr>
<td>13</td>
<td>0.76</td>
<td>0.03</td>
<td>-0.06</td>
<td>-0.08</td>
<td>0.01</td>
<td>0.06</td>
</tr>
<tr>
<td>14</td>
<td>0.00</td>
<td>0.16</td>
<td>-0.00</td>
<td>0.31</td>
<td>-0.46</td>
<td>-0.35</td>
</tr>
<tr>
<td>15</td>
<td>-0.06</td>
<td>0.03</td>
<td>-0.05</td>
<td>0.12</td>
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<td>0.70</td>
</tr>
<tr>
<td>16</td>
<td>0.19</td>
<td>0.50</td>
<td>-0.00</td>
<td>0.32</td>
<td>0.18</td>
<td>-0.09</td>
</tr>
<tr>
<td>17</td>
<td>0.28</td>
<td>0.05</td>
<td>-0.32</td>
<td>-0.01</td>
<td>0.05</td>
<td>0.15</td>
</tr>
<tr>
<td>18</td>
<td>0.59</td>
<td>0.07</td>
<td>-0.08</td>
<td>0.11</td>
<td>-0.02</td>
<td>0.05</td>
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<tr>
<td>19</td>
<td>0.36</td>
<td>0.69</td>
<td>0.09</td>
<td>-0.13</td>
<td>-0.70</td>
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<td>0.30</td>
</tr>
<tr>
<td>22</td>
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<td>-0.18</td>
<td>0.03</td>
<td>0.28</td>
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</tr>
</tbody>
</table>

262
Table 10: Pattern Matrix of the Coping Scale Continued

<table>
<thead>
<tr>
<th>ITEM NO</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
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<td>0.58</td>
<td>0.02</td>
<td>-0.05</td>
</tr>
<tr>
<td>24</td>
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<td>-0.69</td>
<td>0.22</td>
<td>0.02</td>
<td>0.16</td>
</tr>
<tr>
<td>25</td>
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<td>0.10</td>
</tr>
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<td>-0.15</td>
</tr>
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<td>-0.23</td>
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<td>0.26</td>
<td>0.16</td>
<td>0.01</td>
</tr>
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<td>28</td>
<td>0.59</td>
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</tr>
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<td>0.19</td>
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</tr>
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</tr>
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<td>35</td>
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<td>0.09</td>
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</tr>
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</tr>
</tbody>
</table>
Table 10: Pattern Matrix of the Coping Scale Continued

<table>
<thead>
<tr>
<th>FACTOR</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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</tr>
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<td>0.12</td>
<td>0.21</td>
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<td>-0.18</td>
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</tr>
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<td>0.08</td>
<td>-0.31</td>
<td>-0.07</td>
</tr>
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<td>49</td>
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<td>0.52</td>
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</tr>
<tr>
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<td>0.07</td>
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<td>0.00</td>
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<td>51</td>
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<td>0.08</td>
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</tr>
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</tr>
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<td>53</td>
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<td>-0.05</td>
<td>-0.14</td>
<td>-0.05</td>
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</tr>
<tr>
<td>54</td>
<td>0.20</td>
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<td>-0.04</td>
<td>0.30</td>
<td>-0.19</td>
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</tr>
<tr>
<td>55</td>
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<td>0.12</td>
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<td>-0.00</td>
</tr>
<tr>
<td>56</td>
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<td>-0.19</td>
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<td>-0.20</td>
</tr>
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</tr>
<tr>
<td>58</td>
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<td>0.13</td>
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<td>-0.10</td>
</tr>
<tr>
<td>59</td>
<td>0.74</td>
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<td>0.00</td>
<td>0.08</td>
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<td>0.07</td>
</tr>
<tr>
<td>60</td>
<td>-0.01</td>
<td>0.34</td>
<td>-0.59</td>
<td>-0.05</td>
<td>-0.16</td>
<td>0.04</td>
</tr>
</tbody>
</table>
The scales and items identified in the factor analysis were studied to investigate whether the statistically valid factor structure was psychologically meaningful. Five of the predicted factors did emerge. The original factor five, now discarded, tapped into internal-external locus of control and was found to correlate with other coping mechanisms which is in keeping with other findings in the literature as discussed above.

_The Factor Interpretation._

The next section labels the factors identified in the factor analysis and lists the items in each factor to illustrate the coping construct being measured. The correlation coefficient alongside, indicates the correlation with the factor.

Factor one is labelled CATASTROPHISING/ AVOIDANT. The items which load on this factor reflect an avoidant behavioural style and cognitions which reflect a catastrophic interpretation of events.

13. I tell myself I am unable to cope with this (0.76)
25. I dwell on what a terrible situation I am in (0.74)
55. I tell myself nothing good can come out of this (0.74)
59. I can never come to terms with this (0.74)
51. I tell myself how awful my situation is (0.72)
47. I view the situation as terrible and not likely to improve (0.67)
53. I feel overwhelmed by these difficulties (0.66)
44. I tell myself life is impossible (0.66)
39. I worry about what I am going to do (0.63)
18. I watch TV or read to avoid thinking about my problems (0.59)
57. I dwell on the injustice of my situation (0.59)
28. I tell myself this is not really happening (0.59)
56. I believe I can do little to improve this situation (-0.53) [reverse scored item].
3. I avoid activities which make me think about the accident (0.50)
4. I get angry about my situation (0.47)
29. I find that I am preoccupied with aches and pains (0.46)
12. It is helpful not to think about what happened (0.45)
2. I think why did this happen to me? (0.44)
33. I distract myself from my difficulties (0.39)
Factor two is labelled POSITIVE APPRAISAL/CONFRONTING. The items which load on this factor reflect a cognitive style which is positive and a behavioural style which directs effort to confront rather than avoid difficulties. The items which loaded on this factor were:

35. I tell myself things could be worse (0.70)
19. I tell myself things will get better (0.69)
42. I tell myself that others are worse off than me (0.68)
52. I tell myself a positive attitude is helpful (0.68)
58. I try to learn something from all experiences good and bad (0.55)
16. I make special efforts to overcome my difficulties (0.50)
43. If I wait, time will improve my situation (0.43)
32. I feel no-one appreciates how difficult things have been (0.42)
20. I believe I can do a lot to help myself (0.41)
54. I think of different ways to deal with my problems (0.39)
48. I feel I can accept my situation as it is (0.37)
21. It helps to be with others (0.34)
46. I deal with difficulties and do not put things off (0.31)

Of the thirteen items four were behavioural and nine cognitive.

Factor three is labelled FINDING PURPOSE. The items which load on this factor reflect a search for meaning in the event both in cognitions and behaviour. The items loading on this factor were:

24. I try to find some purpose in what has happened (-0.69)
34. I try to find personal meaning in what has happened (-0.64)
26. I use the situation to show that I can deal with problems (-0.59)
60. I tell myself I may become a stronger person through confronting this (-0.59)
10. I tell myself some good can come out of this (-0.51)
30. I read my horoscope (0.43) (reverse scored item).
27. I believe in Fate (0.38) (reverse scored item).

Most of the seven items on this factor relate to cognition.
Factor four is labelled RATIONAL ACTION and the items which load on this factor appear to relate to a cognitive and behavioral style which is analytic and based on reason rather than emotion. The items which load on this factor are:

38. I think things through before I react (0.65)
23. I try to organise my time better (0.58)
   1. I analyse my difficulties and consider all the possible actions I can take (0.57)
37. I believe I can do things to influence the outcome of my situation (0.52)
49. I feel I can do little to influence what happens to me in life (0.52) (reverse scored item)
31. I have made a plan to deal with my difficulties and I am following this plan (0.41)
41. I seek expert advice if there are problems I need help with (0.39)

Of these seven items three are behavioural and four cognitive.

Factor five (the original factor six before one factor was excluded) was labelled CATHECTIC. Items which load on this factor are characterised by being emotion focused in both cognition and behaviour. The items may to some extent be seen as avoidant however they are more strongly characterised by an attempt to ameliorate unpleasant emotions and reflect a sense of loss of control. The items loading on this factor are:

15. I sleep more than before the accident (0.70)
50. I lose my temper (0.61).
   5. I say to myself that I am in control of my life (0.60) (reverse scored item).
   7. I drink alcohol, smoke or eat more than I used to before the accident (0.53).
22. I find that I am taking it out on other people (0.51).
36. I think a lot about happier times (0.43).

Of these items two are cognitive and four are behavioural.

Before looking at how the coping strategy measures were correlated with measures of psychological distress, the next section will present a general overview of the measures of psychological morbidity reported by the sample of accident survivors who returned questionnaires.
Section Three: Patterns of Morbidity and Co-morbidity and their Relationship to Background and Demographic Variables.

*Ratings of psychological distress.*

The Hospital Anxiety and Depression scale suggests that scores above eight to ten are suggestive of clinically significant anxiety or depression and therefore a cut off score of a 8 was chosen for anxiety (HADA) and depression (HADD). On the Impact of Events scale, a cut-off score of thirty was chosen as this is the score most widely used in the literature. However where appropriate, percentages are also given for a cut-off score of 35, as this was the cut off score identified as significant in a recent British study referenced above. The terms IESI refer to scores on the intrusion subscale and IESA to scores on the avoidance scale. The term IES score (or IEST), refers to the combined total of intrusion and avoidance subscales. Certain tables in the text use the terms depression and anxiety as labels for clarity and this refers to depression and anxiety symptoms as measured by the HAD.

*General Findings.*

Of the 124 individuals who responded to the questionnaire, 63, (50.8%) were found to have rating scores suggestive of significant psychological morbidity.

Table 11: Sample Breakdown by Morbidity.

<table>
<thead>
<tr>
<th></th>
<th>Anxiety</th>
<th>Depression</th>
<th>IES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>9</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>IES</td>
<td>16</td>
<td>0</td>
<td>8</td>
</tr>
</tbody>
</table>

In addition the number of individuals who scored above the cut off on all three scales (Anxiety+depression+IES) was 13.
Symptoms of Anxiety.
The number of individuals reporting anxiety symptoms at or above the cut-off score was 51 (41%), of which, 13 (10.5%) reported anxiety symptoms alone. Patterns of co-morbidity will be reported in the following sections.

Symptoms of Depression.
The number of subjects whose scores were suggestive of clinical levels of depression was 26 (21%). Of this 26, only 4 (3.2%) reported depression alone.

Symptoms of Post Traumatic Stress.
The number of subjects reporting scores suggestive of a diagnosis of PTSD was 37 (29.8%). Those whose scores were over 35 numbered 31 (25%). The number of subjects reporting significant levels on the IES alone was 8 (6.45%).

Patterns of Co-morbidity.
Patterns of co-morbidity are most clearly presented diagrammatically (see fig 1.).

Figure 1: Diagrammatic Representation of Co-morbidity:
Patterns of Co-morbidity.

Correlational analysis using Pearson's product moment correlations were carried out to examine patterns of co-morbidity. The correlations in table 12 reveal a reasonably high level of co-morbidity.

Table 12: Co-morbidity represented correlationally.

<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th>Anxiety</th>
<th>IES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.43</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>IES</td>
<td>0.48</td>
<td>0.35</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Moderate correlations were observed between all three symptom groups all of which were significant beyond the 1% level. Visual analysis of the data suggested that these patterns of co-morbidity might mask strong sex differences and therefore further correlational analysis using Pearson's product moment correlation was undertaken to examine the patterns of co-morbidity in different gender groups. Separate correlation matrices were calculated for males and females in order to see whether there were sex differences. The results are reported in table 13, where the female correlations are reported in bold below the diagonal and the male correlations are reported above.

Table 13: Co-morbidity broken down by sex. Female correlations are given in bold.

<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th>Anxiety</th>
<th>IES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>1.00</td>
<td>0.13</td>
<td>0.55</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.70</td>
<td>1.00</td>
<td>0.04</td>
</tr>
<tr>
<td>IES</td>
<td>0.40</td>
<td>0.61</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Higher positive correlations were observed between depression and anxiety and between anxiety and IES in the Female sub group, all of which were highly significant. In the males there were very low positive correlations between the three measures of distress. All the correlations for the male group were less than one, and none were significant.

Having looked at patterns of psychological morbidity in the sample, the next section will look at variables which the literature suggest may be related to outcome. The First group of variables which will be considered are: age, sex, educational level and previous history of anxiety and depression.

Background Variables and Morbidity.
A series of mean comparisons were conducted with the background variables; age, gender, and educational level. No significant differences were found using the HAD and IES as dependant variables. A previous history of anxiety and depression did however appear to be significantly related to morbidity as measured by the HAD and IES.

Table 14: Scores on IES and HAD and Previous History.

<table>
<thead>
<tr>
<th>Scale</th>
<th>History of Anxiety &amp; Depression</th>
<th>No history of Anxiety &amp; Depression</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>IES</td>
<td>27.65</td>
<td>19.31</td>
<td>18.41</td>
</tr>
<tr>
<td>HADA</td>
<td>9.26</td>
<td>5.45</td>
<td>6.03</td>
</tr>
<tr>
<td>HADD</td>
<td>5.74</td>
<td>4.38</td>
<td>3.54</td>
</tr>
</tbody>
</table>

*= p<0.05; **=p<0.01

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There were higher observed mean scores with individuals who had a previous history of anxiety and depression on all morbidity indices. These differences were found to be significant at the 1% level for the HAD scales and at the 5% level for the IES.

Having looked at outcome measures in general, the results section will now return to an exploration of the relationship between coping scale factors and ratings of psychological distress.

**Section Four: Coping Factors and Ratings of Psychological Morbidity.**

In this section the coping factors and their relationships with ratings of psychological distress are analysed using Pearson's product moment correlations. Correlations are also given for the two sub-scales of the IES. IESI indicates scores on the intrusion sub-scale and IESA indicates scores on the avoidance sub-scale.

Table 15: Relationships between Coping and Morbidity.
Correlations which are significant at or above the 5% level are given in bold type.

<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th>Anxiety</th>
<th>IESI</th>
<th>IESA</th>
<th>IEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophising/</td>
<td>0.66</td>
<td>0.66</td>
<td>0.54</td>
<td>0.61</td>
<td>0.62</td>
</tr>
<tr>
<td>Avoidant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confronting/</td>
<td>0.13</td>
<td></td>
<td>0.26</td>
<td>0.18</td>
<td>0.25</td>
</tr>
<tr>
<td>Positive appraisal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finding Purpose</td>
<td>0.09</td>
<td>0.22</td>
<td>0.14</td>
<td>0.34</td>
<td>0.27</td>
</tr>
<tr>
<td>Rational action</td>
<td>0.01</td>
<td>0.01</td>
<td>0.16</td>
<td>0.00</td>
<td>0.08</td>
</tr>
<tr>
<td>Cathectic/</td>
<td>0.46</td>
<td>0.41</td>
<td>0.29</td>
<td>0.40</td>
<td>0.37</td>
</tr>
<tr>
<td>Avoidant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The results from these correlations point to a moderate to high positive correlation between catastrophic/avoidant coping style and all measures of psychological morbidity. All correlations are highly significant, exceeding the 1% significance level.

Confronting/positive appraisal showed low positive correlations with all measures apart from depression.

Finding purpose did not correlate significantly with measures of depression or IES intrusions but low positive correlations were observed between this coping style and anxiety and also with total IES. A moderately high correlation was observed with IES avoidance and this was significant beyond the 1% level.

No significant correlations were observed between Rational Action and any of the measures of psychological morbidity.

The Cathectic/Avoidant scale showed moderate positive correlations with all outcome measures apart from IES intrusion where the correlation remained positive but was lower. All correlations were significant beyond the 1% level.

The next section will look at correlations with other individual variables and study their relationships to measures of psychological morbidity.
Section Five: Accident Background Variables and Within Accident Variables; Relationship with Morbidity.

**Accident background variables: Relationship to ratings of psychological morbidity.**

This section will study the following individual variables and look at their degree of relationship with outcome using a Pearson's product moment correlational analysis.

1. Previous involvement in RTA and aspects of previous RTA experience. Specifically referred to are injury to self or others and whether the previous RTA could be defined as a stressor according to DSM IV criteria.

2. Involvement in litigation as a result of current RTA.

3. Time elapsed since the accident.

4. Attribution of Blame.

Involvement in a previous road traffic accident was not found to correlate with any outcome measure and neither did sustaining injury in a previous RTA. Where the previous RTA involved the experience of intense fear, helplessness or horror there were significant low/moderate positive correlations with all outcome measures. These are illustrated in table 16 together with other significant correlations. The attribution of blame either to self or others did not correlate significantly with any outcome measure and therefore this variable is omitted from the table. Correlations significant above the 5% level are indicated in bold type.
Table 16: Background Variables: Correlations with Morbidity Measures

<table>
<thead>
<tr>
<th></th>
<th>Prior RTA+Fear</th>
<th>Litigation</th>
<th>Time since RTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>HADD</td>
<td>0.22</td>
<td>0.12</td>
<td>0.28</td>
</tr>
<tr>
<td>HADA</td>
<td>0.29</td>
<td>0.17</td>
<td>0.25</td>
</tr>
<tr>
<td>IESI</td>
<td>0.33</td>
<td>0.26</td>
<td>0.14</td>
</tr>
<tr>
<td>IESA</td>
<td>0.20</td>
<td>0.05</td>
<td>0.21</td>
</tr>
<tr>
<td>IEST</td>
<td>0.28</td>
<td>0.16</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Involvement in litigation was found to have low positive correlations with symptoms of anxiety and intrusion. Time since the accident showed low positive correlations with all measures apart from IES intrusions.

Within-accident variables are considered below. Pearson's product moment correlations are used to analyse the data, exploring the degree of relationship between such variables and measures of psychological morbidity.
Within Accident Variables and Ratings of Psychological Morbidity.

The within accident variables which are studied in this section include:

1. Injury Level Sustained.

2. Perceived Threat.
   i. Perceived extent of injury to self.
   ii. Perceived extent of injury to others.
   iii. Witnessing injury to others.
   iv. Perceived threat of injury to self.
   v. Perceived threat of injury to others.
   vi. Perceived threat of mortality to self.
   vii. Perceived threat of mortality to others.
   viii. The experience of intense fear, helplessness, and horror.

3. Aspects of Loss
   i. Perceived financial loss
   ii. Perceived permanent disability
   iii. Perceived degree of disfigurement
   iv. Perceived loss of physical well-being
   v. Perceived loss of mental well-being
Injury sustained and outcome on psychological measures.

The role of sustained injury in PTSD has been debated in the literature. T-tests were conducted to examine the significance of mean group differences in IES scores and depression and anxiety scores between the group of subjects sustaining no injury or mild injury and those sustaining injuries requiring medical follow up or admission. Outcome groups one and two formed the low injury group (n=87) and three, four and five the more severely injured group (n=36).

Table 17: Injury level and Outcome Measures; T-test results.

<table>
<thead>
<tr>
<th>INJURY LEVEL AND IES</th>
<th>High Injury Group (n=87)</th>
<th>Low Injury Group (n=37)</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>HADA</td>
<td>8.49</td>
<td>4.39</td>
<td>6.27</td>
<td>4.88</td>
</tr>
<tr>
<td>HADD</td>
<td>3.51</td>
<td>3.79</td>
<td>5.43</td>
<td>4.16</td>
</tr>
<tr>
<td>IES</td>
<td>27.30</td>
<td>17.34</td>
<td>18.50</td>
<td>17.81</td>
</tr>
</tbody>
</table>

High injury was therefore associated with higher mean IES scores. The differences observed were found to be significant at just below the 1% level. Injury alone would not appear to be a good predictor of PTSD as the low injury group had twenty-one individuals who scored positive for PTSD (24%) which although much lower than the high group is still a significant number. The percentage of individuals in the high injury group with IES scores suggestive of PTSD was almost double (43%), n=16.
The mean differences observed between the two groups for anxiety were also found to be significant with those having more severe injuries reporting higher anxiety scores. As with IES scores, degree of injury alone is insufficient to account for anxiety as scores suggestive of clinical anxiety were reported by 30 individuals in the low injury group (34%). The incidence in the high injury group was 21 (56%).

As with the other mental health measures described it was found that there were significantly higher mean depression scores in the group of subjects with more severe injuries. The number of subjects with depression scores above the cut off level in the low injury group was 15 (17%) and in the high injury group 11 (30%).
The perception of injury and threat.

Table 18 summarises findings. NS indicates non significant correlations. The value of $r$ is given where this is significant and to simplify the table, asterisks are used to indicate the significance level.

* = $P < 0.05$

** = $P < 0.01$

*** = $P < 0.000$

Table 18: Correlations between Within Accident Variables and Outcome Measures.

<table>
<thead>
<tr>
<th>PERCEPTION OF:</th>
<th>HADA</th>
<th>HADD</th>
<th>IESI</th>
<th>IESA</th>
<th>IEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury to Self</td>
<td>0.29**</td>
<td>0.32***</td>
<td>0.42***</td>
<td>0.28**</td>
<td>0.38***</td>
</tr>
<tr>
<td>Witnessed Injury to Others</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Extent of Injury to Other</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Threat of Injury to Self</td>
<td>NS</td>
<td>NS</td>
<td>0.31***</td>
<td>0.24**</td>
<td>0.30**</td>
</tr>
<tr>
<td>Threat of Injury to Others</td>
<td>NS</td>
<td>NS</td>
<td>0.27**</td>
<td>0.20*</td>
<td>0.26**</td>
</tr>
<tr>
<td>Threat of Mortality to Self</td>
<td>NS</td>
<td>NS</td>
<td>0.33***</td>
<td>0.34***</td>
<td>0.36***</td>
</tr>
<tr>
<td>Threat of Mortality to Others</td>
<td>NS</td>
<td>NS</td>
<td>0.25**</td>
<td>0.19**</td>
<td>0.23**</td>
</tr>
<tr>
<td>Fear, Helplessness, &amp; Horror</td>
<td>0.20*</td>
<td>NS</td>
<td>0.40***</td>
<td>0.38***</td>
<td>0.43***</td>
</tr>
<tr>
<td>DSM-IV Stressor Criteria Met</td>
<td>NS</td>
<td>NS</td>
<td>0.29**</td>
<td>0.33***</td>
<td>0.34***</td>
</tr>
</tbody>
</table>

To summarise the findings in the above table, it was found that perception of extent of injury to self was correlated positively at low/moderate levels with all measures of psychological distress and that the correlations observed were all significant beyond the 1% level.
Witnessing injury to others did not correlate significantly with any measure and nor did the perceived extent of injury sustained to others.

The perception of threat of injury to self and to others did correlate positively with IES ratings, but not with anxiety or depression. Specifically there were low/moderate positive correlations with Intrusion, Avoidance and total IES scores and significance levels were at the 5% level or above. In the case of threat to self the correlations were marginally higher.

Where there was perceived threat to the life of self, moderate, positive correlations were observed with all IES measures, all of which were significant beyond the 1% level of significance. Perceived threat to the life of others was also found to correlate positively with all IES measures. The correlations were low but all were significant at the 5% level or above.

Where intense fear, helplessness or horror were reported to have been experienced there was no correlation with depression ratings. A low positive correlation, significant at the 5% was observed with ratings of anxiety. Moderately high correlations were observed on all IES measures and these correlations were all highly significant.

Where both DSM IV stressor criteria were met there were low/moderate highly significant positive correlations with all IES measures but again this was specific and no correlation was found with ratings of depression or anxiety.

In general the within-accident variables were found to have a stronger relationship with symptoms of PTSD than with symptoms of anxiety and depression.
To summarise the findings in this table, financial loss had low positive correlations with depression and intrusion ratings which were significant at the 5% level.

All other loss dimensions had low/moderate positive correlations with all other measures of psychological morbidity and these correlations were all significant beyond the 1% level.
**Section Six: Social Support and Morbidity.**

Table 20: Correlations Between Measures of Social Support and Measures of Psychological Morbidity

<table>
<thead>
<tr>
<th></th>
<th>HADD</th>
<th>HADA</th>
<th>IESI</th>
<th>IESA</th>
<th>IEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can Talk About Facts</td>
<td>-0.36***</td>
<td>-0.23**</td>
<td>-0.26**</td>
<td>-0.35***</td>
<td>-0.33***</td>
</tr>
<tr>
<td>Can Talk About Feelings</td>
<td>-0.35***</td>
<td>-0.32***</td>
<td>-0.21*</td>
<td>-0.32***</td>
<td>-0.29**</td>
</tr>
<tr>
<td>Perceived Presence of Social Support</td>
<td>-0.31***</td>
<td>-0.33***</td>
<td>NS</td>
<td>-0.17*</td>
<td>NS</td>
</tr>
<tr>
<td>Availability of Social Support</td>
<td>-0.24**</td>
<td>-0.18*</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Satisfaction With Social Support</td>
<td>-0.36***</td>
<td>-0.36***</td>
<td>NS</td>
<td>-0.20*</td>
<td>-0.19*</td>
</tr>
<tr>
<td>Use of Social Support</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

* = $P < 0.05$

** = $P < 0.01$

*** = $P < 0.000$

The ability to talk about facts and feelings relating to the accident was negatively correlated at low/moderate levels with all measures. Correlations were highly significant.
The perceived presence of social support was negatively correlated with ratings of mood at moderately high levels and these correlations were highly significant. The presence of social support only correlated with one IES measure and that was a low negative correlation with IES Avoidance, significant at the 5% significance level.

The perceived availability of social support showed low negative correlations with ratings of anxiety and depression but no significant relationship with symptoms of PTSD.

Satisfaction with the social support available showed moderate negative correlations with both ratings of mood and these were highly significant. Low negative correlations significant at the 5% level were observed with IES avoidance and total IES scores.

The frequency of use of the social support available to subjects was not found to correlate significantly with any outcome measure.

In general social support measures tended to show more association with ratings of mood than with ratings of PTSD symptoms although some measures also appeared to be associated with less avoidance.

The previous sections have pointed to interesting correlations between different variables and psychological morbidity. In order to further explore these relationships, and in particular to look at the extent to which some of these factors could predict outcome measures, a regression analysis was performed. The results of this analysis will be presented in the next section. This study will look at one outcome measure which is the IES score as this was the main focus of this particular study.
Section Seven: Generating Prediction Models.

Multiple regression analysis.

A series of multiple regression analyses were undertaken. The first looks at the coping scales and prediction of IES and the second looks at social support factors and the prediction of IES. The final multiple regression analysis integrates these two factors and a number of other predictor variables in a model of predicting IES. The other predictor variables include whether the RTA satisfied DSM-IV criteria, current anxiety and depression, previous history of anxiety and depression, educational level, injury in previous RTA, and, the experience of fear, helplessness and horror in previous RTA.

Tables of the regression analysis data are first presented. A diagrammatic representation will later illustrate the contribution different variables made in the prediction of IES scores.

Coping and IES.

Table 21: Multiple Regression Analysis of Coping on IES.

<table>
<thead>
<tr>
<th>Coping Factor:</th>
<th>B</th>
<th>SEB</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophising/Avoidant</td>
<td>0.68</td>
<td>0.08</td>
<td>8.71</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Positive Appraisal/Confronting</td>
<td>0.17</td>
<td>0.12</td>
<td>1.41</td>
<td>NS</td>
</tr>
<tr>
<td>Finding Purpose</td>
<td>0.29</td>
<td>0.19</td>
<td>1.51</td>
<td>NS</td>
</tr>
<tr>
<td>Rational Action</td>
<td>-0.05</td>
<td>0.20</td>
<td>-0.25</td>
<td>NS</td>
</tr>
<tr>
<td>Cathectic</td>
<td>-0.35</td>
<td>0.26</td>
<td>1.36</td>
<td>NS</td>
</tr>
</tbody>
</table>

R2 = .47
F = 21.25
P = <.0000

The coping factors therefore account for 47% of the variance in IES scores.
Social Support and IES.

Table 22: Multiple Regression Analysis of Social Support on IES.

<table>
<thead>
<tr>
<th>SUPPORT FACTOR</th>
<th>B</th>
<th>SEB</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of Social Support</td>
<td>3.97</td>
<td>1.39</td>
<td>2.85</td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>Use of Social Support</td>
<td>1.76</td>
<td>0.89</td>
<td>1.96</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Satisfaction with Social Support</td>
<td>-1.29</td>
<td>1.19</td>
<td>-2.45</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Facts</td>
<td>-0.25</td>
<td>1.53</td>
<td>1.67</td>
<td>ns</td>
</tr>
<tr>
<td>Feelings</td>
<td>-1.32</td>
<td>1.44</td>
<td>-0.91</td>
<td>ns</td>
</tr>
<tr>
<td>Presence of Social Support</td>
<td>-1.75</td>
<td>1.29</td>
<td>-1.35</td>
<td>ns</td>
</tr>
</tbody>
</table>

R2 = 0.20
F = 5.03
P = <0.0001

Social support factors therefore account for 20% of the variance in IES scores.
Full Regression Analysis.

Finally the composites generated from the two preceding regression analyses were derived forming a general predictor of coping and social support respectively. These predictors were entered into a regression analysis along with a number of other dispositional and background variables in order to suggest a more comprehensive model of IES.

Table 23: Full Regression Analysis.

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>B</th>
<th>SEB</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coping</td>
<td>7.21</td>
<td>1.63</td>
<td>4.41</td>
<td>&lt;0.0000***</td>
</tr>
<tr>
<td>DSM-IV Stressor Criterion Met</td>
<td>6.80</td>
<td>1.90</td>
<td>3.58</td>
<td>&lt;0.0005**</td>
</tr>
<tr>
<td>Social Support</td>
<td>3.29</td>
<td>1.24</td>
<td>2.64</td>
<td>&lt;0.0093**</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1.19</td>
<td>0.35</td>
<td>2.60</td>
<td>&lt;0.009**</td>
</tr>
<tr>
<td>Fear, Helplessness, Horror</td>
<td>0.34</td>
<td>4.04</td>
<td>0.84</td>
<td>NS</td>
</tr>
<tr>
<td>Education</td>
<td>0.32</td>
<td>1.50</td>
<td>0.22</td>
<td>NS</td>
</tr>
<tr>
<td>History of Anxiety/Depression</td>
<td>0.13</td>
<td>2.42</td>
<td>0.05</td>
<td>NS</td>
</tr>
<tr>
<td>Injury</td>
<td>-2.90</td>
<td>3.72</td>
<td>-0.78</td>
<td>NS</td>
</tr>
<tr>
<td>Depression</td>
<td>-0.33</td>
<td>0.40</td>
<td>-0.82</td>
<td>NS</td>
</tr>
</tbody>
</table>

R2 = 0.61
F = 19.85
P = <0.0000

* = P < 0.05
** = P < 0.01
*** = P < 0.000

The full regression analysis accounts for 61% of the variance in IES scores.
Figure 2: Diagrammatic Representation of Multiple Regression Model

COPING FACTORS
1  0.68
2  0.17
3  0.28
4 -0.05
5 -0.36

SOCIAL SUPPORT FACTORS
1 -2.57
2 -1.32
3 -1.75
4  3.97
5 -2.92
6  1.76

OTHER FACTORS
ANX  1.19
DEP -0.33
INJURY -2.90
DSM  6.82
HIST  0.13

COPING ZPR = 7.21
SOCIAL SUPPORT ZPR = 3.28
IES SCORES
Section Eight: Results of Information Leaflet Survey.

Of the 82 subjects who were sent the information and self-help leaflet, 29 returned a questionnaire a response rate of 35%.

The responses of the subjects are described but are most clearly illustrated diagrammatically, in the bar charts accompanying the descriptions.

The raw data show a clear difference in the responses of individuals who are suffering psychological distress compared to those who are not on some items and a correlational analysis using Pearson’s product moment correlation examines this further.

Of the 29 subjects who responded all but one rated the leaflet as easy to understand.

1. Was the factual information perceived as helpful for the individual?
For those subjects whose HADD and IES rating scores were above the cut-off scores (n=16), all rated the leaflet as helpful for them in its presentation of factual material. Six subjects rated it as being a little helpful, six rated it as quite helpful and four as very helpful. Of the subjects who did not score significant ratings of psychological distress, (n=11), four found it not at all helpful, three as a little helpful and four as quite helpful. No subject in this non-distressed group found it very helpful.

2. Was the self-help information perceived as helpful by the individual?
Of those subjects who appeared to be suffering from anxiety, depression or PTSD all rated the self help information as being helpful to them. Seven rated it as a little helpful, seven as quite helpful and two as very helpful. The group of subjects who did not score above the cut-off points on the measures of psychological distress
again responded differently. Four of this non-distressed group rated the information as not at all helpful for them and seven rated it as a little helpful.

Figure 3: Percentages reporting factual and self-help information as helpful. 
D= Distressed. 
ND= Nondistressed.
3. Did the subjects rate themselves as more likely to talk about the facts of the accident after reading the leaflet?

Of those scoring above the cut-offs on the HADD and IES, eight answered yes and eight answered no.

Of those not scoring above the cut-off scores on these measures, ten responded no and one yes.

4. Did the subjects rate themselves as more likely to talk about their feelings in relation to the accident after reading the leaflet?

The numbers rating themselves more likely to talk about their feelings were identical to those given above for both groups.

Figure 4: Percentages reporting increased likelihood of talking about facts and feelings as a result of reading leaflet.

D= Distressed.
ND= Nondistressed.
5. Are the subjects likely to use the information given in the leaflet to deal with their own situation?

Of the group of subjects identified as distressed, ten indicated that they would use the information while six indicated that they would not do so.

The group of subjects whose symptom rating scores were below the cut-off levels indicated that two would use the information to deal with their own situation and nine would not.

Figure 5: Percentages reporting they would use leaflet in dealing with own situation.
D= Distressed.
ND= Nondistressed.
6. *Did the subjects feel that the leaflet would be helpful for RTA survivors?*

All of the subjects identified as distressed felt that the leaflet would be helpful and this was also true of the majority of the non-distressed group where nine indicated that they felt this would be helpful and two felt that it would not.

Figure 6: Percentages of subjects perceiving that the leaflet would be useful to other RTA survivors.

D= Distressed.
ND= Nondistressed.
7. Which groups of RTA survivors did the subjects feel the leaflet should be available for: only those seriously injured, anyone actually injured, all survivors or did they feel that it should be available for no-one after an RTA?

The distressed group replied as follows: fourteen subjects felt that all those involved in an RTA should have the leaflet available, one felt that the most injured group should be targeted and one felt that anyone injured should have the leaflet available.

Of the group not identified as distressed, four felt it should be available for all, four for the most seriously injured and three suggested that it should be available for all those injured.

The responses of those subjects with anxiety, depression and PTSD were of particular interest and therefore a correlational analysis was undertaken to look at the degree of association between certain responses and measures of psychological distress. Pearson's product moment correlations were carried out and the results are listed in table 24.
Table 24: Correlations between symptom groups and reaction to leaflet.

<table>
<thead>
<tr>
<th></th>
<th>HADD</th>
<th>HADA</th>
<th>IESI</th>
<th>IESA</th>
<th>IEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helpful in Describing Possible Reactions</td>
<td>NS</td>
<td>0.44*</td>
<td>0.43*</td>
<td>0.44*</td>
<td>0.44*</td>
</tr>
<tr>
<td>Helpful re Self Help</td>
<td>NS</td>
<td>0.51**</td>
<td>0.50**</td>
<td>0.56**</td>
<td>0.56**</td>
</tr>
<tr>
<td>Likely to Discuss Facts</td>
<td>NS</td>
<td>NS</td>
<td>0.42*</td>
<td>0.40*</td>
<td>0.45**</td>
</tr>
<tr>
<td>Likely to Discuss Feelings</td>
<td>NS</td>
<td>NS</td>
<td>0.42*</td>
<td>0.40*</td>
<td>0.45**</td>
</tr>
<tr>
<td>Likely to use Information in Own Situation</td>
<td>NS</td>
<td>0.44*</td>
<td>0.48**</td>
<td>0.46**</td>
<td>0.51**</td>
</tr>
</tbody>
</table>

* = P < 0.05  
** = P < 0.01  
*** = P < 0.000

The results from these correlations show moderately significant positive correlations between those with PTSD symptoms and finding the leaflet helpful. There are also moderate positive correlations between PTSD symptoms and intention to use the information in the leaflet.

No significant correlations were observed between ratings of depressive symptoms and responses to any of the questions.

Moderate positive correlations were observed between ratings of anxiety and finding the leaflet helpful and also with the intention to use the information to deal with their own situation.

The findings in this results section will now be discussed more fully and there will also be an attempt to explore the relevance of the findings and integrate them where possible with the research questions posed in the introduction and the broader literature on the psychological sequelae of traumatic events.
DISCUSSION

The first part of this section will discuss the limitations of the study and comment on the sample of subjects in order to define the parameters within which the results can meaningfully be discussed. Following sections will comment on the findings reported in the study and link these with the existing literature in this area. Consideration will also be given to areas for further research.

Limitations of this study.

Firstly, the design of the study was limited by lack of time, lack of finance and lack of resources. An interview study would have been the method of choice and a prospective study would have provided the opportunity to look in a more meaningful way at the variables of interest. A questionnaire study is intrinsically biased by the fact that one can only comment on those who respond. This results in a sampling bias as response rates are usually less than in interview studies. While this study obtained a response rate comparable to another postal survey involving road traffic accident survivors, (Interministerial task force, Ontario, 1981), a response rate of 36% does not enable one to generalise the results confidently. Correlational studies, of which the present study is an example, can only point to possible relationships between variables but cannot determine causality nor exclude the possibility that the relationships observed are mediated through the effects of other variables.

There are further reasons for choosing methods other than a questionnaire study with this sample of subjects where a number of factors may result in a low level of response:

1. A number of those involved in RTAs are known to take steps to avoid being identified. A previous study found that in attempting to trace RTA survivors, even after excluding individuals known to be highly mobile, well over 1/4 could not be
traced (Mayou, Simkin, & Threlfall, 1991). Some individuals were known to have moved however there was also evidence that false addresses had been given. In the present study, at least 3% of the addresses given could not be traced after excluding incomplete addresses.

2. A high number of accidents are known to follow alcohol consumption (Department of Health, 1993) and other accidents may involve police charges e.g. driving without due care and attention, or not having a valid licence, road tax or insurance. Davis & Breslau (1994), cite evidence that RTA is more common amongst individuals with a history of drug and alcohol dependence and also psychiatric conditions including antisocial personality disorder and dementia. It might be presumed that all these factors might lower response rates and again supports the argument that to gain as comprehensive an assessment as possible of the RTA population, interview techniques are preferable.

3. The study also needed to ask about sensitive issues such as history of previous mental health problems and attribution of blame for the accident. This may have been off-putting for some subjects especially those likely to be involved in litigation and insurance claims. Some support for this assertion may be drawn from the fact that over 60% of the sample who responded, blamed others considerably and only 26% admitted blaming themselves to any degree for the accident.

4. It was anticipated that levels of distress in this population would be high as a result of involvement in RTA. Asking distressed individuals to complete a lengthy questionnaire when they are coping with a number of other likely stressors (such as probable car repairs, possible injuries, filling forms for insurance companies etc.), is likely to contribute to a lowered response rate. Some evidence for this assertion may come from the fact that a questionnaire study which approached RTA survivors five to six years after RTA elicited a response rate of over 50% (Mayou et al., 1991). That study also focused on changes in driving behaviour,
which may appear less intrusive than the questions asked in this study.

Other aspects of the design can be validly criticised. Self-rating scales for symptoms of anxiety, depression and PTSD, even when measures are carefully chosen, are less satisfactory than clinical assessment. The use of multiple measures was excluded because of the need for brevity. Again, an interview with the subject would have been preferable.

The Sample Who Responded.
While it is important to be aware of the moderate response rate, the results section shows that in many ways the sample of those responding was representative of the population as a whole. In many important respects such as level of injury, it is seen to be largely representative of the total accident sample. The sample is also representative in terms of gender but under represents the 17-25 age group. This may be relevant as young adults were identified earlier in this work, both as a population at increased risk of developing PTSD and also as a group at increased risk of involvement in RTA.

Those subjects who received follow up treatment from their General Practitioner were also less likely to respond to the questionnaire, perhaps feeling less affiliation with the hospital than those who had received treatment there.

With these criticisms borne in mind and the limitations they pose on the ability to generalise from the results obtained, the findings from the study will now be considered in more depth.

The Coping Scale.
One of the main aims of the study was to develop a coping scale which would assess both cognitive and behavioural approaches currently being used by individuals to cope with their accident. Principal component analysis using oblique
rotation into simple structure yielded six factors of which five were retained. The five factors which emerged were broadly as predicted. The scale which was rejected resulted in too few items and a low reliability co-efficient. It had attempted to measure internality versus externality in coping style. The fact that these items actually correlated with other coping factors and did not emerge in an independent factor confirms predictions made in other studies (Solomon & Benbenishty, 1989; Cassidy & Long, 1996) which have pointed to the fact that locus of control is associated with outcome through its relationship with other factors such as threat appraisal and coping.

The reliability coefficients using Cronbach's alpha are satisfactory ranging from 0.93 to 0.68. The factors which emerged were meaningful with items relating to coherent coping constructs. The scale would therefore appear to have adequate validity and reliability although further work beyond the scope of this study remains. Such work would include further data analysis looking at how the factors co-vary and perhaps further development of the scale to include coping factors such as blunting/monitoring and threat devaluation. Later discussion will explore in more detail ideas for future work and discuss the relationships observed between coping factors and psychological measures.

**Psychological morbidity reported by participants.**

One of the main hypotheses of the study was confirmed in that just over half of those who responded reported significant symptoms of psychological distress suggestive of psychological disorder. The largest symptom group featured symptoms of anxiety. Symptoms of intrusion and avoidance suggestive of a diagnosis of PTSD were reported by almost 30% (or 25% if the higher cut off score of 35 is used) and symptoms of depression were reported by just over one fifth. In all symptom groups significant levels of co-morbidity were reported by the majority of subjects.
Patterns of co-morbidity.
The most common co-morbid patterns involved anxiety with symptoms of PTSD (12.9%) which was a surprising finding as the literature suggests that depressive symptoms most commonly feature with PTSD (Davidson, Kudler, Saunders & Smith, 1990; McFarlane & Papay, 1992). It is considered that this finding may reflect the relatively early stage at which the sample was being studied. The fact that IES scores and depression scores do tend to be associated was reflected in the correlational analysis which reported significant correlations between IES and depression scores. However, it may be that this correlation reflects a relationship with anxiety as no subjects were observed to report PTSD symptoms and depression in the absence of significant ratings of anxiety. Approximately 10% of the sample reported symptoms of all three disorders at significant levels.

An unexpected finding was that male and female patterns of co-morbidity were different. In the female subgroup, highly significant correlations were found between depression and anxiety scores, between depression and IES scores and anxiety and IES scores. No significant correlations were observed between any measures for male subjects. This finding suggests that the psychological response of males and females had different characteristics with the female symptom patterns appearing to strongly co-vary.

These figures suggest that there is significant psychological morbidity associated with RTA, even in the absence of the moderate to severe injury reported in other studies. Only 25% of the sample reported a previous history of anxiety and depression. It confirms the suggestion made by Mayou et al., (1993), that there may be significant rates of psychological morbidity in those RTA survivors who do not sustain serious injury or are perhaps not injured at all and points to the possible central role of subjective threat as a stressor component.

It is interesting to compare the findings of this study with other studies which have
reported on psychological sequelae at similar points in time. Six weeks after involvement in an accident, Feinstein (1993), reported that 27.3% of the sample of 48 that he studied, could be defined as psychiatric cases using a cut-off score of 14 on the Clinical Interview Schedule. At this six week point, 25% of the sample were classified as suffering from PTSD. This figure is identical to the figure reported in this sample if the more rigorous cut-off score of 35 on the IES is used (Neal et al., 1994). The majority of subjects in this study were also reporting symptoms at a time period between one and four months after the accident. Shalev et al. (1996), reported PTSD rates of 25% in a sample of injured trauma survivors the majority of whom had survived RTA, six months after the event.

It is more difficult to make comparisons with the sample reported by Mayou et al. (1993). Although only 13% of their patients were assessed as satisfying DSM-III-R criteria for PTSD, the sample of patients differs from this sample and the sample reported by Feinstein (1993), in one very important respect. While excluding head-injury, Mayou et al. included patients who had been unconscious at some point, many of whom did not have full recollection of the RTA. This factor was reported by the authors to be negatively associated with PTSD and similar findings are reported elsewhere (Bryant & Harvey, 1996). In the study by Bryant & Harvey, symptoms at a level suggestive of PTSD were reported in a third of patients studied shortly after admission to hospital after RTA. Over one quarter of subjects in their study had suffered mild head injury and head injury was reported to have negative associations with intrusive symptoms.

The findings of significant levels of distress suggestive of psychological morbidity in RTA survivors is not new. It is however a new finding in this group of survivors who have not previously been studied in detail. The majority, (almost 70%), had not sustained more than minor injuries and were discharged immediately after assessment/treatment. Just under 10% of the sample had injuries requiring admission to hospital. Despite this, the level of symptoms suggestive of PTSD was
similar to groups reporting higher injuries as discussed above. While it could be argued that the extent of distress reported might be a biased estimate given the response rate of 36%, this criticism must be weighed against two important points. Firstly, even if all the other subjects approached are assumed to be functioning well, the number with IES scores suggestive of PTSD is about 10% and still a significant number. The second point is that individuals with PTSD are known to actively avoid reminders of the stressor event. It is equally plausible to assume that the more distressed individuals were less likely to respond to a lengthy questionnaire which required them to focus in some detail on their accidents.

This study focused on those without head injury and loss of consciousness and this is assumed to have led to higher reporting of PTSD symptoms than if the whole sample were included. Nonetheless rigorous exploration of the relationship between lost consciousness for the event and subsequent PTSD appears warranted given the evidence that PTSD symptoms have been reported in subjects who have no personal recollection of their RTA (McMillan, 1991; Bryant & Harvey, 1996).

**STRESSOR VARIABLES AND OUTCOME.**

This section will explore the relevance of the results from this study in the context of general proposals made in relation to the stressor variable.

**Injury level and psychological distress.**

Those subjects who sustained higher levels of injury as measured by their discharge category were found to report higher IES scores than groups sustaining low levels of injury and these differences were statistically significant. Specifically, subjects whose injuries necessitated hospital admission, hospital follow-up or follow up by their doctor reported more symptoms of intrusion and avoidance. It is important to point out that injury alone did not account for PTSD symptoms as
24% of the low injury group had scores on the IES suggestive of PTSD. In the high injury group the figure was (43%), approximately double. These findings are in line with the hypotheses of the study.

The finding was similar with measures of depression and anxiety. Those with more severe injuries reported higher levels of depression (30% vs 17%) and anxiety (56% vs 34%) and these differences were statistically significant. Nonetheless, these figures also illustrate that morbidity was not confined to high injury groups.

**Reported injury to self or others.**

Perception of degree of injury to self was positively correlated at low/moderate levels with all measures of psychological distress and particularly symptoms of intrusiveness. Extent of injuries to others and witnessing injuries to others were found to have no correlation with outcome on any measure. This was a surprising finding in that it is one of the stressor components proposed by Green (1993). The finding may be explained in a number of ways. It is possible that the injuries witnessed were not sufficiently "grotesque", or were not perceived as life threatening. It may be that witnessing injuries to others is a less potent stressor when an individual is injured themselves and/or preoccupied with threat to self. It is also reasonable to suggest that injury to others is most stressful through the processes of appraisal. When emergency workers report distress at incidents involving others, it is frequently reported that the horror of the event awakens their own sense of mortality or a threat to their own loved ones. This hypothesis suggests that rather than altruism mediating the effects of this stressor component, it may be self-mediated i.e. an indirect threat to the self through the process of threat appraisal. While there is extensive anecdotal support for this proposal, the hypothesis requires empirical validation.
Perceived threat of injury to self or others.
Where there was perceived threat of injury to self, or threat of injury to others, there were low positive correlations with outcome but only for measures of PTSD. This would appear to provide some support for the stressor criterion as defined by DSM IV (APA, 1994). It appears to have some specificity in that there was no correlation between this variable and any other outcome measure. It is interesting that the threat of injury to others was associated with PTSD symptoms whereas actual injury to others was not. This may be seen as supporting the argument for the need to incorporate subjective dimensions of threat into the stressor dimension. There have been objections to this idea because of fears that objectivity may be destroyed and possibly because of the large influence that legal considerations have had on this issue in the study of PTSD in America.

Perceived threat of mortality.
Perceived threat to the life of self or others is another stressor dimension proposed by Green (1993), and is again included in the DSM IV definition. In this study, the perception of risk to life was positively correlated at low/moderate levels with IES scores where the threat was to self. Where the threat was perceived to be to the life of others the correlations were positive but lower. It is interesting to note that perceived threat to life did not correlate with measures of anxiety and depression. The finding from this study both provides some support for the stressor criterion definition and may point to the specificity of this risk variable.

The experience of intense fear, helplessness and horror.
Further support for the stressor definition was provided in examining this variable as the reporting of fear, helplessness and horror during RTA (satisfying the second stressor criterion of DSM IV), was positively correlated at moderate levels with all IES measures. These correlations were all highly significant. There was also a low positive correlation with anxiety ratings.
Where both DSM IV stressor criteria were met, there were low positive correlations with all IES measures but not with anxiety or depression. In the regression analysis, experiencing a RTA which satisfied the DSM IV stressor criterion accounted for the second highest proportion of the variance in IES scores.

In summary, within-stressor variables tend to have stronger associations with PTSD symptoms than with anxiety or depression although perceiving injury to the self, correlated positively with all measures. Although the correlations with IES were positive they were not particularly high and point to the fact that the relationship between experiencing a stressor satisfying the DSM IV criteria and developing PTSD symptoms is likely to be influenced by other factors.

In discussing correlational data it has already been stressed that association cannot be taken to imply causality. On the basis of this data it could be argued that subjects with high IES scores were more likely to recollect threat to self or others and to perceive an event with fear, helplessness and horror or that the observed relationship may be mediated by another variable. While causality in the other direction may seem more logical, these data cannot be seen as confirmation of the hypothesis. Other studies have reported that subjective ratings of severity failed to predict PTSD (Feinstein & Dolan, 1991), although their sample was biased towards young males who may have been less likely to acknowledge fear. In support of this explanation, it was found that on other measures their female subjects appeared more ready to acknowledge distress than males.

Dimensions of loss.
The study also attempted to examine the relationship between stressor dimensions relating to loss and psychological distress. Perceived degree of loss relating to disability, disfigurement, and loss of physical well being, were positively correlated at low levels with all outcome measures. It has previously been reported that degree of injury resulted in significantly higher IES, anxiety and depression scores
and these correlations may be reflecting this. Low positive correlations were observed between financial loss and symptoms of intrusion and depression but on no other measures. It is possible that where there was perceived threat to life of self or other (as reported by 68.6% of this sample), financial losses assume less significance. Perceived loss of mental well being, showed moderately high, positive correlations with all measures reflecting the relatively high distress rate reported in this sample.

Taken together these results do not provide support for the proposals of Thompson (1991) who suggested that dimensions of stressors may be related to symptom pattern. Threat to self or others was associated with PTSD but not with anxiety as proposed. Anxiety was only correlated with threat, when fear, helplessness and horror were reported. In this case a low positive correlation was found. Perceived injury to self correlated with all measures. It was hypothesised that loss may show stronger associations with depression and while this study did not address issues such as bereavement which might be a feature in some stressor experiences, it could also be argued that bereavement is a separate issue contributing to mental health issues in its own right. In summary, the loss dimensions studied here were found to have positive correlations with all outcome measures and not just depression.

**INDIVIDUAL VARIABLES AND OUTCOME.**

**Age, gender and educational level.**

No significant effects of age, gender or educational level were found in relation to measures of psychological morbidity after RTA. It will be remembered that one of the age groups hypothesised to be most at risk of PTSD was under represented in this sample.
Prior RTA.

Over twenty seven per cent of the RTA group studied, had been involved in a previous RTA. This is considered to be a surprisingly high percentage. In 59.6%, the prior accident satisfied the stressor criteria of DSM IV. Mayou et al. (1993), recorded, but did not comment upon rates of previous involvement in road traffic accidents. Findings were even higher than those reported here. Thirty three per cent of car occupants reported at least one previous RTA including 9% who reported more than two. Another group of whiplash injury survivors reported almost identical rates. Sixty percent of motorcycle accident survivors had been involved in a previous RTA, in which 44% had sustained injuries. While RTA has been described as one of the most commonly occurring traumatic events reported (Norris, 1992), the finding may lend support to those who have argued that traumatic events are not just randomly occurring events but more likely to happen to some groups rather than others (Breslau et al., 1991). It also provides support for those who have stressed the need to look at the psychological sequelae associated with multiple traumatisation (Green, 1994). Given the tremendous cost of RTA to the individual, society and the NHS, described elsewhere (Raffle, 1991) it may be useful to look at the reasons why some are involved more than others. In addition to the previous risk variables documented earlier, there are other risk variables which emerge from the literature. It has been reported that those who develop re-experiencing symptoms subsequent to RTA, often describe dramatic perceptual disturbances when subsequently driving which have led to hazardous situations (Burstein, 1989; Bryant, 1996).

Prior RTA was studied in regression analysis by Bryant & Harvey (1996). Prior RTA did not make a significant contribution to post traumatic symptoms in their analysis but as has previously been suggested it may be necessary to assess whether the accident was accompanied by intense fear, or blocked from memory by unconsciousness.
In the present study it was also found that neither involvement in prior RTA or injury in a prior RTA was significantly correlated with any outcome measure. However, involvement in a prior RTA in which intense fear, helplessness or horror were experienced did show significant correlations with measures of psychological distress. No relationship was found with depression but there were low/moderate positive correlations with anxiety, intrusion, avoidance and total IES. This finding may suggest that these individuals are currently reporting symptoms which have resulted from an earlier RTA or may be interpreted as providing indirect support for one of the hypotheses of the study. This was based on the premise that prior RTA accompanied by intense fear would be likely to impede information processing mechanisms. In accordance with several models of PTSD, this may result in unresolved issues which may be reactivated by future traumatic events or contribute to the stress experienced in a second RTA, thereby increasing the risk of morbidity. The correlational nature of the study precludes assuming causality and it might be also be argued that those with current anxiety and high IES scores recall the experience of a prior RTA with more fear, although this seems less likely.

The hypothesised role proposed for prior RTA is illustrated in Figure 7 overleaf.
Figure 7: Possible Role of Prior RTA in Increasing Vulnerability to PTSD Symptoms.

1. Prior RTA with intense F, H, H:
   - Risk of emotional/information processes being overwhelmed.
   - Risk of avoidance of fearful memories/situations.

Resolution of information into schemas which accommodate event.  

No/partial accommodation of traumatic material leaving unprocessed material & intrusion avoidance.

Above schemas may or may not be challenged. If challenged:

- accommodation
  - no symptoms
  - symptoms

- no accommodation
  - no symptoms
  - symptoms

2nd RTA with/without F, H, H.

Unresolved material reactivated.
As only 16% of the total sample reported prior RTA with intense fear, helplessness or horror, a larger sample would provide more information about this proposed relationship and indeed about the role of prior trauma in general. This is another case where the design of the study limited the questions which could be asked. An interview design would have enabled the study to address the question of prior stressor events involving intense fear in a broader sense across a range of stressors. It would also have been interesting to examine whether a second similar trauma is a more potent reactivator than a dissimilar stressor.

**Previous history of anxiety and depression.**

Of those who participated in the study, one quarter reported having previously consulted their doctor about anxiety and/or depression. This may seem high if one uses psychiatric diagnostic criteria prevalence rates in comparison which usually estimate the prevalence of these disorders in single figures. It is assumed that subjects responding to the study are reporting depression and anxiety symptoms in a broader sense and in this case the figures reported by subjects are within population estimates. For example it has been reported that the point prevalence of depressive symptoms in the adult population is between 15% and 20% (Fennel, 1991). Summaries of epidemiological research suggest that between 100 and 250 individuals per 1,000 have a psychological disorder in an one year, the vast majority of which is anxiety or depression (Goldberg & Huxley, 1991).

Other research with an RTA population reported that previous history of psychological problems was not a vulnerability factor in PTSD although it was a vulnerability factor for other symptom groups (Mayou et al., 1993). In this study it was found that those subjects who had a prior history of anxiety or depression reported higher IES, anxiety and depression symptoms. In regression analysis however, history of anxiety and depression was not found to be a strong predictor of IES. This may be in accordance with the hypothesis of the study which viewed its effects as indirect and mediated by higher threat appraisal. To clarify this point,
this study predicted that, contrary to the findings of Mayou et al., it would be found that those who had been vulnerable to anxiety and depression previously, would show higher IES scores. This prediction was based on the supposition that the majority of accidents in the study would objectively be rated as low threat. Individuals with a previous history of anxiety and depression were predicted to appraise more threat under low threat conditions making them more vulnerable to PTSD. In studies where greater objective threat exists then it is predicted that this relationship is over-ridden as more individuals appraise threat and become vulnerable thereby masking this effect. This hypothesis requires further exploration but makes sense in view of the findings of Solomon, Mikulincer & Benbenishty (1989) and Shore, Tatem & Vollmer (1986). These findings suggest that the risk factors pertinent to less extreme stressors become less significant as stressor magnitude increases.

**Coping style and measures of psychological distress.**

It was suggested that coping style has a role to play in the aetiology of PTSD. It was proposed that this might be as a function of the way coping style facilitated confronting the event at an emotional and a behavioural level and it was suggested that coping styles which were characterised by avoidance would be associated with higher IES scores.

Some support was found for these proposals in the present study. The main factor which correlated with PTSD measures was the catastrophising/avoidant factor. This first scale was characterised by an avoidant behavioural style and catastrophic cognitions, However it showed highly significant, moderate/high positive correlations with all other measures. This may be a reflection of the high levels of co-morbidity reported or it may show that this coping scale is associated with increased psychological sequelae in general and not just PTSD. Avoidance and catastrophising would intuitively be perceived as inhibiting psychological adaptation; conversely, threat devaluation has been proposed as a coping strategy.
likely to minimise the risk of phobia development (Davey, Burgess & Rashes, 1995). Catastrophising also relates to the findings in studies of hardiness (Kobassa, 1979), where those who perceive problems as challenge rather than crisis are reported to be more resilient to stressful life events.

Several questions are posed by this finding. Is this coping factor just measuring current distress? It is possible that this is true and other studies have pointed to correlations between catastrophising and psychological distress (Harkapaa, Jarvikoski & Vakkari, 1996). The possible conceptual overlap between catastrophising, which taps into cognitive errors, and depression, has also been discussed in the literature (Jensen, Turner, Romano & Caroly, 1991). Although there is evidence to suggest some overlap, the authors review evidence from longitudinal research which suggest that catastrophising is conceptually distinct and predictive of poor psychological and physical adaptation (in the context of pain studies), even when depression is controlled for. The catastrophising/avoidant scale in this present study is clearly subject to the criticisms levelled at other catastrophising measures. It may also reflect relationships with other predictor and outcome variables and the methodology of the study does not exclude this. However other findings would suggest that the role of catastrophising in relation to the development of PTSD merits further study. For example, it is important to note that in the regression analysis, the contribution of depression to the prediction of IES was found to be non significant and secondly, a previous study reported that initial distress as measured by the IES and other psychiatric disorder appeared to be relatively independent phenomena (McFarlane, 1988).

It is clear that prospective studies are needed to clarify whether catastrophising is predictive of increased risk of psychological morbidity after RTA and perhaps the relationship may be further clarified if attempts are made to exclude confounding variables in catastrophising scales. The possibility that the effects of catastrophising are mediated through avoidance is also an interesting hypothesis.
The other coping factor with interesting correlations with psychological measures was the cathectic/avoidant scale. This scale was characterised by an avoidant cognitive and behavioural style and featured items which appeared to serve the function of ameliorating emotional discomfort. Highly significant, positive correlations at a moderately high level were observed between this factor and depression, anxiety, and avoidance scores. Correlations between this factor and intrusions and total IES were just slightly lower possibly reflecting the fact that some of the items serve the function of reducing intrusive thoughts (e.g. thinking about happier times, appetitive behaviour, increased sleeping). Similar questions are posed about the relationship of this factor to psychological morbidity as stated above and a correlational study cannot hope to satisfy these criticisms. The fact that the subjects in this study were reporting coping style at a relatively early point after the stressful event does however somewhat temper the criticism that these coping measures are only adaptations to the presence of distress. Twenty seven percent were reporting around one month after the accident and another 68.5% were reporting less than four months after the event.

Other coping factors showed positive correlations with outcome measures, although the correlations were lower. Confronting/positive appraisal showed low, positive correlations with all measures other than depression. Although in apparent contradiction to the hypotheses of the study, it is perhaps to be expected that confronting the event would initially be associated with increased levels of anxiety and IES scores given the early stage at which these individuals were assessed. The oscillation of intrusion and avoidance symptoms which may be characteristic of the recovery and adaptation phase (Horowitz, 1986) may contribute to this finding. It might be expected that if this explanation of the findings is true then prospective studies would show a negative correlation or no correlation between this factor and IES scores at follow up. Finding purpose had low positive
correlations with IES total and with anxiety and a highly significant, moderately high correlation with avoidance. In interpreting this finding it should be noted that the scale items were negatively correlated with the scale. The factor may therefore reflect passivity in cognitive attempts to cope with the event and this may be in keeping with the appraisal models of PTSD described in the last literature review which would suggest that making sense of a traumatic event and incorporating it into some understanding of the self and one's world are important for recovery.

The coping scale named rational action was found to have no significant correlations with any outcome measure in line with predictions of the study.

It might have been expected that if an avoidant style was associated with IES symptoms a style which featured confronting the event would be associated with lower IES scores and that negative correlations might be expected. At the early stage that these subjects were reporting the lack of findings may not be surprising. As has been discussed above, Horowitz' (1986) model would predict that confrontational styles would result in some symptoms of intrusion and avoidance as part of the normative adaptation process. There is adequate support from the literature reviewed earlier, which supports the view that resolution possibly continues at least up to the three/four month point, perhaps accounting for these findings. The converse argument is that avoidant coping style is purely measuring a feature of distress. Again, prospective studies are needed to clarify this point. Such studies are clearly called for given the consistency with which coping style has been associated with psychological morbidity across a number of areas including pain (Jensen et al., 1991), fears and phobias (Davey, Burgess & Rashes 1995 and PTSD (Solomon et al., 1989). If coping variables are found to be predictive there are obvious implications for interventions aimed at treatment and prevention.

Coping style was found to predict the largest portion of variance in IES scores in
a regression analysis, accounting for 47% of the variance. Coping was found to be more predictive than stressor variables, other personal variables, or situational variables including social support. Few studies have previously considered the role of coping in the development of PTSD and these findings suggest that further research in this area is warranted. Questions are raised as to whether coping is an important factor across other stressor events and indeed across the larger population of RTA survivors including those with more serious injuries. The results from this study would suggest that such a relationship might be found although the findings of Shore et al. (1986), suggest that caution should be advocated when attempting to extrapolate risk factors across stressor events. The effects of risk variables and stressor intensity may interact. Coping style may exert a less powerful effect as stressor magnitude increases.

Blame.
The hypothesis that higher attribution of blame would be associated with higher morbidity was not supported. The majority of subjects in this study felt that someone else was to blame for the accident. Whether this was an honest appraisal of belief, anxiety about litigation, or cognitive dissonance associated with insurance claims where the driver is instructed never to admit liability, cannot be ascertained. The study assessed this variable inadequately, being limited by the questionnaire format, however a previous study using interview format found no association between the attribution of blame and symptoms of PTSD (Mayou et al., 1993). The authors in this study also commented that even those subjects who did acknowledge responsibility showed little guilt or distress even where the accident had resulted in the injury or death of others. A recent study by the Automobile Association (1996) has also found that most drivers did not acknowledge that their driving contributed to accidents and blamed other drivers. Of course those attributing blame to themselves may not have responded to this study but this finding appears surprisingly consistent across studies suggesting individuals are very defensive about their driving style. The finding may contribute
something to understanding the dynamics behind "road rage" behaviour.

THE RECOVERY ENVIRONMENT.

It was one of the predictions of the study that social support measures would be associated with morbidity. This section will discuss the results relating to social support measures and will also discuss the relationships observed between involvement in litigation, (another recovery environment variable) and morbidity measures.

Other studies have suggested that social support may play a role in the development and maintenance of PTSD symptoms (Joseph et al., 1992; Joseph et al., 1993). This study attempted to delineate some of the factors involved in social support beyond the composite measure generated in these studies which although encompassing a number of social support measures, only specifically explored satisfaction and received support as reported by subjects. While the limitations of correlational research preclude assumptions being drawn about causality, some interesting relationships were observed in the present study.

Ability to talk about the facts of the RTA and the subjects feelings in relation to it was found to be negatively correlated at low to moderate levels with all measures of psychological morbidity. While it could be argued that those who were less distressed were better able to talk about their RTA, this finding was predicted and it is in line with bioinformational models of information processing (Lang 1979; Lang, Levin, Miller & Kozak, 1983). This theory would suggest that being able to talk about facts and feelings would enable closest matching of fear networks and facilitate the extinction of arousal and fullest processing of the information. The finding was also expected given the often reported comments of those who work with survivors of traumatic incidents and who describe the apparent need subjects

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have to talk at considerable length about the incident (Raphael, 1986). It is also in keeping with the findings of McFarlane (1988), who reported that those who avoided discussion of a traumatic incident developed more PTSD symptoms. If it is the case that talking about facts and feelings after a Stressor event reduces the likelihood of developing PTSD, then this may throw some light on the therapeutic mechanisms involved in the technique of psychological debriefing as proposed earlier in this portfolio and as described elsewhere (Busuttil & Busuttil, in press).

Presence of social support as perceived by the subjects was found to have low/moderate negative correlations with anxiety and depression although no significant correlation with intrusion and total IES scores. It was interesting to observe that this variable did show a significant negative correlation with avoidance which was in line with predictions of the study and in line with the findings of Joseph et al. (1993) who also reported that the presence of social support appeared to predict less avoidance.

The availability of social support was found to have low negative correlations with depression and anxiety but with no measure of PTSD symptoms. Satisfaction with social support showed highly significant, low/moderate negative correlations with depression and anxiety but again was not correlated significantly with measures of intrusion. Low negative correlations were observed with avoidance and total IES scores. The actual frequency of use of social support was not found to correlate significantly with any measure of psychological distress. Further examination of the importance of satisfaction with social support may be indicated. Joseph et al. (1993), reported that received social support appeared to be more important than satisfaction with social support in their study but review other literature which may suggest satisfaction can be an important variable.

Again these correlations cannot be taken as evidence that measures of social support prevent psychological distress. Those with lower ratings of psychological
distress may feel their support levels are adequate and conversely those with symptoms may report less support as a function of their distress. It is possible that other variables may mediate the observed relationship. However the findings generate two hypotheses: firstly that social support measures may have a preventative role or mediate the impact of the event and secondly that the role of social support may operate differently with anxiety and depression as opposed to PTSD. Social support factors may have a more global effect in reducing anxiety and depression as a wide range of social support factors are associated with the reporting of lower ratings. In the case of PTSD symptoms it may be that the effect of social support in reducing PTSD symptoms might be mediated through its ability to allow individuals to process the facts and feelings of the event and in reducing avoidance; the theoretical rationale behind this point has already been detailed.

In exploring the role of social support in predicting IES scores, the regression analysis indicates that social support accounts for 20% of the variance in IES scores. It appears that social support may be a variable of some importance in explaining why some individuals will develop PTSD after a Stressor event while others do not. Attempts to use regression analysis to identify which social support factors were most predictive, indicated that the factors which predicted variance in IES scores were the availability of social support, use of social support and satisfaction with social support. These factors were not those which correlated most highly with IES scores and it is considered that the regression analysis in this case is reflecting the problem of co-linearity. While it might be reasonable to assume that the social support factors being measured were independent variables, it would seem that the variables may be highly inter-related, resulting in these findings. It is considered that such findings may call into question the validity of the wide use of multiple regression techniques for model building in psychological studies in this area where a lack of independence in the variables may result in spurious findings.
In order to fully explore the importance of the social support variable it is suggested that prospective work is essential and that the use of structured interview techniques would gain more information than questionnaire studies. The social support variable is complex and it is likely that it will need to be further broken down in order to establish which aspects of social support are useful in which circumstances for which individuals. PTSD is a disorder known to severely affect social support networks yet little is known about the dynamics of this relationship. Is it the lack of support which contributes to illness or exacerbates symptoms which then further disrupts support or is it part of the illness that individuals are unable to make effective use of the support that is available or perceive themselves to be unsupported? In addition to these wider issues there are a huge number of social support variables which research could address and these include the relationship between eliciting the support needed and coping; is this for example, just another measure of adaptive coping? The interaction between vulnerability factors and the ability to obtain support is also of interest as is the importance of receiving the support an individual identifies as necessary for themselves. Just as at Christmas, it may be that what an individual wants, needs or even asks for is not what is given. What are the effects of this? The importance of addressing social support in a longitudinal context is important to raise. Not only may this contribute to the understanding of disruption of social support and PTSD but a number of studies exist which highlight the fact that social support after a Stressor event diminishes over time (Joseph et al. 1992; 1993; Pennebaker & Harber, 1993). Given that the resolution of symptoms appears to follow a fluctuating course in many individuals, this may result in a mismatch of need and support.
Other Recovery Environment Factors.

Litigation.
Involvement in litigation was not associated with higher total IES ratings or IES avoidance and there were no correlations with depression. Low significant correlations were found with intrusive symptoms and with anxiety as predicted. This may reflect the fact observed in clinical practice that ongoing litigation can be distressing for individuals leaving the incident unresolved and with constant reminders of the event which appear to serve as triggers for re-experiencing. Anxiety in relation to ongoing litigation is not a surprising finding and this point will be further discussed in the conclusion.

REACTIONS TO INFORMATION LEAFLET.
The information leaflet sent to subjects was not specifically designed for RTA survivors yet it appeared to be perceived as useful particularly by those subjects who were presenting with symptoms of psychological distress at the time of the study. All but one subject found the leaflet easy to understand. The factual content of the information and the self help information presented was perceived as helpful by all subjects with symptoms of distress. Almost two thirds of the non-distressed group reported both types of information to be helpful to some degree.

Given that it was found that being able to talk about facts and feelings in relation to the accident was negatively correlated with symptoms of PTSD it was interesting to note that half of the distressed subjects reported that they were more likely to talk about facts and feelings in relation to the accident after reading the handout. It was of interest that in the correlational analysis, the subjects with PTSD symptoms showed a stronger association with this intention whereas no significant finding was reported for any other symptom group. It was a surprising finding in some respects given the late point in time at which this information was given. It
might have been expected that most subjects would have communicated most of the facts and feelings at this point although there is experimental evidence to suggest that survivors need to talk about the event for longer than those in their support network are prepared to listen (Pennebaker & Harber, 1993). Of those who were not distressed, one subject reported increased likelihood of talking about these issues. The majority of distressed subjects, almost two-thirds, reported that they would use the information given in the leaflet in dealing with their situation.

Correlational analysis suggests that the leaflet is perceived as most useful across all measures by subjects reporting symptoms of anxiety and symptoms of PTSD. No significant correlations between depression scores and ratings on any leaflet measure were found. The findings of the leaflet survey were in line with the predictions of the study.

While noting that the response rate of 35% is considered moderate, it is felt that the use of an information leaflet after RTA could be cautiously advocated on the basis of these findings. All subjects who responded, distressed or not, reported that they felt that the information should be available for RTA survivors. It is of interest that the majority of the distressed group recommended that the information should be available to all involved in RTA, whereas the non-distressed group tended to see degree of injury as indicative of need. No subject who responded dismissed the potential usefulness of the information. It is argued that the findings of this pilot study suggest that this low level and minimally intrusive form of intervention should be evaluated prospectively. There is evidence to suggest that survivors of RTA would like advice and support but do not want "counselling" (Andersson et al., 1994), perhaps reflecting the fact that being perceived as a victim is aversive (Taylor, Wood & Lichtman, 1983). There is evidence that psychological symptoms which do not resolve within the first three to four months within this population are unlikely to spontaneously resolve (Mayou et al., 1993) and that symptoms remaining after four months are treatment resistant (Burstein,
1989). Given the high levels of distress reported in this group there is an obvious need for research to address methods to identify those at risk, to prospectively evaluate whether early intervention may prevent chronic disorder from developing and to assess whether information and self-help information may play a part in this.

The hypothesis that those more able to talk about facts and feelings will be less likely to develop PTSD symptoms and that self help information might facilitate this, merits further study in light of the above findings.

The handout was not specifically written for survivors of RTA and it is felt that the perceived usefulness of the leaflet would be increased if the information was adapted to the specific needs of RTA survivors. Current empirical findings, previously discussed, point to the fact that three overlapping types of disorder are reported of which PTSD is but one. An information leaflet for RTA survivors should address anxiety, depression and phobic symptoms in addition to PTSD. Advising survivors to share the information with friends and family may facilitate understanding of the issues involved. Friends and family are the group most likely to provide the social support which may be important in reducing distress (Andersson et al., 1994) and the information may give these individuals insight into some of the issues involved.

The study clearly tapped into very high levels of distress in this group of RTA survivors. A significant number supplemented the information requested with large amounts of written material detailing the extensive impact the accident was having on their lives. Similar findings have been reported elsewhere (Mayou et al. 1991). Together with experience drawn from work with RTA survivors, it suggests that the stresses involved in dealing with issues subsequent to a road traffic accident, add significantly to the stress of the event. This point should not be dismissed lightly given the fact that increased negative life events post-stressor have been
associated with poorer psychological adjustment including increased rates of PTSD (Solomon, Mikulincer & Flum, 1988). Insurance companies and the litigation process appear to add considerably to the stress involved for survivors as has been reported elsewhere (Andersson et al., 1994; Lemmon, Acimovic, Keatley, Josephs, Carnes & Purves, 1995). Survivors may be confused if one medical "expert" diagnoses PTSD and then another insurance company's chosen medical expert dismisses the diagnosis and by implication any therapeutic recommendations. Individuals tend to expect disinterested care for their well being from medical practitioners. The present system which often leaves individuals feeling that they are under suspicion of malingering does not reflect this. In the authors experience this can lead to individuals becoming disillusioned, even hostile towards medical practitioners leading to a reluctance by individuals to seek help when it is needed. A panel of experts, chosen independently, on the basis of acknowledged expertise in their specialism to give one independent report must be preferable. The current system is also biased towards illness and disability and the financial compensation of suffering instead of finance to promote adaptation and recovery. The majority of individuals will make a good psychological recovery, the general pattern is towards improvement, and a legal system which promotes a victim rather than a survivor mentality can only inhibit this.

SUMMARY.

The present study provides some support for the current stressor definition as proposed in DSM IV and particularly for the validity of incorporating subjective components of the stressor. It strongly suggests that greater consideration must be given to the role of individual coping style in the development of PTSD and perhaps in other psychological morbidity after RTA. The role of coping style across different stressor events should be studied and the need for prospective work has already been stated. The recovery environment variable of social support was
shown to be negatively correlated with all distress measures and adds to evidence highlighting the importance of social support after a stressor event. The quality of social support offered may be particularly important in PTSD. The findings point to interesting questions for those assessing psychological debriefing to consider. Are the potential therapeutic mechanisms related to general social support, its relationship with avoidance or to the specific structure which addresses facts, feelings and relational meaning information?

The findings support the model proposed by Green et al. (1985), which view the development of PTSD as a process involving stressor, individual and recovery environment variables. All three measures significantly contributed to the regression analysis of IES scores. The total regression model which incorporated the above factors accounted for over 60% of the variance in IES scores. It has been argued here that the stressor variables which appear to be most strongly related to PTSD involve threat to self and this supports findings by Green (1993). It is hypothesised that other stressor dimensions proposed by Green such as witnessing the grotesque or injury to other may not be independent stressor variables but mediated through threat to self. Again this proposal requires further empirical validation. Stressor dimensions in the model may therefore have to be seen as having different weightings and these weightings may be seen to vary according to the nature of the stressor event. Specifically, after personal direct exposure to a stressor of intense subjective and objective dimensions, stressor variables may be given more weighting. These situations are more likely to overwhelm the coping mechanisms of a greater number of individuals and recovery environment variables may have less power to ameliorate their impact. Where stressors are objectively less intense, subjective appraisal may be found to be of greater importance. Personal variables such as coping style and environmental variables such as social support may have a more powerful impact in mediating the impact of such events. In each case all three dimensions will impact on adaptation but depending on the situation the contribution of each variable will
differ. The model of Green et al. (1985), could be assessed in relation to these hypotheses.

One of the reasons for undertaking this pilot study was to examine factors which might be drawn together in a "risk scale". The results from this study and from the literature review suggest that the following risk factors should be incorporated and assessed in prospective studies and this work will now be undertaken:

The study will evaluate the role of:

1. Individual coping style.
2. The stressor experience including threat of injury/death to self and threat to others.
3. The social support available and the individuals ability to use that support to talk about facts and feelings.
4. Previous exposure to a stressor involving intense fear, helplessness or horror.
5. The role of repeated exposure to a same stressor event.
6. Consciousness for the event.
7. Degree of injury.
8. Previous history of anxiety, depression or PTSD.

In addition other variables still merit inclusion although controversy exists about their predictive validity. Such measures would include initial IES scores and reports of dissociative symptoms.

While the study can and has been criticised on a number of points, it also has a number of merits. For the first time psychological morbidity has been currently assessed in a population of RTA survivors, the majority of whom escaped serious injury. Significant rates of psychological morbidity have been identified in this
population and attention drawn to the need to consider early intervention given the risk of chronic morbidity. Other issues relevant to this group have been highlighted. The issue of the role of prior RTA in PTSD has been raised and attention has been drawn to the high incidence of prior RTA. The study is also one of few to specifically examine stressor dimensions especially the DSM-IV definition and to look at aspects of social support. Through the development of a valid and reliable measure to assess coping style, the relevance of coping, which accounted for the greatest variance in IES scores in this group, has been raised.

General Overview.

While yielding interesting results the low response rate and questions about the appropriateness of a questionnaire design for this population, raise issues about how far it is possible to generalise the findings of this study. Many of the correlations described are relatively low although this may be in keeping with theoretical understandings of PTSD drawing on complex multifactorial models where the relative contributions of any one factor may be small. Further work remains including item analysis, factor correlation analysis, and readability analysis of the information literature. Future work should be prospective, using self report and objective measures and interview methodology. It should attempt to control for confounding variables (for example alcohol abuse, subjection to prior trauma) which may affect vulnerability to PTSD in this population.
References.


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Diagnostic Criteria for PTSD from DSM-IV:
POSTTRAUMATICSTRESSDISORDER
A The person has been exposed to a traumatic event in which both the following were present:
(1) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.
(2) the person's response involved intense fear, helplessness or horror.

B The traumatic event is persistently re-experienced in one (or more) of the following ways.
(1) recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions.
(2) recurrent distressing dreams of the event.
(3) acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated).
(4) intense psychological distress at exposure to internal or external cues that symbolise or resemble an aspect of the traumatic event.
(5) physiological reactivity on exposure to internal or external that symbolise or resemble an aspect of the traumatic event.

C Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following.
(1) efforts to avoid thoughts, feelings, or conversations associated with the trauma.
(2) efforts to avoid activities, places, or people that arouse recollections of the trauma.
(3) inability to recall an important aspect of the trauma.
(4) markedly diminished interest or participation in significant activities.
(5) feeling of detachment or estrangement from others.
(6) restricted range of affect (e.g., unable to have love feelings).
(7) sense of foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span).

D Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following.
(1) difficulty falling or staying asleep.
(2) irritability or outbursts of anger.
(3) difficulty concentrating.
(4) hypervigilance.
(5) exaggerated startle response.
E Duration of the disturbance (symptoms in Criteria B, C, and D) is more than 1 month.

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

ACCIDENT QUESTIONNAIRE

Please complete all questions and return as soon as possible.

Please circle answer which applies to you:

Male/Female    Age last birthday    Occupation

I am currently: employed / unemployed

I am:

- single
- separated
- living with partner
- divorced
- married
- widowed

What was the highest level of full time education you attended?

- school
- college
- university

Have you ever consulted your doctor because of anxiety or depression? Yes / No

PLEASE ANSWER SOME QUESTIONS ABOUT YOUR RECENT ACCIDENT.

Date of accident:

Type of accident:

Is this accident likely to involve you in legal action? Yes / No

Have you previously witnessed or been involved in a serious road accident? Yes / No

If so, did this involve serious injury to yourself or others? Yes / No

Did you experience intense fear, helplessness or horror? Yes / No
### IN MY OPINION:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all</th>
<th>A little</th>
<th>Moderately</th>
<th>A lot</th>
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<tr>
<td>I feel the accident was avoidable</td>
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<td>I blame myself for the accident</td>
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<td>I blame someone else for the accident</td>
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<tr>
<td>I was injured in the accident</td>
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<tr>
<td>I saw injuries to others in the accident</td>
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<tr>
<td>Others were injured in the accident</td>
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<tr>
<td>During the accident I feared personal injury</td>
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<tr>
<td>I feared injury to others</td>
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<tr>
<td>I felt my life was in danger</td>
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<tr>
<td>I felt the lives of others were in danger</td>
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<tr>
<td>I felt intense fear, helplessness or horror</td>
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<tr>
<td>The accident caused me financial loss</td>
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<tr>
<td>It caused me permanent disability</td>
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<tr>
<td>It caused disfigurement to me</td>
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<tr>
<td>I suffered loss of physical well being</td>
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<tr>
<td>I suffered loss of mental well being</td>
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PLEASE ANSWER THE FOLLOWING:

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at all</th>
<th>A little</th>
<th>Moderately</th>
<th>A lot</th>
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<tbody>
<tr>
<td>Are you able to talk about the facts of the accident?</td>
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<tr>
<td>Are you able to express your feelings about the accident?</td>
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<tr>
<td>How often is someone willing to listen?</td>
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<tr>
<td>Are people sympathetic and supportive at present?</td>
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<tr>
<td>Overall are you satisfied with the support you are receiving?</td>
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<tr>
<td>How often do you use the support that is available?</td>
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</table>
The next part of the questionnaire aims to look at the ways you are coping with your accident and the difficulties which have resulted from it. There are no right or wrong answers and no trick questions!

Please read each one carefully and tick the most appropriate answer. Do not spend too long on your replies - your most immediate reaction is often the most accurate.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
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</thead>
<tbody>
<tr>
<td>I analyse my difficulties and consider all possible actions I can take.</td>
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<tr>
<td>I think &quot;why did this happen to me?&quot;</td>
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<tr>
<td>I find that I avoid activities which made me think about my accident.</td>
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<tr>
<td>I get angry about my situation.</td>
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<tr>
<td>I feel that I am in control of my life.</td>
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<tr>
<td>I think about how I have tackled other difficulties in the past and try to apply lessons learnt.</td>
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<tr>
<td>I drink alcohol, smoke or eat more than I used to before the accident.</td>
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<tr>
<td>I blame myself for my situation.</td>
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<tr>
<td>I blame others for my situation.</td>
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<tr>
<td>I believe that some good can come out of this.</td>
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<tr>
<td>I believe that it is within my power to influence how my life turns out.</td>
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<tr>
<td>It is helpful not to think about what happened.</td>
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<tr>
<td>I tell myself I am unable to cope with this.</td>
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<tr>
<td>I believe that my destiny is in my own hands.</td>
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<td>I sleep more than before the accident.</td>
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<td>I make special efforts to overcome difficulty.</td>
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<td>I freeze and do not know what to do for the best.</td>
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<tr>
<td>I watch TV or read to avoid thinking about my problems.</td>
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<tr>
<td>I tell myself things will get better.</td>
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<tr>
<td>Statement</td>
<td>Not at all</td>
<td>Rarely</td>
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<td>--------------------------------------------------------------------------</td>
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<tr>
<td>I believe I can do a lot to help myself.</td>
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<td>It helps to be with others.</td>
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<tr>
<td>I find I am taking it out on other people.</td>
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<tr>
<td>I try to organise my time better.</td>
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<td>I try to see some purpose in what has happened.</td>
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<tr>
<td>I dwell on what a terrible situation I am in.</td>
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<tr>
<td>I use the situation to prove I can deal with problems.</td>
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<td>I believe in &quot;fate&quot;.</td>
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<td>I tell myself this is not really happening.</td>
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<td>I find I am preoccupied with aches and pains.</td>
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<tr>
<td>I read my horoscope (star signs).</td>
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<tr>
<td>I have made a plan to deal with my difficulties and I am following this plan</td>
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<tr>
<td>I feel that no-one appreciates how difficult things have been.</td>
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<tr>
<td>I distract my self from my difficulties.</td>
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<tr>
<td>I try to find personal meaning in what has happened.</td>
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<tr>
<td>I tell myself things could be worse.</td>
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<tr>
<td>I think a lot about happier times.</td>
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<tr>
<td>I believe I can do things to influence the outcome about my situation.</td>
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<td>I think things through before I react.</td>
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<tr>
<td>I worry about what I am going to do.</td>
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<tr>
<td>I believe that other people have most power to influence the outcome of my situation</td>
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<tr>
<td>I seek expert advice if there are problems I need help with.</td>
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<td>I tell myself others are worse off than me.</td>
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<tr>
<td>I think that if I wait, time will improve my situation.</td>
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<tr>
<td>I tell myself life is impossible.</td>
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<tr>
<td>I cry to let my feelings out.</td>
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<tr>
<td>I deal with difficulties and do not put things off.</td>
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<tr>
<td>I view the situation as terrible and not likely to improve.</td>
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<tr>
<td>I feel I can accept my situation as it is.</td>
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<tr>
<td></td>
<td>Not at all</td>
<td>Rarely</td>
<td>Sometimes</td>
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<tr>
<td>I feel that I can do little to influence what happens to me in life.</td>
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<tr>
<td>I lose my temper.</td>
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<tr>
<td>I tell myself how awful the situation is.</td>
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<tr>
<td>I believe a positive attitude is helpful.</td>
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<tr>
<td>I feel overwhelmed by my difficulties.</td>
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<tr>
<td>I think of different ways to deal with my problems.</td>
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<tr>
<td>I tell myself that nothing good can come out of this.</td>
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<tr>
<td>I believe that I can do little to improve this situation.</td>
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<tr>
<td>I dwell on the injustice of my situation.</td>
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<tr>
<td>I try to learn something from all experiences, good and bad.</td>
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<td>I believe I will never come to terms with this.</td>
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<tr>
<td>I feel I may become a stronger person through confronting this.</td>
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</table>
APPENDIX III.

Thank you very much for completing the questionnaire.

Finally, recent research has suggested that an information and self-help leaflet may be useful for those involved in road accidents. We have no information about how useful this would be. **Please would you look at the leaflet attached and answer the following questions by underlining your response.**

1. Was the leaflet easy to understand? yes no

2. Was the information about possible reactions helpful to you? not at all a little quite helpful a lot

3. Was the information about ways to help yourself helpful for you? not at all a little quite helpful a lot

4. Are you more likely to talk about the facts of the accident? yes no

5. Are you more likely to talk about your feelings about the accident? yes no

6. Are you likely to use the information in dealing with your situation? yes no

7. Do you think that this information would be useful to those involved in road accidents? yes no

3. Should the leaflets be available for: all involved in road accidents only those injured only those seriously injured no-one

Thank you again for your help. Please return this questionnaire in the envelope provided as soon as possible.
SECTION 5: SUMMARY OF MSc COURSE AND THESIS.
Summary of MSc Clinical Psychology Course and Thesis.
University of Manchester. Faculty of Medicine, 1983-1985.

The course required compulsory attendance of taught courses, satisfactory completion of supervised placements and the satisfactory completion of a research thesis defended at viva-voce examination.

**Supervised Placements:**

1. Learning Disability: South Manchester Community Mental Handicap Team.
2. Elderly / Adult Psychology: Cheadle Hospital.
3. Child Psychology: Booth Hall Hospital.
5. Adult Psychiatry: Withington Hospital.

The MSc Thesis is presented in the following pages.
Psychophysiological Response to Emotive Imagery:

The Role of Response Training

A thesis submitted to the University of Manchester for the degree of M.Sc. in the faculty of Medicine, 1985.

A. M. C. Gaynor
Abstract

This study evaluates the role of imagery training in relation to Lang's bioinformational model of imagery processing (1977), and in particular its potential use for improving physiological response to emotive imagery in subjects who have an imagery deficit. Analysis of subject's verbal description of scenes imagined is undertaken to examine more closely the effect of training on the response/stimulus propositional structure of imagery. Analysis of self-generated fear scenes from subjects is undertaken in an attempt to evaluate the stimulus/response propositional structure of spontaneously occurring phobic imagery.

A group of 17 focal phobic subjects are studied. High and low responders to emotive imagery are identified on the basis of heart rate response to response structured fear imagery. Subjects are randomly allocated to response or stimulus training groups. Response training involves training subjects to focus on response propositions in scripts by the reinforcement of response features in verbal descriptions of scenes imagined. Stimulus trained groups undergo the same procedure but are taught to focus on stimulus propositions in scripts. Effects of training are examined on measures of EMG, heart rate and skin conductance. Ratings of compliance vividness and arousal are studied before and after training. Descriptions of scenes imagined are analysed in terms of stimulus/response structure. Results indicate that training is not necessary for the high response group to produce increased response. In the low response group imagery training is necessary to produce increased response. Possible reasons for the lack of imagery ability in low responders are proposed in relation to bioinformational theory.
No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institution of learning.
Acknowledgements

I wish to express my gratitude to Professor Beech, for the use of departmental facilities, my supervisor, Clive Reading for his continual support and advice, and Brian Farragher, for his advice on the statistical analysis. I would especially like to thank all subjects, who gave their time to take part in the study, and John for typing.
INTRODUCTION ................................................................. 1.0
The Role of Imagery in Psychological Therapy .................. 1.1
Theory of Imagery ............................................................. 1.2
Empirical Investigations of Imagery and its Role in Systematic Desensitisation ....................... 1.4
Bioinformational Theory ................................................... 1.8
Imagery Processing .......................................................... 1.9
Modification of Imagery .................................................... 1.10
Imagery Ability and Imagery Training ......................... 1.11
Imagery Training (Bioinformational Model) ..................... 1.13
Aims of the Present Study ............................................. 1.18
Hypotheses: .................................................................... 1.19

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Selection of Subjects ....................................................... 2.2
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Other Measures ............................................................... 2.4
Apparatus ........................................................................ 2.5
Procedure ........................................................................ 2.7
Preparation of Subject ..................................................... 2.7
Attachment of Electrodes ................................................. 2.7
Image Presentation ......................................................... 2.8
Image Content .................................................................. 2.9
The Training Period .......................................................... 2.10
The Categorisation of Subjects into High and Low Response Groups ........................................ 2.11
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Analysis of Descriptive Reports ..................................... 2.13
Data Analysis ................................................................. 2.13

RESULTS ............................................................................. 3.0
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Heart Rate ........................................................................ 3.2
Skin Conductance ........................................................... 3.5
RSGH Interaction ............................................................. 3.8
TG Interaction ................................................................. 3.8
EMG .................................................................................. 3.9
RSGH Interaction ............................................................. 3.12
RTGH Interaction ............................................................. 3.12
Vividness .......................................................................... 3.13
Arousal ............................................................................. 3.16
Compliance ....................................................................... 3.19
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Heart Rate ........................................................................ 3.22
Skin Conductance ........................................................... 3.23
EMG .................................................................................. 3.23
Vividness and Arousal ...................................................... 3.23
Vividness and Compliance .............................................. 3.24
Arousal and Compliance .................................................. 3.24
Analysis of Verbatim Reports .......................................... 3.24
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  Subject Details ............................................... A
  Fear Survey Schedule ......................................... B
  Rating Scales .................................................. C
  Consent Form ................................................... D
  Summary of Procedure ......................................... E
  Rating Scale Instructions .................................... F
  Images Presented .............................................. G
  Training Scripts ............................................... H
  Subject Scene Descriptions .................................. I
  Analysis of Covariance (separate volume) ................. J
<table>
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<tr>
<th>No.</th>
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<tbody>
<tr>
<td>1</td>
<td>Heart Rate Analysis of Variance</td>
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<td>2</td>
<td>Skin Conductance Analysis of Variance</td>
<td>3.6</td>
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<td>3</td>
<td>EMG Analysis of Variance</td>
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<td>4</td>
<td>Vividness Analysis of Variance</td>
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<td>5</td>
<td>Arousal Analysis of Variance</td>
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<td>6</td>
<td>Compliance Analysis of Variance</td>
<td>3.20</td>
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<td>7</td>
<td>Propositional Content of Verbatim Reports</td>
<td>3.24</td>
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### Figures

<table>
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<th>No.</th>
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<tr>
<td>1</td>
<td>Heart Rate Response Before/After Training</td>
<td>3.4</td>
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<td>2</td>
<td>Skin Conductance Response Before/After Training</td>
<td>3.7</td>
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<td>3</td>
<td>EMG Response Before/After Training</td>
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<td>4</td>
<td>Vividness Response Before/After Training</td>
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<td>5</td>
<td>Arousal Response Before/After Training</td>
<td>3.18</td>
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<tr>
<td>6</td>
<td>Compliance Response Before/After Training</td>
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It may be considered that the use of imagery in psychotherapy to invoke psychological or physical healing is a modern phenomenon, but it is possible that imagery has been used for centuries to exert control over physiology. Singer and Pope (1978) quote Satchel Paige who was perhaps one of the first to advocate the practical application of imagery in medical disorders. In one of his "Six Rules for Long Life" he recommends "If your stomach disputes you, lie down and pacify it with cool thoughts". The potential action which imagery can invoke in the physiological and mental state of the individual has been exploited from time immemorial by writers and poets. They take for granted that a frightening or relaxing scene presented to a subject will result in the duplication of sights, sounds and sensory experiences and thus skilful artists can successfully produce an emotive response through the use of imagery. As the fearful (or relaxing) imagery is processed in the brain the body will react to some extent as if the image is actually part of some current experience.

During the 1960s the use of imagery in therapy became increasingly prevalent. Imagery was seen as a fundamental tool used to gain information in psychological assessment (eg. psychodynamic word association tasks), and also as a means of treatment or re-training. The widespread use of imagery in therapy can be appreciated through the consideration of its use in different forms of therapy:

Hypnosis employs imagery in a number of different ways, including its use for symptom relief and the improvement of recall.
Psychoanalysis uses imagery variously. It has been used to aid the interpretation of dreams and to assess transference. Imagery and free association are said to be powerful tools when used in psychoanalysis to overcome 'repressive tendencies' which may prevent the patient from communicating important information. It has for example, been reported that the use of more extensive periods of pure imagery association results in less defensiveness in patients who are undergoing psychoanalysis. (Reyher 1963)

Imagery has also been used in the treatment of depression. Singer and Pope (1978) report that chronically depressed patients treated by methods employing the use of esteem enhancing imagery scenes could reduce the amount of depression which they subjectively experienced. This resulted in patients reporting experiences of more positive emotion.

Sex therapists have successfully utilised imagery in therapy. Kaplan (1974) reports that it may be used to facilitate and potentiate arousal.

In behavioural psychotherapy imagery has played an extremely important role. Imagery has been used with reported success in covert conditioning (Cautela 1967), implosion therapy (Stampfl and Levis 1967), and systematic desensitisation.

2 Theory of Imagery

While the forementioned uses of imagery indicate its pervasive use throughout psychological therapy, it must be acknowledged that the theoretical basis for its use in most forms of therapy is sadly lacking. It may be this factor which accounts for reports of its
There are two major approaches to imagery which have been adopted. According to one view, images are considered to be nothing more than the primary products of observation (Lang 1977) which are stored in the brain in primitive form and are not liable to modification. This viewpoint presents imagination as an introspective or interpretive process involving the scanning of this collection of observations. As Pylyshyn (1973) points out this is a commonly held view of imagery and indeed, one which has engendered a whole vocabulary of its own. Thus one would speak of seeing images "in the minds eye". Lang has criticised this approach by pointing out what an incredible burden the brain would have to bear if it did indeed have to cope with the storage of all these pictures. Lang also suggests that the idea of interpretation being secondary to the process of retrieval is inconsistent with the efficiency of the brain in reviewing experience. He points to the fact that certain images would appear to have attributitional properties incorporated as part of their content, which makes such images something more than pictures. Perhaps the most logical reason for discarding this theory is one which Sperry (1952) provided, when he stated that the function of the brain was not to provide sensory experience but to generate behaviour.

The second major approach to the conceptualisation of imagery developed alongside investigations into Wolpe's theory of systematic desensitisation (Wolpe 1958). Systematic desensitisation is perhaps the most well known therapy involving the use of imagery and its practical and theoretical framework has certainly stimulated much empirical work. Systematic desensitisation is based on Watson's classical conditioning theory of phobic neurosis (Watson 1920). Therapy involves the repeated
presentation of graded phobic stimuli, with a counteracting response such as relaxation, taught to reciprocally inhibit the fear response aroused by exposure. While it is now common practice for exposure to take place in-vivo, the original paper presented imaginal exposure as the method of choice. The clinical method is interesting in itself but more importantly, it is the theoretical assumptions which underlie the process and particularly what Wolpe has to say about the nature of imagery which should be the focus of interest in this context. Wolpe described images as 'specific neural events' which have been previously evoked as part of a neural pattern in response to a particular external stimulus. From this assertion it was proposed that the consequences of image manipulation should be similar to those that would be evoked if the actual fear stimulus itself was involved rather than an imaginal encounter. To quote Wolpe "a basic assumption underlying this procedure is that the response to the imagined scene resembles that to the real scene" (Wolpe 1958). This was perhaps the first theory of imagery that lent itself to investigation, although this investigation, partly because of the nature of imagery itself, was often still indirect in nature.

3 Empirical Investigations of Imagery and its Role in Systematic Desensitisation

Early work in this area was directed towards establishing whether fearful stimuli presented in fantasy did in fact produce patterns of physiological response similar to those which would be occasioned by an in-vivo encounter with the same stimulus. A study by Grossberg and Wilson (1968) involved the presentation of fearful and neutral scenes to 36 female subjects. It was observed
that heart rate and skin conductance measures were elevated accompanying the presentation of fearful scenes. Neutral scenes failed to produce this effect. In a later study, May and Johnson (1973) looked at psychophysiological response to the imagination of internally evoked stressful thoughts. It was found that a significantly higher increase in physiological response occurred to these stressful thoughts, than when the subject's response was compared to the imagination of either non-stressful or relaxing thoughts. Numerous other studies (including Barber and Hahn 1964, Craig 1968) have provided support for Wolpe's conceptualisation of the image. Differences observed between real and 'imaginal' encounters were related to the latency and magnitude of the response to the stimulus. In in-vivo encounters, the latency of response was found to be shorter and the magnitude of response was found to be greater.

Having ascertained that emotive imagery can produce increased arousal in physiological systems, the next question to be considered is whether increases in arousal as a function of imagining an emotive scene, are a requisite for successful therapeutic outcome. In looking at this question, an important study was carried out in 1970 by Lang, Melamed and Hart. Examining the treatment of phobic subjects it was found that the effectiveness of systematic desensitisation covaried significantly with the subject's physiological reactivity to fear imagery. Subjects who produced increases in heart rate in response to emotive imagery showed greater habituation of response, (with an almost linear decrease in response with repeated presentation), when compared with subjects who failed to produce increases in autonomic response.
These results are in line with the Lader and Mathews (1968) hypothesis which attributes success in systematic desensitisation to habituation rather than reciprocal inhibition. A 1972 study by Watson, Gaind and Marks examined the effect of the repeated imagination of phobic stimuli on measures of heart rate, skin conductance and subjective anxiety. Results indicated that heart rate and skin conductance habituated over presentations. Subjective anxiety followed the same pattern but at a slower rate.

Drummond, White and Ashton (1978) reported a study where it was found that with increased imagery vividness, there was a decrease in the habituation rate of skin conductance measures. Lang (1980) have suggested that visualisation and habituation are important interacting variables in the desensitisation process.

Anderson and Borkovec (1980) examining habituation rates in the light of Lang's theory completed a study of speech anxious subjects. It was found that heart rate decreased in a smoother fashion with stimulus oriented scripts than with scripts having a response orientation.

A paper presented by Robinson and Reading (1984) examined this area further. Twelve subjects with focal phobias were divided into two groups. One group received stimulus training and the other group received response training. Results showed that response trained subjects showed greater physiological activity during imagery and slower habituation rates. Response trained subjects also showed a greater concordance between physiological and subjective reactivity.

Lang concludes "results suggest that successful treatment may
depend on the fact that visceral events are processed with the fear image, and that their absence mitigates against behaviour change". Lang has reported that greater levels of fear, and higher levels of autonomic response were verbally reported by subjects when asked to imagine a scene relating to an item occupying a high position on the subject's personal fear hierarchy. Lower levels of fear and autonomic response were reported when the subject was asked to imagine scenes lower in the hierarchy.

Research in this area has consistently supported the above findings (Mathews 1971, McGlynn, Puhr, Gaynor and Perry 1973). Such findings have stimulated an interest in further theoretical and empirical work focusing on the nature of imagery. The studies discussed in this section have produced evidence to suggest that there is a strong relationship between the production of emotive imagery with associated autonomic response and behaviour change resulting from therapy. However there is a danger here. While imagery clearly can produce a psychophysiological response to an imaginal situation similar to that which might be occasioned by a real life encounter with the same stimulus, this does not mean that the two responses can be considered isomorphic. Lang has highlighted this issue positing that there are critical differences between the real life situation and the imaginal one created in therapy. It is argued that contrary to the implications of Wolpe's model the two cannot be considered identical. Lang questions two main areas of Wolpe's model. First it is pointed out that the initiating stimulus in therapy is the instruction presented to the subject. Secondly it is argued that it is just not possible to directly manipulate the underlying physiology
which Wolpe presumes to exist. Lang here provides a shift in emphasis, moving towards the examination of the image itself and the instructions or script from which the subject derives the image. From this Lang has developed a bioinformational processing view of imagery.

4 Bioinformational Theory

Lang's bioinformational theory challenges the notion that an emotional image is merely a picture in the head or an internal percept. This approach to the conceptualisation of imagery combines the perspectives of information processing theory and psychophysiology (Lang, 1977, 1979, 1983). Focusing on the therapeutic situation it is proposed that imagery may be objectively studied as the product of information processed by the brain. Processing involves input to and output from the individual. Input variables which are liable to manipulation are considered to be contained in the imagery script and in the instructions which are presented to the subject. Measurable products of imagery processing include verbal reports elicited from subjects after their imagery experience and also related evaluative comments by subjects, relating to qualitative features of the scene such as its vividness and emotive quality. The third and perhaps the most important output measure (as it occurs simultaneously with processing and thus need not be confounded by recall or reporting bias) is the pattern of physiological response generated by the image propositions.

The image is considered to be processed as both a conceptual and a motor program. It is seen as a finite organisation of specific propositions which constitute a response set. Two basic
proposition types are proposed. These are a) stimulus propositions and b) response propositions. Stimulus propositions refer to descriptions of stimulus features or events in a scene. Response propositions refer to behavioural reactions to stimulus features and these involve somatovisceral events such as respiration rate, sweat gland activity and muscle tension. Verbal response and motor acts would also constitute response propositions.

5 Imagery Processing

Lang speculates that when images are therapeutically invoked it is long term memory storage which is being accessed. Propositions are not stored in isolation according to the model (Kieras 1978). It is therefore predicted that a particular stimulus will elicit a network of stimulus and response propositions together with relational meaning information resulting in the measurable output of imagery processing previously described (ie verbal response, behaviour and autonomic activity). This occurs because response information is considered to be double coded both as semantic knowledge and as part of a motor program. Thus when imagining a scene, efferent outflow is the result even if action is prohibited. Imagery is therefore seen as an active response process; in Lang's terms it can be viewed as a "preparatory set to respond". Successful therapy involving imagery must therefore aim to access the whole of the propositional network. An affective network is considered to be accessed and run as a program when a sufficient number of its propositions are instigated by external input (Lang 1983). Networks are considered to vary in coherence; that is, the average associative strength among the propositions varies for different memories and with this varies the likelihood
that the network will be activated as unit. Phobia networks are described as particularly cohesive, to the extent that they can be described as emotion prototypes.

This model is clearly different to the sensory representation model of imagery in its implications for the use of imagery in therapy. The sensory representation model proposes that images are not liable to modification. According to the bioinformational model, as images are always processed with a view to responding then the aim of therapy must be to reprocess the image in a manner which allows modification of the affective character of the response elements. This can be achieved because the model predicts that propositions may be added or removed over time. The emotional image is liable to change and control through the manipulation of both its input and its output variables.

6 Modification of Imagery

According to Lang, instructional control over imagery is evidenced when the subject's physiological response pattern, evoked by the image script can be shown to be consistent with the conceptual content of the script. Manipulations of input and output variables are described as the means of controlling the image.

Input variables can be modified through manipulation of the script instructions. For example it would be possible to include more stimulus or more response propositions. Additionally an instructional set may precede image presentation. This might for example, take the form of encouraging subjects to focus on actively participating in the scene or it may encourage the subject to adopt an observer set, watching the scene as though it
were happening to someone else.

Modification of the products of imagery processing may be achieved through obtaining verbal descriptions of scenes imagined, and then selectively giving verbal reinforcement for reports of either response or stimulus propositions. Lang suggests that the propositional organisation of subsequent images could be changed in this way through "the creation of a feedback loop through verbal output to the hypothesised image in the brain". While recognising that verbal reports can not be taken as direct evidence of what was actually imagined, it is recognised that the degree to which the verbal report matches the script is evidence that the propositions were stored and available for imagery processing.

7 Imagery Ability and Imagery Training

Most outcome studies which have looked at the use of imagery in therapy and particularly in systematic desensitisation point to the variability of results. Some authors (eg. Lang 1980) point to the fact that it may be the way in which imagery has been used without reference to any theoretical understanding which has resulted in ambiguous findings and led authors such as Marks (1978) to conclude "desensitisation in fantasy turns out to be a slow and inefficient form of treatment". There are three main research findings which lend support to Lang's criticism and raise the question of whether more sensitive application of imaginal desensitisation might have produced more reliable results. These findings are:
(a) Subjects who produce increased autonomic response have been found to benefit more from desensitisation in fantasy as Wolpe's model would predict (Lang 1970).

(b) Some groups of phobic subjects respond differently to imaginal procedures.

(c) Some subjects would appear to have an imagery deficit.

Evidence in support of point (a) has already been considered. Evidence for point (b) is provided by a study carried out by Weerts and Lang (1978). This study suggested that there may be a difference in subject's ability to produce autonomic response as a correlate of emotional imagery depending upon the nature of the phobia experienced. It was found that a stronger autonomic response and a more arousing and vivid image (according to subjective reports) was elicited from spider phobic subjects when they were compared to a socially anxious sample. Borkovec (1973) looking at similar groups tested on fear relevant behaviour tasks suggested that socially anxious subjects were more responsive. Results from a study by Lang, Levin, Miller and Kozak (1983) would suggest however that these differences reported by Borkovec may be entirely attributable to task demands. Results show that consideration should be paid to the phobia type before systematic desensitisation is decided upon as the therapy of choice. This conclusion is also supported by a study carried out by Boulougouris, Marks and Marset (1971) who compared systematic desensitisation and flooding in the treatment of specific phobic and generalised anxiety patients. It was found that systematic desensitisation and flooding were equally effective with specific phobic patients, but flooding was the more effective therapy for
generalised anxiety patients. Lang suggests it can be argued that minimal imagery instructions characteristic of systematic desensitisation were adequate in the treatment of focal phobic subjects who are a population found to report vivid imagery. More detailed scripts which are characteristic of the flooding approach were required for patients with generalised anxiety, these being a group with less imagery facility.

Research finding (c) which suggests that some subjects appear to have an imagery deficit is well documented in the literature. Lang, and also Cautela (1967) have noted this problem in using imaginal therapies. The assumption is made that there is a normally distributed ability to imagine vividly and to produce an increase in autonomic arousal when imagining an arousing scene. Thus one author experienced in the use of systematic desensitisation writes "there is no doubt that people do differ greatly in their capacity to create imaginal scenes" (Beech 1967). Wolpe has suggested that cultural factors may also play a role in this ability. He has estimated that 90% of the populations of the USA and Africa have the ability, but suggests that the percentage is smaller in Great Britain. As an inability to imagine vividly may preclude imaginal treatments Lang has proposed an imagery training procedure based on bioinformational theory.

8 Imagery Training (Bioinformational Model)

The training approach is designed with the aim of increasing the subject's focus on response propositions. Training sessions commence with relaxation. The subjects then practise imagining scenes and after each trial they are requested to give details of the scene content. Verbal reinforcement is given where the subject
indicates a focus on response propositions which have appeared in
the script. Some studies have lent support to the idea that
response scripts alone may be sufficient to elicit an increased
rate of physiological response to imagery without the need for
training. Bauer and Craighead (1979) divided 60 subjects into four
groups in a two by two factorial design. Each group received a
different instructional set. Subjects were asked to imagine four
arousing and four neutral situations which were randomly
presented. The variables were attentional focus, (response or
stimulus propositions) and orientation set which involved whether
the subject was asked to imagine participating in the scene or
adopt an observer orientation. Results indicated that the most
significant heart rate increases occurred when attentional focus
was directed towards response propositions. Less significant, but
also important was whether the subject adopted an observer or
participant set. Subjects asked to participate in the scene
produced a higher heart rate response to arousing imagery. Other
autonomic measures proved less responsive.

These findings would tend to support the assertions of Sheehan
(1972) who suggested that the capacity to imagine vividly was
universal and that any apparent imagery deficits were in fact due
to situational variables such as inappropriate cues.

Other studies would suggest that training does have an effect. A
study by Lang (1979) examined whether responses in
physiological systems were consistent with response elements in
scripts. Lang also examined whether presenting elaborate response
propositions to one group of subjects would raise the rate of
physiological response above that of a control group. Measures
included heart rate, GSR, eye movements, muscle tension and respiration rate. 40 normal subjects were divided into three groups and tested on fearful, neutral and arousing scenes. One group received training in reporting stimulus features of images. This group was then tested on stimulus scripts. The second group of subjects also received training, but this group were trained to respond to response features in imagery and were then tested on scripts which emphasised response propositions. The third group formed a control group and did not receive training. They were administered scripts emphasising stimulus propositions. Results showed that the second group (the response trained group) produced greater increases in physiological activity over all measures than either of the other two groups, thus supporting Lang's hypothesis. Another finding of the study was that response specificity was indicated, that is psychophysiological responses did seem to correspond to cues in the script. The conclusions of the study were rendered ambiguous because of a flaw in the experimental design which meant that an adequate control condition was missing from the study. Because of this it was impossible to determine whether the increased rate of response was attributable to the training, the imagery or perhaps both. To overcome the limitations of this study, Lang, Kozak, Miller, Levin and McLean (1980) reported a subsequent experiment which again involved the manipulation of training and imagery script. Subjects were divided into two groups. One group received response training and the other received stimulus training. Each group was divided into two again, one half being assessed on their response to response structured scripts, and the other half being administered stimulus structured scripts. It was found that response group subjects who
were tested on response scripts demonstrated increased physiological arousal. These results were not evidenced by the other groups. The response trained group also rated their imagery as being more vivid. Ratings of subjective arousal were higher in groups administered response scripts. These results, while continuing to support Lang's hypothesis would suggest that the important factor may be the interaction between the type of training and the type of instructions given. The absence of a 'no training condition' from this study undermines this conclusion; the presence of such a group in the study may have made the operant variable clearer. It may also be that efferent responses are inhibited in subjects where the script prevents them from adopting their training focus because there are not the appropriate cues to access.

The role of response training has been thrown into question once again by the results of a recent study. Carroll, Marzillier and Merian (1982) examined four main hypotheses in the light of bioinformational theory. One hypothesis examined whether the greater arousing properties of response oriented scripts were found over a whole range of physiological systems as Lang (1980) had found or just specifically on heart rate response as Bauer and Craighead (1979) found. Again the question as to whether response scripts alone without preceding training could elicit an increased response was examined. The third aim of the study was to replicate the finding showing a close relationship between specific cues in the script and increased physiological arousal $(\text{Lang, 1980})$. A fourth hypothesis examined the effect of relaxing imagery in the light of Lang's theory. Carroll, Marzillier and Watson (1980) had found that response trained
subjects did not show significantly different heart rate responses to relaxing imagery when compared with stimulus trained subjects. Results from the study were interesting. Contrary to Lang's findings, it was suggested that certain psychophysiological propositions, most notably those relating to cardio-vascular function were generally more effective in eliciting widespread psychophysiological change. Again it was found that response trained subjects produced the greatest increase in autonomic response when imagining arousing scenes. Skin conductance rates did not differ significantly. Unlike the findings reported by Kozak and Lang (1980) this study found little specificity of response. Replicating earlier findings, subjects failed to produce significant changes in response to relaxing imagery containing response propositions. Results from this study would suggest that response scripts do elicit greater autonomic response even in the absence of training. This again places the role of imagery training open to question, although it could be argued that response oriented scripts in the absence of training only elicit reliable increases in physiological response from a restricted range of systems, most notably heart rate. It is possible that training may serve to elicit the same increase across a wider range of measures. Findings from the previously cited study by Robinson et al. (1984) would also seem to support this contention as would the results from a 1981 study by Miller, Levin, Kozak, Cook, McLean, Carroll and Lang. Here it was found that subjects who were preselected for their skill in producing vivid imagery (using Sheehan's imagery questionnaire, the QMI, for selection) produced content specific electrodermal changes when response trained. This study found that the training effect on
iological response was only found in the self rated 'good' ers. This finding again raises questions as to the potential of response training.

ims of the Present Study

e it has been repeatedly shown that increasing the number of response propositions in scripts does lead to increased autonomic vity in response to fear imagery, the precise role and ntial of response training remains unclear. Some studies est that response scripts alone are sufficient to elicit the of response required for therapy (Carroll et al. 1982), others (Lang 1980) suggest that there may be a population are totally unsuitable for imaginal therapies because they imagery ability. Response training does not appear to have studied with subjects who fail to show a physiological ease in response to emotive imagery. Nor has training been mined in its own right. Basic issues, such as whether it is ble to modify the way in which a person processes imagery by al reinforcement have not been directly examined.

present study is primarily concerned with the identification sample of high and low responders to emotive imagery. A group a clinically significant focal phobia are chosen as the ect population to be studied, as it is clinical groups which benefit from imaginal therapy. Subjects are defined as high anders if an increased autonomic response is shown when ing response structured scripts relating to the subject's ia are presented. Low response subjects show a lower level of response to the same material, the groups being divided on the
basis of a median split. The effects of stimulus and response training are studied for each group with subjects being tested on stimulus and response scripts which consist of images presented in the pre-training assessment together with novel scripts. The effects of training on heart rate, EMG and skin conductance are studied. Subjective measures of vividness, compliance and arousal are examined in relation to training. Verbal descriptions are obtained from each subject for each scene imagined. This assesses the pre and post training stimulus/response orientation of subjects' imaging. Verbal reports of a spontaneously generated phobic scene are examined for each subject to assess the stimulus/response structure of naturally occurring, as opposed to experimenter constructed, scripts.

10 Hypotheses:

1. High response subjects will produce increased skin conductance, heart rate and EMG measures as a function of imagining arousing response structured scripts based on their phobias. This will occur in the absence of training.

2. Subjects who have an 'imagery deficit' will produce a poor psychophysiological response as a function of imagining arousing response structured imagery, based on their phobias. For these subjects, response training will produce increases in physiological response. It is predicted this will occur when subjects are tested on response structured scripts, and not when stimulus scripts are presented.
3. Analysis of verbatim reports of fear imagery will reflect response training in the low response group. It is hypothesised that before training, these subjects will give verbal reports indicating a focus on stimulus propositions. Response training will result in an increase in reports of response propositions.

4. Response training will have no effect on the physiological response of high response subjects. Analysis of verbatim reports of imagery is expected to reveal an emphasis on response propositions, both before and after training in this group.

5. Lang's training model assumes that the verbal reinforcement of self report features of imagery results in the modification of imagery processing. If this assumption is true, it is predicted that stimulus training of high response subjects will result in increased reporting of stimulus propositions in descriptive reports. This subject group is predicted to show a decrease in physiological response when tested on stimulus or response scripts.

6. No change is predicted in either autonomic measures or in the structure of verbatim reports for low responders who are stimulus trained. Prior to training this group will show an emphasis on stimulus propositions in images as reflected by verbatim reports.

7. Ratings of arousal, vividness and compliance will be greater for response trained subjects.
8. It is predicted that in the analysis of verbatim reports of spontaneously generated fear images, low group subjects will show a focus on stimulus propositions and high group subjects will show a focus on response propositions.
Subjects

17 subjects participated in this study. 9 male and 8 female volunteers aged between 18 and 35 were recruited. The mean age of subjects was 26. Subjects were recruited through poster advertisements placed at Manchester University halls of residence, and at Withington Hospital. Additional subjects were recruited through personal contact. 12 out of 17 subjects were university students. Subjects were not paid to participate.

All subjects had focused phobias (Weerts and Lang 1978) as experimental evidence indicates that true differences in imagery ability exists between subjects who have a focused phobia and subjects who suffer from more global phobias. It has also been reported that such subjects report more vivid imagery and experimental evidence indicates that "afferent outflow consistent with perceptual experience is more likely to be observed in subjects who report themselves to image vividly". All but one subject reported a fear of insects, small animals or snakes, with one subject reporting a fear of fireworks. Full subject details are presented in appendix A.

Subjects who had a phobia of clinical significance were selected. Selection was on the basis of the following criteria which will be described fully in the next section.

(a) Maximal response on the fear survey schedule (Geer 1965).

(b) Marked avoidance of the feared object as determined by a question based on a behaviour avoidance test (Robinson and Reading 1984).
(c) Reports of increased physiological arousal in the presence, or anticipated presence, of the fear item.

These measures were chosen to try and ensure that subjects experienced the phobia at the three levels which Lang (1980) and other writers propose are involved in a true phobic reaction. That is at cognitive, behavioural and physiological levels. None of the subjects were receiving treatment for the reported phobia. This was to minimise the possibility of results being confounded by treatment effects. Additionally subjects were screened to exclude cardiac or respiratory disorder which may have affected physiological measurements.

During the course of the study there was a high degree of subject wastage. In addition to twelve volunteers who did not meet the specified selection criteria, eight subjects had to be excluded from the study during the course of data collection for a variety of reasons. Four were excluded as a result of equipment failure, three because of the need to balance experimental groups and one because of minor illness.

2 Selection of Subjects
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Initial screening of subjects took place over the telephone. Subjects were asked four main questions at this stage. First they were asked to describe the nature of their phobia. Secondly they were asked to rate how disturbed they felt (on a scale of ten) when confronting their fear object. Subjects were then asked to detail any restrictions which the phobia placed on their activities, and if there were any particular situations avoided because of the phobia. Finally subjects were asked about their
physical reactions either in the presence of the fear object or when threatened with such a confrontation. From the information thus obtained, volunteers who reported all of the following were invited to participate in the study.

(a) A focused phobia.

(b) High levels of fear experienced in the presence of the item with a reported subjective rating of disturbance greater than eight out of ten.

(c) Marked avoidance of at least one situation where confrontation was possible.

(d) Marked increase in reported sympathetic nervous system activity when encountering the fear item, or when anticipating such an encounter.

These subjects were then further screened when they came to take part in the study by the use of two further measures. Firstly, subjects were asked to complete the fear survey schedule (FSS-II Geer 1965). The scale requires subjects to rate their subjective fear reaction to 51 items which are common sources of fear. A provision is made for subjects to enter other relevant fear items specific to individual phobias should these not appear elsewhere on the scale. Positioned next to each fear item is a seven point scale which subjects are asked to complete to indicate the degree of fear which each item holds for them. Rating one indicates 'no fear'. Rating seven, the maximum rating indicates 'terror'. A copy of the FSS is included in appendix B.

All subjects completed the scale. It was observed that for all but
Two subjects the reported phobia was an isolated one. For the other two subjects, who had a spider phobia, an increased, but lower fear rating to insects in general was also indicated. All subjects reported a subjective fear reaction of seven to their specific phobia item.

The second screening procedure aimed to establish whether avoidance was a feature of the reported phobia. Subjects were asked whether they would be prepared to enter a room in which their fear item was placed in a cage and then proceed to stand within two metres of the cage. Because of the nature of the phobias reported it was not possible to feature an actual avoidance test as part of the selection procedure, but subjects were only included in the study if they indicated that they would be unable to comply with such a request, if it were made.

3 Physiological Measures
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Three physiological measures were taken:

(a) Frontalis Electromyograph (EMG) measured in µV.

(b) Skin conductance level (SCL) measured in "µmho."

(c) Heart Rate (HR) measured in beats per minute.

4 Other Measures
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(a) Lang (1977) has stated that images possess qualities of vividness and affect. Subjective ratings of these qualities were obtained together with a rating of the level of compliance with instructions contained in the imagery
script. A copy of the rating scale used is included in appendix C.

(b) Verbatim reports were obtained from subjects detailing descriptions of each scene imagined.

5 Apparatus

The study took place at Withington Hospital in south Manchester. Two separate rooms which form a psychophysiological laboratory were used. One of the rooms contained all the experimental hardware and thus it was possible for the experimenter to conduct the experiment from this room without the need to interrupt the subject as communication between the two rooms was facilitated by the presence of an intercom system. Tape recorded image scripts and instructions were played via a cassette deck and relayed to the subjects' cubicle through two loud speakers positioned behind the subject's seating position at head level.

The subject's cubicle was a dimly lit room which was sound attenuated and maintained at a constant temperature of 72 degrees Fahrenheit. Subjects sat upright in a Parker-Knoll recliner chair. Wires from electrodes were unobtrusively connected behind the subject's chair, passing through the wall to the experimenter's room where they were linked to the monitoring equipment. Next to the subject's chair was an intercom placed on a table at subject's shoulder height. A microphone was placed on the same table to enable recording of the subject's communications during the experiment. On the right of the subject's chair a unit was positioned which contained equipment necessary for the attachment of electrodes.
The experimenter's room contained equipment for monitoring physiological activity during the experiment:

(a) Frontalis EMG (100-200Hz bandwidth) was monitored by an Autogen A1700 feedback myograph. 3 Autogen silver/silver chloride electrodes were placed horizontally in the mid-line of the forehead about an inch and a half below the hair line. Two active electrodes were placed about an inch and a half on either side of a ground electrode which was positioned in line with the nose. Beckman conductivity gel was used to facilitate conduction. Skin was prepared using 'Sterets H swabs' which are soaked in 70% isopropyl alcohol.

(b) Skin conductance was monitored using an Autogen A3400 feedback dermograph with a constant AC voltage applied through Beckman silver/silver chloride electrodes. A conductivity paste consisting of a unibase and 0.9% saline mixture as detailed by (Fowles 1981) was used. Electrodes were placed on the right hand, on the first second and third fingers, centred on the second phalanges. Active electrodes were positioned on the index and second finger. An inactive electrode was placed on the third finger.

(c) Pulse rate was measured using a contact heart rate unit. A photoplethysmogram pulse pick up was attached to the subject's right thumb.

Electrodes and pulse pickup were supported in place by micropore tape. Output signals were analysed using an Autogen A5600 data acquisition centre which computed the means and standard deviations of measures over each ten second period.
The experimenter's room also contained equipment for playing cassette recorded instructions through to the subject and also for recording communication from the subject. This equipment consisted of two cassette decks and an amplifier.

6 Procedure
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6.1 Preparation of Subject
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After the screening procedures were completed subjects were asked to wash their hands in the preparation room next to the laboratory. Subjects were then brought to the subject cubicle and asked to sit upright in the subject's chair. A brief summary of the aims of the experiment was given to the subject and then participants were asked to sign a consent form to indicate that they understood the nature of the experiment and were prepared to participate. Following this a summary of the procedure was presented to the subject. Subjects were given the opportunity to ask questions on points about which they remained unclear. A copy of the consent form and procedure summary can be found in appendices D and E. The rating scales to be used in the study were presented to the subject at this point together with instructions for their use later in the experiment (see appendix F).

6.2 Attachment of Electrodes
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After cleaning the skin on the forehead and palmar surface of the fingers with Sterets swabs, electrodes were attached and placed in the positions described and then connected to the monitoring equipment. Subjects were then left alone in the room and a ten minute period was allowed for adaptation to the experimental
situation to occur.

6.3 Image Presentation

In total subjects were asked to imagine nine images. Prior to each image presentation a 30 second base line recording was taken. Following this, the image script was presented each one lasting for a duration of thirty seconds. Images were equal in length and contained equal numbers of propositions to control for information processing factors, as research has shown that information processing itself can lead to increases in heart rate (Carroll and Anastiades 1978).

Subjects were then asked to imagine the scene for another thirty seconds during which recordings were taken to measure physiological response to the image. The time period of thirty seconds was chosen with reference to the work of Haney and Euse (1976) which suggested that the peak of autonomic response took place 25 seconds behind image formation. After the presentation of each scene, subjects were asked to complete the three ten point rating scales and then to give a verbal description of the scene which had just been imagined. This description was recorded verbatim. A thirty second rest period followed before the next image was presented.
6.4 Image Content

Ideas for image construction were briefly discussed with the subject when initial contact was made. Individual tapes were recorded for each subject so that the order of image presentation could be randomised. Images were constructed with reference to the work of Lang (1977, 1979) and Kroger and Fezler (1976). Nine images were imagined by subjects, but the first image differed from the rest in that subjects, instead of being presented with an image script were asked to generate in fantasy a fearful encounter with their phobic object. The next eight images involved the presentation of images to subjects in pre-recorded form. Four of these images were presented to establish a pre-training base line for each subject. Of the four images, two contained response and
stimulus propositions and the other two scripts contained stimulus propositions only. Images presented are detailed in appendix G. After this pre-test, electrodes were removed from the subject and the training period commenced. Training will be described in full in the next section. After the training period, the electrodes were reattached in the manner previously described. This was followed by another ten minute period to allow for adaptation to the recording situation once again. During the post training assessment period four images were presented. As before, two contained response and stimulus propositions and two contained stimulus propositions only. Two of the images were original, additionally one of the stimulus and one of the response images from the pre-training period were also used. Images were presented in this way to control for the novelty value of the two new images and also to exclude the possibility of a practice effect.

6.5 The Training Period

Physiological reactivity of subjects was not monitored during this training period. After the removal of the electrodes and before any of the four training images were presented there was a five minute period in which the subject was requested to relax. This was to allow the subject to direct attention away from the fear images previously presented.

Four tape recorded scripts each lasting for a duration of 45 seconds were presented one by one to the subject. The content of the images did not relate to any of the fears reported by subjects. Scripts contained either stimulus, or response and stimulus propositions. Training scripts are included in appendix H. After playing each script and then allowing the subject 30
seconds to continue imagining the scene, the experimenter entered the subject cubicle. The subject was asked to give a full and complete report of the scene which had just been imagined. Subjects were randomly allocated to response training or stimulus training groups. Response training group subjects were reinforced for giving verbal descriptions relating to response propositions in the scene. Stimulus training group subjects were reinforced for reporting details relating to stimulus propositions in the script. Verbal reinforcement consisted of words such as "good", "that's right", "yes", "go on", etc. Non verbal reinforcement was also given in the form of head nods.

Subjects were encouraged to describe the scene which they had just imagined for as long as possible to a maximum of 180 seconds. If subjects could not give this amount of detail or insisted that they had fully described everything which they had imagined in the scene then they were asked to "go over once again" the scene which they had imagined so that all subjects had the opportunity to experience equal amounts of reinforcement training. The same procedure was followed for each of the four training images. Following training, electrodes were reattached and the post training assessment proceeded.

7 The Categorisation of Subjects into High and Low Response Groups

This was undertaken towards the end of the study, subjects up until this point having been randomly assigned to training groups. Grouping was undertaken before the end of the study to enable the recruitment of two additional subjects where an imbalance was found to exist between the numbers of high and low responders in training groups. The first image imagined by the subject was
excluded at this stage as were the stimulus images. It was assumed that to assess the subject's physiological reaction to fear imagery the best measure would be obtained through looking at heart rate reactivity to the two response images presented in the pre-training period. Heart rate was chosen as the criterion measure as experimental evidence indicates that heart rate is the most consistent physiological response to imagery (Bauer and Craighead 1979). May and Johnson (1973) and May (1977) have argued that electrodermal activity is "not .... very sensitive to internally elicited thoughts". Response images were chosen as the criterion stimuli because experimental evidence (Lang et. al. 1980) has shown that such images produce the greatest increase in heart rate response. It was therefore assumed that subjects who failed to respond or who produced a low response to these images could be categorised as low responders and those who produced a high level of response could be categorised as high responders. Division into the two groups was made using a median split. This resulted in a group of nine high responders who produced a mean heart rate increase of 13.82 beats per minute or more, and a low response group who produced mean increases in heart rate of below 13.82 beats per minute.

8 Data Reduction

Heart rate, EMG and SC measures were determined in each case by looking at the mean level of the three, ten second periods which formed the 30 second base line, and then subtracting this from the level shown during the last ten seconds of the 'imagine' period, to obtain a difference score.
9 Analysis of Descriptive Reports

The number of stimulus and response propositions were counted in each description. Reports containing just stimulus propositions were categorised as stimulus focused. Reports containing both stimulus and response propositions were categorised as response focused. Thus length of description did not confound categorisation.

10 Data Analysis

Data analysis was performed at the University of Manchester Regional Computer Centre, using a BDMP (1981) statistics package from the department of Bio-Mathematics, University of California, Los Angeles, Ca., 90024, USA.

Results from the breakdown of verbatim reports were not analysed statistically for the following reasons:

(a) Group numbers were too small, thus even if statistical analysis had produced significant results, the assumptions of many tests would have been violated and a valid interpretation would be impossible.

(b) Differences between groups were clear.
RESULTS
---------
1 Statistical Analysis
---------------------------------

Analysis of variance was carried out for each of the six measures. These were heart rate, skin conductance, EMG, arousal, vividness and compliance. Using a five factor Anova, the separate and interactional effects of the following were considered:

(R) Response/stimulus scripts.

(S) Pre-training and post-training levels of response.

(T) Repeated or novel images.

(G) Stimulus or response training.

(H) High or low level response groups.

The criterion level of significance chosen was 5% \( P \leq 0.05 \).

Analysis of variance looked at group mean differences comparing differences between baseline and 'imagine' period measures. Analysis of covariance was also performed.

Throughout the results section the following abbreviations are used:

HR This refers to the high response group who received response training.

HS This refers to the high response group who received stimulus training.

LR This refers to the low response group who received response training.
LS This refers to the low response group who received stimulus training.

2 Heart Rate

Analysis of variance results are summarised in table one. Figure 1 graphically represents the results.
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<th>Mean Square</th>
<th>F</th>
<th>Tail Probability</th>
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An interaction approaching significance \( p \leq 0.05 \) was observed between image script type, same/different images, training group and high/low response groups.

The RSGH interaction proves significant \( (p=0.051) \) indicating that results differ as a function of scripts, training group, training, and whether subjects are high or low responders. This interaction incorporates a highly significant S effect \( (p=0.000) \) indicating significantly different effects due to stimulus and response images. Response images elicited higher levels of heart rate overall. The RSGH interaction effect appears to be largely accounted for by the fact that high group subjects who are stimulus trained show a decrease in heart rate response when tested on the same response images. Trends were observed in the other groups moving in predicted directions, but these did not attain the significance level.

3 Skin Conductance

Analysis of skin conductance results is summarised in table two. Figure 2 graphically represents the results.
## Table Two

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Figure 2

Skin Conductance Response Before/After Training
3.1 RSGH Interaction

Again the RSGH interaction proved significant ($p=0.01$). Hypotheses would predict that low and high groups who received stimulus training would show a decrease in response when tested on stimulus images, and little increase in response when tested on response images. Low and high groups who received response training would be predicted to show increases in response when tested on response scripts after training. While results clearly were different according to RSGH factors, this was not in the predicted directions, as figure 2 shows. Overall, training resulted in increased response to response images in all but the HS group who stayed the same. A more consistent response was shown by response trained subjects. The low response group who received stimulus training showed a similar increase, while the high response who were stimulus trained remained at the same level. When tested on stimulus images, the LR and HS groups showed increased response after training. HR and LS groups showed a decreased response.

3.2 TG Interaction

A significant TG (same/different X response/stimulus trained) interaction ($p=0.04$) was found in the analysis indicating that subjects produce different responses according to whether they were response or stimulus trained and tested on the same or different images. Response trained groups showed a decrease in response to the same images. Stimulus trained groups showed an increase in response to the same images. Response trained groups showed a higher level of response than stimulus groups, both before and after training. With the presentation of different images there is clearly a different pattern of results with pre
and post training skin conductance measures moving closer together. This result may partly be accounted for by the high groups showing trends in the predicted directions as a function of training.

4 EMG
-------

Analysis of variance is summarised in table three. Figure 3 graphically represents the results.
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4.1 RSGH Interaction

The RSGH interaction was significant (p=0.02). Hypotheses would predict that response trained groups would be expected to show an overall increase or stability of response when tested after training on response structured scripts. Any increase in response would be predicted to be greater for the low response group. For stimulus trained groups, when tested on either stimulus or response structured scripts after training it is predicted that there would be no improvement in response and that high groups would show a decrease in response from pre-training baselines.

For the LR group, results were found to show trends in the opposite direction to those predicted. The HR group showed little variability in response. This group showed a slight increase in response when tested on stimulus scripts after training as figure 3 shows. EMG response to response structured images varied in HR group subjects, according to whether the scripts were novel or not. The LS group, contrary to predictions, showed an increase in EMG response to response images and a decrease in response to stimulus images. The HS group generally showed trends in the predicted direction according to script, training and training groups.

4.2 RTGH Interaction

The RTGH interaction also proved significant (p=0.043) indicating that results were significantly different according to script, training group, high or low response and whether the images were the same or different. Again the results for the LR group can be seen from figure 3 to contribute greatly to this effect. The LR
group when tested on the same images, show a different response according to whether the scripts were stimulus or response structured. With response images which are the same, there is a decrease in response. With stimulus images which are the same there is an increase in response. With different response images the LR group show a decrease in EMG. With stimulus images which are different the result is an increase in EMG. The HS group showed a different EMG response to the same images according to whether they were response or stimulus structured. With the same response images, results indicated stability in EMG. With the same stimulus images a sharp decrease in response was shown. With different response images, decreased response was shown, with different stimulus images increased response was shown. The LS group when tested on response images showed increased response. With stimulus images, a decrease in response was shown.

5 Vividness

Analysis of variance is summarised in table four. Results are graphically presented in figure 4.
### Table Four

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Figure 4

Vividness Response Before/After Training
The RSTGH interaction proved significant ($p=0.02$). This suggests that subjects produce different results as a function of the combined effects of scripts, training, high or low grouping, type of training and whether the images which subjects are tested on are novel or repeated. There are clear differences between results before and after training as indicated by significant $S$ effect. Overall training produces increases in vividness ratings. Contributing to the interaction are the results of the HS group. When tested on the same response scripts after training this group shows a decrease in response, an increase is shown to response structured scripts if different images are presented. With the same stimulus images this group showed significant increase in response from a low baseline. A smaller increase is shown with presentation of different stimulus images.

6 Arousal
--------
Analysis of variance for arousal is summarised in table five, and results are graphically presented in figure 5.
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A RSTGH interaction approaching significance was found \( (p=0.057) \) which incorporates a highly significant S effect. This reflects an overall marked increase in arousal as a result of training. Different results would therefore be expected as a function of the combination of the five experimental variables. LR group subjects after training show increased ratings overall. These are generally higher for the same images irrespective of script type. The LS group, as with ratings of vividness, showed consistent levels of response across conditions. The HS group show variability on results across conditions. With the same response images lower ratings of arousal are shown. Increases are shown when different response images are presented. With the same or different stimulus images increases in ratings of arousal are shown. With the same images there is clearly a different response according to whether the scripts are stimulus or response structured. Different images whether response or stimulus structured, produce little difference in ratings of arousal. Where the same response images were presented a decrease in response was shown, where the same stimulus images were presented an increase in arousal ratings resulted. The HR group showed increased ratings across all images. Baseline ratings of the same images whether response or stimulus structured, were lower than levels to different images. Ratings after training move closer together for all conditions.

7 Compliance

Analysis of variance results for compliance ratings are summarised in table six. Figure 6 represents results graphically.
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Figure 6

Compliance Response Before/After Training
A significant RTGH interaction ($p=0.029$) is found for compliance indicating that results differed as a function of the combination of effects of script, training group, high and low groupings and whether images were novel or the same. The HR group showed little variability in ratings across conditions. HS groups when presented with the same response image showed decreased ratings. When different response images were presented an increased level of compliance was reported after training but different response images had lower baseline ratings. Increased ratings were also shown when the same stimulus image was presented again, while a different stimulus image resulted in decreased ratings. The LS group showed increased levels of compliance across all conditions. Generally higher ratings were reported before and after training when stimulus scripts were presented. Little difference in response occurred according to whether the scripts were the same or different. The LR group showed more clearly the effects of the interaction. After response training, ratings of the same images were higher. Little difference in ratings were observed for different images. Generally response scripts resulted in higher overall ratings.

8 Analysis of Covariance (Appendix J: Vol II)

An analysis of covariance was performed and significant findings are summarised.

8.1 Heart Rate

The effect of vividness on heart rate was found to be significant. The resulting effect was to make the T effect more pronounced,
between same and different images. The more vividly images are seen, the more pronounced are the differences between same and different images. The effect of arousal on heart rate mirrored this pattern. Compliance had no effect.

8.2 Skin Conductance

No significant effect was found for vividness, but vividness was found to accentuate the differences observed in skin conductance as a result of stimulus and response images. Arousal had no effect. Compliance was found to accentuate differences observed before and after training. Results suggest that greater levels of compliance result in greater increases in skin conductance response after training.

8.3 EMG

Vividness was found to accentuate differences observed before and after training. The effect of arousal was to accentuate the RT effect. Differences between the same and different images are more pronounced according to script content. This difference is further accentuated by increased arousal. There was no effect due to compliance.

8.4 Vividness and Arousal

A positive correlation was shown between the two indicating increases in ratings of arousal and vividness after training.
8.5 Vividness and Compliance  
----------------------------------
Increased compliance resulted in greater reports of imagery vividness before and after training.

8.6 Arousal and Compliance  
----------------------------------
Increased levels of compliance resulted in increases in the differences in arousal observed between stimulus and response images.

9 Analysis of Verbatim Reports  
----------------------------------
The propositional content of verbatim reports is summarised in table seven.

Table Seven  
Mean number of images showing a focus on response propositions

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<th>LR n=5</th>
<th>HS n=5</th>
<th>HR n=4</th>
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<tr>
<td>post</td>
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<td>Total</td>
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Results show that consistent with hypothesis predictions, high group subjects prior to training show a focus on response propositions. Low group subjects largely show a focus on stimulus
the predicted directions for each group, that is stimulus trained subjects report more stimulus propositions and response trained subjects report more response propositions. Subjects who reported response propositions did not report propositions relating to EMG, heart rate and skin conductance, but rather behavioural responses such as escape or avoidance. Spontaneously generated images show the same focus on stimulus or response according to low or high grouping.
The aim of the present study was to examine the effect of training on physiological and self-report measures in low and high responders to emotional imagery and to examine more closely the effects of response training. Results will be discussed in relation to the major hypotheses posited.

It was predicted that high response subjects would produce increases in measures as a function of imagining arousing response structured scripts relevant to their phobias. High response subjects did show a significantly higher heart rate response to emotive imagery (mean increase 27.1 bpm, sd 9.65). Low group subjects showed a lower increase in response (mean increase 6.94 bpm, sd 3.4). While the significant difference (H) which emerged in the statistical analysis is a function of the experimental design, it would seem justified to claim that two groups with differences in ability to produce heart rate response to response structured fear imagery emerged. Interestingly, the prediction that these groups would also be high responders with regards to EMG and skin conductance measures, was not met. This finding is not entirely discordant with other research in this area. A wide variability in response has been noted between different physiological systems, especially in the absence of training; one of the reported effects of response training being to increase concordance of measures. In spite of the disparity which exists between EMG, SC and HR in low and high groups, it is argued that choosing heart rate as the measure upon which to make the division into high and low response groups is justified because:
(a) Research has shown heart rate to be the most consistently reliable index of autonomic arousal during emotional imagery, (Bauer and Craighead 1979).

(b) Consideration of the less reliable measures of skin conductance and EMG may have resulted in high heart rate responders being placed into low response groups or vice versa.

In view of the non-significant H effect when looking at EMG and skin conductance, it may have been interesting to look at high and low EMG and SC responders separately and then assess the differential effects of stimulus and response training on these groups. The small group sizes in the present study precluded this.

In considering the first hypothesis it is thus possible to conclude that a group of high response subjects and a group of low response subjects were identified, showing differences in heart rate response to emotive imagery. These results were not mirrored by EMG and SC patterns. The high response group, as predicted evidenced high levels of heart rate change during imagery even in the absence of training.

The second hypothesis predicted that low response subjects would not be able to evidence an increase in physiological response during imagery in the absence of training. While the identification of such a group was inevitable because of the nature of the experimental design, it was apparent that before training this group could be identified because of low levels of heart rate change noted during imagery. The fact that these subjects with a hypothesised 'imagery deficit' could produce
minimal change is not a reason to challenge their inclusion in this group, as information processing alone results in increased physiological response (Carroll et al. 1976). The hypothesis predicted that with this group, response training would produce increases in physiological response when subjects were tested on response structured scripts. The heart rate analysis revealed that this group did show trends in the predicted directions. With response structured images, subjects showed increases in heart rate response. With stimulus structured scripts a decrease in heart rate was shown when the same scene was re-presented. Contrary to predictions, an upward trend was shown when different images were presented before and after training. Figure 1 shows that overall, subjects showed higher heart rate measures to response scripts even in the absence of training. This replicates Lang's finding (1980). This difference was also observed in the low response group. The effect was highly significant (p=0.00). It must be acknowledged that the trends which were in predicted directions for the LR group did not reach the significance level.

The second hypothesis received support from heart rate data; although results did not attain the significance level, trends were in the predicted directions. With skin conductance the hypothesis was not supported. After training, stability in response is evident when the same image is re-presented and a slight, though non-significant increase was shown when a different response image was presented. Contrary to the predictions from the hypothesis, stimulus images tended to produce higher SC responses overall. It would seem clear from figure 2 that low heart rate responders are not necessarily low SC responders. Response training of low heart rate responders to emotive imagery does not
produce increases in SC response when subjects are tested on response scripts. Low heart rate responders are also not necessarily low EMG responders as figure 3 clearly shows. Trends were found to be in the opposite direction to those predicted by the hypothesis, in that response trained subjects showed decreased response to response structured imagery. As with skin conductance, it can be concluded that response training of low heart rate responders to emotive imagery does not produce increases in EMG response when subjects are tested on response scripts.

The third hypothesis predicted that analysis of the image descriptions in the LR groups would reveal a training effect in that prior to training this group would show an emphasis on stimulus propositions. After response training, a shift in focus was predicted. It was hypothesised that this group would then focus on response propositions. Table seven clearly shows that findings support this hypothesis. It is possible that the classification of stimulus and response focus makes this effect more pronounced. Images were classified as stimulus focused images if they contained stimulus detail and no response propositions. As response structured scripts contained response and stimulus detail, subjects had only to include one reference to response features of the scene for the description to be classified as response focused. Examination of verbatim reports clarifies the effect of training (see appendix I) showing that subjects did not completely change their style of imaging/reporting to focus entirely on response features of the scene, but incorporated small response features as part of the image. The other interesting point to note is that subjects do not necessarily adopt the strong response
suggestions which are a feature of the constructed script. Subjects often included response detail absent from the script but particular to their personal phobia. This would suggest that response training was not just increasing response reporting, but actually changing the way the subject accesses and processes the emotion prototype. This is shown by the fact that response features were also reported in stimulus scripts. As other studies have not incorporated a self report component it has not been possible to determine this effect previously. Another interesting question raised by this finding, is that it maybe that some people have an imagery deficit because they focus on stimulus rather than response propositions. The focus on stimulus propositions was found prior to training across the low response group.

The fourth hypothesis predicted that response training would have no effect on the physiological response of high response subjects and that verbatim reports would show response focus both before and after training. An examination of the heart rate response reveals that response training does not remain stable as the hypothesis would predict. With response images a decrease in heart rate is evidenced when the subject is asked to imagine the same scene. It is possible that this may be a habituation effect as it is also evidenced by the other groups (except LR who showed the predicted increase). However it has been suggested that habituation is expected to be slower in response trained groups (Robinson et al. 1984). With stimulus images, results are in the predicted direction. Examination of EMG reveals that this group show little variability in response except inexplicably to the imaging of different stimulus images where a slight (non-
significant) increase in EMG response is shown. Analysis of verbal descriptions of scenes, supports the hypothesis and once again raises the question as to whether the difference between good and poor imagers may be the result of different propositional focusing. It might be argued that those who produce a good image then experience emotional arousal as a result of the good image and thus report it. This is contradicted by the fact that experimental evidence has supported Lang's model. Including response propositions in scripts has been shown to result in increased arousal (Lang 1980).

The fifth hypothesis sought to examine this further by looking at high group subjects and whether increased focusing on stimulus propositions would lead to decreases in physiological measures. It was also hypothesised that verbal descriptions would show a change in that only stimulus propositions would be reported. Table seven shows a marked decrease in reports of response propositions by all five of the subjects in this group after stimulus training. Examination of heart rate results indicates that a significant decrease in heart rate response occurred when subjects were tested on response scripts. When the same stimulus script was represented in the post training session, increased heart rate response was shown, however closer examination of raw data suggest that this may be an aberrant result due to an inadequate recovery period being allowed before the next baseline measure was taken. Different stimulus scripts again resulted in decreased response. With EMG ratings either decreases or stability are shown in response, although once again it must be acknowledged that this group of high heart rate responders were not high EMG responders.
Skin conductance responses showed decreases across all but one condition were the same stimulus image was presented. Overall the fifth hypothesis received support.

The sixth hypothesis examined the effects of stimulus training on low responders. No change in physiological response or in the propositional structure of reports was predicted thus it was expected that verbal reports of scenes imagined would show an emphasis on stimulus propositions before and after training. Examination of heart rate results supports this hypothesis. With the EMG measures it is observed that there is a trend for increases to be shown with response images and decreases to be shown in response to stimulus images. Again however, low heart rate responders do not necessarily seem to be low EMG responders to emotive imagery.

The hypothesis relating to vividness, compliance and arousal suggested that all three would be greater for response trained subjects. This was not found with compliance ratings which were generally lower for response trained than stimulus trained subjects (although differences were not significant). The hypothesis was not supported for arousal or vividness ratings.

The final hypothesis attempted to examine whether phobic images reported by subjects themselves as examples of naturally occurring (as opposed to therapist constructed) scripts would reveal the same response/stimulus construction which Lang proposes to exist in emotive imagery. It was predicted that low responders would again show a focus on stimulus propositions and high responders
show a focus on response propositions. Table seven shows that this hypothesis was supported.

1 Summary of Findings Relating to Hypotheses

In the assessment of the effects of training on the physiological measures evoked as a result of imagining fear imagery, it was found that there were trends in the predicted directions for heart rate measures in low and high response groups. Significant differences were observed as a function of script content. Results for skin conductance and EMG measures were less consistent. This was partly due to the fact that an assumption of the experimental design was that the pattern of results evidenced in heart rate response would be reflected by similar changes in SC and EMG response. Effects of vividness, arousal and compliance were not in the predicted directions. Training was found to increase reports of imagery, vividness and arousal irrespective of training type. This may reflect a practice effect. Increased ratings of arousal and vividness resulted in increased observed differences in heart rate response between same and different images. Increased compliance resulted in greater increases in skin conductance response after training. In the EMG measures, vividness accentuated the differences observed before and after training. As might be predicted, increased compliance resulted in greater reports of vividness and also produced increases in the differences in arousal produced by stimulus and response images. Low response groups were found to focus on stimulus responses before training, both when asked to imagine a script and when asked to generate a fear scene. This occurred with both stimulus and response structured scripts. High response groups included
response propositions in their descriptions of stimulus and response structured scenes. After training it was found that subjects gave reports of stimulus or response propositions according to training group.

2 Future Research

This study had a number of limitations. Firstly the number of subjects studied was inadequate. With such small groups, statistical significance is elusive and while high order effects were predicted by the hypotheses, this factor increases the likelihood of obtaining high order interactions. Obtaining two experimental groups on the basis of a median split, while appearing to produce the populations required, is not the method of choice. A criterion response, validated to determine high or low responders should be specified at the outset and used to determine group membership.

The imagery training procedure was short by comparison with those used in other studies. An extended procedure may have increased observed differences.

Verbatim reports produced by subjects were brief and did not lend themselves to detailed analysis. Future research might include an interview in which images are described in order to elicit more detailed information in terms of stimulus and response content. From this, imagery network maps might be detailed and an examination of Lang's proposal that phobia networks, because of their cohesiveness, require fewer input propositions, could be analysed.
3 Conclusion
---------------

Conclusions to be drawn from the study remain tentative and require replication because of the small sample size, however some interesting trends did emerge.

The study showed that increased heart rate response may be produced by response scripts alone as Carroll et al. (1982) found. This appears to occur only in subjects who have good imagery ability. Trends from this study suggest that other subjects appear to require response training before physiological response occurs and then it is particularly elicited by response scripts. Response training appears to work by changing the way in which imagery is processed, to include response propositions. It is possible that subjects with an imagery deficit fail to produce good imagery because response propositions are not included. Before imaginal therapies are undertaken with patients, these findings, together with other research in this area, would suggest that an analysis of imagery ability is undertaken and then response training incorporated into the treatment program if this seems indicated. It would appear that script type, imagery ability and training type interact in producing physiological response to imagery and should therefore be considered when undertaking imaginal therapy.
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APPENDIX A

SUBJECT DETAILS
Response Group n=9

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Stimulus Group n=8

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APPENDIX B

FEAR SURVEY SCHEDULE

--------------------------
F.S.S. II Scale (1965)

Name ........................................ Age .......................... Sex ......................

For each of the following items, please indicate what degree of fear the item has for you by drawing a circle around the appropriate number according to the following scale:

(1) None  (2) Very little  (3) A Little  (4) Some  (5) Much  
(6) Very much  (7) Terror

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APPENDIX C

RATING SCALES
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COMMENTS...
APPENDIX D

CONSENT FORM
Thank-you for volunteering to take part in this study. As was explained to you when you first considered taking part, the study aims to look more closely at how people who have phobias think about their feared object and in turn at how this affects their physiology. It is hoped that through this it may be possible to gain further knowledge about phobias and thus to develop more rapid and effective treatments for phobic patients.

As has been explained to you some monitoring equipment will be placed on your forehead and also on your fingers while you imagine some scenes related to your phobia. The experiment will not involve coming into contact with your feared object in any other way. None of the procedures involved are considered to be dangerous.

I would be grateful if you could sign this form to show that you are aware of what the study involves and as an indication that you are willing to participate as a subject.

Volunteer.

I confirm that I have explained to the subject the nature and purpose of this study and the procedures involved.

Psychologist

Hospital

Date.
After reading this some electrodes will be placed on your fingers and forehead so that your reaction to the scenes you will imagine can be measured. There is no danger involved in this procedure. After a short period of time to allow you to get used to the situation you will hear the instruction "Please sit as quietly as possible for the next 30 seconds". Please try not to move during this period. You will then be asked to imagine a frightening scene involving a confrontation with your phobia item. This will be preceded by the instruction "Please try to imagine the most frightening scene you can relating to your phobia". After this you will hear the instruction "Please try to imagine this scene for a few seconds more". After 30 seconds you will be asked to give a description of the scene which you have just imagined. Please speak clearly into the microphone when you hear the instruction "Try to describe the scene which you have just imagined as fully as possible and then complete the rating scale to your left hand side." A short rest period will then follow indicated by the instruction "Just sit back and relax until the presentation of the next image". This procedure will be repeated four times, but instead of asking you to imagine your own scenes, you will be asked to imagine a particular scene. After four images have been presented, four scenes unrelated to your phobia will be described. You will not be asked to rate or report these images, but after you have imagined each scene the experimenter will enter your room and ask you for a detailed description of the scene. Following this you will be asked to imagine, rate and report four more images relating to your phobia.

There is no need to try and remember this procedure, as instructions will tell you what you should be doing at each stage.
APPENDIX F

RATING SCALE INSTRUCTIONS

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After reading this some electrodes will be placed on your fingers and forehead so that your reaction to the scenes you will imagine can be measured. There is no danger involved in this procedure. After a short period of time to allow you to get used to the situation you will hear the instruction "Please sit as quietly as possible for the next 30 seconds". Please try not to move during this period. You will then be asked to imagine a frightening scene involving a confrontation with your phobia item. This will be preceded by the instruction "Please try to imagine the most frightening scene you can relating to your phobia". After this you will hear the instruction "Please try to imagine this scene for a few seconds more". After 30 seconds you will be asked to give a description of the scene which you have just imagined. Please speak clearly into the microphone when you hear the instruction "Try to describe the scene which you have just imagined as fully as possible and then complete the rating scale to your left hand side." A short rest period will then follow indicated by the instruction "Just sit back and relax until the presentation of the next image". This procedure will be repeated four times, but instead of asking you to imagine your own scenes, you will be asked to imagine a particular scene. After four images have been presented, four scenes unrelated to your phobia will be described. You will not be asked to rate or report these images, but after you have imagined each scene the experimenter will enter your room and ask you for a detailed description of the scene. Following this you will be asked to imagine, rate and report four more images relating to your phobia.

There is no need to try and remember this procedure, as instructions will tell you what you should be doing at each stage.
1 Arousal

Minimum  Moderate  Maximum

2 Vividness

Minimum  Moderate  Maximum

3 Compliance

Minimum  Moderate  Maximum

Please use the above scales to help you fill in the rating scale, placing the appropriate rating next to the corresponding image number.
APPENDIX G

Images Presented
Imagine that you have just got out of bed and that you are getting dressed in your bedroom. You are about to put on your shoe and you notice a black shape in it. You feel your heart beat faster as you pick up the shoe and shake the spider onto the floor. You tense with fear as the spider runs across the floor and you feel yourself start to perspire. (response)

Imagine that you have just returned from the greengrocer's. You put your hand into the brown paper bag which contains some apples. You feel something move against your hand and you tense up in horror. Perspiration rolls down your body as you feel the large insect move against your skin. As you quickly withdraw your hand from the bag the spider falls to the ground and your heart pounds in fear. (response)

Imagine that you are lying in the garden relaxing in the warm sun. Suddenly you notice that in the grass just in front of your face, there is a large insect weaving it's way in and out of the grass. You want to move but you are rigid with fear. As the spider moves closer towards you, you feel your heart start to pound and your skin prickles with goosepimples. (response)

Imagine that you are sitting in the car driving along the motorway. On the window you suddenly notice a large brown spider starting to weave a web. You watch it move across the window sometimes pausing to wrap it's silky thread around it's legs. You notice how firm and round the spider's body is and the tiny brown hairs on it's legs.
Imagine that you have got undressed in the bathroom and are ready to run the water for a bath. Suddenly you notice that there is a large black spider walking around under the taps. It's black body stands out clearly against the white enamel of the bath and you can count it's legs easily. Two sharp feelers which are short and stubby protrude from it's head.

Imagine that you are in the garden shed looking for a tool. You are looking underneath some boxes when suddenly a large spider runs out and crawls across your foot. You notice it's long legs and the way in which it's fat round body is suspended from them. As it scurries away towards it's web you notice the mangled collection of flies which have been ensnared by the web.
Imagine that you are lying in bed trying to sleep and a noise on the ceiling above you is distracting you. There is a persistent scratching above you and occasionally rapid scuttling from one part of the ceiling to the other. It is probably rats. You know that the house next door had their attic infested. In the darkness the scratching seems to get louder and louder and fills the room. The scurrying seems very close, almost as if there were rats in the room.

Imagine that some work has been carried out on some drains outside the window of your flat. You walk into a room in your flat and as the light is switched on, large brown shapes on the floor scurry in all directions. The floor seems to be covered in rats running around trying to find cover. In seconds they have disappeared underneath the furniture where you cannot see them. Then a sharp furry head appears beneath the sofa. As the rat stares out at you, you notice its whiskers twitching and the sharp nails on the ends of its front paws.

Imagine that you are in the countryside having a picnic, relaxing by the edge of a river in some long grass. You hear a rustling noise in the grass beside you and you notice a large brown rat scurrying towards you. You drop everything, feeling your heart start to pound. Your hands feel cold and clammy with perspiration despite the warm sun and as you try to run from the river bank you notice how rigid and tense your muscles feel.
ne that you are in an old garage at the back of your house
for tools. Lots of rubbish has accumulated in the garage and
to move a large carpet to get to the corner you want. You
cuttling noise and think it is just some piece of rubbish
u have disturbed. Then with horror you notice two brown beady
a sharp pointed face peering at you. You freeze in horror
am, your face rigid with fear, your heart pounding within
st, your skin prickling with goose pimples and sweat pouring
r body. (Rat /mouse)
ne that you are in a wood, on a pleasant autumn day, taking
l. As you walk along you kick up the leaves with your feet
ten to the rustling sound they make and the snapping sounds
small twigs as you step on them. Suddenly, from nowhere a
it dashes across your path. You notice how fast your heart
you turn round to head back and two more rats cross your path
'll the muscles of your body seem tense as you start to run
id perspiration rolls down your skin. (Rat /mouse)
ne that you are alone in the sitting room of an old house.
, you notice a movement near the fireplace. It is a large
stops very still with just its nose twitching - it edges
the skirting board and then moves to the middle of the
yards you. It has a fat, furry, brown body and a long
tail, which looks like a long, fat worm. It stops a
of feet in front of you, nibbling some crumbs, its beady
es sparkling. (Rat /mouse)
9) Imagine that you are sunbathing in the garden, feeling very relaxed as the warm sun beats down on you. Suddenly, you hear a dog growling. You look up and see it is a large alsation; it runs into your garden barking wildly. You sit up, quickly feeling your heart pounding. You are rigid with fear as the large dog comes bounding towards you - your hands are clammy with perspiration.

10) Imagine that you are riding your bicycle feeling quite relaxed when suddenly you notice a large alsation in a gateway along the road. He starts to bark and run towards you. Your heart starts to race and you tense all the muscles of your body as you try to pedal furiously away. The dog snaps at your ankles and you feel the perspiration roll down your body.

11) Imagine that you have walked into a telephone box to call a friend. As you finish your call you notice that a large dog is standing outside the booth. He places his large paws against the glass and barks furiously. Your heart starts to race because you daren't get out of the phone booth. All your body starts to feel tense and rigid as you realize that you are trapped in the booth and sweat pours down your body.

12) Imagine that you are out walking in the park one day, when a large dog comes bounding towards you. You can see its large teeth as it draws back its lips to growl at you. It has huge paws and

13) Imagine that you are walking in the supermarket. As you approach the entrance you notice that someone has tied up a large dog outside. As you walk besides the entrance the dog comes bounding towards you and leaps up at you, placing his large paws on your chest. You notice the dogs shaggy coat and his large teeth as he pants.
Imagine that you are sitting on the beach when some people come to
text to you with a large dog. The dog starts to sniff around you.
notice how big the dog is and how large its teeth are as it pans
the sun. You notice the sand which has stuck to its coarse heavy
and the droplets of saliva which drip from its lips onto
ground. You cannot take your eyes from its large-
up teeth (Irritation).
1) Imagine that you are walking in a wood on a pleasant summers day. The sunlight filters through the trees around you and you slowly stroll along the path. Suddenly you hear a slow hissing noise and in front of your eyes a snake quickly slithers across your path. You notice its black formed tongue and its flickering movements. (Snake/Stimulus)

2) Imagine that you are walking out in the countryside. You see a pile of freshly cut grass and decide to take a rest there. As you lie back in the grass you feel something hard slither from beneath you and you see a snake dart out from the grass. You leap up in horror, feeling your heart pounding, your hands cold and clammy with perspiration. You notice that your body is rigid with fear. (Snake/Response)

3) Imagine that you are walking around a zoo. Without thinking you walk into the reptile house. Glass cases surround you containing snakes. You would like to walk out but can't, as there is a large crowd behind you. You hear the intermittent hissing sounds of the snakes. Some lie curled up, others slither up and down the arms of a zookeeper, winding themselves around his body. You imagine how cold and slimy they would feel. (Snake/Stimulus)

4) Imagine that you have been for a walk up a steep rocky hill. As you descend you stop for a rest against a rock. A large snake with zigzag markings suddenly emerges from behind the rock and winds across your foot. You are so terrified that you cannot move. You lean back against the rock, feeling your heart thumping inside your chest and perspiration covers your body. (Snake/Response)
6) Imagine that you are in a safari park, standing under some trees. You hear a hissing noise and think that it must be a snake. Suddenly, in front of you a snake drops down, hanging from a branch - its face is right in front of your face - you are so afraid that your muscles go funny and you can't run. You feel tension in your face - you want to scream but no noise comes out. Your skin prickles with goose pimples and perspiration runs down your skin. Your heart is beating so hard and fast, you feel it banging in your chest. (SNake/REACTION)

5) Imagine that you are swimming in the river. As you dive down you see something wind itself around you. You think that you have become tangled in some weed. To your horror you see that there are some water snakes swimming round you - weaving in and out of the water. The snakes dart in and out of the water in front of you. You notice the markings of their skin and the ripples they leave in the water behind them. (SNake/STIMULUS)
15) Imagine that it is a cold autumn evening in November and you are coming back from lectures to your flat. As you get off the bus you notice a crowd of boys at the bus stop playing with some fireworks. Your heart starts to pound as you realize you will have to walk past them. As a large banger goes off you jump with fright and you can feel the tension in the muscles of your forehead as you clench your eyes tight and place your hands over your ears to stifle the noise. You notice that your hands are cold and clammy with perspiration.

16) Imagine that you are at a wedding reception held in a large marquis on a hot summers day. Someone announces that there will be a firework display and your heart starts to pound. Rockets shriek across the sky. You place your hands over your ears so that you do not hear the loud bangs they make before they hit the ground.

Some young boys next to you are about to let off some bangers; you start to panic as they bang loudly, feeling your skin prickle and perspiration running down your skin. The muscles of your forehead, neck and shoulders are so tense and you rush past the crowds to try to find somewhere quiet.

Imagine that you are on holiday at a beach party. At the bar finishes your host announces that there will be a firework display. There are large bangs all around you as hundreds of fireworks suddenly see: to go off. All at once before you can leave the beach, you notice the bright tails the rockets leave behind them as they tear across the sky and the vivid colour of the bright balls of fire, which leap up out of some fireworks strewn across the ground.
Imagine that some boys have come to your front door asking for a penny for the guy. As you don’t like fireworks you send them away. In revenge you see that they are opening your letterbox and pushing something through. You try to rush out of the hall as you see a firework fall onto the carpet, but before you get away it bangs loudly and just a burnt out cardboard tube remains. Just outside your door you hear another matchstick strike and once more the flap of the letterbox opens. You run out of the hall before the next firework falls through.

Imagine that it is another cold autumn evening and you are walking out of the newsagents after buying your paper. Outside a group of boys are playing with a box of fireworks they have just bought. As you walk past they light up a jumping jack and throw it after you. The firework leaps out of control and although you try to run away you are frozen to the spot in fear. Your heart pounds harder and harder each time the firework jumps; you raise your hands to your face to cover your ears, noticing as you do so the cold, clammy feel of your hands against the muscles of your forehead, which are clenched rigidly in fear.

Imagine that you are dancing at your friends birthday party. There is a very lively disco going on and most people are on the dance floor. The music is loud and brightly coloured lights around the room are flashing. Suddenly, someone decides to throw some firecrackers onto the dance floor for a laugh. As the firecrackers hit the floor they spark brightly and explode loudly. Lots of girls start to giggle and scream. It seems that all around you there are hundreds of explosions coming from all directions. You feel yourself start to panic and you run from the dance floor.
1. You have to present a long talk before a very important group. They are all going to assess you on your skills as a speaker. You've never addressed such a large group before. As you stand in the wings waiting to go on the stage you notice the sea of faces in front of you. You notice how very bright the stage looks under the glare of the spotlights. As you anxiously watch the clock the second hand inches forward jerkily. You notice people milling in from the foyer filling up the seats in the audience. A bell rings calling your audience into the room, the bell echoes through the hall. The lights in the auditorium go down and you are told to go on stage. In the front row you pick out the face of your assessor, sitting poised with his pencil and notebook at the ready. As you walk across the stage your footsteps ring out across the wooden floorboards.

2. You are sitting in the doctor's examining room when you are told that you must have a very painful injection. You look at the large tray of syringes positioned on the doctor's desk as you walk into his room. Your eyes follow the doctor's movements as he fits a large needle into a syringe. You notice the serum squirt out into the air as the doctor pushes all the air out of the syringe. You watch the skin of your arm turn red as the nurse scrubs the skin clean. The doctor holds out your arm and you watch the needle as he presses it into your skin. You watch the contents of the syringe slowly disappear as the serum is injected into your arm. You are still watching the syringe as the needle is slowly withdrawn from your arm.
3. You are lying in bed and you see a wasp crawling on the pillow just beside your face. It crawls slowly alongside your face waving its feelers. As the wasp creeps towards you, you notice its black and yellow body and the fury hairs which cover it. You notice how vividly the wasp's black legs stand out against the white pillow. The wasp has a fluffy, segmented body and hairy legs. Your eyes follow its movement up and down the fold of the pillow. For a moment it disappears, but then it reappears from a fold in the cloth and moves closer towards your face. You sit in bed and wonder if it will sting you.

4. You are all alone sitting on a towel, taking a sauna. You realize the temperature has gone wrong. You watch the perspiration running down your skin in streams, mixing with condensed moisture from the swirling clouds of steam. The heavy fog swirls around you and you notice the glowing coals which are still sending more steam into the atmosphere. Droplets of water run down the walls of the room. You notice tiny puddles forming on the floor. You see the needle on the temperature dial inching towards the 'danger' zone. You hear someone outside thumping on the door despite the hissing sound of the steam swirling round you. You realize that you are trapped inside.
1. You are all alone taking a sauna when the temperature suddenly becomes hot and unbearable. You realize the temperature setting has gone wrong. You start to sweat profusely and perspiration rolls down your skin in streams mixing with condensed moisture from the swirling clouds of steam. The heavy fog hampers your breathing and you take rapid gulps of the scorching air which burns your throat and makes it feel dry. You become aware of your heart thumping away. It is beating so hard and fast that you sense it in your chest. You tense all the muscles of your forehead, squinting to exclude the burning steam from your eyes as you try to glimpse the exit. Your heart pounds wildly as you pull with all your strength on the door which is jammed shut.

2. You are sitting in the doctor's examining room when you are told that you must have a very painful injection. You feel your breath catch in the back of your throat and your eyes follow the doctor's movements as she fits a large needle into a syringe. Your heart beats quickly and erratically and all your muscles tense up. You feel your heart pounding away as the nurse puts some alcohol on a cotton ball to clean your arm. It is beating so hard that you can feel it pulsing high in your throat. The smell of the hospital makes you feel sick. You feel the butterflies in your stomach and you start to sweat as she holds your arm and presses the needle into it.
3. You have to present a long talk before a very important group. They are all going to assess you on your skills as a speaker. You've never addressed such a large and important group before. Your hands have become sweaty and you feel tension across your forehead, neck and shoulders. You have butterflies in your stomach and your throat is parched and dry. As you anxiously watch the clock the second hand inches forward jerkily. You are so scared that you notice that your heart flips with each jump of the second hand. A bell rings calling your audience into the room. Suddenly your heart begins to race, beating so hard you can feel it. As you walk quickly towards the stage you breathe rapidly and glance round at the faces in the packed audience. Again you become aware of your heartbeat as it jumps in unison with your footsteps, which ring out as you walk across the wooded floor.

4. You are lying in bed and you see a large wasp crawling on the pillow just beside your face. You tense up all your muscles as you hold your body rigid, thinking that it may sting you. As the wasp creeps towards you, you take deep grasping breaths. Your heart starts to race. Pounding, it goes faster and faster and beats harder. It is beating so fast that you can feel every beat in your chest going thump...thump...thump. The wasp is black and yellow in colour. You see it vividly against the white pillowcase. Your eyes follow its movement up and down in the fold of the pillow and you tense your face and neck as the wasp moves closer towards your face. Shivers run down your spine and you feel so afraid you cannot move or scream.
APPENDIX I

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Summary of
SUBJECT SCENE DESCRIPTIONS

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Summary of content of scenes described

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POOLED REGRESSION COEFFICIENTS

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### Analysis of Variance

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G | 16.30616 | 1 | 16.30616 | 1.70 | .172 | 1 | 9.61719
H | 4.44479 | 1 | 4.44479 | 1.11 | .302 | 1 | 9.61719
SH | 4.44479 | 1 | 4.44479 | 2.61 | .142 | 1 | 9.61719
1ST COVAR | 4.44479 | 1 | 4.44479 | 1.47 | .066 | 1 | 9.61719
**Error** | 115.42328 | 12 | 9.61719 | | | | |
R | 10.14691 | 1 | 10.14691 | 6.68 | .012 | 1 | 1.19461
RC | .41463 | 1 | .41463 | 1.20 | .067 | 1 | 1.19461
RH | 2.41606 | 1 | 2.41606 | 1.41 | .051 | 1 | 1.19461
RSH | .41463 | 1 | .41463 | 51 | .012 | 1 | 1.19461
1ST COVAR | 10.14691 | 1 | 10.14691 | 6.68 | .012 | 1 | 1.19461
**Error** | 14.33886 | 12 | 1.19461 | | | | |
S | 6.06724 | 1 | 6.06724 | 5.01 | .049 | 1 | .99949
SG | .41463 | 1 | .41463 | 1.14 | .062 | 1 | .99949
SH | .01229 | 1 | .01229 | 51 | .012 | 1 | .99949
SGH | .04753 | 1 | .04753 | 6.01 | .049 | 1 | .99949
1ST COVAR | 1.06028 | 1 | 1.06028 | 1.86 | .377 | 1 | .99949
**Error** | 14.33886 | 12 | 1.06028 | | | | |
RS | .12665 | 1 | .12665 | 5.01 | .049 | 1 | .99949
RSG | .41463 | 1 | .41463 | 1.14 | .062 | 1 | .99949
RSH | 2.01086 | 1 | 2.01086 | 1.26 | .247 | 1 | .99949
RSHG | .1229 | 1 | .1229 | 2.24 | .116 | 1 | .99949
1ST COVAR | 1.06028 | 1 | 1.06028 | 1.14 | .049 | 1 | .99949
**Error** | 19.15473 | 12 | 1.69623 | | | | |
T | .01564 | 1 | .01564 | 1.01 | .363 | 1 | .99949
TG | .79576 | 1 | .79576 | 17 | .484 | 1 | .99949
TH | 3.17267 | 1 | 3.17267 | 1.91 | .121 | 1 | .99949
TGH | .00013 | 1 | .00013 | 51 | .012 | 1 | .99949
1ST COVAR | 2.77114 | 1 | 2.77114 | 1.21 | .247 | 1 | .99949
**Error** | 28.94383 | 12 | 2.46469 | | | | |
RT | .00028 | 1 | .00028 | 1.01 | .363 | 1 | .99949
RTO | .14429 | 1 | .14429 | 2.27 | .121 | 1 | .99949
RTH | .34585 | 1 | .34585 | 1.26 | .247 | 1 | .99949
RTGH | .07492 | 1 | .07492 | 2.24 | .116 | 1 | .99949
1ST COVAR | 7.14920 | 1 | 7.14920 | 1.41 | .066 | 1 | .99949
**Error** | 6.14736 | 12 | .51230 | | | | |
ST | .00890 | 1 | .00890 | 0.30 | .593 | 1 | .99949
STG | .18198 | 1 | .18198 | 0.30 | .593 | 1 | .99949
STH | .01121 | 1 | .01121 | 1.01 | .363 | 1 | .99949
STGH | .03600 | 1 | .03600 | 1.01 | .363 | 1 | .99949
1ST COVAR | 2.74718 | 1 | 2.74718 | 1.63 | .049 | 1 | .99949
**Error** | 9.15473 | 12 | 2.46469 | | | | |
RST | 1.17044 | 1 | 1.17044 | 1.17 | .304 | 1 | .99949
RSTG | .10262 | 1 | .10262 | 1.00 | .363 | 1 | .99949
RSTH | 3.17267 | 1 | 3.17267 | 2.24 | .116 | 1 | .99949
RSTGH | 1.17044 | 1 | 1.17044 | 1.17 | .304 | 1 | .99949
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