The Psychological Predictors of Parasuicide:

A longitudinal investigation of the relationships between three psychological measures (generality of autobiographical memory, future fluency for specific positive events, attentional bias for hopelessness-related words) and deliberate self-harm

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ABSTRACT OF THESIS/DISSERTATION submitted by GARY L. SIDLEY
for the degree of Ph.D and entitled *The Psychological Predictors of
Parasuicide: A longitudinal investigation of the relationships between three
psychological measures (generality of autobiographical memory, future fluency
for specific positive events, attentional bias for hopelessness-related words) and
deliberate self-harm* Month and Year of submission *July 2001*

Five experiments were conducted investigating the relationships between
several psychological measures and parasuicide in patients who had recently
taken a deliberate drug overdose. Using both cross-sectional and longitudinal
designs, the main findings were as follows:
1. The replication of a significant correlation between ineffective problem
   solving and the degree of autobiographical memory generality;
2. The identification of three dimensions of parasuicide, associated with
   "hopelessness", "unrelenting, unrecognised distress", and "communication";
3. Autobiographical memory generality at index assessment was a significant
   predictor of hopelessness levels one month later;
4. The generality of autobiographical memory, future fluency for positive
   events, and attentional bias for hopelessness-related words did <u>not</u> predict
   parasuicide repetition, the most potent predictors being scores on the Beck
   Hopelessness Scale (short-term predictor) and number of previous acts of
   self-harm (long-term predictor).
5. The failure to find any evidence for an active hopelessness schema in the
   form of a selective attentional bias on a modified Stroop task incorporating
   words depicting a theme of "no future";
6. Ambiguous results regarding the trait or state status of autobiographical
   memory generality.
The implications of these results for research, theory and practice are discussed.

Declaration

No portion of this work has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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1. Chapter 1

GENERAL INTRODUCTION

1. Chapter 1. GENERAL INTRODUCTION

Summary

The broad aims of the thesis were to further elucidate the relationships between parasuicide and several potentially relevant psychological variables. The psychological variables under scrutiny were the generality of autobiographical memory, anticipation of positive events, and beliefs related to themes (hopelessness, problem insolubility, affect regulation, communication) that previous research has suggested may be of relevance to the emergence of suicidal behaviour. This General Introduction will provide a broad overview of the relevant literature pertaining to the above mentioned areas. The literature specific to each of the five experiments will be discussed in more detail in the introductory section to each chapter.

1.1 Definition of parasuicide

Parasuicide can be defined as any deliberate, self-inflicted act that is intended to cause harm but does not result in death. This definition of parasuicide incorporates a very wide variety of self-injurious behaviours, for example ranging from superficial scratches to the skin to fortuitous survival of more extreme acts of self-destruction (such as hanging or gunshot wound). However, as proposed by MacLeod, Williams and Linehan (1992), the term parasuicide has the important advantage over related labels in the suicide literature ("cry for help", "attention-seeking behaviour", "attempted suicide", "failed suicide") of not automatically inferring the motive behind the

deliberate self-harm. Numerically the parasuicide population is less heterogeneous than at first appears with self-poisoning accounting for over 90% of all parasuicide episodes (Williams and Pollock, 1993).

There has been debate about the extent of the relationship between parasuicide and completed suicide (MacLeod et al., 1992). Clearly, there are some important differences between the two populations. Thus, there is a marked gender difference with men outnumbering women by a ratio of more than three-to-one for completed suicides, whereas parasuicide has traditionally been viewed as being more common in females (Hawton and Catalan, 1987; Platt, 1992). However, there is evidence to suggest an important association between the two groups, the most striking observation being the fact that patients who have deliberately self-harmed are 100 times more likely to kill themselves in the subsequent 12-months when compared to the rate for the general population (Ovenstone and Kreitman, 1974; Kreitman and Foster, 1991).

The study of the psychological processes that underpin acts of parasuicide is an important area of empirical investigation. It is important not only because of its strong relationship with completed suicide, nor solely because of its high prevalence and the corresponding heavy demand it imposes on the health-care resource (see section 1.2 below). Acts of parasuicide are important in their own right, typically being precipitated by very high levels of emotional distress.

1.2 <u>Prevalence and incidence of parasuicide</u>

The Registrar-General's figures for England and Wales suggest that
there is somewhere in the region of 70,000 to 80,000 instances of parasuicide
each year. As these figures are based exclusively on admissions to District
General Hospitals they are likely to significantly underestimate the problem,
many acts of deliberate self-harm either being treated in General Practice or
not receiving medical treatment at all. Hawton and Catalan (1987) found
parasuicide to be the most common cause of emergency admission to
hospital for females and second only to heart disease for men. It has been
estimated that on average ten such cases per week present to each District
General Hospital (MacLeod et al, 1992). An audit of one Accident and
Emergency department (Sidley and Renton, 1996) suggested that the number
of parasuicides presenting to hospitals in inner city areas might be
significantly greater.

The incidence of parasuicide is not evenly distributed throughout the
general population, gender, age and social class all having an impact on the
rate of occurrence. Thus, female parasuicides outnumber those of males by a
ratio of about 2: 1 (Hawton and Catalan, 1987). This differential is largely
attributable to the very high rates in young females aged 15 to 19 years old,
mean annual rates in the city of Oxford for this group being estimated to be
one in one hundred. The most vulnerable age group for males is 25 to 29 year
olds with about one in two hundred presenting each year to hospitals as a
result of parasuicide. Over the age of 50, gender differences in rates of

parasuicide fade, the overall incidence in both sexes falling to about one per thousand of the population. Social class is also associated with parasuicide rates, a markedly higher incidence having been reported in social class V as compared to social classes I and II (Kreitman, 1977; Hawton and Catalan, 1987).

1.3 The importance of furthering our understanding of the psychological processes that underpin parasuicide

Enhancement of our understanding of the psychological processes associated with suicidal behaviour would potentially contribute towards progress in two very important clinical areas, namely that of risk assessment for parasuicide repetition and effective therapeutic intervention to reduce this risk.

1.3.1 *Risk assessment*

Somewhere in the region of one-third to one-half of all people who complete suicide has a previous history of parasuicide (Gunnell and Frankel, 1994). Furthermore, at least 13% of patients hospitalised following self-harm will be re-admitted because of a further episode of parasuicide within 6 months and 25% within 2 years (Bancroft and Marsack, 1977; Wang, Nielsen, Bille-Brahe, Hansen and Kolmos, 1985). Also, 1% of parasuicide patients will complete suicide within the subsequent 12-month period. Therefore, given the repetitive nature of suicidal behaviour, it is very important in the immediate aftermath of a parasuicide to be able to predict

those patients who are likely to repeat in the near future so that scarce professional resources can be targeted at the most vulnerable.

As a supplement to a clinical interview, social and demographic variables have been explored to determine to what extent they are statistically associated with parasuicide repetition. Using this approach, Buglass and Horton (1974) proposed that six items were predictive, namely: alcohol abuse; a "sociopathy" diagnosis; previous in-patient psychiatric treatment; previous outpatient psychiatric treatment; not living with relatives; and previous parasuicide. More recently, Kreitman and Foster (1991) conducted a prospective validation study to investigate the power of 23 socio-demographic variables in predicting parasuicide repetition. The following eleven variables were proposed to be predictive in an additive way: *previous parasuicide* (whether treated or not); *personality disorder* (a clinical diagnosis); *alcohol abuse* (habitual consumption over the medically recommended limits); *previous psychiatric treatment* (by a psychiatrist in any setting); *unemployment* ("officially" unemployed, not permanently sick or retired); *social class V* (by Registrar General's criteria); *drug abuse* (habitual abuse of drugs including cannabis and solvents); *criminal record* (found guilty by a court of a criminal offence); *violence* (given or received within last five years); *age* (25-54 years); and *civil status* (single/widowed or divorced). Kreitman and Foster (1991) proposed that the more of the above risk factors present, the greater the risk of parasuicide repetition. They calculated that the statistical risk of a person engaging in further deliberate self-harm in the 12 months following the index parasuicide was 4.9% if 3 or

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fewer risk factors were present, 20.5% if 4 to 7 risk factors were present, and 41.5% if 8 or more risk factors were present.

Although awareness of social and demographic risk factors can helpfully be used by a clinician to "shape the overall level of concern" (MacLeod et al., 1992) regarding risk of parasuicide repetition, they have significant limitations when assessing risk in one individual. The major deficiency in statistical estimates of this type is their low specificity in that they are characterised by a very high number of "false positives" (patients identified as at high risk who do not go on to repeat the parasuicide). For example, for every 100 patients identified as high risk by having 8 or more of Kreitman and Foster's risk factors, almost 60 of these patients will not repeat the parasuicide in the ensuing 12-months. Given the very high incidence of suicidal behaviour, together with limited health care resource available, this low level of specificity inherent in using socio-demographic risk factors is a considerable problem.

Investigation of the psychological processes involved in suicidal behaviour might offer some solution to the problem of low specificity of risk assessment. An enhanced understanding of psychological deficits that contribute to an individual's decision to self-harm should facilitate a more valid and specific evaluation of the likelihood of future suicidal behaviour.

1.3.2 *Interventions to reduce suicidal behaviour*

Prior to the last ten years, interventions aimed at reducing future

suicidal behaviour had been unsuccessful (see Hawton and Catalan, 1987; MacLeod et al., 1992, for further discussion). More recently, a few successful interventions have been reported. The potential primary preventative function of training General Practitioners to better recognise and treat depression has been suggested by the study of Rutz, von Knorring and Wolinder (1989) who reported a significant, albeit temporary, drop in the completed suicide rate for the small Swedish island of Gotland (compared to the Swedish mainland) in the year following two educational workshops. With regard to parasuicide, Morgan, Jones and Owen (1993) have demonstrated that the provision of a "green card" to a patient in the aftermath of deliberate self-harm, which gives a name of a mental health professional and 24-hour contact number for the patient to ring should a suicidal crisis return, can significantly reduce parasuicide repetition, although the benefits of this approach seem limited to those individuals without any prior history of self-harm behaviour (personal communication).

Two studies, both targeting patients at high risk of parasuicide repetition, have suggested that cognitive-behavioural interventions might provide an effective treatment for this client group. Salkovskis, Ather and Storer (1990) found that five 1-hour sessions of problem solving delayed post-treatment parasuicide in comparison with a "treatment as usual" control group. A longer and more intensive cognitive-behavioural intervention was provided by Linehan (Linehan, Armstrong, Suarez, Allmon and Heard, 1991; Linehan, 1993) to female patients with borderline personality disorder. A combination of weekly group and individual sessions, spanning 12 months and incorporating a range of techniques within a context of respectful

acceptance of the way things are for the patient, was successful in reducing both the frequency and severity of parasuicide acts in comparison with a "treatment as usual" control group.

Although the demonstration that cognitive-behavioural intervention can reduce future suicidal behaviour is encouraging, the development of effective psychological treatments for this group of patients remains in its infancy and "active ingredients" of therapy are unclear. Further clarification of the psychological processes involved in suicidal behaviour should aid progress in the evolution of effective treatments.

Therefore, it is reasonable to suggest that a clearer understanding of the psychological processes associated with suicidal behaviour would be beneficial in two main ways: firstly, in the development of more specific measures of risk to predict future parasuicide; secondly, to provide a theoretical framework for understanding suicidal behaviour which should spawn the evolution of more powerful and effective psychological therapies. Following on from this, the next section will review what is already known about the psychological deficits associated with parasuicide.

1.4 Psychological deficits associated with suicidal behaviour

1.4.1 *Hopelessness*

It has long been known that individuals prone to suicidal acts differ from other groups in the way they think about the future. Early empirical studies suggested a general detachment from forward thinking. Thus, Yufit, Benzies, Font and Fawcett (1970) found that suicidal individuals were less elaborate in their descriptions of goals, wishes and desires relating to future time periods. Similarly, Melges and Weisz (1971) reported how deliberate drug overdose patients, after having described the period leading up to the parasuicide, thought less far into the future. Further evidence of a general deficit in thinking about the future was provided by Greaves (1971) who found that, when asked to complete sentences, parasuicide patients used fewer future tense verbs. In a more recent review article, Baumeister (1990) coined the phrase "cognitive deconstruction" to encapsulate the way suicidal individuals disengage from the future.

Negative thinking about the future in clinical populations has increasingly been conceptualised as hopelessness. In addition to being an important component of clinical depression (Melges and Bowlby, 1969; Brown and Harris, 1988; Abramson, Alloy and Metalsky, 1989), hopelessness appears to play a central role in suicidal behaviour. Thus, there is evidence that hopelessness mediates the relationship between depression and suicidal intent within parasuicide populations (Wetzel, Margulies, Davis and Karam, 1980; Salter and Platt, 1990). Furthermore, prospective studies

have demonstrated that levels of hopelessness can predict both repetition of parasuicide (Petrie, Chamberlain and Clarke, 1988) and completed suicides (Beck, Brown and Steer, 1989; Fawcett, Scheftner, Fogg, Clark, Young, Hedeker and Gibbons, 1990).

Although strongly associated with suicidal behaviour, there has been some lack of clarity about the concept of hopelessness and the term has been used to represent different aspects of future thinking. Abramson et al. (1989), in the development of their hopelessness theory of depression, employed the term hopelessness to represent the expectancy that positive events will not occur *or* negative events will occur. In contrast, Melges and Bowlby (1969) more specifically argue that what is important in hopelessness is a reduced expectancy of success.

Attempts to quantify hopelessness have predominantly involved the Beck Hopelessness Scale (Beck, Weissman, Lester and Trexler, 1974), a 20-item true/false questionnaire that measures a patient's broad attitude to the future. As some items of the Beck Hopelessness Scale have a positive valence (for example, "*I look forward to the future with hope and enthusiasm*") while others have a negative valence (for example, "*My future seems dark to me*"), the instrument provides a composite measure that fails to clarify the relative importance of positive and negative anticipation. Recently, welcome resolution of this issue has been provided by MacLeod and his collaborators (MacLeod, Rose and Williams, 1993; MacLeod, Pankhania, Lee and Mitchell, 1997). Using a "future fluency" paradigm in

which subjects were asked to generate occurrences in the future that they were either looking forward to or not looking forward to, it was found that parasuicide subjects were less able to think of future positive events when compared to controls whereas there was no difference in their fluency for events they were not looking forward to.

In summary, high hopelessness about the future renders an individual vulnerable to suicidal behaviour, and the key component of hopelessness is reduced anticipation of positive events.

1.4.2   *Deficient problem solving*

Individuals who are vulnerable to engaging in suicidal behaviour have been found to be relatively impaired with regards to solving interpersonal problems in comparison to non-suicidal controls. McLeavey, Daly, Murray, O'Riordan, and Taylor (1987) found that a group of deliberate drug overdose patients were less effective at problem solving when compared to a mixed group of psychiatric patients who did not have a history of parasuicide. A similar dysfunction was measured by Schotte and Clum (1987) who found that psychiatric inpatients with high levels of suicidal ideation were poorer problem solvers than a group of equally depressed but non-suicidal inpatient controls. Analogous deficits in problem solving have also been measured in adolescent female parasuicides (Rotherham-Borus, Trautman, Dopkins and Shrout, 1990).

The above-mentioned studies suggesting a problem solving deficit in parasuicide populations have all utilised the Means-End Problem Solving Test (MEPS, Platt, Spivack and Bloom, 1975) as a measure of the dependent variable. The MEPS provides subjects with an initial problematic social scenario (e.g. "person moving into a new neighbourhood who wants to get to know his neighbours") and a desired endpoint (e.g. "he has many good friends in the neighbourhood") and the respondent has to complete the middle part of the story. The variable of most interest in these studies has been the *number* of relevant means reported. However, by modifying the standard MEPS procedure, deficits in the *quality* of solutions offered by parasuicide patients have been detected in relation to being more passive, with an over reliance on others, less versatile and displaying a greater degree of avoidance (Linehan, Camper, Chiles, Strohsal and Shearin, 1987; Orbach, Bar-Joseph and Dror, 1990).

1.4.3 *Deficiencies in affect regulation*

Individuals who engage in suicidal behaviour typically display difficulties in the management and tolerance of emotional experiences. In addition to depressive feelings, parasuicidal populations commonly display high levels of anger and hostility (Paykel and Dienelt, 1971; Weissman, Fox and Klerman, 1973; Crook, Raskin and Davis, 1975;). Weissman et al. (1973) compared 29 acutely depressed women with a matched group of suicide attempters. Significantly greater hostility was reported for the suicide group in the form of more frequent arguments with family members and friends.

A similar finding was reported by Paykel and Dienelt (1971) who followed 189 depressed patients for ten months and found that the 13 individuals who engaged in suicidal behaviour (12 parasuicides and 1 completed suicide) displayed greater hostility, at initial interview and at follow-up, in comparison to the non-suicidal remainder.

Patients with borderline personality disorder, for whom deliberate self-harm is often a prominent feature, experience aversive and enduring affective states with parasuicidal acts appearing to be "behavioural solutions to intolerably painful emotions" (Linehan, 1993). In addition to anecdotal reports of self-injurious behaviour serving a mood regulatory function in individuals with borderline personality disorder, there is also empirical support that self-mutilation has a short-term positive effect on emotional state for many of these patients. Thus, Kemperman, Russ and Shearin (1997) reported mood-elevating consequences of self-injurious behaviour for 38 inpatients with borderline personality disorder. Also, a study by Russ, Roth, Lerman, Kakuma, Harrison, Shindledecker, Hull and Mattis (1992) that used a cold pressor test to simulate self-injurious behaviour, found a subgroup of borderline personality disorder patients who exhibited significantly decreased ratings of tension, anger, depression and confusion after the self-injurious analogue.

Further empirical support for a mood regulatory function for deliberate self-harm comes from studies of Favazza and Conterio (1989) and

Wilkins and Cold (1991), although the diagnostic categories of the participants were less clear in these investigations. Favazza and Conterio (1989) found that questionnaire responses from 229 "habitual self-mutilators" indicated that the majority of them (65% and 58% respectively) felt more relaxed and less depressed after deliberate self-harm. Similarly, an investigation of 74 female remand prisoners with self-injurious behaviour by Wilkins and Cold (1991) reported further evidence of a mood enhancing function of deliberate self-harm. Eighty-one per cent of this prisoner population experienced positive effects on their dysphoria after self-mutilation, whereas reductions in tension and irritability were reported for 73% and 66% respectively.

One can conclude from the above studies that a significant proportion of the parasuicide population, both depressed and those with borderline personality disorders, exhibit short-term positive mood changes as a direct result of the self-injurious behaviour.

In summary, individuals who are vulnerable to suicidal behaviour tend to display a disproportionate degree of one or more of the following characteristics: they believe that nothing positive will happen in the future, they have difficulties in solving interpersonal problems, and they experience emotion-regulation difficulties. Unsurprisingly, the two cognitive behavioural interventions found to have a beneficial effect on suicidal

behaviour (Salkovskis et al., 1990; Linehan et al., 1991) have targeted one or more of these psychological deficiencies.

Further understanding of the psychological processes involved in parasuicide is likely to derive from investigation of discrete deficits that might underpin the three psychological deficiencies described above. As already mentioned (section 1.4.1), reduced anticipation of positive events might be the "active ingredient" of hopelessness and its role in relation to suicidal behaviour warrants further study. With regards to problem solving deficits, the quality of a person's autobiographical memories has been proposed to be intimately associated with the effectiveness of the problem solving process (Williams and Broadbent, 1986a; Williams and Dritschel, 1988; Evans, Williams, O'Loughlin and Howells, 1992). The literature regarding the association between the generality of autobiographical memory and both emotional disturbance and suicidal behaviour will be reviewed in section 1.6. From a cognitive perspective, pessimistic beliefs about the future and thoughts underpinning mood disturbances are likely to be the result of activated schema (Beck, 1967; Beck, 1976) influencing information processing. The literature exploring the relationship between schema activity, dysphoric mood, and suicidal behaviour is discussed in section 1.7.

1.5 Heterogeneity of the parasuicide population

The large numbers of people who engage in parasuicide acts are unlikely to comprise a homogenous group. Most previous attempts to

differentiate sub-groups of parasuicide patients have either relied on clinical interpretation (for example Lester, 1990) or psychiatric and socio-demographic parameters (for example Paykel and Rassaby, 1978). Given that the final common pathway for all parasuicides is a decision to act, a cognitive process, a classification system based on beliefs held at the time of the suicidal act is likely to have greater validity. Surprisingly, no studies have been reported that employ beliefs per se to differentiate sub-groups of parasuicide, although three studies have given prominence to the retrospective intentions for the parasuicide given by patients shortly after a deliberate drug-overdose (Bancroft, Skirmshire, Casson, Harvard-Watts, and Reynolds, 1977; Bancroft, Hawton, Simkins, Kingston, Cumming, and Whitwell, 1979; Williams, 1986). Beliefs held by parasuicide patients at the time of the self-injurious act are likely to sensitively reflect the person's mood state and current intentions, and as such might form the basis of a useful and valid classification system for suicidal behaviour.

1.6 Autobiographical memory

Autobiographical memory refers to the retrieval of personal events from our past. A large amount of research has explored the connection between mood and preferential access to episodic memory (see Blaney, 1986 for a review). More recently Williams and his colleagues have examined the *quality* of autobiographical memories, in particular whether a person retrieves a specific event (for example, "when I went to Sue's party last Christmas") or a summary of events (for example, "when I go to parties"),

and the implications of degree of memory specificity for recovery from emotional disturbance. This literature will now be reviewed.

1.6.1 _Overgeneral autobiographical memory in parasuicide patients_

The phenomenon of overgeneral retrieval of past personal events in patients suffering emotional disturbance was first reported by Williams and Broadbent (1986a) in their assessment of 25 deliberate drug-overdose patients. Using an Autobiographical Memory Test, based on Francis Galton's cue-word method as adapted by Crovitz (1975) Lloyd and Lishman (1975) and Robinson (1976), they presented the drug overdose patients with ten cue-words (5 pleasant and 5 unpleasant) and the patient was asked to retrieve a specific memory (operationally defined as a discrete event spanning no longer than 24 hours). In comparison with a control group of patients hospitalised for physical investigations, Williams and Broadbent found that the parasuicide patients were significantly less likely to respond with a specific memory. Furthermore, by also comparing the groups on a test of general semantic processing, they were able to exclude the possibility that the overgeneral responding was a direct result of the after-effects of the drugs ingested.

The phenomenon of overgeneral recall of autobiographical memories in parasuicide populations has been replicated on two further groups of deliberate drug overdose patients (Williams and Dritschel, 1988; Evans, Williams, O'Loughlin and Howells, 1992) and it therefore appears to be a robust finding.

1.6.2 *Overgeneral autobiographical memory in other clinical groups*

Overgeneral retrieval is not restricted to parasuicide patients having been measured in a number of other clinical groups where recent suicidal behaviour is not the central defining characteristic. These include patients experiencing a major depressive episode (Williams and Scott, 1988; Puffet, Jehin-Marchot, Timit-Berthier and Timsit, 1991) and patients with persecutory delusions (Kaney, Bowen-Jones and Bentall, 1999). However, most of the other clinical groups in which overgeneral autobiographical memory has been measured all have previous trauma as a common theme. Thus, survivors of motor vehicle accidents with acute stress disorder were found to report fewer specific memories than the non-distressed survivors, even after controlling for depression levels (Harvey, Bryant and Dang, 1998). Similarly, a study of Vietnamese combat veterans by McNally, Lasko, Macklin and Pitman (1995) reported that those with post-traumatic stress disorder displayed greater difficulty retrieving specific autobiographical memories.

Clinical groups who have experienced more distal trauma have also been shown to display overgeneralised autobiographical memories. Thus, Kuyken and Brewin (1995) in their study of depressed women compared those with and without a history of childhood sexual abuse. They found that those patients with an abusive history retrieved significantly more general memories. A further study by Jones, Heard, Startup, Swales, Williams and Jones (1999) reported that patients with a diagnosis of Borderline Personality

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Disorder, (a group who typically report childhood trauma), retrieved significantly more general memories than a matched, non-clinical control group.

Although measured in a number of clinical disorders, it appears that overgeneral autobiographical memory is not associated with all forms of emotional disturbance. Thus, overgeneral memory was not found in-patients diagnosed as having Generalised Anxiety Disorder (Burke and Mathews, 1992), nor in those suffering Social Phobia (Rapee, McCallum, Melville, Ravenscroft and Rodney, 1994). It therefore appears that overgeneral autobiographical memory is not a broad correlate of all types of emotional distress, but is more specifically related to depressive disorders and conditions consequent to traumatic life experiences.

1.6.3 *Intrusive memories and overgeneral memory*

In addition to being characterised by generality of autobiographical memory, both depressed and traumatised clinical groups have been shown to display frequent intrusive memories for past negative events (Kuyken and Brewin, 1994; Brewin, Hunter, Carroll and Tata, 1996). Thus, the depressed women in the Kuyken and Brewin (1994) study who had been physically or sexually abused in childhood described intrusive memories of these assaults at a level equivalent to patients suffering post-traumatic stress disorder. Not only was the frequency of intrusions elevated in this clinical group, but the effort put into trying to actively avoid these painful memories was also significantly increased as measured by the Impact of Event Scale (Horwitz,

Wilner and Alvarez, 1979). A similar finding was obtained by Brewin et al. (1996) in a mixed-sex sample of depressed patients, a large majority of this group reporting abnormally high levels of intrusive memories and subsequent active avoidance.

The above findings have led to recent exploration of the relationship between intrusive memories and overgeneral autobiographical memory. Brewin, Reynolds and Tata (1999) investigated the coexistence of these two parameters and found that memory generality was significantly correlated with spontaneous intrusion of stressful memories, even after controlling for depression severity. Brewin, Watson, McCarthy, Hyman and Dayson (1998) had earlier found that attempts by depressed cancer patients to avoid intrusive memories were associated with greater overgeneral memory. Interestingly, "mindfulness-based cognitive therapy", an innovative psychological intervention one element of which discourages active avoidance of cognitions, has been shown to enhance memory specificity (Williams, Teasdale, Segal and Soulsby, 2000). Collectively these results are consistent with the possibility that patients' attempts to avoid painful intrusive memories are causally implicated in their overgeneral memory problem.

The link between intrusive memories and autobiographical memory generality is concordant with the proposal of Williams (1996) that reduced working memory capacity might be the precursor of an overgeneral retrieval style. Empirical studies have reported a negative association between

working memory capacity and memory generality in both clinical (Phillips and Williams, 1997) and non-clinical (Winthorpe and Rabbit, 1988) groups of elderly people. In addition to intrusions, the degree of cognitive impairment is also likely to deleteriously effect working memory and therefore memory specificity (Phillips and Williams, 1997). Although Winthorpe and Rabbit (1988) found a negative association between current IQ and generality of memory, subsequent analysis suggested it was reduced working memory (not IQ per se) mediating this relationship. The main implication of these findings is that working memory capacity has a significant influence upon the specificity of autobiographical memory, with working memory itself being sensitive both to the severity of intrusions and the degree of cognitive impairment.

1.6.4   *The consequences of overgeneral memory*

Although acknowledging that generic recall is useful in certain well-rehearsed activities, for example knowing how to act in a restaurant, Williams (1996) persuasively argues that overgeneral memory is a handicap in open-ended situations requiring the person to flexibly select one option from an array of alternatives. Interpersonal situations typically present an individual with complex choices of this type. An illustrative example given by Williams (1992) is that of an unhappy student asking herself how she can be happy again. If her only memory of being happy is a generic one (for example "when I'm with my boyfriend") this recollection only provides one cue, the boyfriend, for devising coping strategies for resolving her current distress. In contrast, if she had access to a specific memory associated with

previous happiness (for example, "a walk with my boyfriend last Friday when we met his friends and went to have a drink") this furnishes her with a number of cues that could be used to generate solutions to her current predicament.

As previously mentioned, suicidal patients have been shown to be relatively ineffective with regards to interpersonal problem solving and there is some empirical evidence to suggest that this deficit may be associated with overgeneral autobiographical memory. Thus, Evans et al. (1992) reported a significant correlation between overgeneral recall and low effectiveness of problem solving in a group of 12 patients presenting to an Accident and Emergency department following a deliberate drug overdose. Furthermore, Goddard, Dritschel and Burton (1996) found a significant positive correlation between problem-solving ability and memory specificity in non-clinically depressed students.

The empirical evidence to date suggests that the retrieval of overgeneral autobiographical memories result from a relatively enduring cognitive style rather than being associated with current levels of distress (Williams and Dritschel, 1988; Brittlebank, Scott, Williams and Ferrier, 1993). Williams (1996) has speculated as to the causes of this overgeneral style, proposing that it may result from a failure to progress beyond an earlier stage of cognitive development, possibly as a reaction to childhood trauma. Prolonged aversive circumstances, Williams argued, might spawn a generic style of remembering as a means of diminishing emotional distress by

avoiding the acute emotional pain associated with specific memories of negative life events.

It has been proposed that, in addition to impaired problem-solving, a further negative consequence of this generic memory style is that it may be associated with a poor clinical prognosis (Brittlebank et al., 1993; Harvey et al., 1998; Hutchings, Nash, Williams and Nightingale, 1998; Wahler and Afton, 1980). Adopting a longitudinal follow-up of depressed patients, Brittlebank et al. (1993) found that generality of autobiographical memory at initial assessment was highly correlated with failure to respond to anti-depressant treatment by 7-months follow-up. In addition, a study by Harvey et al. (1998) with acutely distressed survivors of road traffic accidents reported that those victims who had poor recall of the trauma in the week following the accident were more likely to meet the formal criteria for post traumatic stress disorder six months later. Furthermore, the studies of Wahler and Afton (1980) and Hutchings et al. (1998) discovered that the greater the memory specificity in mothers' reporting of their children's bad behaviour the more likely they would be to persist with, and benefit from, parent training programmes.

In summary, empirical studies outlined above have suggested that autobiographical memory generality is an enduring trait characteristic that may impair interpersonal problem solving and predict a poor clinical outcome. As such, it may potentially be of significant utility in both furthering our understanding of the psychological processes involved in

suicidal behaviour and identifying those at greater risk of parasuicide repetition.

1.6.5 *Limitations of the current autobiographical memory literature*

Although studies to date have suggested that the degree of generality of autobiographical memory is a trait characteristic that impedes recovery from emotional disturbance, there are some inherent weaknesses in these studies that necessitate caution before one can draw firm conclusions. Firstly, the studies of depressed or suicidal populations have used either small numbers of patients (Brittlebank et al., 1993; Evans et al., 1992) or participants with relatively mild levels of psychological disturbance (Evans et al., 1992; Goddard et al., 1996; Williams and Dritschel, 1988). It is therefore questionable whether conclusions drawn from these studies can be extrapolated to the patient population as a whole who typically present to the mental health services with greater levels of psychological impairment.

In addition, the longitudinal study of Brittlebank et al. (1993) that provided the strongest support for the trait status of autobiographical memory generality only reported that there was no significant difference in generality scores at three and seven months follow-up (as compared to levels at initial assessment). As no correlation coefficients were provided, the degree of stability of the autobiographical memory construct remains unclear.

Furthermore, if memory generality is confirmed to be a trait construct that confers vulnerability to emotional disturbance, its potential to predict

both level of hopelessness and future risk of parasuicide repetition would be of interest and potential clinical utility in suicidal populations. No study to date has explored this possibility.

1.7 Suicide-related beliefs and schema theory

Comprehensive theories of emotion (for example, Lang, 1985; Scherer, 1984) incorporate a cognitive component that gives emphasis to the role of mental processing in the regulation of affective states. The key assumption inherent in cognitive approaches to psychological disorders is that mental phenomena (for example, attributions, inferences, beliefs, selective attention) intervene between an environmental event and the problematic emotion or behaviour. The cognitive theory that has had the greatest influence on the development of clinical interventions to reduce psychopathology is Beck's schema theory (Beck, Rush, Shaw and Emery, 1979; Beck, Emery and Greenberg, 1985).

1.7.1 *Beck's schema theory*

Beck conceptualised a schema as a stored body of knowledge that interacts and organises new information of potential relevance to its domain. Once a schema is activated, a person's perceptions, interpretations and memories selectively favour information consistent with that schema. According to Beck, clinical disorders result from the activation of specific dysfunctional schemata, the content of which will determine the type of emotional disturbance experienced (the "content specificity" hypothesis,

Beck and Clark, 1988). For example, depression is said to be associated with schemata concerned with loss and negative aspects of self, the world, and the future whereas anxiety disorders are associated with themes of danger and vulnerability.

Beck's schema theory was largely informed by clinical observations and its primary purpose was to guide treatment. Its lack of grounding in cognitive science has recently attracted criticism (Teasdale, Taylor, Cooper, and Hayhurst, 1995; Wells and Mathews, 1994; Williams, Watts, MacLeod and Mathews, 1997). The more important criticisms include the failure to find evidence for dysfunctional schemata once the patient has returned to a normal mood state, the theory's lack of recognition of non-conscious information processing, and its exclusive emphasis on a propositional level of meaning. Despite these criticisms, Beck's schema theory has been of central importance in the evolution of effective psychological interventions for a wide range of emotional disorders.

According to Beck's theory, once a specific dysfunctional schemata is activated, information processing biases occur in memory, attention and interpretation, the bias being in favour of information consistent with the schemata's content. With regards to suicidal patients, schematic activity would be expected to relate to themes and belief-clusters associated with suicidality, such as hopelessness. Empirical demonstration of the attentional bias purported to be inherent in schema activity has commonly been put

forward as evidence for the existence of a particular, disorder-specific

schemata (see Wells and Mathews, 1994; Williams et al., 1997 for reviews).

1.7.2   *Attentional bias and the Stroop test*

Cognitive science has utilised several approaches to investigate the

existence of specified schemata, the most common of which has been the

measurement of the extent of the Stroop interference effect. Informed by the

central assumption that any cognitive system will have finite capacity that

will inevitably lead to competition in the processing of simultaneous sources

of information, performance on the dependent variable in the Stroop test

suffers as a result of the allocation of attention to alternative, more salient

aspects of the stimulus array. In the original Stroop task (Stroop, 1935) the

subject is required to name, as quickly as possible, the colour of ink in which

an item is printed while attempting to ignore the item itself. The items in the

original test were meaningless stimuli such as rows of 'X's or actual names

of colours. A robust finding is that it takes subjects longer to name the

colours when the base items are conflicting colour names than when they are

rows of meaningless stimuli.

Subsequent research has modified the original Stroop format and has

found that any common word produces some colour-naming interference,

particularly if the word is strongly associated with a colour (for example,

"sky" or "grass") (Klein, 1964). More recently, the Stroop paradigm has been

further elaborated to explore the attention-biasing characteristics of an active

schema specific to a particular emotional disorder or mood state. This

modified Stroop test explores the extent to which words related to the emotional phenomenon under investigation slow down the colour naming process. Using this paradigm a significant slowing of colour-naming has been shown with mildly depressed students (Gotlib and McCann, 1984), patients with anxiety states (Mathews and McLeod, 1985) and spider phobics (Watts, McKenna, Sharrock and Trezise, 1986), although the terminology regarding what exactly is under investigation is confusing ("construct accessibility", "activation of danger schemata" and "emotional salience of words" respectively). Despite the inconsistencies in terminology, these studies suggest schematic activity specific to an emotional disorder produce attentional bias that can be measured by a modified Stroop format.

Gotlib and McCann (1984) explored the degree of Stroop interference precipitated by tachistiscopically presented depressed, neutral, and manic-content words in two groups of undergraduate students, namely "depressed" (BDI scores greater than 8) and "non-depressed" (BDI scores less than 5). They found that, whereas non-depressed subjects did not demonstrate differential reaction times to the three types of words, the depressed students had longer colour-naming response latencies to depressed words than to neutral or manic words. Similarly, Watts et al. (1986) found that spider-avoidant subjects, although showing little disruption on general emotional words compared to control subjects, nevertheless showed large disruption in colour naming spider words such as "crawl" and "web".

Further evidence, and arguably the most supportive, for the effectiveness of a modified Stroop in detecting schema-based attention biases comes from the work of Mathews and MacLeod (1985). Twenty four patients with an anxiety disorder, grouped on the basis of whether their prominent concern was social or physical, participated in a modified Stroop test comprised of sets of stimuli related to physical threat, social threat, and positive words (all matched for length and frequency of general usage). In addition to finding the expected slower colour naming for threat words with the anxiety patients as compared to the control group, these authors also found a correspondence between the extent of interference and the "match" of the type of threat – that is to say, those patients whose concerns related mainly to a social theme were slowed most by the social threat words, whereas those patients whose concerns were primarily physical were differentially slowed by physical threat words. Furthermore, a recent study by Westra and Kuiper (1997), using a modified probe-detection test (a more sophisticated alternative to the traditional Stroop for measuring selective attention), provided convincing evidence for the existence of content-specific interference effects. Taking great care to ensure that participants in the study scored highly on only one of the clinical disorders under investigation, they were able to measure selective attention biases specific to depression, anxiety and bulimia.

Although not all the results of empirical investigations have been entirely consistent with the content specificity hypothesis (for example, McNally, Reimann, Louro, Lukach and Kim, 1992; Mogg and Marsden,

1990), overall the modified Stroop evidence generally supports the notion that subjects with a current clinical disorder, or a high trait score, show some form of attentional bias towards the specific content of the currently active schema.

1.7.3 *Relevance of the Stroop paradigm to suicidal patients*

Given the demonstrated potential for interference on a modified Stroop test to signify current schematic activity, it is surprising that this paradigm has rarely been used to investigate the information processing biases of suicidal patients. In particular, considering the strong association between hopelessness and suicidal behaviour, it is remarkable that no study has yet explored the Stroop interference effect of hopelessness words on the colour-naming speed of patients who have recently engaged in parasuicide. Although a number of empirical investigations have employed a modified Stroop approach with groups of depressed patients (see Wells and Mathews, 1994; Williams et al., 1997 for reviews), groups that presumably incorporate a significant number of suicidal individuals, no study has focused on whether highly hopeless patients at high risk of deliberate self-harm can be distinguished from non-suicidal depressives on the basis of attentional biases toward words with a "no future" theme. The only two studies to use a modified Stroop approach with parasuicide patients per se (Williams and Broadbent, 1986b; Becker, Strohbach and Rinck, 1999) both employed words related to the act of parasuicide rather than hopelessness itself and, therefore, the attentional bias detected in these investigations provided no support for the presence of a currently active schematic structure pertaining

to hopelessness. If a modified Stroop paradigm were successful in suggesting

hopelessness-related biases in parasuicide patients, this would aid both our

theoretical understanding of this clinical group as well as potentially being of

utility to the risk assessment process.

1.8 The inter-relationship between hopelessness, future fluency for positive events, overgeneral autobiographical memory, suicide-related beliefs, and parasuicide

Based on the above literature review, a tentative model can be

suggested as to how the psychological constructs to be investigated might

relate to one another. A diagrammatic representation of this model is shown

in Figure 1.

It is proposed that previous traumatic experiences may result in the

evolution of an overgeneral style of memory retrieval. There are two

important consequences of overgeneral autobiographical. Firstly, it restricts

the database for use in the problem solving process thereby producing

deficits in interpersonal problem solving. Secondly, it impairs a person's

ability to anticipate the future occurrence of specific positive events in the

future, with the subsequent strengthening of "no future" beliefs and increase

in hopelessness. Problem solving deficits and increased hopelessness may

then proximally predispose to an increased risk of parasuicide. Current stress

and life adversity might increase hopelessness both directly (by realistically

reducing the likelihood of future positive events) and indirectly (by

increasing conviction in "no future" beliefs and by activating an overgeneral

style of memory retrieval in those individuals predisposed to this cognitive style).

The series of studies undertaken in this thesis will attempt to further explore the validity or otherwise of this proposed model. The specific aims of these studies will now be described.
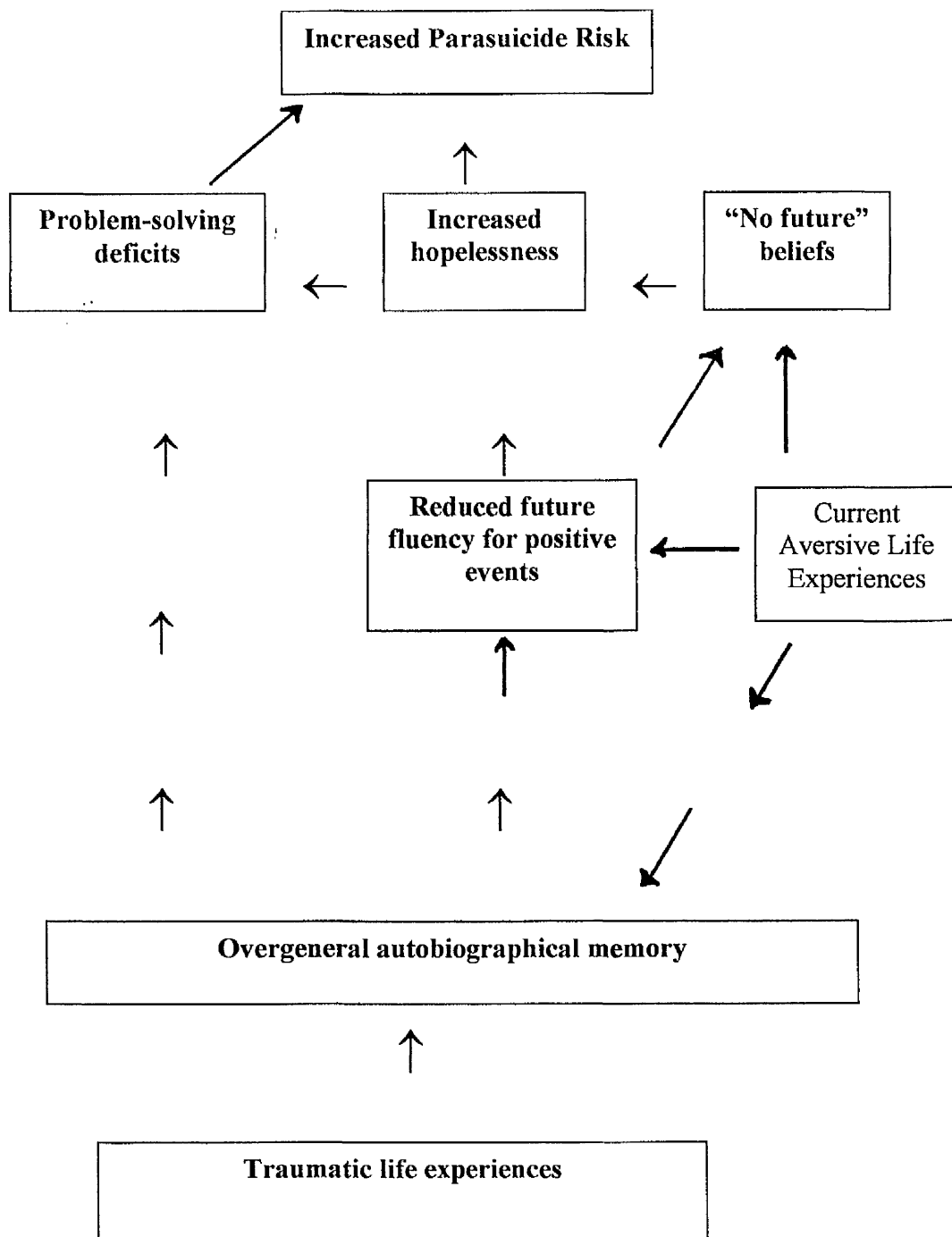
Figure 1: Tentative model proposing the inter-relationship between the constructs under investigation

1.9 <u>Aims of the present study</u>

The broad aim of the present series of studies is to further our understanding of the psychological processes involved in acts of parasuicide. The particular constructs under investigation are the generality of autobiographical memory, the future fluency for positive events, and beliefs that are potentially related to parasuicide. In consideration of some of the weaknesses and gaps in the current literature, the specific aims of the subsequent five experiments are detailed below. The specific hypotheses are set out at the start of each of the subsequent chapters.

1.9.1 *Experiment 1: The relationship between problem-solving and autobiographical memory in parasuicide patients*

The relevance of autobiographical memory to suicidal behaviour pivotally depends upon its relationship to interpersonal problem solving. The only evidence to date for such an association in clinical populations comes from the study of Evans et al. (1992) who found a significant correlation between the generality of autobiographical memory and the effectiveness of interpersonal problem solving. However, this important study had only 12 participants whose level of psychopathology was generally less than that of many patients who present to mental health services. Therefore, the aim of the first experimental chapter was to replicate the Evans et al. (1992) study with a larger and more psychologically impaired sample.

1.9.2 *Experiment 2: Exploratory factor analysis to discriminate dimensions of parasuicide*

The parasuicide population is heterogeneous and it is likely that the psychological mechanisms associated with the act of self-harm will not be uniform throughout the whole group. If reliable sub-categories of parasuicide can be established it may aid the task of identifying the specific psychological disturbances involved in suicidal behaviour, these disturbances being more easily measurable in a relatively homogenous sub-group as compared to the parasuicide population as a whole. As a first step towards this categorisation, the second experiment attempted to differentiate dimensions of parasuicide on the basis of beliefs held immediately prior to the suicidal act.

1.9.3 *Experiment 3: Can parasuicide patients be distinguished from distressed patients without a parasuicide history by biased attention towards hopelessness-related words?*

Using a modified Stroop paradigm, this study explores whether there is evidence for a hopelessness schema in suicidal individuals. Incorporating a similarly distressed but non-suicidal control group, the aim was to see if words associated with a theme of no future (hopelessness) differentially slowed down the colour-naming process for patients who had recently engaged in parasuicide.

1.9.4 *Experiment 4: The stability of autobiographical memory generality and its relationship to future depression and hopelessness*

An important aim of this experiment was to further explore the stability of autobiographical memory generality by means of a longitudinal

study of a large group of parasuicide patients. Using test-retest correlations, the study aimed to test the contention of Brittlebank et al. (1992) that memory generality is a trait construct. In addition, the potential for the generality of autobiographical memory at initial assessment to predict future levels of emotional disturbance was investigated. Given that overgeneral memory might impair problem-solving, and that this in turn might be expected to lead to lack of positive anticipation about the future, levels of subsequent hopelessness (as well as depression) were measured.

1.9.5 *Experiment 5: The prediction of parasuicide repetition in a high risk group.*

In a clinical setting, the identification of those parasuicide patients who are most likely to repeat self-harm in the future is a very important challenge. The broad aim of this study was to explore the utility of several psychological variables in predicting parasuicide repetition. More precisely, it investigated whether the specificity of risk assessment can be enhanced by measurement of any of three psychological variables (generality of autobiographical memory, future fluency for positive events, degree of attentional interference on a modified Stroop comprising hopelessness-related words) in the period shortly following the index parasuicide.

2. Chapter 2

METHODOLOGY: AN OVERVIEW

2. Chapter 2. METHODOLOGY: AN OVERVIEW

This section presents an overall outline of the methodology adopted in the subsequent five experiments described in this thesis. Emphasis is given to decisions pertaining to how the participants were selected and recruited to each of the studies and to the rationale that informed this recruitment process. A more detailed discussion of the methodological detail is incorporated into the write up of each experiment in the following five chapters.

2.1 Participants

From the outset it was deemed to be important to access a cohort of parasuicide patients who were reasonably typical of the large number of such individuals who present, often in crisis, to the Accident and Emergency Services and who subsequently would be likely to receive help from mental health professionals. Access to such a heterogeneous and clinically representative population was particularly important with regards to the validity of the findings from two of the experimental studies. Firstly, the attempt to begin to discriminate discrete dimensions of parasuicide (Chapter 4) required involvement of a broad "real-world" cohort of self-harm patients in order to allow the identification of the specific characteristics that may correspond to different sub-categories of this complex group. Secondly, the attempt to identify more specific predictors of parasuicide repetition (Chapter

7) necessitated the participation of a clinically representative sample if any of the findings were to have real clinical utility.

In addition, given some of the limitations of previous research into autobiographical memory generality (see 1.6.5 above), patients experiencing high levels of emotional disturbance were deemed to be appropriate participants for the experiments exploring the relationships between overgeneral autobiographical memory and problem solving effectiveness (Chapter 3) and between overgeneral autobiographical memory and future levels of depression and hopelessness (Chapter 6).

Although desirable, gaining appropriate access to this clinically representative group of parasuicide patients was associated with a number of pragmatic difficulties and these will now be discussed.

2.1.1 *Recruitment of patients: practical difficulties*

The interaction between some of the inherent characteristics and behaviours of individuals who engage in acts of parasuicide, in combination with the operational procedures of a general hospital environment, conspired to produce considerable difficulties in gaining timely access to appropriate patients for this series of studies. Thus, alcohol intoxication, life crises, interpersonal conflicts, and high levels of anger were a frequent accompaniment to the parasuicide. These characteristics, together with a propensity to impulsiveness, were likely reasons for a large number of

parasuicide patients (potential participants) leaving the hospital prematurely before their consent for involvement in the study could be sought.

However, parasuicide patients' often brief stays in the hospital environment were not always attributable to their presenting characteristics. Hospital practices for the management of patients who deliberately self-harm also contributed to the fact that the majority of such individuals were not admitted to a medical or psychiatric ward for further evaluation. An earlier audit of the hospital from which the large majority of the parasuicide patients were recruited (Sidley and Renton, 1996) revealed that 42% of this cohort was discharged directly home after receiving medical attention in the Accident and Emergency Department, while a further 13% left the department prematurely without waiting for completion of treatment. Clearly, with regards to the present series of studies, the window of opportunity to access appropriate patients and subsequently complete the initial assessments was a narrow one.

Initially, the intention had been to enlist the assistance of front-line staff in the Accident and Emergency Department in the recruitment of appropriate patients to the studies. Following discussions with the Casualty Consultant, junior medical staff, and nursing personnel, the hope had been that these medical and nursing staff would complete the initial screen of parasuicide patients presenting to the department and promptly inform the current author when a suitable participant was available and willing to be included in the study. Unfortunately, this liaison was rarely productive. This

inner city Accident and Emergency Department was often very busy and, together with a shortage of staff, many times resulted in a chaotic environment within which there was understandably very little time available for non-essential activity such as screening for research patients. Therefore it was necessary for the author to visit the Accident and Emergency Department as frequently as possible to check whether any patient had recently attended following deliberate self-harm. Although some research assistant time was episodically available to the author during the series of experiments, there was often limited flexibility to immediately attend the casualty department or medical ward to complete the relevant assessments and questionnaires. Thus, for example, for periods during the series of studies the author was only free to pursue research patients one day each week (on a Friday). As a direct consequence of the above-mentioned factors, the parasuicide patients that were recruited could appropriately be described as a convenience sample.

Even when patients were admitted to inpatient medical facilities and thereby typically remained in hospital for 48 hours or more, there were still some barriers to successful recruitment. Drug overdoses requiring hospital admission frequently resulted in comatose or partly comatose states, thus rendering these patients incapable of giving informed consent and of assessment completion. In addition, their subsequent discharge from medical wards was frequently done without prior warning thus further impeding the process of recruitment to the research project.

After recruitment to the study and initial assessment completion, further difficulties were experienced when patients were required to be followed up (as in Chapters 6 and 7). In addition to non-arrival for subsequent appointments or not being home at the arranged time for home visits, people with a history of parasuicide comprise a relatively mobile population for whom a change of address was a frequent occurrence. On several occasions, this resulted in patients being lost to follow-up (as detailed in the methodology sections of the relevant chapters).

2.1.2 *Disadvantages of a convenience sample*

Although the utilisation of a convenience sample of parasuicide patients was desirable in some respects (see section 2.1 above) and necessary given the practical recruitment difficulties already described, some disadvantages are associated with this procedure. In a convenience sample a significant determinant of who is, and who is not, recruited to the study is the availability of the researcher. As such, parasuicide patients presenting to the hospital in daylight hours of Monday to Friday were more likely to be incorporated into the project than those presenting at weekends or during the night. Also, given the relatively lengthy initial assessment process required for entry into the study, it is plausible that parasuicide patients with high levels of anger and agitation might have been under represented. A similar bias may have resulted from the fact that the significant minority of patients who left the Accident and Emergency Department prematurely before medical treatment was completed were essentially excluded (excluded in the

sense that there was no chance for them to be accessed by the recruitment procedure). Although any bias from these sources was unlikely to be substantial, it remains a possibility that this convenience sample was not truly representative of the parasuicide population as a whole.

Partly as a consequence of the practical difficulties encountered during the recruitment procedure, it was not feasible to control for potentially influential characteristics such as formal (DSM-IV) diagnoses of mental disorder, concurrent medication use, and ongoing psychological treatment. The advantages of having a heterogeneous and clinically valid sample outweighed the limitations inherent in not having these precise measures for most of the experimental studies. However, it would have been beneficial to have been able to control for concurrent medication and psychological treatment in the longitudinal study focusing on the prediction of parasuicide repetition (Chapter 7) as it is conceivable that these interventions might have impacted on the likelihood of further deliberate self-harm.

2.1.3 *Inclusion criteria*

The inclusion criteria for the parasuicide patients who participated in the five experimental studies reported in this thesis were determined by two broad considerations. Firstly, the wish to recruit patients who displayed relatively high propensity to further self-harm. Identification of any parasuicide-related cognitive characteristic (for example, the generality of autobiographical memory) is more likely to be achieved if the patient sample

contains a significant number of participants who are actively suicidal at the time of the assessment. Furthermore, the study exploring the predictors of parasuicide repetition (Chapter 7) required a substantial number of participants to repeat the act of deliberate self-harm during the follow-up period so as to allow meaningful statistical comparisons of the characteristics of repeaters versus non-repeaters.

The second consideration to inform the inclusion criteria was a practical one in that the participants were required to be both accessible for interview shortly after the parasuicide and able to fully understand the assessment questions. It was therefore deemed necessary to exclude those patients who spent only a brief period in the hospital setting and those who displayed significant degrees of intellectual impairment or florid psychotic symptoms.

After consideration of the above issues, the inclusion criteria for all the parasuicide patients who participated in the current series of studies were:

    i.   aged 16 to 65 years old;

    ii.   no evidence of psychotic disorder;

    iii.   no evidence of an organic deficit.

With the exception of participants in the factor analytical study to discriminate dimensions of parasuicide (Chapter 4), where it was desirable to include patients with less severe suicide proneness, further inclusion criteria were:

    iv.   displaying five or more sociodemographic risk factors for

parasuicide repetition (Kreitman and Foster, 1991);

v.   the recent parasuicide had resulted in admission to an in-patient medical ward.

2.1.4   *Source of participant recruitment*

In total, 100 parasuicide patients were recruited to participate in the five experimental studies. Sixty-six of these patients originated from the medical wards of North Manchester General Hospital. A further 29 were recruited from the Accident and Emergency Department of another hospital, the Manchester Royal Infirmary. These twenty-nine patients formed part of the cohort who participated in the study exploring the dimensions of parasuicide (Chapter 4), liaison with another research team allowing questionnaire completion as an "add on" to their own study. The remaining 5 patients, also recruited solely for the experiment reported in Chapter 4, derived from the Clinical Psychology Out–Patient Department of North Manchester General Hospital.

A major determinant of which patients participated in which study was the need to keep the assessment load within manageable proportions. As such, it was not possible for each of the 100 parasuicide patients to complete all of the assessments used in the five experiments. The number, and source, of the participants in each study were as follows:

The Relationship Between Problem-Solving and Autobiographical Memory (Chapter 3) – 35 patients in total, 21 males and 14 females (mean age 32.1 years, range 18 to 51 years), being comprised of the first thirty-five patients to be recruited from the medical wards of North Manchester General Hospital.

Exploratory Factor Analysis to Discriminate Dimensions of Parasuicide (Chapter 4) – 64 patients in total, 26 males and 38 females (mean age 31.4 years, range 18 to 58 years), being comprised of the last thirty patients recruited from the medical wards of North Manchester General Hospital, the twenty-nine from Manchester Royal Infirmary Accident and Emergency Department, and five out-patients from the Clinical Psychology Department, North Manchester General Hospital.

Distinguishing Parasuicide Patients by a Hopelessness Word Stroop (Chapter 5) – 30 patients in total, 13 males and 17 females (mean age 34.8 years, range 19 to 58 years), being comprised of the last thirty patients recruited from the medical wards of North Manchester General Hospital.

Stability of Autobiographical Memory Generality and its Relationship to Future Depression and Hopelessness (Chapter 6) and *Prediction of Parasuicide Repetition* (Chapter 7). The same cohort of 66 patients, 36 males and 30 females (mean age 33.6 years, range 19 to 58 years) was used in both of these studies, all being recruited from the medical wards of North Manchester General Hospital.

In addition to the parasuicide patients, 21 patients without any history of suicidal behaviour were recruited as controls in the *Distinguishing Parasuicide Patients by a Hopelessness Word Stroop* study (Chapter 5). All these patients derived from the Clinical Psychology Department at North Manchester General Hospital where they were receiving outpatient psychological treatment for either depression (10 patients) or an anxiety disorder (11 patients). Further details of these cohorts are provided within the methodological section of Chapter 5.

2.2 Measures

The range of questionnaires and semi-structured interviews used in the five experimental investigations can be summarised under the following three headings.

2.2.1 *Measures whose validity has already been established*

Two valid, standardised, self-report questionnaires were completed by all participants. These were the Beck Depression Inventory (Beck, Ward, Mendelson, Mock and Erbaugh, 1961) and the Beck Hopelessness Scale (Beck, Weissman, Lester and Trexler, 1974). In addition, the Means-End Problem-Solving Procedure (Platt, Spivack and Bloom, 1975), completed by thirty-five patients in the experiment reported in Chapter 3, has support from previous studies regarding both its validity and reliability as a measure of interpersonal problem solving (Schotte and Clum, 1987; Evans et al., 1992).

Further information about these three widely used clinical and research tools is provided in Appendices 3, 4 and 5.

2.2.2 *Less standardised measures previously reported in the literature*

Three assessments utilised in the present series of experiments fall into this intermediate category, namely the Autobiographical Memory Test, the modified Stroop Task, and the Personal Future Task.

The Autobiographical Memory Test (Williams and Broadbent, 1986), a measure of memory specificity, was completed by all of the sixty-six patients recruited from the medical wards of North Manchester General Hospital some of whom participated in all of the five studies reported in this thesis. Although standardised norms for this measure have yet to be established, research supporting its reliability was cited by Williams and Scott (1988). Furthermore, the Autobiographical Memory Test has previously been used in a number of studies exploring the link between memory specificity and various psychological parameters (problem solving ability, emotional disturbances and delusions) [see Section 1.6 for a review].

Although the use of hopelessness words in the Stroop task reported in Chapter 5 has no precedent in the literature, the procedure involved in the development of this modified Stroop Task was analogous to that reported in a number of previous studies (see Sections 1.7.2 and 1.7.3 for a review). The

modified Stroop Task used in the current study was completed by the last 30 patients to be recruited at the North Manchester General Hospital site.

The Personal Future Task (MacLeod et al., 1993) was employed in Chapter 7 as a measure of positive anticipation. Based on a "future fluency" paradigm, this task has been previously reported on two occasions in the literature (MacLeod et al., 1993; MacLeod et al., 1997). The Personal Future Task was completed by the first 36 patients to be recruited from the medical wards of North Manchester General Hospital.

2.2.3 *Newly developed assessments*

Two new assessments were developed for use in the present series of studies. The Parasuicide Beliefs Questionnaire (Appendix 1), an eight-item, self-report questionnaire that explored the conviction and frequency of beliefs associated with deliberate self-harm, was developed on the basis of expert consensus (see Section 4.2.2.1 for further details). This questionnaire was completed by 64 patients in total, recruited from three different sites (as reported in Section 2.1.4). The second original assessment, developed for use in the experiment described in Chapter 4, was the Potential Lethality of Deliberate Drug Overdoses questionnaire (Appendix 2). This questionnaire was completed by two physicians, independently, in an attempt to achieve a reliable measure of the medical severity of a series of ingested drug combinations (see Section 4.2.2.5 for further details).

2.3 <u>Procedure</u>

For each of the five experiments described in this thesis, the procedure adopted broadly followed three consecutive stages:- preliminary interview to obtain informed consent and to ensure that inclusion criteria were met; completion of the initial assessment measures; and (where appropriate) follow-up interview for re-assessment and/or to determine if parasuicide had been repeated since initial assessment. More extensive procedural details are incorporated into the methodology section of each chapter.

2.4 <u>Design</u>

The series of studies reported in subsequent chapters incorporated both cross-sectional and longitudinal designs, and both within-subjects and between subjects comparisons. Details of the statistical analyses employed are described in the methodology section of each experiment. Further discussion is provided here regarding the determination of sample sizes.

2.4.1 *Sample size and power calculations*

The overall number of participants recruited to the studies was largely determined by the need to ensure that the longitudinal studies (Chapters 6 and 7) had adequate numbers of participants to make the regression analyses valid. Adhering to the multiple regression guideline of no less than 10 participants for each variable under investigation (Altman, 1991, p349), and

anticipating the exploration of up to four dependent variables and a relatively high drop-out rate, it was estimated that at least 60 patients would initially be required in order to enable the multiple and logistic regression analyses to be validly conducted (Chapters 6 and 7 respectively). In all, 66 patients were recruited for this purpose from the medical wards of North Manchester General Hospital.

With regards to the experiment to discriminate dimensions of parasuicide (Chapter 4), statistical advice had suggested there should be at least five times as many subjects as variables examined. As there were *eight* belief ratings under investigation, an absolute minimum of forty participants was required in order for the exploratory factor analysis to be valid. Due to the assessment load, it was feasible to administer the Parasuicide Beliefs Questionnaire to only 30 of the North Manchester General Hospital medical ward cohort, the remainder of participants being recruited from two further sources (reported above). In total, 64 participants were included in this factor analytical study, sufficient to assume the statistical analysis was a valid one.

Although the primary effort was to ensure sufficient numbers of participants for the exploratory factor analysis (Chapter 4) and regression analyses (Chapters 6 and 7), further power calculations indicated that the numbers involved in other statistical comparisons of interest might not be sufficient to reliably exclude the possibility of type II errors. Thus, in the *Prediction of Parasuicide Repetition* study (Chapter 7), in addition to the logistic regression analysis (the main analysis), further comparisons of

interest were between the group of patients who repeated parasuicide and those who did not repeat. Using the graphical method of calculating sample size and power (Altman, 1991), and employing standard deviation values for the Autobiographical Memory Test parameter as reported in the previous study of Williams and Dritschel (1988), in order to be able to detect a difference at 5% level of significance in a study of 80% power it was calculated that a cohort of 160 would be required (that is 80 parasuicide repeaters and 80 non-repeaters). Group sizes of this scale were unrealistic in the present series of studies. As such, findings from group comparisons of this type could only be suggestive of the existence of a real difference in the parameter under investigation rather than reliably confirming that no such difference exists.

As a result of the primacy given to the regression analyses experiments (Chapters 6 and 7), together with consideration of the need to keep the assessment load within manageable limits, the number of parasuicide patients available to complete the modified Stroop Task (Chapter 5) was limited to 30. Therefore, following power calculations and statistical advice, an early decision was made that this exploration of specific Stroop interference effects to hopelessness words should be explicitly viewed as a pilot study. As this experiment was an original one, investigating for the first time the potential for suicidal individuals to be differentially slowed down by a hopelessness-word Stroop, it was felt legitimate to view this work as a preliminary, small-scale investigation.

Finally, the major consideration regarding sample size in the experiment attempting to replicate the correlation between problem solving ability and memory specificity (Chapter 3) was to include a significantly larger number of patients than those used in the original study (Evans et al., 1992). This was accomplished, with 35 patients participating in the current study (compared to 12 in the Evans et al. study), thereby allowing a more robust estimate of the association between memory specificity and the effectiveness of interpersonal problem solving.

Each of the five experiments will now described in detail.

3. <u>Chapter 3</u>

<u>THE RELATIONSHIP BETWEEN PROBLEM SOLVING AND
AUTOBIOGRAPHICAL MEMORY IN PARASUICIDE PATIENTS</u>

3. Chapter 3. THE RELATIONSHIP BETWEEN PROBLEM-SOLVING AND AUTOBIOGRAPHICAL MEMORY IN PARASUICIDE PATIENTS

3.1 Introduction

Parasuicide is a prevalent problem and, based on the Registrar-General's conservative figures for England and Wales, accounts for 70,000 – 80,000 admissions to hospital each year. The high prevalence, together with the rarity of clinical interventions which have demonstrably reduced parasuicide repetition (see MacLeod et al., 1992, for a review), make it increasingly important to further our understanding of the psychological processes involved in an individual's decision to commit an act of deliberate self-harm.

There is persuasive evidence that parasuicide patients display a deficit in their ability to solve interpersonal problems, such a difficulty having been measured in suicidal psychiatric in-patients (Schotte and Clum, 1987) and parasuicide patients presenting to a Casualty Department (McLeavey et al., 1987; Rotherham-Borus et al., 1990). Further, albeit qualitative, evidence of problem-solving deficiencies in parasuicide populations is provided by Williams (1986) with his finding that the most frequently endorsed reason for taking an overdose of drugs was that the "situation was so unbearable I didn't know what else to do". In addition, there are indications that the solutions to problems which parasuicide patients offer tend to be passive with an over-reliance on others (Linehan et al., 1987; Orbach et al., 1990).

Overgeneral memory recall, in the form of experiencing disproportionate difficulty remembering specific events from our past, appears to be a phenomenon of general clinical importance and may possibly underpin the problem-solving deficit found in parasuicide. Wahler and Afton (1980), in relation to a Parent Training Program, discovered that those women who had persistent difficulty in recalling specific incidents of how their children annoyed them did not improve their relationships with their children as the treatment progressed. More recently, Brittlebank et al. (1993) demonstrated that depressed patients with a greater degree of overgenerality of autobiographical memory at the beginning of treatment responded significantly less well to clinical intervention, which in this study was largely chemotherapy.

With regards to parasuicide patients, empirical investigation using the Autobiographical Memory Test has shown them to be significantly more overgeneral in their autobiographical memories in comparison to both matched patients residing on medical wards (Williams and Broadbent, 1986a; Evans et al., 1992) and non-patient controls (Williams and Dritschel, 1988).

In addition to replicating the finding that individuals who have deliberately self-harmed display significantly overgeneral autobiographical memories, the study of Evans et al. (1992) also found a highly significant correlation coefficient of 0.67 between low effectiveness of problem-solving strategies and overgeneral recall in a group of 12 parasuicide patients. This

strong association is consistent with the possibility that efficient problem-solving may be reliant on satisfactory retrieval of specific autobiographical memories, as such memories are likely to provide a more helpful and varied database from which to construct solutions to important real life problems (Williams, 1996). The observation that the few interventions which have been shown to have any positive impact on parasuicide repetition have tended to incorporate a substantial problem-solving component (Salkovskis et al., 1990; Linehan 1993) lends further importance to the task of elucidating the psychological underpinnings of problem-solving deficits as a means of refining our clinical interventions for parasuicide patients. As a step towards this end, the demonstration by Evans et al. (1992) of a link between problem-solving effectiveness and overgeneral memories requires replication.

The present study aims to explore the robustness of the association between ineffective problem-solving and overgeneral autobiographical memories by attempting to replicate the Evans et al. (1992) study with a larger, and more psychologically distressed group of parasuicide patients deemed to be of at least moderately high risk of parasuicide repetition. In addition to measures of memory generality and problem-solving skills, mood and degree of hopelessness were also assessed in order to gauge the level of psychological disturbance in this cohort of patients and to facilitate comparisons with the groups of parasuicide patients described in related studies.

3.2 Method

3.2.1 *Participants*

Thirty-five patients (average age 32.1 years; age range 18 to 51 years) admitted to the Accident and Emergency Department of North Manchester General Hospital following a deliberate drug overdose were included in this study. Twenty-one of the participants were male and fourteen were female. Inclusion criteria were: age between 16 to 65 years, the parasuicide resulted in an admission to an in-patient medical ward, no evidence of psychotic disorder or organic disorder, and identified as statistically being at medium to high risk of repeating parasuicide on the basis of scoring 5 or more of the eleven sociodemographic risk factors as described by Kreitman and Foster (1991). Based on the information provided by the patient at initial interview, a diagnostic classification was made using the Research Diagnostic Criteria (Spitzer, Endicott and Robins, 1978). Twenty-five patients met the criteria for definite and three for probable major depressive disorder. Of the remainder, four patients were identified as displaying minor depressive disorder and three a mood disturbance as a reaction to a short-term crisis. Twenty-six patients, approximately 74%, had a history of previous parasuicide and twenty-five patients, approximately 71%, had previously had contact with the psychiatric services.

3.2.2 *Measures*

3.2.2.1 Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock and Erbaugh, 1961)

This 21-item self-report questionnaire measures the intensity of depressive symptoms. Scores range from 0 to 63.

3.2.2.2 Beck Hopelessness Scale (BHS) (Beck et al., 1974)

This 20-item self-report scale has been found to be associated with severity and frequency of suicidal ideation (Nekanda-Trepka, Bishop and Blackburn, 1983) and with suicidal intent (Dyer and Kreitman, 1984), as well as predicting parasuicide repetition (Petrie et al., 1988) and completed suicide (Beck et al., 1989). Scores range from 0 (no hopelessness) to 20 (high hopelessness).

3.2.2.3 Means Ends Problem Solving Test (MEPS) (Platt et al., 1975)

This test of interpersonal problem-solving provides the respondent with the beginning of a story (for example, a person moving into a new neighbourhood and wanting to get to know his neighbours) and a successful ending (for example, he has many good friends in the neighbourhood) and asks the respondent to provide the middle part of the story by generating the appropriate means of achieving the successful outcome. Although the original MEPS used 10 stories, the present study employed only 5 of these as it has previously been demonstrated that a valid assessment of problem-solving can be achieved using an abbreviated format (Platt and Spivack, 1975). From the responses provided by the patients, two scores were obtained:- number of relevant means, and the overall likely effectiveness of the solutions offered. In order to compute an effectiveness rating, the procedure adopted by Evans et al. (1992) was duplicated in that problem solutions provided by the patients were evaluated on a three point Likert scale (0 = "not at all effective"; 1 = "effective"; 2 = "very effective"). The

author and a research assistant individually conducted and subsequently

scored the MEPS assessment, and a total score of effectiveness was obtained

for each patient ranging from 0 (not at all effective) to 10 (extremely

effective). In order to check the reliability of this effectiveness rating, the

responses from a random sample of 12 patients were independently scored

by the two researchers and a correlation of 0.92 was found for the

effectiveness ratings, thus suggesting a satisfactory level of reliability.

3.2.2.4 Autobiographical Memory Test (AMT) (Williams and Broadbent, 1986)

The cue words used, and the procedure followed, was identical to that

adopted in the previous Williams and Broadbent (1986) and Evans et al.

(1992) studies. Five positive words (*happy, safe, interested, successful,* and

surprised) and five negative words (*sorry, angry, clumsy, hurt* and *lonely*)

were read aloud to each patient in the order given above but alternating

between positive and negative words. The latency to the first word of each

response was timed using a stop-watch. If participants offered a memory

which was not specific a standard prompt was given ("can you think of a

specific time, one particular occasion?"), and the cumulative time to all

subsequent responses was recorded. Patients were given 60 seconds to come

up with a specific memory and, if no such memory was provided within this

period, a time of 60 seconds was recorded. A memory was deemed specific if

it referred to an occasion that did not span more than one day (Williams and

Broadbent, 1986, have demonstrated that this distinction between specific

and general memories can reliably be made). Of particular interest in this

study was the number of first responses which were specific, potential scores

for each patient ranging from 0 (no specific first responses given) to 10 (a specific first response given for each cue word).

3.2.3 *Procedure*

Participants who gave their consent were interviewed as soon as practicable after recovery from the overdose (range 1-18 days, mean 4.3 days, mode 2 days). A brief history was taken together with sociodemographic details sufficient to ensure each patient displayed at least 5 risk factors (Kreitman and Foster, 1991) for further parasuicide. For those patients satisfying the inclusion criteria, the assessments were administered in the order shown above (together with one other assessment not reported in this study). The total time spent with each patient approximated to 75 minutes, breaks being taken at the patient's request or at any sign of fatigue.

3.3 Results

The scores for all participants on each assessment measure are summarised in Table 1. One patient failed to complete the BDI, hence only 34 sets of data were obtained on this measure.

Table 1: The means and standard deviations for scores on the BDI, BHS, MEPS effectiveness, and total number of specific memories given as a first response on the AMT

MEASURE	N	MEANS	S.D.
BDI	34	30.0	13.1
BHS	35	11.8	6.1
MEPS effectiveness	35	4.0	2.5
AMT sp. memories	35	5.4	2.2

Because the data did not meet all the assumptions for parametric tests, MEPS effectiveness and the BHS scores being skewed towards impaired problem-solving and high hopelessness respectively, the Spearman-Rank Coefficient was computed to determine the correlations between each of the four variables and the results are shown in Table 2. Unsurprisingly, the values obtained for the Beck Depression Inventory and Beck Hopelessness Scale were highly correlated. With regards to the association between effectiveness of problem-solving and the specificity of autobiographical memory, a significant correlation of 0.38 ($p < 0.01$) was found. Mood, as measured by the BDI, correlated significantly with problem-solving effectiveness ($r = 0.30$, $p < 0.04$) but not with the specificity of autobiographical memory.

Table 2: Correlations (Spearman-Rank) between scores on the BDI, BHS, MEPS effectiveness and total specific memories given as a first response on the AMT

	BDI	BHS	MEPS effectiveness	Total specific memories
BDI	-			
BHS	0.65***	-		
MEPS effectiveness	-0.30*	-0.20	-	
Total specific memories	-0.15	0.002	0.38**	-

*p< 0.04
** p< 0.01
***p< 0.0001

In order to explore whether the significant correlations between problem-solving effectiveness and memory specificity could largely be explained by mood, a partial correlation coefficient between these two parameters was calculated while controlling for scores on the BDI. The value of this coefficient was 0.36 (p< 0.019) suggesting that the relationship between ineffective problem-solving and overgeneral autobiographical memories is not mood dependent.

As to the possibility that a general sluggishness to respond was responsible for the significant correlation between problem-solving effectiveness and memory specificity, the relationship between the latency to give a response (any response) to the AMT cue words and problem-solving effectiveness was explored. The correlation was found to be low (-0.106) and non-significant, indicating that general unresponsiveness can not account for the correlation between effective problem-solving and memory specificity.

3.4 <u>Discussion</u>

The main aim of this study was to confirm the finding of Evans et al. (1992) of a significant correlation between problem-solving effectiveness and the specificity of autobiographical memory. Using a larger sample of parasuicide patients, the present study replicated the significant association between ineffective problem-solving as measured by the MEPS and the over-generality of personal memories given in response to the AMT cue-words. This significant correlation was not due to prevailing sluggishness to respond, nor was it a direct consequence of depressed mood. Thus, the present study demonstrated that the relationship between ineffective problem-solving and over-general autobiographical memory is a robust one in parasuicide patients, those individuals who have greatest difficulty providing effective solutions to interpersonal problems also tended to have greatest difficulty retrieving specific memories.

Although comfortably reaching an acceptable level of significance, the correlation coefficient of 0.38 computed between the effectiveness of problem-solving and the specificity of autobiographical memory was notably lower than that of 0.67 found by Evans and her colleagues. The source of this discrepancy may be found in the differing characteristics of the subjects used in each study. There are indications that the patients involved in the present study displayed higher levels of psychiatric symptomatology. Thus, whereas eleven of the twelve patients in Evan's study were deemed to have mood disturbance in response to a short-term crisis, seventy-one percent of

participants in the present study were characterised as displaying a definite major depressive disorder with a further nine percent meeting the criteria for probable major depressive disorder. Although the hopelessness level was only marginally higher than that in the previous study, almost three-quarters of the current patients had a history of previous parasuicide and a similar number reported prior contact with the psychiatric services, the latter two characteristics not having been reported in the Evans et al. (1992) study but likely to have been significantly less widespread. It is plausible to suggest that, for patients displaying relatively mild psychological distress in response to short-term crises, problem-solving deficits are likely to be a purer feature of the clinical picture, less obscured by other psychopathology when compared to patients in the present study who displayed greater psychiatric disturbance. These more disturbed patients, the majority with a parasuicide history, may often engage in deliberate self-harm as a means of mood-regulation or communication rather than as a primary response to a problem situation.

Two further points are worthy of note. Unusually for research with parasuicide patients, in the present study males outnumber females at a ratio of 3 to 2. However, when males were compared to females no significant differences were found on either problem-solving effectiveness nor with regards to the specificity of autobiographical memory, suggesting that gender differences between the participants in the present study and those in the Evans et al. (1992) study can not account for the discrepancy in the correlation coefficient values. Secondly, consistent with previous research

regards to the specificity of autobiographical memory, suggesting that gender differences between the participants in the present study and those in the Evans et al. (1992) study can not account for the discrepancy in the correlation coefficient values. Secondly, consistent with previous research (Williams and Dritschel, 1988; Brittlebank et al., 1993) the correlation between specificity of autobiographical memory and mood (as measured by the BDI) was not significant, a finding suggestive of overgenerality being a trait rather than a state characteristic.

In conclusion, the relationship between poor interpersonal problem-solving and over-general autobiographical memory appears a robust one, although a stronger association between these two variables may exist for a sub-group of parasuicide patients for whom the apparent insolubility of current life problems is the *prime* precipitant of the parasuicide. Further research might usefully explore whether over-generality in autobiographical memory can be modified by direct clinical intervention, as if this is the case such an intervention could prove to be an effective secondary preventative strategy for some patients who use parasuicide as a problem-solving strategy.

4. Chapter 4.

EXPLORATORY FACTOR ANALYSIS TO DISCRIMINATE DIMENSIONS OF PARASUICIDE

4. Chapter 4. EXPLORATORY FACTOR ANALYSIS TO DISCRIMINATE DIMENSIONS OF PARASUICIDE

4.1 Introduction

It is generally accepted that patients who carry out deliberate self-harm do not constitute a homogenous group, the only apparent similarity between such individuals often being that a non-accidental, self-inflicted injury has been sustained. To enhance our understanding of the factors that contribute to parasuicide, and thereby increase the efficacy of preventative clinical interventions, it is likely that some reliable differentiation of this large group of patients could usefully be made. There have been many attempts throughout this century to isolate different categories of suicidal behaviour (see Ellis, 1988; Arensman and Kerkhof, 1996 for reviews) but to date the various systems that have been proposed have displayed only modest uniformity and, more importantly, they have contributed very little to informing the clinician as to the optimal therapeutic strategy to adopt in the treatment of a patient at risk of suicidal behaviour. The present study attempted a preliminary investigation to explore whether a classification of parasuicide can be made on the basis of *beliefs* held by the patient just prior to the self-injurious act. The validity of identified subgroups will be explored in relation to levels of hopelessness and depression, the potential lethality of the means of self-harm, and the number of previous parasuicides.

Studies that have attempted to classify suicidal behaviour have drawn from both theoretical and empirical sources. Theoretical categorisations have emerged from a combination of sociological theories and clinical

experiences, and some of these studies have addressed parasuicide

(Neuringer, 1962; Devries, 1968; Pokorny, 1974). For example, the National

Institute of Mental Health Center for Studies of Suicide Prevention proposed

the concepts of "completed suicide", "suicide attempt" and "suicidal ideas"

(Pokorny, 1974), distinctions which are often used in clinical parlance. More

recently, Lester (1990) suggested five categories of parasuicide based upon

whether the self-harm was foreseen or desired, namely: *failed suicide* in

which the person genuinely intended to die but failed due to incompetent

planning or unexpected intervention; *deliberate self-harm* in which there is a

wish to harm or punish themselves but not sufficiently to die; *sub-intentioned*

self-harm in which the person has some ulterior motive such as to

communicate or change the behaviour of others; *counterproductive self-harm*

in which the person was unaware of how much self-harm they were

inflicting; and *pseudo self-harm* characterised by mild gestures of minimal

self-harm.

Further theoretical classifications of parasuicide have relied on the

dimensions of suicidal intent (Beck, Schuyler and Herman, 1974),

seriousness of the act (McHugh and Goodell, 1971) and repetitiveness

(Buglass and Horton, 1974).

Empirically based studies, many using the statistical technique of

cluster analysis, have proposed several classification systems for parasuicide

the content of which have been significantly shaped by the type of data

collected (Colson, 1973; Kiev, 1976; Henderson, Hartigan, Davidson, Lance,

Duncan-Jones and Koller, 1977; Paykel and Rassaby, 1978; Kurz, Moller, Baindl, Burk, Torhorst, Wachtler and Lauter, 1987). Colson (1973) classified seventy-nine graduate students with a history of suicidal behaviour or ideation into four groups based on the reasons given for wanting to die, namely *interpersonal loss/loneliness, health problems, fear of failure/concern for future*, and *wish to hurt/manipulate*. A markedly different system was suggested by Kiev (1976) who, using criteria of seriousness of the attempt, overall functioning, interpersonal conflict, and the perception of significant others, claimed to have identified seven sub-types from a cluster analysis of 298 parasuicides.

Greater consistency of categorisation is to be found in the cluster analytical studies of Henderson et al. (1977), Paykel and Rassaby (1978), and Kurz et al. (1987) who all proposed three subgroups of parasuicide, two of which sound similar. All three studies described what approximates to a depressed/high risk of suicide group and a group characterised by many previous attempts/low risk/high hostility. The third group of Paykel and Rassaby (1978) and Kurz et al. (1987) both highlight interpersonal motivations whereas the third category in the Henderson et al. (1977) system could not be characterised by any of the variables examined. These three large-scale, psychiatrically orientated studies therefore suggest sub-groupings distinguished by high levels of depression, high anger, and a desire to use parasuicide as a means of communication.

In their search for meaningful subgroups the cluster analytical studies of parasuicide (reviewed above) have incorporated a wide range of parameters including psychiatric diagnoses, recent life-events, developmental experiences, circumstances of the attempt, motivation for the act derived from both the patient's testimony and the judgement of the researcher, associated substance abuse, and demographic factors. Other empirical research has given prominence to the retrospective intentions for the parasuicide given by the patients shortly after a deliberate drug-overdose (Bancroft et al., 1977; Bancroft et al., 1979; Williams, 1986). Both the Bancroft et al. (1979) and Williams (1986) studies found that a significant majority of parasuicide patients did <u>not</u> definitely want to die, with about half of this group being ambivalent as to whether the drug overdose might have a fatal outcome. Interestingly, the most frequently endorsed reason for the parasuicide was *"The situation was so unbearable that I had to do something and I didn't know what else to do"*, this being ratified by 56% and 67% of subjects in the Bancroft et al. (1979) and Williams (1986) studies respectively. Approximately 50% also endorsed *"I wanted to get relief from a terrible state of mind"* and *"I wanted to escape for a while from an impossible situation"*. The responses to these three statements taken as a whole are consistent with motives of problem-solving and affect regulation. Interpersonal communication appeared to underpin the motives of *"I wanted to show how much I loved someone"* and *"I wanted to make people understand how desperate I was feeling"*, these reasons being supported by about one-quarter of respondents.

Although these explorations of the intentions of parasuicide patients are a useful step towards furthering our knowledge of the psychological processes operating in this client group, there are various pressures which may influence responses when people are asked to try and rationalise an episode of self-harm. Thus, in the immediate aftermath there may be a feeling that, for the behaviour to be acceptable, there should be clear suicidal intent and anything less than this could be viewed pejoratively by others as manipulative or attention-seeking. Also, patients may be very unclear themselves as to why they self-harmed. It therefore follows that further elucidation of sub-groupings of parasuicide, and the psychological processes involved, might be achieved more effectively by examination of the *beliefs* held just before the act rather than directly asking about *intentions*. Although belief exploration will, for the purposes of research, have to be similarly retrospective, it might be less influenced by these biases.

The present study was a preliminary attempt to classify parasuicide on the basis of cognitions held just prior to the act. Beliefs to be investigated were selected to reflect domains which research has shown to be associated with suicidal activity. Hopelessness has been found to be predictive of both parasuicide and completed suicide (Petrie et al., 1988; Beck et al., 1989; Fawcett et al., 1990). Problem-solving deficits have been consistently demonstrated in parasuicide patients (Linehan et al., 1987; McLeavey et al., 1987; Schotte and Clum, 1987; Orbach et al., 1990; Rotherham-Borus et al., 1990). (see Section 1.4.2 for a review of this literature). That problem-solving beliefs might be a relevant area to explore is further demonstrated by

the frequent endorsement by parasuicide patients of intentions suggestive of the perceived insolubility of life problems in the studies of Bancroft et al. (1979) and Williams (1986) discussed above. Similarly, these latter two studies suggest an emotion regulating function of self-harm in some parasuicide patients, a prospect supported by MacLeod et al. (1992) with their premise that parasuicide can have a powerful effect on mood via prolonged sleep, distraction from emotional stimuli, or some direct biological effect on the emotion system. Fourthly, the potential communication function of parasuicide is worthy of study given the interpersonal communication grouping found in both the cluster analyses of Paykel and Rassaby (1978) and Kurz et al. (1987), together with the significant minority of patients who endorsed intentions to convey information to others in the studies of Bancroft et al. (1979) and Williams (1986). Therefore, in the current study, an attempt is made to distinguish dimensions of parasuicide on the basis of beliefs relating to *hopelessness, problem-solving, emotion regulation,* and *communication.*

It was hypothesised that it would be possible to identify three sub-groups of parasuicide patients on the basis of belief conviction and belief frequency. These will be characterised by different motives for self-harm, namely *emotion regulation, communication* and *escape* (resulting from high hopelessness and/or problem insolubility). Specifically, further hypotheses were:

1. Patients identified as "escapers" will have used potentially more lethal means of self-harming compared to other sub-groups.

2. Patients identified as "escapers" will score more highly on the Beck Hopelessness Scale as compared to the other group(s).

3. For those patients identified as "escapers", the generality of autobiographical memory will be a more potent predictor of parasuicide repetition.

4. Patients identified as "communicators" and/or "emotion regulators" will have a greater number of previous parasuicides as compared to the "escapers", as one would expect these functions to be served by a high frequency of self-injurious acts of relatively low potential lethality.

4.2 Method

4.2.1 *Participants*

Sixty-four patients (mean age 31.4 years; standard deviation 9.5 years; age range 18 to 58 years) with a recent history of deliberate drug overdose were included in this study. There were 26 males and 38 females. All the patients met the following inclusion criteria: aged between 16 and 65 years, no evidence of psychotic or organic disorder, and deliberate self-harm had taken place within the previous 7 days and had resulted in hospital treatment. For 48 (75%) of patients the drug overdose was sufficiently serious to require admission to an in-patient medical ward. Precisely three-quarters of the sample had a history of previous parasuicide and 59% had been in receipt of help from the psychiatric services.

4.2.2 _Measures_

4.2.2.1 Parasuicide Beliefs Questionnaire

A preliminary attempt was made to develop a questionnaire to reflect the range of beliefs a heterogeneous group of parasuicide patients might have in the period immediately preceding a drug overdose. On the basis of interviews with parasuicide patients and expert group consensus, eight items were generated which collectively comprised the Parasuicide Beliefs Questionnaire (see Appendix 1). (The number of items was restricted to such a small number in order to maintain the assessment load within a manageable level). Two belief items were generated with the aim of reflecting each of four domains postulated, on the basis of the literature, to be important in the aetiology of parasuicidal behaviour. One of each belief-pair was slanted in a positive direction and the other in a negative direction. The items were as follows, with the domain that they intended to mirror in parentheses: -

1. _There is no solution to my problems (PROBLEM SOLVING)_

2. _My unpleasant feelings will soon fade (EMOTION REGULATION)_

3. _People do not realise how much I am hurting (COMMUNICATION)_

4. _In time my future will look brighter (HOPELESSNESS)_

5. _I will, in time, find an answer to my problems (PROBLEM SOLVING)_

6. _My unpleasant feelings will go on and on (EMOTION REGULATION)_

7. _People know how much distress I am feeling (COMMUNICATION)_

8. _Nothing positive will ever happen in my life (HOPELESSNESS)_

Participants were asked to indicate by putting a pencil mark on a 100-point Likert scale to what extent they believed each statement "in the 24-hour

period before the overdose" (anchors:- 0 = *did not believe this at all;* 100 = *very much believed this*). In addition, for each statement the participant was asked to indicate "how often the thought occurred" in this 24-hour period just prior to the drug overdose by choosing one of the following four responses:-

A = *very often*

B = *often*

C = *occasionally*

D = *never*

For the statistical analyses, A, B, C and D were scored 4, 3, 2, and 1 respectively.

4.2.2.2 Beck Depression Inventory (BDI) (Beck et al., 1961)

This 21-item self-report questionnaire measures the intensity of depressive symptoms. Scores range from 0 to 63.

4.2.2.3 Beck Hopelessness Scale (BHS) (Beck et al., 1974)

Scores on this 20-item self-report questionnaire range from 0 (no hopelessness) to 20 (maximum hopelessness).

4.2.2.4 Autobiographical Memory Test (AMT) (Williams and Broadbent, 1986)

This measure of the generality of autobiographical memories (as described in Section 3.2.2.4) was administered to a sub-sample of 33 patients. Ten emotional cue words were employed, 5 positive and 5 negative,

and sixty seconds was allowed for the participant to respond with a specific

memory – i.e. one that refers to an occasion which does not span longer than

one day. The measure of interest in this experiment was the mean latency to

retrieve a specific memory to a positive emotion cue word.

4.2.2.5 Potential Lethality of Drug Overdoses

An attempt was made to develop a reliable measure of the potential

lethality of drug overdoses ingested by the participants by use of the

following procedure.

The specific details of the drugs (and alcohol) consumed by 28 of the

patients in this study were listed along with age and gender. (It was not

possible to utilise the whole patient sample as the details of the drugs taken

were not available from all sites). This list was sent to two senior physicians

working in the Accident and Emergency Department of a local district

general hospital and each was asked to independently rate the likelihood of

death in the absence of medical treatment. The precise instructions on the top

of the form were: *"Below are listed the known details of substances a patient*

has ingested prior to their attendance at an Accident and Emergency

Department. Based on your medical expertise and experience of working in

Casualty, please rate each overdose for **POTENTIAL LETHALITY** *– that*

is, if left untreated what is the probability that the patient would die?. A

numerical rating was requested on a 0 to 100 visual analogue scale, where 0

represents *"No possibility whatsoever of death"*, and 100 represents

"Certainly would have died". The instructions on the form also asked that

the rater should assume average weight and build, to not be overly cautious in giving the ratings, and to make an "educated guess" purely on the information provided. (A copy of this questionnaire can be found in Appendix 2).

In order to establish the reliability of this measure, a correlational analysis of the lethality ratings provided by the two physicians was carried out. As the numerical values of lethality for each rater were not normally distributed, the non-parametric Spearman-Rank Correlation Coefficient was calculated and found to be 0.28 (NS). Therefore, as no reliable measure of potential lethality of drug overdoses was achieved, it was not possible to explore the relationship between the severity of the parasuicide and factors identified in the subsequent factor analysis.

4.2.3 *Procedure*

The large majority (92%) of deliberate drug overdose participants for this study was obtained from the Accident and Emergency Departments of two district general hospitals in Manchester. The remainder were patients currently in treatment in a Department of Clinical Psychology who had recently taken an overdose. Patients were interviewed as soon as practicable after recovery from the parasuicide (range 0 to 11 days, mean 3.3 days, SD 2.8 days) and asked for written consent to participate in a study the expressed aim of which was "to try and understand a little bit more about the reasons why people self-harm". An informal clinical interview was carried out with each patient to gather basic demographic information and to ensure that the

inclusion criteria had been met. Each participant was also asked about the number of any previous parasuicides and whether there had been any prior contact with psychiatric services. Patients were then asked to complete, in writing, the BDI and BHS. A sub-sample of participants was then administered the Autobiographical Memory Test (AMT). The whole sample then completed, in writing, the Parasuicide Beliefs Questionnaire, further clarification being given by the experimenter if the subject did not fully understand the task. Therefore, the order of assessments was always BDI →

BHS → AMT (sub-sample only) → Parasuicide Beliefs Questionnaire. (A variety of further assessments was completed by some patients, which will not be reported here as they have no bearing on this study). The sub-sample of patients who completed the AMT was followed up over the subsequent 12-month period in order to establish whether parasuicide was repeated. This follow-up was achieved via interviews in the patients' homes, out-patient appointments, postal questionnaire completion or, for those who did not fulfil follow-up appointments, an examination of hospital records for admissions to Manchester hospitals as a result of further deliberate self-harm.

4.3 Results

The belief convictions and belief frequency data obtained from the Parasuicide Beliefs Questionnaire were factor analysed separately.

4.3.1 _Belief conviction_

The inter-item correlations for the conviction ratings for the eight

beliefs comprising the Parasuicide Beliefs Questionnaire are shown in Table

3.

Table 3: Correlation matrix showing inter-item correlations for conviction
ratings on the 8 items of the Parasuicide Beliefs Questionnaire

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8
Item 1	1.00							
Item 2	-0.15	1.00						
Item 3	0.06	0.07	1.00					
Item 4	-0.30	0.52	0.09	1.00				
Item 5	-0.43	0.37	0.09	0.74	1.00			
Item 6	0.40	-0.03	0.41	-0.27	-0.18	1.00		
Item 7	-0.24	0.29	0.04	0.28	0.19	0.05	1.00	
Item 8	0.44	-0.11	0.36	-0.26	-0.19	0.49	-0.13	1.00

Exploratory factor analysis was carried out on these conviction

ratings. An initial principle components method of factor extraction was

performed and the Eigenvalues obtained are shown in Table 4.

Table 4: Initial Principal Components analysis (unrotated) of all eight items
of the Parasuicide Beliefs Questionnaire showing Eigenvalues and
the variance accounted for

FACTOR	EIGENVALUE	PERCENT OF VARIANCE	CUMULATIVE VARIANCE
1	2.77	34.6	34.6
2	1.79	22.4	57.0
3	1.01	12.6	69.6
4	0.73	9.2	78.8
5	0.59	7.4	86.1
6	0.47	5.9	92.1
7	0.45	5.6	97.7
8	0.18	2.3	100.0

A three-factor solution based on the scree test was subjected to

oblique rotation (by Direct Oblimin). The Structure Matrix is shown in Table

5.

Table 5: Structure matrix showing factor loadings for conviction ratings of
individual items on the full Parasuicide Beliefs Questionnaire

Questionnaire item	Factor 1	Factor 2	Factor 3
1	**-0.66**	0.44	0.21
2	**0.52**	0.03	**0.63**
3	0.20	**0.77**	-0.01
4	**0.84**	-0.12	0.42
5	**0.87**	-0.06	0.21
6	-0.34	**0.79**	0.17
7	0.13	-0.04	**0.85**
8	-0.34	**0.78**	-0.07

In order to reduce factor overlap, a relatively high loading of 0.50 or above was taken as a significance threshold. The initial factor composition was as follows:

Factor 1: Items 5, 4, 1, and 2 loaded on Factor 1. To explore the reliability of this factor, Cronbach coefficient alphas and Item Correlations were calculated as shown in Table 6. The Cronbach coefficient alpha for this 4-item sub-scale was found to be very low (0.30). However, this increased markedly to 0.77 when item 1 was deleted.

Table 6: Item Total Correlations and Alpha if Item Deleted for each of the four items loading on Factor 1

Item	Item total correlation	Alpha if item deleted
1	-0.35	0.77
2	0.40	-0.10
4	0.57	-0.29
5	0.33	0.03

Factor 2: Items 6, 8 and 3 loaded on Factor 2. The item total correlations and Alphas if item deleted are shown in Table 7. The Cronbach coefficient alpha for this 3-item sub-scale was 0.69, with no improvement with each item deleted.

Table 7: Item Total Correlations and Alpha if Item Deleted for each of the 3 items loading on Factor 2

Item	Item total correlation	Alpha if item deleted
3	0.48	0.66
6	0.55	0.53
8	0.50	0.59

Factor 3: Items 7 and 2 loaded on Factor 3. The Cronbach coefficient alpha for this sub-scale was 0.45, suggesting only modest reliability.

In consideration of these reliability scores, together with the observation that item 2 loaded on more than one factor, the factor analysis was re-run omitting items 1 and 2, leaving six items in total. The scree test again suggested a three-factor solution and, as before, a principal components method of factor extraction was performed (the three factors being subjected to oblique rotation by Direct Oblimin). The structure matrix for this analysis is shown in Table 8.

Table 8: Structure matrix showing factor loadings for conviction ratings of the modified version (six items) of the Parasuicide Beliefs Questionnaire

Questionnaire item	Factor 1	Factor 2	Factor 3
3	0.21	**0.77**	0.02
4	**0.92**	-0.17	0.26
5	**0.92**	-0.09	0.14
6	-0.29	**0.80**	0.16
7	0.22	-0.02	**0.98**
8	-0.27	**0.77**	-0.19

The Eigen values and variance accounted for by the three factors in this analysis is shown in Table 9. Factor 1, which was responsible for almost 37% of the overall variance, incorporated item 4 (*"In time my future will look brighter"*) and item 5 (*"I will in time find an answer to my problems"*). This factor might represent a hopelessness dimension with the level of distress being dependent upon the degree of anticipation that the future would incorporate positive events. Factor 2 accounted for 27% of the total variance the essence of which appeared to be unrelenting, unrecognised distress. This factor was composed of three questionnaire items, item 6 (*"My unpleasant feelings will go on and on"*), item 8 (*"Nothing positive will ever happen in my life"*), and item 3 (*"People do not realise how much I am hurting"*). Factor 3 was a single item factor (*"People know how much distress I am feeling"*) which might encapsulate a communication function whereby parasuicide conveys the level of distress to others. This communication factor accounted for 15% of the overall variance.

Table 9: Eigen values and variance accounted for by the three factors in the factor analysis of the six-item Parasuicide Beliefs Questionnaire

Factor	Eigenvalues	% of Variance	Cumulative %
1	2.21	36.8	36.8
2	1.62	27.0	63.8
3	0.91	15.2	79.0

4.3.2 *Belief Frequency*

Exploratory factor analysis was carried out on the frequency rating of the eight items of the Parasuicide Beliefs Questionnaire. As with the conviction analysis above, a principal components method of factor extraction was performed. A four-factor solution suggested by the scree test was subjected to oblique-rotation by Direct Oblimin. The structure matrix is shown in Table 10.

Table 10: Structure matrix showing factor loadings of the frequency ratings of individual items on the full Parasuicide Beliefs Questionnaire

Questionnaire Item	Factor 1	Factor 2	Factor 3	Factor 4
1	0.09	**0.85**	0.11	0.17
2	**0.74**	0.10	0.09	0.21
3	0.29	-0.07	**0.85**	-0.07
4	**0.91**	0.08	0.16	0.33
5	**0.92**	0.12	0.24	0.18
6	0.00	0.35	**0.77**	0.33
7	**0.52**	-0.07	0.13	**0.87**
8	0.13	**0.85**	0.11	-0.16

By taking a loading of 0.5 or above as the significance threshold, the initial factor composition was as follows:

Factor 1: The items composing this factor were 5, 4, 2 and 7. The Cronbach coefficient alpha for this sub-scale was 0.82, which increased very slightly to 0.84 when item 7 was deleted.

Factor 2: This factor consisted of items 1 and 8, the reliability measure (Cronbach coefficient alpha) being 0.66.

Factor 3: Items 3 and 6 comprised this factor, with a moderate reliability as indicated by a Cronbach coefficient alpha of 0.48.

Factor 4: This factor was comprised of a unitary item, item 7.

Although Factor 1 was very similar to the "hopelessness" dimension identified in the previous analysis of belief-conviction ratings, the remaining factors were more difficult to clinically interpret. Therefore, based on the assumption that the conviction data will be more sensitive than the frequency data (being comprised of items rated on a 0 to 100 scale as compared to a 1 to 4 scale for the frequency measures), the subsequent exploration of the data will be restricted to the conviction ratings.

4.3.3 *Concurrent Validity of the Belief Conviction Factors*

In an exploration of the concurrent validity of the factors identified in the analysis of the conviction ratings, some predictions were investigated.

*Prediction 1: Participants scoring highly on the **"unrelenting, unrecognised distress"** and **"hopelessness"** dimensions will score more highly on the Beck Hopelessness Scale than those loading on the **"communicators"** dimension.*

A Pearson Product-Moment correlation coefficient was calculated between participants' composite scores on items 3, 6 and 8, and scores on the Beck Hopelessness Scale (BHS) and this was found to be significant ($r = 0.40$, $p < 0.001$, 2-tailed). The correlation between this "unrelenting, unrecognised distress" factor and the BHS remained significant when depression scores (BDI) were partialled out ($r = 0.27$, $p < 0.03$, 2-tailed). The

correlation between Factor 1 (a composite of items 4 and 5) and BHS scores was also significant (r = -0.31, p< 0.01, 2-tailed), however the correlation was non-significant (-0.16) when BDI scores were partialled out. (This is to be expected given that some items of the BDI assess hopelessness). The correlation between Factor 3 (item 7) and BHS scores was low and non-significant. Overall, the above evidence provides some support for the prediction that the dimensions represented by Factors 1 and 2 have predictive validity in the context of hopelessness scores. As would be expected, beliefs associated with unrelenting, unrecognised distress and hopelessness were significantly correlated with BHS scores.

*Prediction 2: Factor 3 ("**communicators**") will be associated with a greater number of previous parasuicides.*

A Pearson Product-Moment correlation coefficient of 0.20 was calculated between conviction scores on item 7 and number of previous parasuicides. This correlation was not significant and therefore does not support this prediction.

A further exploration of the above two predictions was achieved by including BHS scores and number of previous parasuicides in the factor analysis along with the belief ratings of the six Parasuicide Belief Questionnaire items. As before, a principle components method of factor extraction was performed and a three-factor solution, based on the scree test, was subjected to oblique rotation (by Direct Oblimin). The structure matrix is shown in Table 11.

Table 11: Structure matrix showing factor loadings of conviction ratings for six items of the Parasuicide Beliefs Questionnaire, BHS scores, and number of previous parasuicides.

Variable	Factor 1	Factor 2	Factor 3
Item 3	-0.20	**0.72**	0.09
Item 4	**-0.90**	-0.14	0.05
Item 5	**-0.87**	-0.09	0.01
Item 6	0.26	**0.79**	0.19
Item 7	-0.33	0.06	**0.73**
Item 8	0.31	**0.80**	-0.25
BHS	**0.59**	**0.53**	-0.03
Previous parasuicides	0.27	0.01	**0.79**

The findings of this factor analysis were consistent with the above two predictions. Hopelessness, as measured by the Beck Hopelessness Scale, loaded on both Factors 1 and 2, but not Factor 3. Also, in keeping with the hypothesis that the "communicators" will have a greater incidence of prior self-harm, the number of previous parasuicides loaded on Factor 3.

As no discrete problem-solving dimension emerged from the factor analysis, it was not possible to explore the relationship between overgeneral autobiographical memory and scores on a "pure" problem-solving factor. It was possible, however, to investigate whether overgenerality of autobiographical memory might determine those vulnerable to parasuicide repetition for those patients scoring highly on the only "escape" factor to emerge from the analysis, namely the *hopelessness* dimension. Patients scoring at or above the median score of 40.0 on the "hopelessness" factor were divided into those who repeated deliberate self-harm (N = 7) and those

who did not (N = 9). Positive latency scores on the Autobiographical

Memory Test were then compared for each group using an independent t-test. A non-significant t-value of 0.44 was obtained suggesting that the

generality of autobiographical memory was not associated with parasuicide

repetition, even for a group scoring highly on the "hopelessness" dimension.

Given that it is conceivable that problem-solving deficits, and the

associated over-general autobiographical memory, might make a significant

contribution to one or more of the three factors identified ("hopelessness",

"unrelenting, unrecognised distress", and "communication"), a correlational

analysis was carried out between each patient's cumulative score on the

items comprising each factor and AMT +ve latency. Because the data did not

meet the requirements for the use of parametric tests, Spearman-Rank

correlation coefficients were calculated as shown in Table 12.

Table 12: Spearman-Rank correlation coefficients between cumulative
scores on each factor and AMT positive latency

	"Hopelessness" factor (items 4 and 5)	"Unrelenting, unrecognised distress" factor (items 3, 6 and 8)	"Communication" factor (item 7)
AMT-positive latency	**0.17** (NS)	**-0.22** (NS)	**0.02** (NS)

As can be seen from Table 12, AMT-positive latency did not significantly

correlate with any of the three factors, a finding that suggests that the

generality of autobiographical memory has no direct bearing on the three dimensions which emerged from the factor analysis.

Because no reliable measure of the lethality of drug overdoses was achieved, (as previously described), it was not possible to explore the relationship between severity of the parasuicide and the three factor dimensions.

4.4 Discussion

On the basis of belief conviction on the eight-item Parasuicide Beliefs Questionnaire, factor analysis identified three dimensions of parasuicide: *hopelessness; unrelenting, unrecognised distress;* and *communication.* Consistent with the initial hypotheses, both an "escape" factor (associated with high levels of hopelessness) and a "communication" factor emerged from the factor analysis. However, no dimensions concerned primarily with mood-regulation or problem solving were identified.

With regards to the extent to which the results support the specific hypotheses generated at the end of the Introduction, the following comments can be made:

1. The low reliability of the lethality measure meant that it was not possible to explore whether the "hopelessness" factor was associated with more potentially lethal means of parasuicide. That two senior physicians working in an Accident and Emergency Department did not achieve a

significant correspondence in their ratings of potential lethality of various drug cocktails was surprising and further emphasises the low reliability of using the type and amount of substances ingested as an index of suicidal intention (Macleod et al., 1992).

2. Some support was obtained for the hypothesis that "escapers" would rate highly on the Beck Hopelessness Scale (BHS) in that there was a significant correlation between scores on the BHS and the "hopelessness" dimension, whereas there was a low and non-significant association between BHS scores and the "communication" dimension. However, the non-predicted emergence from the analysis of the "unrelenting, unrecognised distress" factor which also correlated significantly with the BHS scores, together with the failure to find a distinct "emotion-regulation" dimension, makes this finding less striking than it might otherwise have been.

3. The prediction that generality of autobiographical memory would predict parasuicide repetition in those patients identified as "escapers" was not substantiated. The previously established association between problem-solving skills and the specificity of autobiographical memories (Evans et al., 1992; and Chapter 3 of this thesis) had raised the possibility that over-general autobiographical memory might increase the likelihood of parasuicide repetition, particularly in those patients for whom problem-solving deficits were a major contributor to their self-harm behaviour. Contrary to prediction, no "problem-solving" factor emerged from the

analysis. A comparison of repeaters versus non-repeaters for those

patients scoring highly on the "hopelessness" dimension revealed no

difference in the latency to retrieve specific autobiographical memories.

Furthermore, the autobiographical memory parameter did not

significantly correlate with any of the three dimensions of parasuicide to

emerge from the factor analysis. Therefore, on the basis of these findings,

it is reasonable to conclude that generality of autobiographical memory is

not a distinguishing feature of any of the parasuicide factors identified in

this study.

4. The hypothesis that patients scoring highly on the "communication"

    factor would have a history of a greater number of acts of deliberate self-

    harm was supported to the extent that, in the factor analysis, the number

    of previous parasuicides loaded on the "communication" factor and not

    on either of the other two factors. This finding is consistent with the view

    that acts of parasuicide primarily motivated by the desire to communicate

    something to others are best served by high frequency self-injurious acts

    of low potential lethality.

The emergence of three dimensions of parasuicide from the factor

analysis shows consistency with some previous studies. Thus, the

"communication" factor corresponds to the interpersonally motivated groups

identified in the cluster analytical studies of Paykel and Rasserby (1978) and

Kurz et al. (1987). Similarly, the depressed/high risk group also described in

these two studies (also by Henderson et al., 1977) could plausibly relate to

the "hopelessness" factor in the present study. In contrast, the "unrelenting, unrecognised distress" dimension does not have an obvious precedent in the literature and, if this factor turns out to be a robust one, might usefully focus attention on the perceived unchanging nature of suicide-related adversity as well as perceived lack of empathy from others. It would follow that patients rating highly on this factor might differentially benefit from a combination of therapeutic interventions that both highlight the temporal variability in levels of negative emotion as well as conveying some empathic grasp of the depth of the patient's plight. Interestingly, the suggestion that unrelenting distress might be an important dimension of suicidality is consistent with a previous study (Young, Fogg, Scheftner, Fawcett, Akistal and Maser, 1996) that found that <u>stable</u> levels of hopelessness in patients with remitted depression was more predictive of subsequent suicide attempts than high levels at any one point.

A major limitation of the present study in its attempt to describe a clinically useful framework for classifying parasuicide was the fact that the participants were exclusively drug-overdose patients. One important consequence of this restriction is that the study did not sample the full range of deliberate self-harm. In particular, one can plausibly suggest that the failure to identify a factor primarily associated with mood-regulation may have been a consequence of not incorporating patients who self-mutilate, the clinical impression being that the self-cutting of such patients often serves a tension-reducing function. Furthermore, the pool of patients in the study contained a preponderance of those who had taken a relatively large drug

overdose, with three-quarters having been admitted to an in-patient medical ward for treatment. In effect, therefore, the actual population for this factor analytical study was confined to a group of drug-overdose patients who tend to ingest large amounts of noxious substances.

Ellis (1988) persuasively argues that a valid framework for classifying suicidal phenomena must incorporate four dimensions: *descriptive*, specifying the nature of the suicidal activity such as method used and potential lethality; *situational*, referring to the pre-disposing circumstances of the suicidal behaviour; *psychological/behavioural*, incorporating psychiatric risk factors for suicide, cognitive distortions and skills deficits; and *teleological*, regarding the motivational intent of the suicidal behaviour. The present study explicitly focused on beliefs held immediately prior to the parasuicide and therefore related mainly to the third and fourth of Ellis's categories, with the relative neglect of situational and descriptive dimensions. Although this emphasis on the beliefs of parasuicide patients was intended and in some respects advantageous, future attempts to elucidate a valid and comprehensive classification system for suicidal behaviour could usefully incorporate a number of additional "situational" and "descriptive" variables. However, in order to retain statistical integrity, such an expansion in the number of variables included in the factor analysis would necessitate a large increase in the number of participants in the study.

A further, potentially fundamental, weakness of the present study concerns the identification and labelling of the parasuicide dimensions.

Exploratory factor analysis involves a substantial degree of interpretation and it is conceivable that the three factors identified could have been construed differently. This is particularly so when one considers that the factor-loadings of the eight items of the Parasuicide Beliefs Questionnaire in no way corresponded to the domains they were constructed to mirror. Thus, each of the item-pairs intended to reflect the four domains ("hopelessness", "problem-solving", "communication" and "emotion-regulation") did not load together. For example, the three items proposed to constitute the *unrelenting, unrecognised distress* factor originated from three different domains. Under such circumstances, the definitive label for each factor becomes, to some extent, a matter of surmise.

Concerning this potential for different interpretations of the factor structure, one particularly striking possibility is that the majority of the factor-loadings may have been determined by the slant of the questionnaire item. Therefore, the two items comprising the "hopelessness" dimension (items 4 and 5) may have been associated purely by their positive slant, and the items embracing the "unrelenting, unrecognised distress" dimension (items 3, 6 and 8) by their negative slant.

In an initial attempt to exclude these possibilities, and thereby validate the factor-labels proposed in the current study, the predicted loadings of scores on the Beck Hopelessness Scale on the "hopelessness" dimension and number of previous parasuicides on the "communication" dimension were confirmed. However, further validation would require future

factor analytical studies incorporating additional questionnaire items that logically reflect the essence of each of the three parasuicide dimensions identified in the current study. Thus, extra questionnaire items such as "My distress will never fade" and "Others have no idea about the pain I am in" would be expected to load on the *unrelenting, unrecognised distress* factor if this dimension is indeed a valid one. This expansion of the Parasuicide Beliefs Questionnaire would necessitate a much larger group of participants but would go a significant way to establishing the validity or otherwise of the three proposed dimensions of parasuicide.

5. Chapter 5

CAN PARASUICIDE PATIENTS BE DISTINGUISHED FROM DEPRESSED PATIENTS WITHOUT A PARASUICIDE HISTORY BY BIASED ATTENTION TOWARDS HOPELESSNESS-RELATED WORDS?

5. Chapter 5. CAN PARASUICIDE PATIENTS BE DISTINGUISHED
   FROM DEPRESSED PATIENTS WITHOUT A PARASUICIDE
   HISTORY BY BIASED ATTENTION TOWARDS
   HOPELESSNESS RELATED WORDS?

5.1 Introduction

Beck's schema theory of emotional disorders (Beck et al., 1979; Beck

et al., 1985) has had a major influence on the development of clinical

interventions to reduce the distress associated with psychological disorders.

Within this theory, a schema is conceptualised as a stored body of knowledge

that interacts and organises new information of potential relevance to its

domain. Thus, once a schema is activated it guides attention, expectancies,

interpretation and memory search toward information consistent with the

schema at the expense of contradictory information which is either largely

ignored or distorted. According to Beck, clinical disorders result from the

activation of specific dysfunctional schemata, the content of which will

determine the type of emotional disturbance experienced (the "content

specificity" hypothesis, Beck and Clark, 1988). For example, depression is

said to be associated with schemata concerned with loss and negative aspects

of self, the world, and the future whereas anxiety disorders are associated

with themes of threat and vulnerability.

The main impetus behind the evolution of Beck's schema theory was

to provide a useful guide to treatment, and its lack of grounding within

cognitive science has attracted criticism (Wells and Mathews, 1994;

Teasdale et al., 1995). Despite these limitations, schema theory has been the

impetus for much empirical research and has developed over time. For example, the concept of "self-schema" (knowledge about self stored in long-term memory) has emerged along with the premise that each of us is likely to have several of these cognitive structures (Markus and Nurius, 1986).

A schematic domain that may be of importance in the development and maintenance of suicidal behaviour relates to the concept of hopelessness. In broad terms, hopelessness can be defined as a negative view of the future and, as well as being an important component of depression (Brown and Harris, 1988; Abramson et al., 1989) it is associated with both parasuicide and completed suicide. Thus, it has been demonstrated that scores on the Beck Hopelessness Scale (Beck et al., 1974) predict both repetition of parasuicide (Petrie et al., 1988) and completed suicides (Beck et al., 1989; Fawcett et al., 1990). Subsequently, MacLeod et al. (1993), using an adaptation of the verbal fluency paradigm, found a deficit in the ability of parasuicide patients to anticipate future positive events (rather than over-prediction of negative events) in comparison to patients on a general medical ward. This finding was replicated by MacLeod et al. (1997) who reported this reduced positive anticipation in parasuicide patients who were not depressed. These authors also described a significant, negative correlation between scores on the Beck Hopelessness Scale and positive anticipation scores, whereas in contrast there was a low and insignificant correlation with negative anticipation scores. Overall, these findings suggest that the most prominent component of hopelessness is a difficulty in predicting future positive events.

Given the central role of hopelessness in suicidal behaviour, it is plausible to propose that parasuicide patients possess an active hopelessness schema that organises and selectively processes information relating to themes of no positive future and/or a person's inability to advantageously influence it. In order to empirically support the existence of a specified schema, cognitive science has utilised several investigative approaches the most common of which has been measurement of the extent of the Stroop interference effect (see the General Introduction for a historical review). Surprisingly, very few studies have utilised the Stroop paradigm to explore attentional biases in suicidal patients. Williams and Broadbent (1986b) reported that a parasuicide group showed significantly delayed colour-naming on a Stroop incorporating words specifically related to an overdose theme (*suicide, drug, fatal, blackout,* and *failure)* as compared to two control groups (namely hospital patients with physical complaints and controls from a panel). Whereas all three groups showed significantly greater interference on general emotional words as well as specific overdose words (compared to neutral words), between group comparisons of the amount of interference showed that performance on the emotional Stroop failed to significantly distinguish the groups, but the specific Stroop did do so. Although these results are consistent with a parasuicide-related schema biasing attention towards words associated with a deliberate drug overdose, the omission of a mentally disordered non-suicidal control group means that one cannot exclude the possibility that the differential interference was a result of higher general emotional disturbance rather than proneness to suicide per se.

A similar modified Stroop experiment by Becker et al. (1999) produced comparable results. Using "suicide-related" stimulus words (for example, "blade", "quietness", and "hang") they found that a group of patients who had attempted suicide in the previous twelve months took significantly longer to colour-name these words in comparison to neutral, positive and negative words, this differential response not being detected in a control group of people without any history of suicide attempts (a mixture of in-patients, outpatients and community volunteers). Furthermore, this attentional bias towards suicide-related words significantly correlated with suicidal ideation. Although the control group were less depressed and less hopeless than the group of suicide attempters, and the possibility remains that the differential interference was a result of higher general emotional disturbance than suicidality per se, the fact neither depression nor hopelessness correlated significantly with degree of colour-naming interference on the suicide-related words makes this potential confound unlikely to have been of importance.

The studies of Williams and Broadbent (1986b) and Becker et al. (1999) suggest that patients who have engaged in parasuicide show an attentional bias towards words related to a suicide theme. However, both of these experiments have methodological and theoretical limitations that make interpretation difficult. Thus, an alternative explanation for the differential interference measured in these studies concerns the possibility of an "expertise" effect. The suggestion here is that parasuicide patients are likely

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to have frequently ruminated about death and the means of achieving it and, as a result of this repeated rehearsal, the Stroop interference may have been a direct result of an enhanced efficiency in the processing of information related to their problem (Segal, Truchon, Horowitz, Gemar and Guirguis, 1995). However, the observations that Stroop interference effects can be eliminated by successful cognitive –behavioural treatment (Watts et al., 1986; Mattia, Heimberg and Hope, 1993; Mathews, Mogg, Kentish and Eysenck, 1995), treatments that involved repeated presentations of stimuli related to the theme of their emotional concern, indicate that frequency of usage cannot provide a complete explanation for this phenomenon.

A more important weakness of the Williams and Broadbent (1986b) and Becker et al. (1999) studies was that they were not conceptually embedded within a clinically relevant schematic framework. One important consequence of this was that all but one of the suicide-related target words had no logical association with hopelessness or any other cognitive construct thought to confer vulnerability to suicidal behaviour. Therefore, despite the reporting of a selective attention effect in favour of words associated with parasuicide, the studies provide no evidence for a discrete, theoretically relevant schema that might predispose to suicidal behaviour.

Interestingly, in the Westra and Kuiper (1997) study (see the General Introduction) that provided strong evidence for content-specific, schema-based attention biases, the target words for the depressed group were purportedly of a hopelessness theme. However, apart from the word

"hopeless", the remainder of these words appeared to have little or no relevance to the theme of "no positive future", most being self-derogatory (for example, *loser, pathetic,* and *idiotic*). Therefore, once again, the demonstration of a selective attention bias towards these words can not be taken as evidence for a cognitive construct approximating to a hopelessness schema.

In order to provide compelling evidence for the presence of a hopelessness schema in suicidal individuals, an empirical investigation using a modified Stroop test needs to satisfy three requirements. First, in addition to an experimental group of suicidal patients, the design should incorporate similarly distressed control groups who have no suicidal inclinations. Second, the target word stimuli in the modified Stroop test should focus upon the theme of nothing positive happening in the future, as there is empirical evidence to suggest that this may be the primary element of hopelessness. Third, the degree of Stroop interference on the hopelessness-related words needs to be compared to the corresponding interference with negative (non-hopeless) emotion words and positive emotion words, all matched for length, frequency of usage, and emotionality. The present study attempted to fulfil these requirements.

A further consideration derives from evidence that suggests that greater Stroop interference for self-referent words is observed if one increases the subject's self-awareness (Geller and Shaver, 1976). Therefore, in order to accentuate any Stroop interference effect, the experimental design

should incorporate a means of triggering a greater orientation towards self-schemata.

Using a modified Stroop paradigm, the present study explores whether parasuicide patients show a disproportionately high degree of interference with colour naming of hopelessness words as compared to other similarly distressed, non-suicidal groups. If a differential interference effect was found, this would provide some support for the existence of a specific hopelessness schema. Furthermore, if colour-naming interference on a modified Stroop can detect the presence of an active hopelessness schema, its lack of transparency and reduced susceptibility to subject bias (compared to questionnaires and clinical interview) might enhance its utility as a risk assessment tool for future suicidal behaviour (see Chapter 7).

Specifically, the hypotheses were:-

1. Parasuicide patients will exhibit a significantly greater degree of Stroop interference for hopelessness words than they will for either depression words or positive emotion words,

2. Parasuicide patients will exhibit a significantly greater interference effect for hopelessness related words as compared to an equally depressed group of patients without a history of parasuicide.

3. Parasuicide patients will exhibit a significantly greater interference effect for hopelessness related words than a group of anxiety disorder patients without a parasuicide history.

4. The degree of Stroop interference for the parasuicide patients will show a significant positive correlation with their scores on the Beck Hopelessness Scale.

5.2 Method

5.2 1 *Participants*

Three discrete groups of patients were included in this study, namely a *parasuicide* group who had recently taken a deliberate drug overdose, a *depressed* group without any history of deliberate self-harm, and an *anxiety disorder* group who had no coexisting depressive disorder.

5.2.1.1 Parasuicide group

A convenience sample of thirty patients (mean age 34.8 years; SD 9.7 years; age range 19 to 58 years) who had presented to the Accident and Emergency Department of a district general hospital comprised this group. There were 13 males and 17 females. All patients met the following inclusion criteria: aged between 16 and 65 years, no evidence of either a psychotic disorder or organic impairment, a deliberate drug overdose had taken place within the previous 7 days, the parasuicide had resulted in admission to an in-patient medical ward, and the patient was identified as at medium to high risk of repeating parasuicide in the future on the basis of exhibiting 5 or more of the eleven sociodemographic risk factors described by Kreitman and Foster (1991). Twenty-five (83%) of the patients had a

history of previous parasuicide and twenty-two (73%) had been in receipt of help from the psychiatric services.

5.2.1.2 Depressed group

This group was comprised of 10 patients (mean age 35.5 years; SD 7.8 years; age range 26 to 49 years) all of whom were currently outpatients receiving treatment in a Department of Clinical Psychology. There were 3 males and 7 females. At the time of assessment, all patients met DSM-IV criteria for a major depressive episode. Although the possibility of the coexistence of another formal clinical disorder was not excluded, all the patients were receiving psychological treatment for depression, which was deemed to be their primary problem. During the initial interview, all patients denied any incidence of parasuicide during their lives. No patients displayed any symptoms indicative of psychotic disorder or organic impairment.

5.2.1.3 Anxiety group

This group was comprised of 11 patients (mean age 38.5 years; SD 14.9 years; age range 22 to 62 years). All were currently receiving psychological treatment, individual or group, in a Department of Clinical Psychology. There were 1 male and 10 females. On the basis of DSM-IV criteria, primary problems (the initial targets for therapy) were social phobia (3), generalised anxiety disorder (2), panic disorder with agoraphobia (2), panic disorder without agoraphobia (2), specific phobia (1) and hypochondriasis (1). An initial clinical interview was undertaken to ensure that none of these patients was experiencing a concurrent major depressive

episode and to guarantee that there had been no incidences of deliberate self-harm. No patients displayed any symptoms indicative of a psychotic disorder or organic impairment.

5.2.2 *Measures*

5.2.2.1 Beck Depression Inventory (BDI) (Beck et al., 1961)

This 21-item self-report questionnaire measures the intensity of depressive symptoms. Scores range from 0 to 63.

5.2.2.2 Beck Hopelessness Scale (BHS) (Beck et al., 1974)

Scores on this 20-item self-report scale range from 0 (no hopelessness) to 20 (maximum hopelessness). The construct of hopelessness, as measured by the BHS, has been found to be associated with the severity and frequency of suicidal ideation (Nekanda-Trepka et al., 1983) and suicidal intent (Dyer and Kreitman, 1984), as well as predicting parasuicide repetition (Petrie et al., 1988) and completed suicide (Beck et al., 1989; Fawcett et al., 1990).

5.2.2.3 Modified Stroop Task

Five white stimulus cards (210 x 296mm) were used:- a practice card consisting of rows of Os, a neutral word card, a positive emotion card, a negative (depressed) emotion word card, and a card with words specifically related to a hopelessness theme. All lettering was in block capitals 5mm high. There were five colours used on each card (blue, green, grey, red and purple) and each occurred 12 times. Apart from the practice card, six words

comprised each card, each word occurring 10 times. The stimuli on all cards were arranged randomly into two columns of 30 with the stipulation that no colour or word should occur twice in succession.

The following process identified the hopelessness Stroop words. A list of thirteen words relating to the notion of "no future" were generated by two psychologists:- *gloom, hopeless, suicide, black, overdose, dismay, despair, desperate, bleak, sunk, empty, lament,* and *ominous.* The list was then given to 12 normal participants, 6 males and 6 females, who were asked to rank order the words on the basis of how strongly they believed them to be associated with "no future". The six words found cumulatively to have been given the highest ratings were SUICIDE, DESPAIR, BLEAK, HOPELESS, DESPERATE and GLOOM, and these comprised the hopelessness Stroop card.

The words used in the Negative Emotion Stroop and the Positive Emotion Stroop were matched to the words used in the Hopelessness Stroop on the basis of 1) word length; 2) word frequency; 3) emotionality. Emotionality ratings for four of the six hopelessness words were found by reference to the work of John (1988). The two words for which emotionality ratings were not found in John's work were included in a list with 14 other positive or negative emotion words which were possible matches on the basis of length and frequency of usage (Thorndike Lorge Table, 1992). This list of words (*bleak, desperate, cheerful, depressed, relieved, weakness, devoted, ugly, friendly, awful, hopeful, punish, peaceful, pleasant* and *solemn*) was

given to 10 normal subjects (5 males and 5 females) who were asked to rate each of them for level of emotionality on a visual analogue scale with 0 being "not at all emotional" and 100 being "extremely emotional". Using the mean scores given for each word, a level of emotionality was computed for the two hopelessness words and these were matched with two negative and two positive emotion words (after consideration of word length and frequency). A combination of this methodology, John's emotionality ratings and the Thorndike Lorge frequency tables was used to achieve positive and negative matches for all six hopelessness words. The final six words used in the Negative Emotion Stroop card were GUILTY, GRIEF, UPSET, ASHAMED, DEPRESSION and SOLEMN. The final six words used in the Positive Emotion Stroop card were EXCITED, TENDER, PEACEFUL, JOY, CHEERFUL and AMAZED.

The words for the neutral Stroop card were matched to the hopelessness words for length and frequency of usage based on John (1988) who found them to have no emotional connotations for the general public. The six neutral words were DIAGRAM, POTTERY, EGYPT, INDIRECT, FRAMEWORK and SALAD.

Guided by a list of previously generated random numbers, the order of Stroop card presentation was randomised (except for the practice card). Participants were asked to name aloud the ink colours as quickly as possible, with as few mistakes as possible, while ignoring the words. Further clarification was given, as required, following completion of the practice

card. The time taken to accurately name all 60 stimuli on each card was recorded by use of a stopwatch. No error rates were recorded as these were very few in number and were immediately self-corrected by the participant. A rest period of approximately one-minute was given between the presentation of each Stroop card. Thirty seconds after completion of the final card, patients were asked to recall as many of the words as they could, and these were written down.

5.2.3 *Procedure*

Consenting participants in the parasuicide group were interviewed as soon as practicable following recovery from deliberate overdose (mean 1.9 days; SD 1.3 days; range 0 to 5 days). They were asked to complete a study that aimed "to find out a little bit more about the reasons why people self-harm". Details about the circumstances leading up to the parasuicide were sought together with sociodemographic details. Patients comprising the anxiety and depression groups were approached at the end of a treatment session in the Department of Clinical Psychology and asked to act as controls in a research study aimed at enhancing our understanding of suicidal behaviour. (Information was provided to explain the need for participants with emotional problems but without any history of deliberate self-harm to act as a comparison with patients who had recently taken a drug overdose).

All consenting participants completed the assessments in the following order: BDI $\rightarrow$ BHS $\rightarrow$ modified Stroop task. (The patients in the

parasuicide group completed two other assessments, between the BHS and modified Stroop task, which are reported elsewhere in this thesis).

Immediately before attempting the Stroop task, each participant was required to carry out a preliminary assessment intended to increase self-awareness and thereby maximise the degree of subsequent Stroop interference. The eighteen words collectively comprising the three emotional Stroop cards (6 hopelessness words, 6 depressed words and 6 positive emotion words) were listed in the form of a questionnaire (see Appendix 8). Each patient was requested to indicate by a line on a visual analogue scale (0 = "*I do not feel at all like this*", 100 = "*I feel like this very much*") to what extent each word described "how you feel at the present time".

The whole testing session for the parasuicide patients lasted approximately 75 minutes, whereas that for participants in the anxiety and depression groups was approximately 40 minutes. After completion of the tasks, all participants were given a brief explanation regarding the purposes of the experiment and were thanked for their help.

5.3 <u>Results</u>

A summary of the ages, BDI scores and BHS scores for the three experimental groups is provided in Table 13.

Means and standard deviations for age, BDI and BHS for the parasuicide, depression and anxiety disorder groups

	Parasuicide group N = 30	Depressed group N = 10	Anxious group N = 11
Age Mean (SD)	34.8 (9.7)	35.5 (7.8)	38.5 (14.9)
BDI Mean (SD)	31.1 (13.7)	33.4 (12.4)	11.6 (6.4)
BHS Mean (SD)	11.9 (5.5)	14.4 (5.0)	3.6 (4.5)

Exploration of these three variables revealed that they met the requirements for use of parametric analyses, and therefore 1-way analyses of variance were used to determine whether the groups differed significantly on these three measures. The three clinical groups were found not to differ significantly with regards to age. However, as expected, there were significant group differences on BDI scores ($F = 11.0$, d.f. = 2, 47, $p < 0.0001$) and BHS scores ($F=7.1$, d.f. = 2, 40, $p < 0.002$). A post-hoc Tukey's Honestly Significant Difference test ($p< 0.05$) demonstrated that the anxiety disorder group had significantly lower BDI and BHS scores than the depression and parasuicide groups, which did not significantly differ.

The mean times for each group of patients to colour name the four type of Stroop words are summarised in Table 14.

Table 14: Mean times (secs.) to colour name the four Stroop cards for parasuicide patients, depressed patients and anxious patients

	N	WORD TYPE			
		Neutral	Positive	Depressed	Hopeless
Parasuicide	30				
Mean (secs.)		62.7	63.5	65.8	69.8
SD		17.7	14.4	15.3	27.2
Depression	10				
Mean (secs.)		59.6	62.2	62.7	60.5
SD		16.4	16.1	14.6	13.7
Anxiety	11				
Mean (secs.)		52.5	54.5	56.9	57.9
SD		12.1	13.3	15.1	14.5

Taking the colour-naming times for the fifty-one patients as a whole, comparisons were made to explore whether there were any significant differences attributable to word-type. As the data did not meet the requirements for parametric tests, (even after logarithmic transformation), a Friedman Test was used and this indicated a significant difference between the times taken to colour-name the four types of word ($\chi 2 = 23.3$, d.f. $= 3$, p < 0.00001). Subsequent Wilcoxon paired comparisons revealed that the times taken to colour-name the hopelessness words were significantly greater than both the corresponding times on the neutral words (z = -3.8, p < 0.00001 [2-tailed]) and the positive words (z = -2.6, p < 0.01 [2-tailed]. Similarly, the times taken to colour-name the depressed words were significantly longer than the corresponding times on both the neutral words (z = -3.0, p < 0.003 [2-tailed]) and the positive emotion words (z = -2.5, p < 0.01 [2-tailed]). The

positive emotion words took significantly longer to colour-name than the neutral words (z = -2.4, p < 0.02 [2-tailed]), whereas there was no significant difference in the colour-naming times between depressed words and hopelessness words. Thus, the relative times taken to complete each Stroop card can be summarised as follows: HOPELESSNESS WORDS = DEPRESSION WORDS > POSITIVE EMOTION WORDS > NEUTRAL WORDS.

In order to allow a comparison between the groups in the amount of interference precipitated by each word-type, an "interference index" was calculated for each patient by subtracting the time taken to colour-name all the words on the neutral card from the time taken to colour-name all the words on each of the emotional cards. These mean interference indices for hopelessness words, depressed words and positive emotion words for each of the three clinical groups are shown in Table 15.

Table 15: Mean Stroop interference indices (secs.) on each of the word cards for parasuicide, depressed and anxious patients

	Parasuicide group N = 30	Depression group N = 10	Anxiety group N = 11
Hopeless word interference Mean (SD)	7.2 (14.0)	0.9 (10.3)	5.5 (7.9)
Depression word interference Mean (SD)	3.1 (10.8)	3.1 (11.1)	4.5 (8.8)
Positive word interference Mean (SD)	0.8 (7.2)	2.5 (3.8)	2.1 (7.6)

These Stroop interference indices did not meet the requirements of parametric tests. In an effort to enable logarithmic transformation, negative scores were eliminated by adding 31 to all the interference values for all subjects on all word-types. However, after transformation of the data, parametric requirements were still not achieved and therefore non-parametric analyses were implemented. A Kruskal-Wallace Test was used to compare the size of each interference index between the three patient groups (parasuicide/depressed/anxious) and no significant differences were found. This indicates that non of the word-types produced a greater Stroop interference effect in one patient group compared to the other two patient groups.

A subsequent analysis explored whether there was a differential response to word-type within each patient group. A Friedman Test was used separately with each of the three experimental groups (parasuicide/depressed/anxious) to compare the sizes of the interference indices. For the parasuicide group, there was a trend for a differential response to the word types in the amount of interference measured ($\chi2 = 5.5$, d.f. = 2, p < 0.06) with positive emotion words producing less interference than depressed and hopelessness words. The depression and anxiety group did not demonstrate any differential response to the three types of stimulus words. When all three patient groups were collapsed, a significant difference between word-type interference indices was obtained ($\chi2 = 9.5$, d.f. = 2, p < 0.009), subsequent Wilcoxon matched pairs tests revealing that hopelessness-word interference and depression word interference were both significantly

greater than positive-word interference (z = -2.6 and –2.5 respectively, p < 0.01 in both cases). However, there was no difference between the degree of interference caused by hopelessness-words and depression-words. Therefore, overall, no evidence was obtained to support the hypothesis that the parasuicide patients would be differentially slowed down by the hopelessness words in comparison to the other clinical groups (depressed and anxious) without a history of parasuicide.

In addition to between-group comparisons, correlational analyses offer another way of investigating the relationship between emotional disorder and degree of Stroop interference. Spearman-Rank correlation coefficients between the interference indices, Beck Hopelessness Scale scores (BHS), and Beck Depression Inventory scores (BDI) for the whole sample (N = 51) are shown in Table 16.

Table 16: Spearman-Rank correlation coefficients between the three
interference indices, BHS and BDI for all participants

	BHS	BDI	Hop. Word Interference	Dep. Word Interference	Pos. Word Interference
BHS	1.0	0.85 *****	-0.26 *	-0.05	0.02
BDI	-	1.0	-0.21	0.12	-0.04
Hop. Word Interference	-	-	1.0	0.30 **	0.33 ***
Dep. Word Interference	-	-	-	1.0	0.53 ****
Pos. Word Interference	-	-	-	-	1.0

*****p < 0.00001   ****p < 0.0001   ***p < 0.02   **p < 0.03   *p < 0.10

It can be seen from Table 16 that there is a positive and significant correlation between each of the three interference indices, a predictable finding given that the three sets of Stroop words were matched for emotionality. Interestingly, the strongest association was found between the words of opposing valence (namely the positive emotion words and the depressed words). No significant correlations were found between the BDI or BHS and any of the emotional word indices, although there was a trend ($r_s = -0.26$, $p < 0.10$) for the hopelessness word interference index to be *negatively* correlated with hopelessness scores on the BHS. If this trend was a genuine one it would suggest, contrary to prediction, that the more hopeless a person is the less the impediment to the colour-naming process caused by words with a hopelessness theme.

Given that an active clinical disorder might be expected to involve the activation of relevant schemata, and thereby accentuate any Stroop interference effect, it is possible that any correspondence between Stroop interference and emotion levels might be diluted when the heterogeneous group of patients is evaluated as a whole. Therefore, the correlational analysis was repeated but with each clinical group investigated independently. The results of this investigation are summarised in Table 17.

Table 17: Spearman-Rank correlation coefficients between the interference indices, BDI, and BHS for each patient grouping

	PARASUICIDE PATIENTS (N = 30)			DEPRESSION PATIENTS (N = 10)			ANXIETY PATIENTS (N = 11)		
	Hopeless Word Interfere.	Depress. Word Interfere.	Positive Word Interfere.	Hopeless Word Interfere.	Depress. Word Interfere.	Positive Word Interfere.	Hopeless Word Interfere.	Depress. Word Interfere.	Positive Word Interfere.
BDI	-0.31 *	0.20	0.00	0.16	0.25	0.03	0.01	-0.10	-0.13
BHS	-0.30 *	0.04	0.05	-0.19	-0.38	0.02	Ψ	Ψ	Ψ

*p < 0.10

Correlational analysis of each clinical group separately failed to produce any significant associations between each of the three interference indices and neither depression severity (BDI) nor hopelessness severity (BHS) - see Table 17. There remained a trend for BHS scores to be negatively correlated with the hopelessness- word interference index for the parasuicide patients. In addition, these parasuicide patients displayed a trend for their BDI scores to also be negatively correlated with the hopelessness-word interference index.

An alternative way of investigating any schematic influence on information processing is to compare the clinical groups (parasuicide/depressed/anxious) on the number of Stroop words <u>recalled</u> at the end of the Stroop procedure. The assumption here is that the greater the relevance of the Stroop words to the current emotional concern of the patient,

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Ψ Because of missing data, insufficient numbers to calculate meaningful correlation

the greater depth of processing will occur, resulting in more words remembered. The data in this case (total number of words recalled) was not normally distributed and was therefore logarithmically transformed (after adding 1 to each score in order to eliminate the zeros). A one-way analysis of variance (unrelated) was conducted on this transformed data and a significant between-group difference was found (F = 7.5, d.f = 2,48, p < 0.002). Post-hoc Tukey's Honestly Significant Difference tests (p< 0.05) revealed that the parasuicide group of patients recalled significantly fewer words than both the depressed and anxious groups. In order to investigate whether there were any interactions between the clinical groups and word-type, comparisons of the number of each word-type recalled were made within each clinical group. As the data did not meet the requirements of parametric tests (even after logarithmic transformation), a Friedman Test was used separately with each of the three clinical groups (parasuicide/depressed/anxious) to compare the number of words recalled of each type (hopeless/depressed/positive/neutral). Within the parasuicide patients, a significant difference was found in the number of words recalled of each type ($\chi2 = 16.8$, d.f. = 3, p < 0.0008). Subsequent Wilcoxon paired comparisons revealed that a greater number of hopelessness words had been recalled than both positive words (z = -3.2, p < 0.001) and neutral words (z = -3.5, p < 0.005). Similarly, more depressed words had been recalled than both positive words (z = 2.9, p < 0.003) and neutral words. However, there were no significant differences between the number of hopelessness words and depressed words recalled, nor between the recalled number of positive words and neutral words. Therefore, although there was a general attentional bias towards words of a negative valence, this

group of parasuicide patients did not differentially attend to hopelessness words in comparison with depressed words.

In both the depressed group and anxious group, no significant differences were found regarding the number of words recalled of each word-type (hopeless / depressed / positive / neutral).

5.4 Discussion

The primary aim of this study was to explore whether parasuicide patients show a disproportionately high degree of Stroop interference with colour naming of hopelessness words as compared to other, similarly distressed, non-suicidal groups. Contrary to experimental prediction, no differential interference effect was found between the three clinical groups.

5.4.1 *Stroop interference effects*

The prediction that parasuicide patients will show greater interference on hopelessness words compared to depressed words and positive emotion words was not supported by the data. Depressed words produced the same degree of interference as hopelessness words. Although positive emotion words evoked less interference than hopelessness words, this difference was a trend that failed to reach significance.

Similarly, no support was found for the hypothesised between-group differences. Thus, the parasuicide group did not show any greater interference on the hopelessness- words than the depressed group. Nor did the parasuicide group show any greater interference on the hopelessness words than the anxiety group. In addition, the hypothesised positive correlation between the degree of Stroop interference on hopelessness words and scores on the Beck Hopelessness Scale did not materialise. Indeed, there was a trend for these two parameters to be <u>negatively</u> correlated.

Therefore, consideration of these Stroop interference findings as a whole provided no evidence to support the existence of a specific, parasuicide-related, hopelessness schema.

The only prominent Stroop interference effect to emerge from this study was, when the three clinical groups were collapsed and analysed together, the negative emotion words (depressed words and hopelessness words) slowed down these distressed patients significantly more than the positive emotion words. As all these word-types were matched for emotionality, one is left to conclude that the match between the <u>valence</u> of the word and the patient's current emotional state resulted in attentional resource being diverted away from the colour-naming task, thus evoking a significant interference effect. Apart from this broad valence effect, no further word-group differentiation was observed thereby offering no further support for the content specificity hypothesis (Beck and Clark, 1988).

5.4.2 *Words recalled following the Stroop procedure*

Consistent with the interference findings detailed above, the parasuicide patients did not recall more hopelessness words than depression words. A broad valence effect was again found with the parasuicide group able to remember significantly more hopelessness and depression words than positive and neutral words. Thus, the words-recalled data also did not support the presence of an active and specific hopelessness schema in the parasuicide patients.

Taking the number of words recalled as a whole (that is without differentiating between word-types), the parasuicide group of patients recalled significantly <u>fewer words</u> than the other two groups of patients. This difference might have arisen from the fact that many of the parasuicide patients were probably in a state of crisis when they carried out the assessments, a deliberate drug overdose having recently taken place. Acute crisis might plausibly result in reduced concentration and a shallower form of information processing. Alternatively, the reduced recollection of words might be a direct consequence of memory impairment caused by recent drug ingestion.

5.4.3 *Weaknesses in the study*

Several weaknesses can be identified in the present study, which collectively might account for the failure to identify a more specific word-group interaction in degree of Stroop interference. Firstly, the distinction between the three clinical groups was not a totally pure one. Thus, unlike the

previously mentioned Westra and Kuiper (1997) study that provided impressive evidence of content-specific attention biases, it is likely that some participants would have scored highly on more than one of the clinical disorders under scrutiny. For example, some patients in the parasuicide group also met the formal criteria for the existence of a major depressive episode. Similarly, although the presence of coexisting depressive disorder in the anxiety group was excluded, it is likely that some patients in the depression group would have displayed coexisting anxiety disorders. Furthermore, it is not inconceivable that some patients in the depression and anxiety groups, although reporting no history of parasuicide, might subsequently display suicidal behaviour at some point in the future thereby crucially "contaminating" the parasuicide versus no parasuicide distinction.

Secondly, the number of participants in the depression and anxiety groups, ten and eleven respectively, was relatively low. Given that the means of the hopelessness-word interference indices were in the predicted direction (7.2 seconds and 0.9 seconds for the parasuicide and depression groups respectively), a significant expansion of group sizes may have increased the likelihood that significant differences would emerge.

Thirdly, although the primary aim of the study was to probe for the existence of a hopelessness schema, the most prominent difference between the parasuicide group of patients and the other two groups was with regards to whether any deliberate self-harm had occurred at some time in the past. Indeed, the parasuicide and depression groups were similarly depressed and

hopeless (as measured by the BDI and BHS respectively). It would therefore have been useful to incorporate a specific measure of vulnerability to future suicidal behaviour, such as the Scale for Suicide Ideation (Beck, Kovacs and Weissman, 1979), which assesses the degree to which someone is presently thinking of suicide. The relationship between scores on this measure and the hopelessness-word interference index would have been informative. A suicide-related hopelessness schema would require activation in order to ascertain an attentional bias on an emotional Stroop test, and the present study tried to achieve this activation via the self-rating exercise completed prior to the Stroop procedure. However, one can plausibly speculate that a high score on the Scale for Suicidal Ideation might indicate a <u>currently active</u> hopelessness schema and therefore this measure could usefully have been employed to further differentiate the participants in the parasuicide group from the other two clinical groups.

On reflection, the current study was essentially exploring for the presence of a <u>hopelessness-like</u> schema that increases vulnerability to parasuicide, not a hopelessness schema per se. Investigation of the latter would have involved purely distinguishing the clinical groups on the basis of hopelessness scores on the BHS. Although such a design might be useful for a future study, the absence of a positive correlation between scores on the BHS and the corresponding hopelessness-word interference indices found in the present experiment indicates that it would be unlikely to provide corroborative evidence for a hopelessness schema.

Despite not reaching statistical significance, the negative correlation between scores on the BHS and the hopelessness-word interference index is worthy of further comment. If this trend were to be substantiated, it would suggest that high levels of hopelessness <u>facilitate</u> the colour naming of hopelessness words. Such a relationship would be very difficult to fit into an explanatory conceptual framework for, whether one accounts for the Stroop interference effect on the basis of automatic processing (for example MacLeod and Rutherford, 1992) or deliberate conscious avoidance strategies (for example MacLeod and Hagan, 1992), one would still expect to find either an interference effect or no effect at all. Therefore, this suggestion that hopelessness words may facilitate the colour naming of words with a hopelessness theme is puzzling and warrants further investigation.

5.4.4 _Conclusions and suggestions for further research_

In conclusion, although providing no support for an active hopelessness schema in patients who have recently self-harmed, the present study has several inherent weaknesses that render it premature to conclude that no such cognitive structure exists. In effect, the main value of the present study has been to act as a pilot to elucidate the desired characteristics of a more substantive experiment. Such an experiment would have a larger number of participants in each clinical group. The parasuicide group would contain only patients who have: 1. a history of deliberate self-harm; 2. a very high score on the Beck Hopelessness Scale; 3. a high level of current suicide ideation as measured by the Scale for Suicidal Ideation (Beck et al., 1979). In contrast, the depression group would contain patients whom: 1. have no

history of parasuicide; 2. have relatively low levels of hopelessness, perhaps no greater than moderately high scores on the Beck Hopelessness Scale; 3. have low scores on the Scale for Suicidal Ideation. Furthermore, the depressed group of patients would contain no one with a coexisting anxiety disorder.

Finally, doubts can be raised about the adequacy of single words such as "gloom" and "desperate" in capturing the essence of the likely content of a suicide-related hopelessness schema. Such a schema might be expected to display a higher level of semantic sophistication, and it is pertinent to speculate whether <u>phrases</u> like "no future", "endless pain", and "nothing changes" might more potently correspond to the schematic content and thereby increase the chances of producing a significant interference effect on a modified Stroop test. Only further empirical studies, incorporating the above suggestions, will confirm or reject the existence of a cognitive structure approximating to that of a hopelessness schema.

6. Chapter 6.

THE STABILITY OF AUTOBIOGRAPHICAL MEMORY GENERALITY AND ITS RELATIONSHIP TO FUTURE DEPRESSION AND HOPELESSNESS

6. Chapter 6. THE STABILITY OF AUTOBIOGRAPHICAL MEMORY GENERALITY AND ITS RELATIONSHIP TO FUTURE DEPRESSION AND HOPELESSNESS

6.1 Introduction

Overgeneral autobiographical memory is a widespread clinical phenomenon and has been measured in a number of emotionally disturbed groups (see Section 1.6.2 of the General Introduction). Despite this broad prevalence in a range of clinical disorders, the failure to find overgeneral memories in non-traumatised patients with anxiety disorders (Richards and Whitaker, 1990; Burke and Mathews, 1992) suggests that the propensity to recollect the past in a relatively overgeneral way is not merely a correlate of distress. Furthermore, no study has reported a significant correlation between the extent of overgenerality and the current level of depressed mood. Therefore, overgeneral autobiographical memory may be an enduring cognitive style rather than a transient state.

Further evidence to support the contention that overgeneral autobiographical memory is a trait characteristic comes from the work of Williams and Dritschel (1988) who reported how ex-patients remained significantly overgeneral in their memories several months after taking a deliberate drug-overdose. A longitudinal study by Brittlebank et al. (1993) provided more convincing evidence of the enduring nature of overgenerality of autobiographical memory. By interviewing depressed patients on three separate occasions during their recovery (on admission to hospital, 3-months and 7-months follow-up) they were able to show no reliable fall in

overgeneral memory. Despite these findings, further research is required to reliably confirm a trait status for the overgenerality of memory construct. Interpretation of the Williams and Dritschel study is hindered by its cross-sectional design, comparing two separate groups of patients (one group within 10 days of taking an overdose and another whose overdose took place 3 to 14-months prior to testing). The Brittlebank et al. study, although strengthened by its longitudinal format, only obtained 3-month and 7-month follow-up data on 19 and 13 previously depressed patients respectively. Furthermore, test-retest correlation coefficients were not reported so the extent of autobiographical memory stability over time is unclear. Therefore, in order to reliably establish overgeneral memory as a trait construct, a larger longitudinal study is needed that incorporates test-retest correlations. The present study attempts to meet these requirements.

In addition to research regarding its trait or state status, there is evidence that overgenerality of autobiographical memory is associated with a poor clinical prognosis. Thus, Brittlebank et al. (1993), in their study of depressed patients, reported that generality of autobiographical memory in response to positive cue words at initial assessment was highly correlated with failure to respond to treatment (mainly pharmacological) by 7-months follow-up. In addition, the degree of difficulty mothers have in identifying specific examples of their children's problem behaviour has been found to be associated with response to a parent training programme, the more specific they become the greater the therapeutic gain (Wahler and Afton, 1980). Similarly, Hutchings et al. (1998) demonstrated that overgeneral

autobiographical memory in mothers attending a behavioural management training programme was a significant predictor of subsequent non-attendance.

As well as predicting response to therapeutic intervention, the generality of autobiographical memory may also predict the degree of spontaneous recovery following trauma. Thus, Harvey et al. (1998) found that acutely distressed survivors of road traffic accidents who had poor recall of specific memories of the trauma in the week following the accident were more likely to meet the formal criteria for post traumatic stress disorder six months later.

Collectively, the above evidence suggests that overgeneral autobiographical memory may predict a relatively poor recovery from emotional disturbance. The potential for memory generality to be subsequently associated with high levels of depressive symptoms has important clinical implications as it may be a useful tool for identifying those patients most likely to respond positively to treatment interventions. As such, the link between the current generality of autobiographical memory and future levels of depression requires further empirical investigation. With regards to patients who have recently engaged in parasuicide, a more pertinent question would be the extent to which overgeneral memory shortly after a deliberate drug overdose predicts levels of *hopelessness* at a later time. Given the significant associations found between memory specificity and the effectiveness of interpersonal problem solving (Evans et al., 1992;

Chapter 3 of this thesis) it is plausible that overgeneral memory might have a deleterious effect on a person's ability to find constructive solutions to problems arising from adverse life events, and thereby predispose to higher levels of hopelessness.

The present study employed a longitudinal follow-up of 66 parasuicide patients to determine the stability of the measure of autobiographical memory generality. In addition, the potential for memory generality measured within 2 weeks of a deliberate overdose to predict future levels of depression and hopelessness was also investigated. More precisely, the hypotheses to be tested were as follows:

1. There will be a significant positive correlation between measures of memory specificity in the aftermath of a deliberate drug-overdose and repeated measures at one and six-month's follow-up, and these significant correlations will remain after controlling for initial levels of depression.

2. The extent of autobiographical memory generality in the aftermath of a deliberate drug overdose will predict levels of depression at both 1-month and 6-month follow-ups.

3. The extent of autobiographical memory generality in the aftermath of a deliberate drug overdose will predict levels of hopelessness at both 1-month and 6-month follow-ups.

6.2 <u>Method</u>

6.2.1 *Participants*

A convenience sample of sixty-six patients (mean age 33.6 years; age range 19 to 58 years) admitted to the accident and Emergency Department of North Manchester General Hospital following a deliberate drug overdose entered the study. There were thirty-six males and thirty females. The inclusion criteria were that patients were aged between 16 to 65 years, the parasuicide necessitated admission to an in-patient medical ward, no evidence of a psychotic disorder or organic impairment was present, and the patient was identified as at medium to high risk of repeating self-harm in the future on the basis of exhibiting 5 or more of the eleven sociodemographic risk factors described by Kreitman and Foster (1991). A diagnostic classification was made based on information provided at initial interview using the Research Diagnostic Criteria (Spitzer et al., 1978) with forty-seven patients meeting the criteria for definite and three for probable major depressive disorder. Of the remainder, twelve patients were identified as displaying minor depressive disorder and seven a mood disturbance as a reaction to short-term crisis. Seventy-nine percent of the cohort had a history of previous parasuicide and 73% had previously had contact with psychiatric services.

6.2.2 _Measures_

6.2.2.1 Autobiographical Memory Test (Williams and Broadbent, 1986)

The cue words used, and the administration procedure followed, were identical to that employed in the Williams and Broadbent (1986) and Evans et al. (1992) studies, and as previously described in this thesis (Section 3.2.2.4). For each patient, scores were obtained for number of first responses which were specific (values ranging from 0 to 5 for positive cue words and 0 to 5 for negative cue words) and for mean latency to the first specific response.

Williams and Broadbent (1986) have demonstrated that a reliable distinction can be made between specific and general memories. In the present study, a random sample of 12 patients' responses was independently scored by two researchers for the specific/general distinction. Kappa coefficients of 0.84 and 0.90 were computed for responses to positive cue words and negative cue words respectively, suggesting an acceptable level of inter-rater reliability.

6.2.2.2 Beck Depression Inventory (BDI) (Beck et al., 1961)

This 21-item self-report questionnaire measures the intensity of depressive symptoms. Scores range from 0 to 63.

6.2.2.3 Beck Hopelessness Scale (BHS) (Beck et al., 1974)

Scores on this 20-item self-report scale range from 0 (no hopelessness) to 20 (maximum hopelessness)

6.2.3 *Procedure*

Consenting participants were interviewed as soon as practicable following recovery from deliberate overdose (range 0 to 18 days, mean 3.1 days, s.d. 3.7). Details about the circumstances leading up to the parasuicide were sought together with sociodemographic details. For those patients satisfying the inclusion criteria, assessments were administered in the order BDI→ BHS→ Autobiographical Memory Test. (Several other assessments were also administered which are reported elsewhere in this thesis). The total time spent with each patient was on average approximately 75 minutes, incorporating both the interview and test administration.

Attempts were made, via outpatient appointments and home-visits, to follow-up each patient at 1 month and 6 months after the index parasuicide and to repeat the three assessment measures on each occasion. However, a significant number of patients did not fulfil these follow-up appointments or refused to repeat the assessments. For those who could not be contacted for further face-to-face interviews, the BDI and BHS were sent in the post, some of which were returned (although it was, of course, not possible to conduct the AMT interview in these cases). As a result, there was a high level of attrition from 1 to 6 months follow-up. Also, for a significant number of patients follow-up data was available at 6-months but not at 1-month (and vice versa). Furthermore, due to the postal returns, for a few patients BDI and BHS scores were available for 1 and/or 6-months follow-up whereas AMT scores were not.

6.3 Results

6.3.1 *Summary of results*

Follow-up data of some kind was available for 56 of the original 66 patients who entered the study. The mean age of these 56 was 34.5 years (SD = 9.3), comprising twenty-nine males and twenty-seven females.

As a result of dropouts and missing data, complete data sets (that is assessment scores for initial assessment, 1-month follow-up and 6-month follow-up) were only available for 19 patients. A summary of the initial assessment and follow-up data for these 19 patients is shown in Table 18.

Table 18: Means and standard deviations for AMT latency to positive and negative cue words, total specific memories, BDI and BHS at initial assessment, 1-month and 6-month follow-up

TEST	0 months (n = 19)	1-month (n = 19)	6-months (n = 19)
AMT +ve latency (SD)	34.3 (10.8)	28.1 (12.5)	24.2 (16.1)
AMT –ve latency (SD)	30.9 (13.0)	28.9 (12.9)	20.5 (11.6)
AMT tot. sp.m (SD)	4.7 (2.3)	5.6 (2.3)	6.8 (2.3)
BDI (SD)	32.0 (12.0)	22.2 (13.1)	20.9 (14.0)
BHS (SD)	12.0 (5.5)	9.2 (6.0)	10.1 (6.7)

In order to explore whether these dependent variables significantly changed between initial assessment and the two follow-up points, a repeated measures analysis of variance was used. A significant main effect was found for time (F [2, 36] = 9.3, p< 0.001), and a significant interaction effect between time and measures (F [8, 144] = 3.6, p< 0.001). This latter finding indicates that the measures changed differentially with time.

To discover which measures significantly changed over time and which did not, a series of paired t-tests were used. Because a significant number of participants had data available for only two of the three assessment times, these paired t-test analyses involved higher N values than the previous repeat measures analysis of variance. The results of these paired t-test comparisons, together with the pertinent N value, means and standard deviations, are summarised in Table 19.

Table 19: Paired t-test comparisons of BDI, BHS and memory parameters at initial assessment (time 0) with repeated measures at 1 and 6 month follow-up

PAIRED MEASURES (Means and standard deviations in brackets)	t-value	N	P
AMT +ve latency 0 (33.9, SD=11.9) **& AMT +ve latency 1** (29.1, SD=12.4)	2.73	47	< 0.009
AMT +ve latency 0 (33.2, SD=10.8) **& AMT +ve latency 6** (26.3, SD=16.1)	2.22	23	< 0.04
AMT –ve latency 0 (27.0, SD=12.6) **& AMT –ve latency 1** (25.9, SD=12.9)	0.50	47	NS
AMT –ve latency 0 (29.5, SD=13.0) **& AMT –ve latency 6** (22.6, SD=11.6)	2.09	23	< 0.05
AMT total sp. mems. 0 (4.7, SD=2.2) **& AMT total sp. mems. 1** (5.2, SD=2.3)	-1.52	47	NS
AMT total sp. mems. 0 (4.6, SD=2.3) **& AMT total sp. mems. 6** (6.2, SD=2.3)	-2.78	23	< 0.01
BDI 0 (30.8, SD=12.6) **& BDI 1** (22.8, SD=15.3)	4.60	48	< 0.0001
BDI 0 (29.0, SD=13.5) **& BDI 6** (20.3, =13.5)	3.24	36	< 0.003
BHS 0 (12.2, SD=5.3) **& BHS 1** (9.7, SD=6.4)	3.00	48	< 0.004
BHS 0 (10.9, SD=6.0) **& BHS 6** (10.1, SD=6.5)	0.71	36	NS

It can be seen from Table 19 that, at both 1-month and 6-month follow-ups, these parasuicide patients were significantly less depressed as compared to baseline assessment. Levels of hopelessness had also significantly reduced 1 month after the index parasuicide, but by 6-months follow-up this reduction failed to reach significance. With regards to the autobiographical memory measures, the findings were conflicting. The latency to retrieve specific memories to positive cue words had significantly reduced at both 1-month follow-up and 6-months follow-up. A different outcome was found for latency to negative cues and the total number of specific memories retrieved, both these parameters being not significantly changed at 1-month follow-up but suggesting significantly enhanced specificity by 6-months follow-up.

The finding that each autobiographical memory parameter became significantly more specific at a subsequent time point was contrary to prediction. It is conceivable that this enhanced specificity may have resulted directly from a practice effect (given that the same cue words were used on each occasion), the patient remembering the response given at the previous assessment. In order to explore this possibility the recorded responses of a sample of 11 patients (every fifth patient to enter the study) were examined to determine how often the same specific memory to that given at initial assessment was offered again at 1-month or 6-month follow-up. It was found that, of the 61 specific memories provided at the initial assessment, only 11 (18%) of these were given again one month later. Similarly, for those patients in this sample who had 6-month follow-up data, only 4 (15%) of 27

specific memories offered at initial assessment were repeated at this later time point. It would therefore appear unlikely that a practice effect had a major influence on the memory specificity findings.

6.3.2 *Correlational analysis*

In order to further investigate the stability of memory generality, and thereby explore whether it is more appropriately viewed as a trait or state measure, correlation coefficients were calculated for repeated measures of AMT positive latency and AMT total memories for 1-month and 6-month follow-ups. As all these parameters were normally distributed, Pearson product-moment correlations were calculated. The result of this correlational analysis is shown in Table 20.

Table 20: Pearson product-moment correlations between AMT measures at initial assessment and repeat measures at 1-month and 6-months follow-up

	AMT +ve latency (1-month) [N=47]	AMT total specific memories (1-month) [N=47]	AMT +ve latency (6-months) [N=23]	AMT total specific memories (6-months) [N=23]
AMT +ve latency (initial assessment)	0.51 ****	-0.45 ***	0.44 **	-0.20
AMT total specific memories (initial assessment)	-0.43 ***	0.43 ***	-0.32	0.37 *

**** $p < 0.0001$ *** $p < 0.001$ ** $p < 0.02$ * $p < 0.05$

It can be seen from Table 20 that the test-retest correlations for the latency to retrieve specific memories on the AMT were significant, at both 1-month ($r = 0.51$, $p< 0.0001$) and 6-months ($r = 0.44$, $p< 0.02$). When depression levels (BDI scores) at both initial assessment and follow-up were controlled for, the test-retest correlations remained significant at 1-month ($r = 0.45$, $p< 0.001$) and at 6-months ($r = 0.40$, $p< 0.04$). Similarly, the test-retest correlations for the total number of specific memories given as a first response to cue words were significant at 1-month follow-up ($r = 0.43$, $p< 0.002$) and at 6-month follow-up ($r = 0.37$, $p< 0.04$), these computed coefficients again remaining significant after controlling for depression levels (1-month: $r = 0.36$, $p< 0.008$, 6-months: $r = 0.41$, $p = < 0.03$). Collectively, these significant associations between repeated measures of the autobiographical parameters provide some support for the stability of the memory generality construct.

6.3.3 *Multiple regression analysis*

In order to explore whether memory generality at initial assessment would predict levels of depression and hopelessness at 1-month and 6-month follow-up, a series of multiple regression analyses was carried out. Given that it was expected that mood variables at initial assessment would predict mood variables at follow-up, interest was focused on any extra variance accounted for by the memory variables. Therefore, for each analysis the independent variables were entered in two blocks as follows: *Block 1*: initial assessment scores on the BDI (BDI-0) and BHS (BHS-0); *Block 2*: initial

assessment scores on AMT latency to positive cue words (AMTlat0p) and AMT total specific memories (AMTtot0).

6.3.3.1 Prediction of depression

Using BDI scores at 1-month follow-up (BDI-1) as the dependent variable, entry of the mood variables at block 1 produced a multiple R of 0.64 and this was significant (F[2, 45] = 15.5, p < 0.0001). Unsurprisingly, examination of the variables in the regression equation indicated that this significant result was due to BDI scores at initial assessment predicting BDI scores 1 month later. Addition of the memory variables at block 2 resulted in a significant multiple R of 0.71, an adjusted R^2 of 0.46, and the increment in R^2 of 0.07 was significant (F change = 4.1, p < 0.02). Thus, collectively the autobiographical memory variables accounted for a further 7% of the variance in BDI-1 scores over and above the contribution of the initial assessment mood variables. However, examination of the variables in the regression equation indicated that neither autobiographical memory variable alone reached significance. A summary of the variables in the final equation is shown in Table 21.

Table 21: Summary of variables in the final multiple regression equation for predicting BDI scores at 1-month follow-up

Variable	B	SE B	Beta	T	Sig. T
BDI-0	0.61	0.18	0.50	3.42	0.001
BHS-0	0.69	0.43	0.24	1.63	0.11
AMT total sp. mems. 0	-1.22	1.08	-0.17	-1.13	0.26
AMT +ve latency 0	0.22	0.20	0.17	1.10	0.28
(Constant)	-6.06	11.72		-0.52	0.61

When BDI scores at 6-month follow-up (BDI-6) was the dependent variable, neither block of independent variables made a significant contribution to the variance.

6.3.3.2 Prediction of hopelessness

Using BHS scores at 1-month follow-up (BHS-1) as the dependent variable, entry of the mood variables at block 1 produced a multiple R of 0.55 and this was significant (F [2,45] = 9.73, p < 0.0003). Examination of the variables in the regression equation indicated that this significant result was due to BHS scores at initial assessment predicting BHS scores 1-month later. Addition of the memory variables at block 2 resulted in a significant multiple R of 0.75, an adjusted R^2 of 0.52, and the increment in R^2 of 0.25 was significant (F change = 12.5, p < 0.0001).

This result demonstrated that the memory generality variables, as measured at initial assessment, accounted for 25% of the variance in levels of hopelessness 1 month later. Inspection of the variables in the regression equation indicated that the significant predictor was the total number of specific memories (AMTtot0). A summary of the variables in the final equation is shown in Table 22.

Table 22: Summary of the variables in the final multiple regression
equation for predicting BHS scores at 1-month follow-up

Variable	B	SE B	Beta	T	Sig. T
BDI-0	0.05	0.07	0.10	0.69	0.49
BHS-0	0.71	0.17	0.59	4.21	0.0001
AMT total sp. mems. 0	-1.13	0.43	-0.38	-2.6	0.01
AMT +ve latency 0	0.10	0.08	0.17	1.21	0.23
(Constant)	1.62	4.66		0.35	0.73

Using BHS scores at 6-month follow-up (BHS-6) as the dependent

variable, entry of the mood variables at block 1 produced a multiple R of

0.57 and this was significant (F $[2,33]$ = 8.01, $p < 0.002$). Observation of the

variables in the regression equation suggested that the major contributor to

this significant finding was BHS scores at initial assessment. Addition of the

autobiographical memory parameters at block 2 produced a significant

multiple R of 0.62, an adjusted R^2 of 0.30, and a small non- significant

increment in R^2 of 0.02. Therefore, memory generality measures at initial

assessment made no significant contribution to the prediction of hopelessness

six months later. A summary of the variables in the final equation is shown

in Table 23.

Table 23: Summary of the variables in the final multiple regression equation for predicting BHS scores at 6-months follow-up

Variable	B	SE B	Beta	T	Sig. T
BDI-0	-0.18	0.11	-0.37	-1.64	0.11
BHS-0	0.88	0.24	0.81	3.62	0.001
AMT total sp. mems. 0	-0.93	0.60	-0.32	-1.57	0.13
AMT +ve latency 0	0.09	0.12	-0.16	-0.75	0.46
(Constant)	12.95	6.89		1.88	0.07

6.4 Discussion

There were two broad aims of this study. The first was to explore the stability of autobiographical memory generality over time and thereby determine whether it is more appropriately viewed as a state or trait construct. Correlational analysis revealed significant test-retest associations for AMT measures taken at baseline and repeated at 1 and 6-month follow-up. These correlations remained significant after controlling for depression levels (at both baseline and follow-up) thereby supporting hypotheses 1 and 2, and consistent with memory generality being a relatively enduring construct. The second aim of the study was to investigate the power of overgeneral autobiographical memory at initial assessment to predict future levels of depression and hopelessness. The results provided partial support for hypotheses 3 and 4. The total number of specific first responses on the AMT at baseline assessment made a significant contribution to the prediction of hopelessness at 1-month follow-up (accounting for 25% of its variance) but not at 6-month follow-up. Similarly, albeit less notably, AMT measures

at initial assessment collectively made a small but significant contribution to predicting levels of depression at 1-month follow-up, although no single AMT parameter reached significance as a predictor in the regression equation. As with the prediction of subsequent hopelessness levels, the memory variables made no contribution to the variance in levels of depression at 6-month follow-up.

Although the significant correlations between repeated measures of AMT at initial assessment and follow-up are consistent with memory generality being a trait characteristic, the overall findings were ambiguous. Thus, although statistically significant, the correlation coefficients were modest ranging from 0.37 to 0.51. Notwithstanding the possibility that a small practice effect (due to the use of the same cue words on each follow-up occasion) may have artificially lowered these correlation coefficients, it would be premature to confidently conclude a trait status for memory generality on the basis of these results. Furthermore, in contrast to the Brittlebank et al. (1993) study, some significant test-re-test *differences* were found between the autobiographical parameters. Thus, with regards to latency to retrieve a specific memory to positive cue words, patients were significantly more specific at 1-month follow-up compared to initial assessment. Furthermore, investigation of the total number of specific first responses (a comparable parameter to that reported in the Brittlebank et al. study) revealed significantly greater specificity at 6-month follow-up in comparison with baseline. In the Brittlebank et al. study, the percentage of overgeneral first responses had reduced at 7-month follow-up (38% at

follow-up compared to 51% at baseline) and, although this increase in specificity did not reach significance, the fact that data was available on only 13 patients leaves open the possibility that a statistically significant change may have been found with a larger sample. Consideration of these inconsistent findings, together with the larger number of patients in the present study than that of Brittlebank (47 at 1-month follow-up compared to 19 patients at 3-month follow-up in the Brittlebank et al. study), leads to the conclusion that trait status for memory generality remains not proven and further empirical investigation is required.

With regards to the generality of autobiographical memory predicting future levels of negative affect, the findings of the present study again show an intriguing difference from the Brittlebank et al. (1993) study. Unlike the Brittlebank study that found baseline memory generality to significantly predict depression levels 7 months later, the current study demonstrated no predictive power of overgeneral autobiographical memory in relation to BDI scores at six months follow-up. Reasons for this discrepant finding are unclear. One possible explanation might lie in the differing characteristics of the participants in the two studies. The Brittlebank study included only patients with a formal diagnosis of major depressive disorder, whereas the patients in the present study were a more heterogeneous group whose only common feature was a recent deliberate drug-overdose. Indeed, almost one third of these patients did not meet the Research Diagnostic Criteria (Spitzer et al., 1978) for major depressive episode. It is plausible that different cognitive mechanisms might be operating in clinically depressed patients as

compared to the distressed states that predispose to parasuicide. Furthermore, the fact that approximately 75% of the patients in the present study had a history of previous overdose and contact with psychiatric services, together with the inclusion criteria of 5 or more risk factors as identified by Kreitman and Foster (1992) (for example history of drug abuse, alcohol abuse, violence), it was likely that a significantly higher proportion of patients in the present study had co-existing axis 2 disorders.

The finding that the degree of memory-overgenerality at baseline assessment can significantly predict levels of hopelessness 1 month later is, if found to be a robust association, of potential clinical utility. Thus, those patients who have relatively overgeneral memories in the period shortly following a deliberate drug overdose might be appropriately assessed as more vulnerable in the immediate future and thereby requiring psychological intervention. Given the demonstrated association between memory generality and poor problem-solving (Evans et al, 1992; Chapter 3 of this thesis), increased hopelessness may derive from greater difficulty in overcoming adverse life events and, as such, cognitive therapeutic and problem-solving interventions (with their emphasis on specific events and alternatives) might be particularly relevant.

There are some weaknesses in the present study that necessitates caution in interpretation of the results. As already reported, the fact that the same cue words were used on successive occasions with each patient raises the possibility of a practice effect, patients accessing more specific memories

at follow-up purely as a result of remembering the specific memory they offered on the previous assessment occasion. Although the finding that only a small percentage of memories offered at baseline assessment were repeated on subsequent occasions, the potential remains for a practice effect to have artificially altered the computed test-retest correlation coefficients.

A further weakness in the study was the large attrition rate between initial assessment and 6-month follow-up. Autobiographical memory data at 6-months follow-up was only available for 23 (35%) of the original 66 patients to enter the study. Conclusions, therefore, should remain provisional. To overcome these limitations further research using a larger sample of patients who have one formal diagnosis (perhaps restricting entry to parasuicide patients with major depressive disorder) is required. In addition, future research in this area could be further strengthened by using different sets of AMT cue-words, matched for frequency of usage and emotionality, on each of the follow-up occasions.

7. Chapter 7.

THE PREDICTION OF PARASUICIDE
REPETITION IN A HIGH RISK GROUP

7. Chapter 7. THE PREDICTION OF PARASUICIDE REPETITION IN A HIGH RISK GROUP

7.1 Introduction

Parasuicide constitutes a widespread problem for clinical services with, on average, ten such cases per week presenting to each District General Hospital in England and Wales (Macleod et al., 1992). Given this high prevalence, in the immediate aftermath of a parasuicide it is important to be able to predict those patients who are likely to repeat the act in the near future so that scarce professional services can be targeted at this more vulnerable group. The usefulness of statistical estimates of risk such as that provided by sociodemographic predictors of parasuicide (Kreitman and Foster, 1991) are significantly limited by their low specificity in that they identify as at risk many patients who do not go on to repeat. Thus with regards to the eleven sociodemographic risk factors suggested by Kreitman and Foster (1991), (namely a history of previous parasuicide, diagnosis of personality disorder, alcohol consumption above the medically recommended limits, previous psychiatric treatment, unemployment, social class V, drug abuse, criminal record, history of violence over the previous 5 years, aged 25 to 54, and not married), a high risk patient who endorses eight or more of these factors would only have a slightly higher than 40% chance of repeating the parasuicide within the subsequent 12 months. Therefore, for every 100 patients statistically identified as high risk on the basis of these factors, almost sixty will *not* repeat. In an attempt to improve the specificity of risk assessment, the present study explores the relative strengths of sociodemographic risk factors, the Beck Hopelessness Scale (BHS) (Beck et

al., 1974), and three psychological parameters (generality of autobiographical memories, future fluency for specific positive events, attentional bias for hopelessness-related words) measured in the short-term aftermath of the index parasuicide in predicting those who will repeat self-harm over the ensuing 12-months period.

It has been known for some time that hopelessness about the future, typically assessed using the Beck Hopelessness Scale (Beck et al., 1974), is intimately associated with suicidal behaviour (see Section 1.4.1). Scores on this self-rating questionnaire have been shown to be a powerful predictor of parasuicide repetition (Petrie et al., 1988) and completed suicide (Beck et al., 1989; Fawcett et al., 1990). More recently, the relative importance of positive and negative anticipation has been explored (MacLeod et al., 1993). Using a 'future fluency' test in which subjects were asked to generate occurrences in the future they were either looking forward to or not looking forward to, it was found that parasuicide subjects were less able to think of future positive events when compared to controls whereas there was no difference in their fluency for events they were not looking forward to. MacLeod et al. (1997) replicated this finding and, by comparing depressed parasuicides with non-depressed parasuicides, found that lack of positive anticipation is independent of mood state. These studies suggest that the basis of hopelessness may be the reduced prediction of positive events, important or trivial, and this pessimism seems to apply for both the immediate and long-term future. The possibility that future fluency for positive events might constitute the 'active ingredient' of hopelessness

indicates that its power in predicting parasuicide repetition deserves further empirical investigation.

It has been consistently demonstrated that parasuicide patients display some difficulties with interpersonal problem solving (Schotte and Clum, 1987; McLeavey et al., 1987; Linehan et al., 1987; Rotherham-Borus et al., 1990; Orbach et al., 1990). Furthermore, an enhanced degree of overgenerality in autobiographical memory has been measured in patients who have recently taken a deliberate drug overdose (Williams and Broadbent, 1986; Williams and Dritschel, 1988; Evans et al., 1992). Measurement of the generality of autobiographical memory has been achieved using the Autobiographical Memory Test (Williams and Broadbent, 1986).

The demonstration by Evans and her colleagues of a significant correlation between overgeneral recall and low effectiveness of problem-solving, a finding replicated in Chapter 3 of this thesis, suggests that the origin of the deficit in interpersonal problem-solving skills of parasuicide patients might lie in the lack of specificity of their autobiographical memories. Further support for a link between problem-solving ability and memory specificity is provided by Goddard et al. (1996) who found a significant positive correlation in non-clinically depressed students. It is possible that the degree of overgenerality in autobiographical memory might predict those parasuicide patients most at risk of further self-harm since the problem-solving process for such patients may be intrinsically impaired with

the result that they see no constructive way out of their current life crisis. Furthermore, the extent to which the overgenerality of autobiographical memory contributes to hopelessness warrants further investigation as it is conceivable that an inability to generate specific memories to nurture the problem-solving process might result in the perception of an intolerable future.

Beck's schema theory of emotional disorders (Beck, 1967; Beck, 1976) would predict that patients who are currently suicidal will have an active hopelessness schema which might result in an attentional bias (as measured by the modified Stroop task) towards stimuli with a hopelessness connotation (see Sections 1.7.1 and 1.7.2). Therefore one can hypothesise that those patients more vulnerable to parasuicide will show greater colour naming interference on a Stroop incorporating words strongly associated with hopelessness. The degree to which this Stroop interference corresponds to scores on the Beck Hopelessness Scale is also of interest in order to explore the contribution selective attention might make to the phenomenon of hopelessness. Furthermore, if the degree of interference on a modified Stroop does discriminate those at high risk of imminent suicidal behaviour, its lack of transparency and reduced susceptibility to subject bias would potentially enhance its utility in a clinical setting when compared to questionnaires and clinical interview.

The present study used a longitudinal follow-up of parasuicide patients to determine the degree with which the likelihood of future self-

harm behaviour can be predicted by measurement of risk factors and any of these three psychological parameters - generality of autobiographical memory, future fluency for positive events, degree of attentional interference on a modified Stroop incorporating hopelessness-related words - in the period shortly following the index parasuicide. Specifically the hypotheses to be tested were that those patients who will repeat parasuicide within the subsequent 12-months will display significantly greater overgeneral memory and Stroop interference, and significantly less future fluency for positive events, as measured shortly after the index parasuicide in comparison to those patients who do not go on to repeat. It was also hypothesised that there would be significant correlations between scores on the Beck Hopelessness Scale and each of the three psychological variables, namely future fluency for positive events (negative correlation), overgenerality of autobiographical memory (positive correlation), and Stroop interference for words with a strong hopelessness theme (positive correlation).

7.2 Method

7.2 1 *Participants*

A convenience sample of sixty-six patients (mean age 33.6 years ; age range 19 to 58 years) admitted to the Accident and Emergency Department of North Manchester General Hospital following a deliberate drug overdose took part in this study. There were thirty-six males and thirty females. The group of participants was the cohort reported in the previous

experiment (see section 6.2.1) with the same inclusion criteria. If a patient reported a previous history of deliberate self-harm, he or she was asked how many times in the past parasuicide had resulted in immediate medical attention at a casualty department. A diagnostic classification was made based on information provided at initial interview using the Research Diagnostic Criteria (Spitzer et al., 1978) with forty-seven patients meeting the criteria for definite and three for probable major depressive disorder. Of the remainder, twelve patients were identified as displaying minor depressive disorder and four a mood disturbance as a reaction to a short-term crisis. Seventy-nine percent of the cohort had a history of previous parasuicide and 73 % had previously had contact with the psychiatric services.

All sixty-six participants completed the Autobiographical Memory Test, the Beck Hopelessness Scale and the Beck Depression Inventory. A subsample of these (n = 36; average age 32.3 years; age range 18 to 51 years; comprised of twenty-two males and fourteen females) also completed the Personal Future task and one other assessment reported elsewhere. The remaining subsample (n = 30; average age 34.8 years; age range 19 to 58 years; comprised of fourteen males and sixteen females) also completed the modified Stroop task (and one other assessment of no relevance to the present study).

7.2.2   *Measures*

7.2.2.1 Autobiographical Memory Test (Williams and Broadbent, 1986)

The cue words used, and the procedure followed, were as previously reported (see section 3.2.2.4). For each patient, scores were obtained for number of first responses which were specific (values ranging from 0 to 5 for positive cue words and 0 to 5 for negative cue words) and for mean latency to the first specific response. Inter-rater reliability was established as previously described.

7.2.2.2 Beck Depression Inventory (BDI) (Beck et al., 1961)

This 21-item self-report questionnaire measures the intensity of depressive symptoms. Scores range from 0 to 63.

7.2.2.3 Beck Hopelessness Scale (BHS) (Beck et al., 1974)

Scores on this 20-item self-report scale range from 0 (no hopelessness) to 20 (maximum hopelessness). The BHS has been found to be associated with severity and frequency of suicidal ideation (Nekanda-Trepka et al., 1983) and suicidal intent (Dyer and Kreitman, 1984), as well as predicting parasuicide repetition (Petrie et al., 1988) and completed suicide (Beck et al., 1989; Fawcett et al., 1990).

7.2.2.4 Personal Future Task (MacLeod et al., 1993)

Five future time periods – next 24 hours, next week, next month, next year and next 10 years – were verbally presented to each patient in the above order, one at a time. There were three versions of the task :-

1) <u>orientation task</u>: each patient was given the verbal instruction "*I am interested in how you think about the future. I am going to give you some future time periods and for each one I want you to tell me as many things as you can that you might be doing or that might happen to you during each period of time. It does not matter whether the things you mention are important or trivial. Try not to repeat the same things over different time periods*". Thirty seconds were allowed for each time period and the experimenter wrote down the patient's responses. This orientation task constituted an open-ended practice version and, based on the responses, further clarification was given to the patient if necessary until it was clear that they fully understood the task.

2) <u>looking forward to (LFT) task</u>: the procedure was as described above in the orientation task, except in this version each patient was asked "*to think of things you are looking forward to*". Each patient was told that it was all right to mention things already reported in the orientation task if they so wished.

3) <u>not looking forward to (Not LFT) task</u>: in this version for each time period the patient was asked "*to think of things you are not looking forward to*".

Scores for the LFT and Not LFT tasks were obtained by summating the total number of anticipated occurrences (excluding duplicates) offered by each patient across all five time periods.

7.2.2.5 Modified Stroop Task

The process for selection of the Stroop words, and details of the stimulus materials, were as described in section 5.2.2.3. Five stimulus cards were used:- a practice card consisting of rows of Os, a neutral word card (DIAGRAM, POTTERY, EGYPT, INDIRECT, FRAMEWORK and SALAD), a positive emotion word card (EXCITED, TENDER, PEACEFUL, JOY, CHEERFUL and AMAZED), a negative (depressed) emotion word card (GUILTY, GRIEF, UPSET, ASHAMED, DEPRESSION and SOLEMN), and a card with words specifically related to a hopelessness theme (SUICIDE, DESPAIR, BLEAK, HOPELESS, DESPERATE and GLOOM). The words on each card were matched for word length and word frequency. The positive emotion words, negative emotion words and hopelessness words were also matched for emotionality (as described in section 5.2.2.3).

7.2.3 *Procedure*

Consenting participants were interviewed as soon as practicable following recovery from deliberate overdose (range 0 to 18 days, mean 3.1 days , S.D. 3.7). Details about the circumstances leading up to the parasuicide were sought together with sociodemographic details sufficient to ensure each patient displayed at least five risk factors (Kreitman and Foster, 1991) for further parasuicide. This latter criterion made it likely that a significant proportion of the cohort would repeat the self-harm in the near future. For those patients satisfying the inclusion criteria, the assessments were administered in the following order: <u>Subsample 1</u> – (1) BDI→ (2)

BHS→ (3) (one other assessment reported elsewhere) (4) Autobiographical

Memory Test → (5) Personal Future Task;

Subsample 2 – (1) BDI→ (2) BHS→ (3) Autobiographical Memory Test→

(4) (one other assessment reported elsewhere) (5) modified Stroop task.

The total time spent with each patient was on average approximately 75

minutes, incorporating both interview and test administration. Attempts were

made to follow-up each patient at 1 month, 6 months and 12 months after the

index parasuicide to determine whether any further parasuicides had

occurred, this information being acquired by a combination of approaches

which included interviews which were held in the patient's home, outpatient

appointments, postal questionnaire completion or, for those who did not

arrive for follow-up appointments, hospital records regarding admission to

Manchester hospitals as a result of further deliberate self-harm. A patient was

deemed to have repeated parasuicide if deliberately inflicted self-harm had

resulted in medical treatment in a hospital setting.

7.3 Results

The results for each of the three psychological variables under

investigation (generality of autobiographical memory, future fluency for

positive events, and Stroop interference for hopelessness words) will be

presented sequentially. The degree to which each correlated with scores on

the Beck Hopelessness Scale will then be reported.

7.3.1 _Autobiographical Memory_

A comparison of the index Autobiographical Memory Test variables,
together with index BDI and BHS scores, for those patients who repeated
parasuicide and those who did not repeat are shown in Table 24 for follow-
up periods of one, six and twelve months.

Table 24 : A comparison of index Autobiographical Memory Test (AMT)
specific memory scores, AMT latencies, BDI, BHS and number
of risk factors (Kreitman and Foster, 1991) for parasuicide
repeaters and non-repeaters at 1-month, 6-months and 12-
months follow-up.

VARIABLE	1-month follow-up		6-months follow-up		12-months follow-up	
	Repeaters N=10 Mean (SD)	_Non-Repeaters N=55 Mean (SD)_	_Repeaters N=20 Mean (SD)_	_Non-Repeaters N=44 Mean (SD)_	_Repeaters N=25 Mean (SD)_	_Non-repeaters N=40 Mean (SD)_
AMT total specific memories	3.7 (2.5)	4.8 (2.0)	4.5 (2.3)	4.7 (2.1)	4.5 (2.3)	4.7 (2.0)
AMT +ve specific memories	1.3** (1.3)	2.1** (1.2)	1.9 (1.3)	2.1 (1.2)	1.9 (1.3)	2.1 (1.1)
AMT −ve specific memories	2.4 (1.7)	2.7 (1.2)	2.6 (1.5)	2.6 (1.2)	2.6 (1.5)	2.6 (1.1)
AMT +ve latency (secs)	42.0** (11.9)	33.6** (11.9)	36.5 (12.7)	34.2 (12.0)	36.7 (13.0)	33.7 (11.7)
AMT −ve latency (secs)	30.1 (15.9)	26.3 (12.7)	26.8 (13.8)	26.9 (13.0)	26.4 (13.0)	27.2 (13.4)
BDI	36.9 (14.3)	29.3 (13.4)	33.0 (16.2)	29.3 (12.4)	31.6 (15.8)	29.7 (12.4)
BHS	15.7** (6.1)	11.4** (5.8)	14.1* (6.4)	11.2* (5.5)	13.2 (6.2)	11.3 (5.6)
Risk factors	7.3 (1.1)	7.0 (1.4)	7.7** (1.3)	6.8** (1.3)	7.6*** (1.2)	6.7*** (1.3)

* p < 0.05   ** p < 0.025   *** p < 0.005

A initial analysis employing independent t-tests (1-tailed) revealed that, at 1-month follow-up, the repeaters differed significantly from the non-repeaters in being more hopeless ($t = -2.2$, $df = 63$, $p < 0.025$), in generating fewer positive specific autobiographical memories ($t = 2.05$, $df = 63$, $p < 0.025$), and in having longer latencies to retrieve specific memories to positive cue words ($t = 2.1$, $df = 62$, $p < 0.025$) ψ[1]. At 6-months follow-up only the Beck Hopelessness Scale continued to significantly distinguish between the two groups ($t = -1.9$, $df = 63$, $p < 0.05$). Twelve months after the index parasuicide, no differences were found between repeaters and non-repeaters on any of the psychological variables under investigation. However, a comparison of the number of sociodemographic risk factors (Kreitman and Foster, 1991) did distinguish between the two groups at 6-months ($t = -2.46$, $df = 62$, $p < 0.025$) and at 12-months follow-up ($t = -2.89$, $df = 61$, $p < 0.005$), the repeaters having significantly more of these risk factors, although there were no differences on this parameter at 1-month follow-up.

In order to explore the relative predictive potential of these variables in distinguishing those who will go on to repeat parasuicide from those who will not, the variables hypothesised to distinguish repeaters and non-repeaters were entered as covariates in a forward stepwise logistic regression analysis. Also, to investigate the relative contribution of each patient's number of previous parasuicides in comparison to the other sociodemographic risk factors (that is the number of risk factors excluding

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[1] ψ In the independent t-test analyses the degrees of freedom differ as a result of missing or incomplete

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previous parasuicide), these two parameters were entered separately. The

results of this analysis are summarised in Table 25 for follow-ups of 1-

month, 6-months, and 12-months.

Table 25 : Summary of results from logistic regression analysis
involving the forward stepwise entry of autobiographical
memory specificity for positive cue words, latency to retrieve
specific memories to positive cue words, BHS scores, number
of previous parasuicides, and the number of other
sociodemographic risk factors in predicting parasuicide
repetition (A=observed no, predicted no ; B=observed no,
predicted yes ; C=observed yes, predicted no ; D=observed
yes, predicted yes)

a) 1-month follow-up

Step	Variable included	χ^2 for improve.	Signif.	A	B	C	D	% correctly classified
0				54	0	9	0	85.7
1	BHS	4.31	0.04	54	0	9	0	85.7

b) 6-months follow-up

	Variable included	χ^2 for improve.	Signif.	A	B	C	D	% correctly classified
0				44	0	19	0	69.8
1	Previous paras.	8.68	0.003	39	5	15	4	68.3

c) 12-months follow-up

Step	Variable included	χ^2 for improve	Signif.	A	B	C	D	% correctly classified
0				39	0	24	0	61.9
1	Previous Paras.	17.1	0.0001	35	4	11	13	76.2

The logistic regression analysis suggested high hopelessness, as measured by the Beck Hopelessness Scale, was the best predictor of further suicidal behaviour in the short-term, but that in the longer term (6-months or more after the index parasuicide) the number of previous parasuicides became the most powerful prognostic indicator. At 1-month follow-up, a BHS cut-off score of 19 or 20 correctly identified six (60%) of the ten repeaters and forty-nine (91%) of the fifty-four non-repeaters. By 12-months follow-up, a cut-off of 2 or more previous parasuicides correctly identified fourteen (58%) of the twenty-four repeaters and thirty-four (87%) of the thirty-nine non-repeaters. Autobiographical memory specificity, latency to retrieve or the number of specific memories, did not significantly add to the predictive model.

7.3.2 *Personal Future*

A comparison of the index Personal Future variables, BDI and BHS scores, together with the number of risk factors, for those patients who repeat parasuicide and those who do not repeat are shown in Table 26.

Table 26 : A comparison of index scores on the Personal Future Task, BDI , BHS and sociodemographic risk factors for parasuicide repeaters and non-repeaters at 1-month, 6-months and 12-months follow-up.

VARIABLE	1-mth follow-up		6-mths follow-up		12-mths follow-up	
	Repeaters N=8 Mean (SD)	*Non-Repeaters N=28 Mean (SD)*	*Repeaters N=13 Mean (SD)*	*Non-Repeaters N=23 Mean (SD)*	*Repeaters N=17 Mean (SD)*	*Non-Repeaters N=19 Mean (SD)*
Future fluency +ve "looking forward to"	6.1 (4.1)	8.7 (6.5)	6.1* (4.2)	9.3* (6.7)	7.5 (5.6)	8.7 (6.6)
Future fluency -ve "not looking forward to"	4.9 (2.9)	5.7 (5.9)	4.7 (3.6)	6.0 (6.2)	4.7 (3.7)	6.2 (6.6)
BHS	15.5* (6.1)	10.9* (6.0)	14.2* (6.5)	10.6* (6.0)	13.0 (6.4)	10.9 (6.3)
BDI	32.8 (14.6)	30.2 (13.4)	33.2 (15.6)	29.4 (12.3)	33.9 (13.7)	27.9 (12.9)
Risk Factors	7.7 (1.8)	6.7 (1.4)	7.6** (1.6)	6.5** (1.3)	7.5** (1.4)	6.4** (1.3)

*p < 0.05   **p < 0.025

At 1-month follow-up only the Beck Hopelessness Scale significantly distinguished the repeaters from the non-repeaters ($t = -1.9$, $df = 34$, $p < 0.05$). By 6-months follow-up the repeaters continued to be significantly more hopeless ($t = -1.72$, $df = 34$, $p < 0.05$) and had significantly poorer future fluency for positive events ($t = 1.78$, $df = 34$, $p < 0.05$). The number of sociodemographic risk factors did significantly distinguish between the two groups at 6-months follow-up ($t = -2.12$, $df = 31$, $p < 0.025$) and at 12-

months follow-up (t = -2.39, df = 31, p < 0.025), but not at 1-month follow-up.

To investigate the power of these variables to predict parasuicide repetition, future fluency for positive events, the scores on the BHS, the number of previous parasuicides and the number of other sociodemographic risk factors were entered as covariates into a forward stepwise logistic regression analysis, the results of which are shown in Table 27 for 1-month, 6-months and 12-months follow-up.

Table 27 : Summary of results of logistic regression analysis involving the forward stepwise entry of future fluency, Beck Hopelessness Scale, number of previous parasuicides, and other sociodemographic risk factors in predicting parasuicide repetition.

a)   1-month follow-up

Step	Variable included	χ^2 for improve	Signif.	A	B	C	D	% correctly classified
0				30	0	4	0	88.2
1	**Previous paras.**	5.74	0.02	29	1	3	1	88.2

b)   6-months follow-up

Step	Variable included	χ^2 for improve.	Signif.	A	B	C	D	% correctly identified
0				23	0	11	0	67.7
1	**Previous paras.**	7.8	0.005	20	3	8	3	67.7

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c) <u>12-months follow-up</u>

Step	Variable included	χ^2 for improve.	Signif.	A	B	C	D	% correctly classified
0				19	0	15	0	55.9
1	Previous paras.	15.3	0.0001	17	2	5	10	79.4

The most potent predictor of parasuicide repetition in this subsample of patients was found to be the number of previous parasuicides, this being the case for 1-month, 6-months and 12-months follow-up. The logistic regression analysis showed that future fluency for positive events did not significantly add to the predictive model.

7.3.3 *Interference on a Modified Stroop Task*

An analysis of the data for repeaters and non-repeaters regarding the degree of interference on the modified Stroop for *hopelessness, depression,* and *positive emotion* words, along with comparative scores on the BDI, BHS and sociodemographic risk factors, is shown in Table 28.

Table 28: A comparison of index scores of Stroop interference, hopelessness, risk factors and depression for parasuicide repeaters and non-repeaters at 1-month, 6-months and 12-months follow-up.

VARIABLE	1-month follow-up		6-months follow-up		12-mths follow-up	
	Repeaters N=5 Mean (SD)	*Non-repeaters N=25 Mean (SD)*	*Repeaters N=8 Mean (SD)*	*Non-Repeaters N=22 Mean (SD)*	*Repeaters N=9 Mean (SD)*	*Non-repeaters N=21 Mean* (SD)
Positive word interference	4.2 (6.9)	0.2 (7.2)	4.5* (5.5)	-0.5* (7.4)	4.0 (5.4)	-0.5 (7.6)
Depression word Interference	4.0 (6.0)	3.0 (11.6)	5.8 (5.3)	2.2 (12.1)	4.8 (5.6)	2.4 (12.4)
Hopeless word interference	9.2 (10.9)	6.8 (14.7)	8.5 (8.4)	6.7 (15.6)	8.0 (8.0)	6.8 (8.0)
BHS	13.4 (7.6)	11.6 (5.1)	12.9 (6.7)	11.5 (5.1)	12.9 (6.3)	11.5 (5.2)
BDI	34.0 (18.1)	30.7 (12.8)	33.0 (17.3)	30.1 (12.2)	31.4 (16.8)	31.1 (12.2)
Risk factors	7.4 (0.5)	7.0 (1.7)	7.9 (0.8)	6.8 (1.7)	8.0** (0.9)	6.7** (1.7)

* $p < 0.10$ ** $p < 0.04$

It can be seen from Table 28 that the Stroop interference indices did not significantly distinguish the small number of repeaters (5, 8 and 9 at one, six and twelve months follow-up respectively) from those that did not go on to repeat parasuicide. There was however a trend for the repeaters at 6-months follow-up to display more interference with the positive emotion words. The group of repeaters at 12-months follow-up again scored significantly higher on the sociodemographic risk factors.

Stroop interference for hopelessness words and for positive emotion

words, together with number of risk factors, were then entered as covariates

into a forward stepwise logistic regression analysis. (Because of the small

number of participants involved, only three variables could be entered into

the analysis and therefore it was not possible to break down the

sociodemographic risk factors into previous parasuicides and other risk

factors). At 1-month and 6-months follow-up, no parameter was significantly

predictive of parasuicide repetition. At 12-months follow-up, only the risk

factors had significant predictive power as shown in Table 29.

Table 29:Summary of results of logistic regression analysis comparing
the power of Stroop interference for positive words, Stroop
interference for hopelessness words, and sociodemographic risk
factors in predicting parasuicide repetition at 12-months
follow up.

Step	Variable included	χ^2 for improve.	Signif.	A	B	C	D	% correctly classified
0				21	0	9	0	70
1	**Risk factors**	**5.5**	**0.03**	18	3	6	3	70

7.3.4   *Components of Hopelessness*

The degree to which the three psychological variables under

investigation (over-generality of autobiographical memory, future fluency for

positive events, and Stroop interference for hopelessness words) might

contribute to hopelessness was investigated by means of a correlational

analysis, summarised in Table 30. As the Stroop interference parameter did

not meet the assumptions for parametric test, a Spearman Rank correlation

coefficient was calculated between this variable and corresponding score on

the Beck Hopelessness Scale. The other coefficients shown in Table 30 are

Pearson Product Moment correlations.

Table 30: Correlations between the scores on the Beck Hopelessness Scale (BHS) and Future Fluency for positive events (FF+), Future Fluency for negative events (FF-), latency to retrieve specific memories to positive cue words (AMT +ve lat.), number of specific positive memories (AMT +ve sp.), and Stroop interference for hopelessness words (St. Hop. Int.)

	BHS
FF+	-0.49** (N=36)
FF-	0.11 (N=36)
AMT +ve lat.	0.03 (N=64)
AMT +ve sp.	0.06 (N=65)
St. Hop. Int	-0.41* (N=29)

** $p < 0.01$ (2-tailed)   * $p < 0.03$

There was a highly significant negative correlation ($r = -0.49$, $p <$

0.01) between hopelessness and future fluency for positive events,

suggesting that an inability to predict enjoyable occurrences might be an

important component of hopelessness. In contrast, the correlation between

BHS and future fluency for negative events was low ($r = 0.11$, n.s.). There

were very weak and non-significant correlations between hopelessness and

the autobiographical memory parameters. Surprisingly, a significant <u>negative</u> correlation was found between hopelessness (as measured by the BHS) and Stroop interference on hopelessness words.

In light of previous research (Salter and Platt, 1990) suggesting a significant positive correlation between "elapsed time" (the time between index parasuicide and the assessment interview) and suicidal intent, in the present study the relationships between the length of this time-lag and the dependent variables (BHS, Autobiographical Memory variables, Personal Future variables, Stroop interference variables, and number of sociodemographic risk factors) were investigated. No significant correlations were found, suggesting that the length of the delay between index parasuicide and time of the assessment had no major influence on the outcome of the present study.

7.4 <u>Discussion</u>

The primary purpose of these studies was to determine if the specificity with which we identify those parasuicide patients at risk of imminent self-harm repetition could be improved by measurement of three psychological variables (the generality of autobiographical memory, future fluency for positive events, and colour-naming interference by hopelessness-related words on a modified Stroop) shortly after the index parasuicide.

The results obtained from this group of sixty-six parasuicide patients lends further weight to the value of the Beck Hopelessness Scale as a short-term predictor of future suicidal behaviour. These findings are consistent with those of Petrie et al. (1988) who found hopelessness to be the variable most closely related to suicidal ideation around the time of the index hospitalisation but a rather weaker, albeit still significant, predictor of further self-harm at six-months follow-up. The hypothesis that future fluency for positive events would be the "active ingredient" of hopelessness and would significantly predict subsequent parasuicide was not supported by the data. Despite the means for the groups of repeaters and non-repeaters being in the predicted direction (significantly so at six months follow-up) logistic regression analysis showed future fluency to make no significant contribution to the identification of those patients who go on to parasuicide again.

With regards to the generality of autobiographical memory, although the group of patients that went on to repeat parasuicide tended on average to generate fewer specific memories to positive cue words and to take longer to retrieve such memories, these differences only approached statistical significance at 1-month follow-up and, importantly, the logistic regression analysis demonstrated that these autobiographical memory variables did not significantly enhance the specificity or sensitivity of the predictive model. Thus, the hypotheses concerning the link between the generality of autobiographical memory and subsequent parasuicide were not supported by

the data, suggesting that these parameters may not be of generic value for routine risk assessment.

Although the generality of autobiographical memory when measured in a heterogeneous group of patients who have recently self-harmed was not able to accurately predict those who would go on to repeat the parasuicide in the near future, it is conceivable that the Autobiographical Memory Test may have some clinical utility in relation to the sub-group of parasuicides for whom problem-solving deficits are prominent. Given that a significant correlation has been demonstrated between problem-solving deficits and overgeneral autobiographical memory (Evans et al., 1992 ; Chapter 3 of this thesis), future research might usefully explore the potential of overgeneral memory to predict future parasuicide in a sub-group of patients who are demonstrably lacking in problem-solving skills and whose index self-harm has been precipitated by practical life problems which are perceived by the patients to be insoluble.

The experimental hypothesis that hopelessness word interference on a modified Stroop would predict parasuicide repetition was not supported by the data. Curiously, comparison of means via independent t-tests suggested a trend for the repeaters at 6-months follow-up to be slower in colour-naming *positive emotion* words than the non-repeaters. However, this result needs to be treated with caution given the very small number of patients who repeated in this cohort (5, 8 and 9 at 1-month, 6-months and 12-months follow-up respectively). Indeed, in this group of patients the Beck Hopelessness Scale

did not emerge as a significant predictor of future parasuicide casting further doubt on the credibility of this data set. Clearly, the relationship between Stroop interference and suicidal behaviour warrants further investigation with a larger group of patients.

The number of sociodemographic risk factors, which includes previous parasuicide, as described by Kreitman and Foster (1991) was confirmed as a significant predictor of future self-harm in the medium term, that is at 6-months and 12-months follow-up. However, splitting the risk factors into number of previous parasuicides and other risk factors (for example history of alcohol abuse, criminal record, past contact with the psychiatric services), and analysing the contribution of each separately, revealed the former to be a highly significant predictor of future deliberate self-harm at six months and twelve months follow-up. The other risk factors did not make any further significant contribution to the predictive model.

Although the relatively small sample size and associated potential for Type II error indicate that it would be premature to totally dismiss the utility of memory specificity, future fluency for positive events and Stroop interference in predicting parasuicide repetition, collectively these findings suggest that, for routine clinical practice with the wide range of parasuicide patients who present to hospital services, the most useful indices to supplement the clinical interview in the assessment of risk for future suicidal behaviour are the Beck Hopelessness Scale and the number of previous incidences of deliberate self-harm. However, as recently proposed by

Hjelmeland (1996), the predictors of repetition might be highly dependent upon the stage of the "suicidal career" the patients are in. In the present study a relatively high risk group was deliberately selected, with 79% already having a history of parasuicide prior to the index attempt and, during the period of the study, this group of historical repeaters comprised twenty-four of the twenty-five patients who did repeat during the 12-months follow-up period. This observation, together with previous empirical evidence that those with and without a parasuicide career may respond differentially to offers of support (the Green Card Study of Morgan, Jones and Owen, 1993; and personal communication), suggest the value of exploring the utility of psychological measures on a larger and less chronic group of parasuicide patients. Indeed, the utility of scores on the Beck Hopelessness Scale and number of previous parasuicides in predicting repetition might be less impressive when applied to a typical clinical situation where one-year repetition rates are significantly less than those measured in the selected "high risk" group who participated in the current study.

Interestingly, despite the lack of support for the hypothesis that future fluency for positive events would significantly predict parasuicide repetition, correlational analysis supported the contention of MacLeod and his colleagues (MacLeod et al., 1993; MacLeod et al., 1997) that lack of positive anticipation, not over prediction of negative events, forms the basis of hopelessness. A highly significant correlation coefficient of –0.49 was computed between positive future fluency and scores on the Beck Hopelessness Scale whereas there was a low and non-significant correlation

between the BHS and negative future fluency. A negative, non-significant correlation coefficient was also calculated between the BHS and Stroop interference for hopelessness words, a finding which was contrary to expectation and which potentially lends some support to the suggestion that patients may use active avoidance strategies when faced with stimuli consistent with their current, aversive mood state (see Williams et al., 1997, for a review). However, this finding of an association between hopelessness and Stroop interference requires replication given the modest size of the correlation and the relatively small number of patients included in this sub-sample. The absence of any significant correlation between the BHS and the autobiographical memory parameters suggests that relative difficulty in identifying specific memories from one's past may have no immediate bearing on levels of hopelessness.

In addition to the relatively small numbers of repeaters, particularly in the modified Stroop sub-sample, a limitation of the present study is the number of dropouts before the end of the 12-months follow-up period (23 out of a total of 66). Although a database check about admission to local hospitals with self-inflicted injuries was carried out, it is conceivable that some parasuicide repetitions might not have been detected (for example, those admitted to hospitals outside of the region) leading to false negatives in the data. However, the fact that dropouts did not differ significantly from non-dropouts on any of the measures taken suggests that any bias from this source would be unlikely to be substantial.

In summary, non of the three psychological parameters (overgenerality of autobiographical memory, future fluency for positive events, and Stroop interference for hopelessness words) was found to enhance the prediction of parasuicide repetition in a heterogeneous group of high risk patients over and above the utility of scores on the Beck Hopelessness Scale and number of previous parasuicides. However, the significant differences found between repeaters and non-repeaters on future-fluency for positive events and generality of autobiographical memories, together with the significant correlation between hopelessness and future positive fluency, raise the possibility that these psychological parameters might have clinical relevance to subgroups of parasuicide patients, the impacts of which are diluted when the whole group of parasuicide patients is investigated. Future research, therefore, might usefully explore the role of each of these psychological variables with particular patients whose parasuicides appear to be motivated by discrete difficulties (for example life-problems perceived as insoluble, high hopelessness in the absence of major life difficulties, intolerable affect), a series of single-case designs being an appropriate first step in the investigative process.

8. Chapter 8.

GENERAL DISCUSSION

8. Chapter 8: GENERAL DISCUSSION

The broad aim of this thesis was to further our understanding of the psychological processes associated with parasuicide. The four main areas explored were as follows:

1. The stability of autobiographical memory generality and its association with problem-solving deficits, hopelessness, and the emergence of suicidal behaviour.

2. The extent to which dimensions of parasuicide can be differentiated on the basis of beliefs held by the patient immediately prior to the deliberate self-harm.

3. The extent of the evidence, in the form of attentional bias, for a hopelessness schema in a parasuicide population.

4. The relative potency of autobiographical memory generality, future fluency for positive events, hopelessness, sociodemographic risk factors, and Stroop interference by "no future" words in the prediction of parasuicide repetition.

The results from the series of studies described in this thesis will now be summarised using the framework of the above four headings.

8.1 Summary of Results

8.1.1 *Overgeneral autobiographical memory*

The study reported in Chapter 3 provided further support for the association between a relative difficulty in accessing specific autobiographical memories and poor interpersonal problem solving. The significant positive correlation between autobiographical memory specificity

and the effectiveness of interpersonal problem solving replicated the earlier work of Evans et al. (1992). Although the computed correlation coefficient in the present study was notably smaller than that reported by Evans and her colleagues, the fact that this correspondence between memory specificity and problem solving effectiveness has now been measured in a larger, more psychologically distressed group suggests that it is a robust association.

In contrast, any relationship between autobiographical memory generality and hopelessness appeared to be a less direct one, the correlation between these two variables being low and insignificant (see Chapter 3 p78, Chapter 7 p184). Importantly, however, the multiple regression analysis (Chapter 6) found that the total number of specific autobiographical memories accessed during the index assessment was a significant negative predictor of hopelessness levels one month later, accounting for 25% of the variance in hopelessness at this follow-up time. Although the predictive power of memory generality fell just short of significance with regards to hopelessness levels at six-months follow-up, this finding is consistent with previous research that has suggested that over-general autobiographical memory may be an indicator of poor prognosis (Brittlebank et al., 1993; Harvey et al., 1998; Hutchings et al., 1998; Wahler and Afton, 1980).

Despite this potential link between memory generality and future levels of hopelessness, the autobiographical memory indices were found not to predict parasuicide repetition in the longitudinal study described in Chapter 7. The logistic regression analysis indicated that the

autobiographical memory parameters did not make any significant contribution to the predictive model. Nevertheless, given that a between-groups comparison of those who repeated parasuicide at 1-month follow-up with those who did not (Table 24, p175) found the repeaters to be significantly more over-general, the possibility remains that autobiographical memory generality might be predictive if one were to look at a sub-group of parasuicide patients rather than the heterogeneous population as a whole. However, even when exclusively focusing upon a group of parasuicide patients who scored highly on the "hopelessness" dimension that emerged from factor analysing the Parasuicide Beliefs Questionnaire (Chapter 4), no significantly higher levels of memory over-generality were found in the parasuicide repeaters in comparison with those who did not repeat. Therefore, based on these findings, autobiographical memory indices are unlikely to enhance the specificity of risk assessment for parasuicide repetition in routine clinical practice.

With regards to the stability of the autobiographical memory construct (as measured by the Autobiographical Memory Test) the findings were mixed and inconclusive. The trait status of memory generality (as proposed by Brittlebank et al., 1993) was supported by significant test-retest correlations at 1-month and 6-months follow-up. However, the measurement of some significant *differences* (see Table 19, p152) between memory generality parameters measured at index assessment and at follow-up suggest that it would be premature to firmly conclude that autobiographical memory generality is a stable, trait characteristic.

8.1.2 *Dimensions of parasuicide*

Exploratory factor analysis of belief conviction ratings on the Parasuicide Beliefs Questionnaire (Chapter 4) suggested three dimensions of parasuicide. Consistent with the initial hypotheses, both an "escape" factor (associated with hopelessness) and a "communication" factor were identified, these two dimensions being partially validated by the fact that scores on the Beck Hopelessness Scale loaded onto the "escape" factor whereas the number of previous parasuicides loaded onto the "communication" factor. Contrary to prediction, no dimensions concerned primarily with mood regulation or problem solving were identified. Also contrary to prediction, but a potentially important finding, was the emergence of an "unrelenting, unrecognised distress" factor possibly characterised by the perception that distress was constant, without variation, and outside the awareness of other people.

8.1.3 *Evidence for a hopelessness schema*

The results from the modified Stroop test (reported in Chapter 5) did not support the existence of an active hopelessness schema in patients who had recently engaged in parasuicide. In comparison with a similarly depressed group of patients without a history of deliberate self-harm, the parasuicide group were not differentially slowed down by their attention being drawn to "no future" words on a modified Stroop test. A general attentional bias towards negative emotion words was found for all the distressed patients (parasuicide, depressed, anxious) rather than any word-

type/clinical group interaction. Furthermore, correlational analyses revealed no significant association between the size of the interference index measured in relation to the "no future" words and current hopelessness severity as measured by the Beck Hopelessness Scale. Thus, in the aftermath of a recent parasuicide, no evidence was found for an active hopelessness schema biasing attention towards words with a theme of "no future".

8.1.4 *Prediction of parasuicide repetition*

The longitudinal study and subsequent logistic regression analysis (Chapter 7) identified scores on the Beck Hopelessness Scale (short-term) and number of previous parasuicides (long-term) as the best predictors of future deliberate self-harm. Contrary to the experimental hypotheses, the other psychological parameters under investigation (autobiographical memory generality, future fluency for positive events, and degree of interference on a hopelessness Stroop) did not make any additional significant contribution to the predictive model. Thus, these three psychological measures were of no demonstrable value in improving the specificity or sensitivity of the risk assessment for parasuicide repetition.

A further finding was that the predictive power of the number of previous parasuicides was greater than a cumulative score on the ten remaining sociodemographic risk factors (that is those reported by Kreitman and Foster, 1992, but excluding previous parasuicide), the latter making no significant contribution to the predictive model over and above that already provided by number of previous parasuicides and scores on the BHS.

8.2 Autobiographical Memory and Parasuicide

Considering the results of the present studies, in the context of previous research, it is reasonable to conclude that there is no direct or immediate relationship between the generality of a person's autobiographical memories and deliberate self-harming behaviour. Clearly, overgeneral memory is not a distinctive feature of parasuicide patients, being found in a number of other clinical groups. Furthermore, memory generality was not found to predict parasuicide repetition, nor was it strongly associated with any parasuicide dimension to emerge in the factor analytical study reported in Chapter 4. In addition, it did not significantly correlate with corresponding hopelessness levels.

Although having no proximal relationship to suicidal behaviour, several strands of evidence suggest that memory generality might play a more distal role in its evolution. As already reported, the relationship between overgeneral autobiographical memory and poor problem-solving skills appears to be a robust one, an association not explicable on the basis of general sluggishness or existing mood level. It is conceivable that the restricted database consequent upon an overgeneral style of memory retrieval will impede effective problem-solving and, thereby, instil a higher level of vulnerability for the subsequent development of clinical disorders including, but not restricted to, suicidal behaviour. Similarly, the previously reported link between memory generality and relatively poor recovery from clinical disorders (Brittlebank et al, 1993; Harvey et al., 1998; Hutchings et al., 1998;

Wahler and Afton, 1980) could plausibly result from the problem-solving deficits it bestows. The additional discovery that memory generality predicted 25% of the variance levels in hopelessness severity 1-month later lends further weight to the premise that relative difficulty in accessing specific autobiographical memories may act as an impediment to a person's ability to constructively deal with life stresses and challenges, hence predisposing to subsequent psychological disturbance.

Overall, one can conclude that overgeneral autobiographical memory is a relatively stable and broad risk factor for the development of a range of psychological disturbances, some of which in turn might make suicidal behaviour more likely.

8.3 Hopelessness and Parasuicide

In contrast to the findings for autobiographical memory generality, the current studies lend further support for the utility of scores on the Beck Hopelessness Scale as a proximal predictor of parasuicide repetition. The longitudinal study (Chapter 7) found hopelessness levels at index assessment to be the most potent predictor of further deliberate self-harm within the subsequent one month period.

The significant negative correlation computed between hopelessness scores and future positive fluency (p184) corroborates previous work (MacLeod et al, 1993; MacLeod et al., 1998) demonstrating that

hopelessness is characterised by difficulties in anticipating future positive

events rather than an over-prediction of negative occurrences.

8.4 Implications for Further Research

8.4.1 *Overgeneral autobiographical memory*

It remains unclear whether the memory generality construct will

further enhance our understanding of the development, maintenance and

recovery from psychological disturbance. With regards to its specific

relationship to suicidal behaviour, the potential of memory generality to

predict parasuicide repetition in a selected group of patients who are

currently faced with major life problems (for example relationship break-up,

financial difficulties, recent job loss) would be worthy of investigation. If

overgeneral autobiographical memory has any direct clinical utility to

suicidal populations, the significant association with problem-solving deficits

suggests that its impact is likely to be most noticeable in such a crisis where

a major life problem has to be resolved.

Given some of the inconsistent findings to date, further longitudinal

research is required to confirm or refute the trait status of autobiographical

memory generality. Using different sets of six cue-words (matched for

frequency of usage and emotionality) to minimise any practice effects, test-

retest correlations could be computed at various points during a patient's

recovery from emotional disturbances (such as major depressive disorder or

post traumatic stress disorder) so as to determine if memory generality reduces as the psychological distress remits.

An alternative way of exploring the stability of autobiographical memory generality would be to find out whether specificity could be enhanced by an intensive training programme. Initially, single case designs could be used to explore the extent to which repeated daily practice at accessing specific autobiographical memories could achieve a significant and sustainable improvement in performance on the Autobiographical Memory Test. Not only would such an endeavour throw further light on the state – trait distinction, it may (given the relationship between overgeneral memory and poor prognosis) provide an opportunity to develop a potentially effective clinical intervention or relapse prevention strategy that could be incorporated into the overall treatment package. A step towards this aim was provided by a recent study (Williams et al., 2000) that suggested that an overgeneral retrieval style in recovered depressed patients might be open to modification by mindfulness based cognitive therapy.

The clinical significance or otherwise of memory generality might best be determined by empirically testing Williams's proposal regarding how an overgeneral style of remembering evolves. According to Williams (1996), the origin of generic recall might be found in a child's attempts to control affect in the context of aversive life events. Thus, overgeneral recollection might typically result in less severe negative affect, a "dull ache", as compared to the "sharp pain" associated with more specific recollection. A

previous study (Kuyken and Brewin, 1995) has already shown that depressed women with a history of childhood sexual abuse are more overgeneral in their recollections than equally depressed women without an abuse history. Although this finding is consistent with Williams's suggestion about the evolution of a generic style of recall in childhood, more definitive evidence is likely to derive from longitudinal studies that tease out the temporal relationships between traumatic life experiences, generality of autobiographical memory, and distress levels. An appropriate target group for a study of this type might be children in socio-economically deprived areas who are at high risk of aversive life experiences, assessments being conducted at regular intervals during their maturation into adulthood.

If further research were to indicate that memory generality evolves as a means of reducing emotional pain, this would explain why no study to date has found any association between current degree of memory generality and coexisting levels of depression (as measured by the BDI), the temporal sequence possibly being as shown in Figure 2.

```
┌─────────────────────────────────────────────────┐
│         Negative life event (real or perceived)  │
│                        ↓                          │
│      Increased or anticipated increase in emotional│
│                    distress                       │
│                        ↓                          │
│           Enhanced memory generality              │
│                        ↓                          │
│    Some reduction in distress at the expense of impaired│
│                 problem solving                   │
│                        ↓                          │
│             Increased hopelessness                │
│                        ↓                          │
│           Increased parasuicide risk              │
└─────────────────────────────────────────────────┘
```
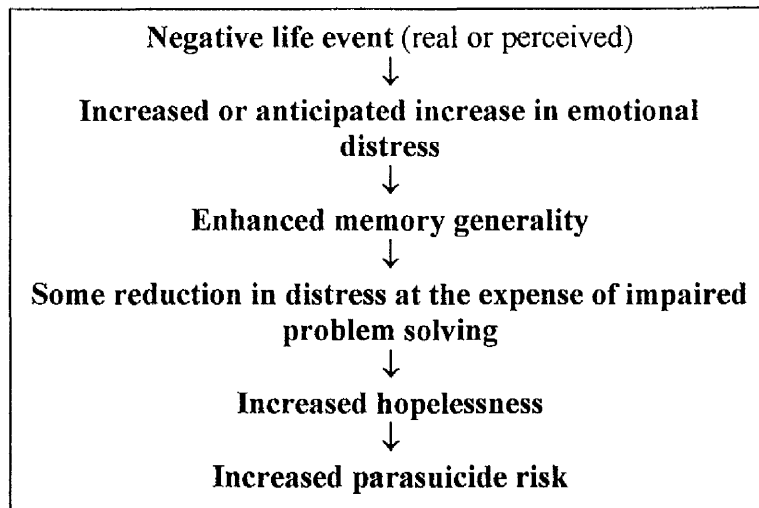
Figure 2: Suggested temporal order for the link between negative life events, autobiographical memory generality, problem solving skills, hopelessness and parasuicide

If such a sequence was present in parasuicide patients (or at least in a significant number of them) no significant correlation would be expected between distress levels and memory generality at any particular point in time, any increase in distress being likely to occur before the corresponding increase overgeneral recall. In addition, such a temporal sequence would be consistent with the finding (Chapter 6) that the degree of autobiographical memory generality is a significant predictor of hopelessness levels 1-month later. Also, it could account for the somewhat ambiguous findings concerning the stability of the memory generality construct; thus, one would expect there would be a significant test-retest correlation due to a person's enduring propensity to repeatedly adopt enhanced memory generality as a means of moderating painful affect, but a degree of variation in the extent of this generality depending upon the point in the sequence at which it is measured (for example, it would be expected to be temporarily elevated in

the period shortly after a negative life event). Only further longitudinal research can support or refute these possibilities.

8.4.2 *Dimensions of parasuicide*

Although a comprehensive categorisation of the heterogeneous parasuicide population would need to include additional "situational" and "descriptive" elements (see Ellis, 1988), further research using belief questionnaires could provide additional insight into important psychological dimensions of suicidal behaviour. Future empirical investigation could usefully re-deploy the Parasuicide Belief Questionnaire with a larger, less uniform group of parasuicide patients. Contrary to the present study, this group should incorporate both a significant number of patients who have self-harmed by means other than deliberate drug-overdose (for example self-mutilation, survival from potentially more lethal methods such as carbon-monoxide poisoning) and those whose acts of self-harm were less life-threatening. By not restricting the target population to patients who have taken medically serious drug overdoses, there would be the opportunity to explore the existence of suicide dimensions that did not emerge from the present factor analytical study, for example a factor associated with a mood regulatory function.

With regards to the three dimensions of parasuicide identified in the current study, (namely *"escape"*, *"unrelenting, unrecognised distress"* and *"communication"*), these require further validation before their clinical utility can be elaborated. This validation could be achieved by incorporating

additional items intended to reflect the above three dimensions into the Parasuicide Beliefs Questionnaire, re-administering this revised questionnaire to another large cohort of parasuicide patients, and determining whether the extra items load on the factor they were intended to represent. If such an endeavour succeeded in validating one or more of these dimensions, this would allow future research to explore the relationship of specific psychological parameters (for example hopelessness and memory generality) to suicidal behaviour within homogeneous sub-groups scoring highly on one of the pertinent dimensions, thereby enhancing the likelihood of teasing out the psychological mechanisms involved.

8.4.3 *Evidence for a hopelessness schema*

Despite the finding (Chapter 5) that hopelessness words did not differentially slow down parasuicide patients on a modified Stroop test in comparison with depressed patients without a parasuicide history, it would be premature to exclude the existence of a discrete hopelessness schema in suicidal individuals. Methodological weaknesses in the study (see Section 5.4.3, p137) highlight the need for further research before this conclusion could be drawn. A definitive study would involve a repeat of the modified Stroop incorporating hopelessness words but this time comparing "purer" clinical groups. Thus, a parasuicide group (history of parasuicide, very high score on the Beck Hopelessness Scale, high current score on the Scale for Suicidal Ideation) could usefully be compared with a depressed group (no history of parasuicide, relatively low levels of hopelessness, low scores on the Scale for Suicidal Ideation). Any differential interference measured in

favour of the parasuicide group would strongly support the existence of an active hopelessness schema in suicidal individuals.

8.4.4 _Prediction of parasuicide repetition_

The study reported in Chapter 7 usefully clarified the relative potency of several indices (BHS scores, memory generality, future fluency for positive events, number of previous parasuicides, other sociodemographic risk factors, Stroop interference in response to hopelessness words) in predicting short-term and long-term risk of parasuicide repetition. However, there are several other measures reported in the literature that might also be associated with suicidal behaviour. Thus, the Beck Self-Concept Test (Beck, Steer, Epstein and Brown, 1990), the Dysfunctional Attitude Scale (Weissman and Beck, 1978), and the Scale for Suicidal Ideation (Beck et al,1979) all have some empirical support for their contribution toward suicidal behaviour or suicidal ideation. A fruitful direction for further research might be to conduct another longitudinal study comparing the potency of the above three measures with the BHS and number of previous parasuicides in predicting future suicidal behaviour. Such an endeavour would helpfully inform front line clinicians about the most specific and sensitive assessment measures available to identify those patients at greatest risk of parasuicide repetition.

As already reported, there may be scope for exploring whether the power of a predictor might be to some degree dependent upon the sub-group of the parasuicide population under investigation. For example, if a valid

"problem solving" dimension of suicidality was identified (by belief questionnaire or some other indicator) one might find that overgeneral autobiographical memory would predict parasuicide repetition. This matching of predictors to particular categories of parasuicide could have greater clinical utility than searching for generic indicators for the heterogeneous population as a whole.

8.5 Implications for Clinical Practice

8.5.1 *Predicting parasuicide repetition*

On the basis of the results obtained, it is reasonable to conclude that the essential basic requirements of any risk assessment for suicidal behaviour would include completion of the BHS and a query regarding the number of previous parasuicides. Arguably, these two indices, together with a clinical interview incorporating some specific questions about suicidal ideas, comprise the minimum elements of the evaluation of any patient for whom suicide risk is an issue. After this initial screen, evidence of significant risk should then be followed up with more detailed assessment of the specific factors contributing to heightened suicidality (for example, aversive life circumstances, problem solving deficits, inability to tolerate negative affect, communication difficulties) in order to rationally plan an appropriate clinical intervention. Protective factors, or reasons for living, should also be explored (Malone, Oquendo, Haas, Ellis, Li and Mann, 2000).

8.5.2 *Effective interventions*

As previously discussed (Section 1.3.2), effective clinical interventions to reduce suicidal behaviour are rare. However, the findings of the present series of studies provide some pointers regarding further, innovative interventions as well as giving additional impetus to existing approaches aimed at minimising suicide risk.

The dimensions of parasuicide identified in the exploratory factor analytical study (Chapter 4) might suggest elements of treatment approaches that could be usefully emphasised. Thus, for those patients who perceive their distress as unrelenting it would be therapeutic to routinely employ strategies that illustrate temporal variability in their levels of negative emotion, perhaps via mood charts or in-session behavioural experiments to explore if mood can be elevated. Alternatively, those patients for whom parasuicide serves a communication function might be helped by a collaborative exploration of less self-destructive ways of conveying information to others.

The results give further impetus to the teaching of interpersonal problem solving skills as an effective treatment paradigm for suicidal behaviour. In addition to the widely used problem solving approach (for example Hawton and Kirk, 1989), the confirmation of a significant association between poor problem solving and memory generality emphasises the potential importance of encouraging specificity. This could be in the form of routine practices in cognitive-behaviour therapy (for

example diary keeping, thought-record completion) or via specificity training where the patient is encouraged to engage in repeated daily practice at accessing discrete memories (perhaps by each day identifying 3 places visited, 3 people known, 3 activities engaged in, and then attempting to write down a specific memory associated with each cue). A recent study by Evans, Tyrer, Catalan, Schmidt, Davidson, Dent, Tata, Thornton, Barber and Thompson (1999) found that subsequent rate of parasuicide could be reduced by a combination of brief cognitive behaviour therapy and bibliotherapy, thus increasing optimism for the future development of effective clinical interventions for parasuicide.

Furthermore, the likely association between previous traumatic events and overgeneral memory opens up the possibility that the therapeutic value of treatment approaches incorporating imaginal exposure to historical aversive events (typically involving detailed accounts of the experience drawing on all sensory modalities) might partly accrue from its encouragement of specificity. One recent therapy of this type is "imagery rescripting and reprocessing" (Smucker and Dancu, 1999). Although not yet fully evaluated, pilot studies suggest significant therapeutic gains for adult survivors of childhood sexual abuse, a group of patients who typically engage in self-harm behaviours. Innovative therapies of this type for complex cases with a history of trauma might usefully give serious consideration to the degree to which their therapeutic value derives from the way they facilitate the transition from generic to specific recollection of painful memories.

8.6   Concluding Comments

The series of studies reported in this thesis have explored the relationships between several psychological constructs (memory generality, hopelessness, future fluency for positive events, and suicide-related beliefs) and parasuicide. The results have contributed to both our theoretical understanding of the psychological underpinnings of suicidal behaviour as well as clarifying the clinical utility of a range of parameters in predicting parasuicide repetition. Undoubtedly, the decision to carry out a self-destructive act is the end point of a complex process most likely involving a range of environmental, psychological and social factors. Progress in understanding and thereby reducing the incidence of parasuicide depends upon the identification, and subsequent modification, of relevant factors in each of these three domains. The work reported here has provided information relevant to the psychological domain and has implications for clinical practice as well as giving pointers as to potentially fruitful lines of future research.

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APPENDICES

Appendix 1: PARASUICIDE BELIEFS QUESTIONNAIRE

PARASUICIDE BELIEFS QUESTIONNAIRE

In the 24-hour period before you took the overdose, to what extent did you believe the following statements ?

Use the following scale :-

```
.    .    .    .    .    .    .    .    .    .    .
_____
0                                                    100
did not believe                              very much
this at all                                  believed this
```

Also indicate how often the thought occurred, using the following scale :-
A = VERY OFTEN
B = OFTEN
C = OCCASIONALLY
D = NEVER

1) *THERE IS NO SOLUTION TO MY PROBLEMS*

```
.    .    .    .    .    .    .    .    .    .    .
_____
0                                                    100
```

Occurred : _____

2) *MY UNPLEASANT FEELINGS WILL SOON FADE*

```
.    .    .    .    .    .    .    .    .    .    .
_____
0                                                    100
```

Occurred : _____

3) *PEOPLE DO NOT REALISE HOW MUCH I AM HURTING*

0   100
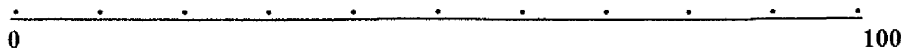
Occurred : _____

4) *IN TIME, MY FUTURE WILL LOOK BRIGHTER*

0   100
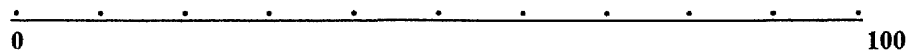
Occurred : _____

5) *I WILL, IN TIME, FIND AN ANSWER TO MY PROBLEMS*

0   100
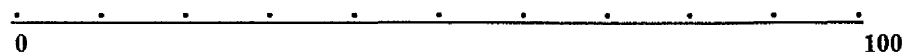
Occurred : _____

6) *MY UNPLEASANT FEELINGS WILL GO ON AND ON*

0   100
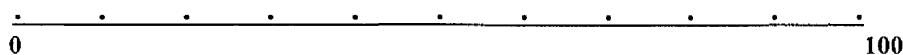
Occurred : _____

7) *PEOPLE KNOW HOW MUCH DISTRESS I AM FEELING*

```
.   .    .    .    .    .    .    .    .    .    .
0                                                    100
```
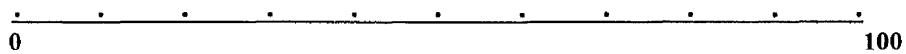
Occurred : _____

8) *NOTHING POSITIVE WILL EVER HAPPEN IN MY LIFE*

```
.   .    .    .    .    .    .    .    .    .    .
0                                                    100
```
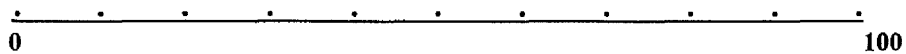
Occurred : _____

Appendix 2: POTENTIAL LETHALITY OF DELIBERATE DRUG
OVERDOSES

Potential Lethality of Deliberate Drug Overdoses

Below are listed the known details of substances a patient has ingested prior to their attendance at an Accident and Emergency Department. Based on your medical expertise and experience of working in Casualty, please rate each overdose for **POTENTIAL LETHALITY** – that is, _if left untreated what is the probability that the patient would die_ ? For each patient, please give a numerical rating based on the following scale:

No possibility whatsoever of death					50% chance of death				Certainly would have died	
0	10	20	30	40	50	60	70	80	90	100

For example, a rating of "95" would suggest that the patient almost certainly would have died without medical intervention, whereas a rating of "35" indicates about a 1 in 3 chance of fatality.

Please bear in mind the following points when giving your ratings:

1. For each patient assume average weight and build.
2. Where the tablet size is not specified, assume it to be the most commonly prescribed or available dosage.
3. Do not be overly cautious in giving your ratings (as you might be in a real-life situation) – decide the potential risk of fatality purely on the information provided.
4. It is your educated guess we are interested in. For several patients the information provided is patchy and incomplete. Despite this, still give your tentative rating of potential fatality.

Thank you very much for your time and assistance. If you have any questions about this form, or you require further information, please contact Gary Sidley (Consultant Clinical Psychologist) on 772-3480.

Patient Code	Gender	Age	Substances Ingested	Rating (0 to 100) of potential lethality	Any other comments
S1	Male	38	45x Temazepam (10mg) & 35x Valium (5mg)		
S2	Female	37	30x Paracetamol & 20x Valium (5mg)		
S4	Female	35	12x Amitripyline (25mg) & Co-dydramol (unknown quantity) & Alcohol (1 litre cider, 2 units of spirit, 1-pint of lager)		
S5	Female	24	50x paracetamol (500mg)		
S6	Female	58	35x Co-dydramol		
S7	Male	34	28x Venlafaxine (37.5mg)		
S8	Male	24	30 Paracetamol (500mg) & 10x Co-codamol & Alcohol (unknown quantity)		
S9	Male	52	28x Paracetamol (500mg) & ½ bottle whisky		
S10	Male	22	70x Paracetamol (500mg) & cannabis (unknown amount)		
S12	Male	25	72x Anadin (aspirin and caffeine) & 40x propanolol (40mg)		

Patient Code	Gender	Age	Substances Ingested	Rating (0 to 100) of potential lethality	Any other comments
S13	Male	28	**28x Paracetamol (500mg)**		
S14	Male	18	**15x Amitriptyline (25mg) & Zimovane (unknown quantity)**		
S15	Female	43	**30x Epilim (200mg) & 10x Co-codamol**		
S17	Female	34	**20x Nitrazepam (5mg)**		
S19	Female	41	**30x Amitriptyline (25mg)**		
S20	Male	38	**28x Diazepam (5mg) & 15x Naproxen (250mg) & Alcohol (5 pints of lager)**		
S22	Male	21	**30x Amitriptyline (25mg)**		
S23	Female	44	**25x Thioridazine (50mg)**		
S24	Male	29	**70x Amitriptyline (25mg)**		
S26	Male	29	**50x Paracetamol (500mg) & intravenous amphetamines (unknown quantity)**		
S27	Male	35	**16x Paracetamol (500mg)**		
S28	Male	31	**30x Amitriptyline (25mg)**		

Patient Code	Gender	Age	Substances Ingested	Rating (0 to 100) of potential lethality	Any other comments
S29	Female	47	**20x Amitriptyline (25mg) & Prozak (20mg) (unknown quantity) & alcohol (unknown quantity)**		
S30	Female	26	**43x Paracetamol (500mg) & alcohol (1/2 bottle of Bacardi)**		
S31	Male	26	**50x Chlorpromazine (50mg)**		
PE	Male	26	**7x Amitriptyline (50mg) & 14 Amitriptyline (25mg) & 8x Co-codamol & 10 Epilim (100mg) & 14x Clonazepam (2mg)**		
NS16	Male	28	**20x Dothiepin (75mg)**		
NS29	Female	51	**70-80 Carbamazepine (200mg)**		
NS1	Female	35	**42x Paracetamol (500mg)**		
NS2	Female	23	**24x Paracetamol (500mg) & 30x Ibuprofen (200mg)**		
NS3	Male	30	**26x Faverine (100mg)**		

Patient Code	Gender	Age	Substances Ingested	Rating (0 to 100) of potential lethality	Any other comments
NS4	Male	40	**25x Amitriptyline (25mg) & 50x Aspirin (300mg) & Epilim (100mg) (unknown quantity)**		
NS5	Male	29	**Methadone linctus (unknown quantity) & 10x Temazepam (20mg) & 20x Diazepam (10mg)**		
NS6	Male	28	**12x Thioridazine (50mg)**		

Appendix 3: BECK DEPRESSION INVENTORY

<u>BECK DEPRESSION INVENTORY (BDI)</u> (Beck et al., 1961)

The BDI is a self-report scale designed to assess current level of depression and provide some estimate of clinical severity. Although not a diagnostic instrument, it is a widely used clinical tool for monitoring change in depressive symptomatology over time.

Split –half reliability is approximately 0.9. Test-retest reliability in populations where no short-term change is expected is approximately 0.75. The scale is, however, a state rather than trait measure.

Validity has been established from high correlations with clinicians' ratings of depression severity.

The 21 items of the scale are scored on a 0 – 3 scale, thus giving a total score range of 0 – 63. Guidelines to interpret the scale are as follows:
0 – 9 *normal range*
10 – 15 *mild depression*
16 – 19 *mild-moderate depression*
20 – 29 *moderate severe depression*
30 – 63 *severe depression.*

A copy of the BDI is provided overleaf.

BDI

Date: _____

e: _____ Marital Status: _____ Age: _____ Sex: _____

pation: _____ Education: _____

questionnaire consists of 21 groups of statements. After reading each group of statements carefully,
the number (0, 1, 2 or 3) next to the one statement in each group which **best** describes the way you
been feeling the **past week, including today.** If several statements within a group seem to apply equally
circle each one. **Be sure to read all the statements in each group before making your choice.**

0 I do not feel sad.
1 I feel sad.
2 I am sad all the time and I can't snap out of it.
3 I am so sad or unhappy that I can't stand it.

0 I am not particularly discouraged about the future.
1 I feel discouraged about the future.
2 I feel I have nothing to look forward to.
3 I feel that the future is hopeless and that things cannot improve.

0 I do not feel like a failure.
1 I feel I have failed more than the average person.
2 As I look back on my life, all I can see is a lot of failures.
3 I feel I am a complete failure as a person.

0 I get as much satisfaction out of things as I used to.
1 I don't enjoy things the way I used to.
2 I don't get real satisfaction out of anything anymore.
3 I am dissatisfied or bored with everything.

0 I don't feel particularly guilty.
1 I feel guilty a good part of the time.
2 I feel quite guilty most of the time.
3 I feel guilty all of the time.

0 I don't feel I am being punished.
1 I feel I may be punished.
2 I expect to be punished.
3 I feel I am being punished.

0 I don't feel disappointed in myself.
1 I am disappointed in myself.
2 I am disgusted with myself.
3 I hate myself.

8
0 I don't feel I am any worse than anybody else.
1 I am critical of myself for my weaknesses or mistakes.
2 I blame myself all the time for my faults.
3 I blame myself for everything bad that happens.

9
0 I don't have any thoughts of killing myself.
1 I have thoughts of killing myself, but I would not carry them out.
2 I would like to kill myself.
3 I would kill myself if I had the chance.

10
0 I don't cry any more than usual.
1 I cry more now than I used to.
2 I cry all the time now.
3 I used to be able to cry, but now I can't cry even though I want to.

11
0 I am no more irritated now than I ever am.
1 I get annoyed or irritated more easily than I used to.
2 I feel irritated all the time now.
3 I don't get irritated at all by the things that used to irritate me.

12
0 I have not lost interest in other people.
1 I am less interested in other people than I used to be.
2 I have lost most of my interest in other people.
3 I have lost all of my interest in other people.

13
0 I make decisions about as well as I ever could.
1 I put off making decisions more than I used to.
2 I have greater difficulty in making decisions than before.
3 I can't make decisions at all anymore.

_____ Subtotal Page 1   **CONTINUED ON BACK**

9-018359

14
- 0   I don't feel I look any worse than I used to.
- 1   I am worried that I am looking old or unattractive.
- 2   I feel that there are permanent changes in my appearance that make me look unattractive.
- 3   I believe that I look ugly.

15
- 0   I can work about as well as before.
- 1   It takes an extra effort to get started at doing something.
- 2   I have to push myself very hard to do anything.
- 3   I can't do any work at all.

16
- 0   I can sleep as well as usual.
- 1   I don't sleep as well as I used to.
- 2   I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
- 3   I wake up several hours earlier than I used to and cannot get back to sleep.

17
- 0   I don't get more tired than usual.
- 1   I get tired more easily than I used to.
- 2   I get tired from doing almost anything.
- 3   I am too tired to do anything.

18
- 0   My appetite is no worse than usual.
- 1   My appetite is not as good as it used to be.
- 2   My appetite is much worse now.
- 3   I have no appetite at all anymore.

19
- 0   I haven't lost much weight, if any, lately.
- 1   I have lost more than 5 pounds.
- 2   I have lost more than 10 pounds.
- 3   I have lost more than 15 pounds.

I am purposely trying to lose weight by eating less. Yes _____ No _____

20
- 0   I am no more worried about my health than usual.
- 1   I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
- 2   I am very worried about physical problems and it's hard to think of much else.
- 3   I am so worried about my physical problems that I cannot think about anything else.

21
- 0   I have not noticed any recent change in my interest in sex.
- 1   I am less interested in sex than I used to be.
- 2   I am much less interested in sex now.
- 3   I have lost interest in sex completely.

_____ Subtotal Page 2

_____ Subtotal Page 1

_____ Total Score

TPC 0528-000   6 7 8 9 10 11 12 A B C D E

Appendix 4: BECK HOPELESSNESS SCALE

BECK HOPELESSNESS SCALE (BHS) (Beck et al., 1974)

The BHS is a self-report questionnaire comprising 20 statements about the
future, to each of which the individual replies by categorising them as "true"
or "false" as describing his/her attitude to the future in "the past week
including today". Each response scores one if it is consistent with pessimism.
Total scores are tentatively categorised in terms of potential suicide risk as
follows:

0 – 3   *None or minimal*
4 – 8   *Mild*
9 – 14 *Moderate*
15 – 20 *Severe*

Scale scores have been shown to correlate with clinical judgements of depths
of hopelessness. In addition, the BHS has been found to be associated with
severity and frequency of suicidal ideation (Nekanda-Trepka et al., 1983) and
suicidal intent (Dyer and Kreitman, 1984), as well as predicting parasuicide
repetition (Petrie et al., 1988) and completed suicide (Beck et al., 1989;
Fawcett et al., 1990).

No specific data is available with regards to reliability.

A copy of the BHS is provided overleaf.

BHS

Date:_____

Name:_____ Marital Status:_____ Age:_____ Sex:_____

Occupation:_____ Education:_____

This questionnaire consists of 20 statements. Please read the statements carefully one by one. If the statement describes your attitude for the **past week including today**, darken the circle with a 'T' indicating TRUE in the column next to the statement. If the statement does not describe your attitude, darken the circle with an 'F' indicating FALSE in the column next to this statement. **Please be sure to read each statement carefully.**

1. I look forward to the future with hope and enthusiasm.   Ⓣ   Ⓕ

2. I might as well give up because there is nothing I can do about making things better for myself.   Ⓣ   Ⓕ

3. When things are going badly, I am helped by knowing that they cannot stay that way forever.   Ⓣ   Ⓕ

4. I can't imagine what my life would be like in ten years.   Ⓣ   Ⓕ

5. I have enough time to accomplish the things I want to do.   Ⓣ   Ⓕ

6. In the future, I expect to succeed in what concerns me most.   Ⓣ   Ⓕ

7. My future seems dark to me.   Ⓣ   Ⓕ

8. I happen to be particularly lucky, and I expect to get more of the good things in life than the average person.   Ⓣ   Ⓕ

9. I just can't get the breaks, and there's no reason I will in the future.   Ⓣ   Ⓕ

10. My past experiences have prepared me well for the future.   Ⓣ   Ⓕ

11. All I can see ahead of me is unpleasantness rather than pleasantness.   Ⓣ   Ⓕ

12. I don't expect to get what I really want.   Ⓣ   Ⓕ

13. When I look ahead to the future, I expect that I will be happier than I am now.   Ⓣ   Ⓕ

14. Things just don't work out the way I want them to.   Ⓣ   Ⓕ

15. I have great faith in the future.   Ⓣ   Ⓕ

16. I never get what I want, so it's foolish to want anything.   Ⓣ   Ⓕ

17. It's very unlikely that I will get any real satisfaction in the future.   Ⓣ   Ⓕ

18. The future seems vague and uncertain to me.   Ⓣ   Ⓕ

19. I can look forward to more good times than bad times.   Ⓣ   Ⓕ

20. There's no use in really trying to get anything I want because I probably won't get it.   Ⓣ   Ⓕ

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Appendix 5: MEANS –ENDS PROBLEM SOLVING TEST

MEANS-ENDS PROBLEM SOLVING TEST (MEPS) (Platt and Spivack, 1975)

This test of interpersonal problem solving provides the respondent with the beginning of a story and a successful ending and asks the respondent to provide the middle part of the story by generating the appropriate means of achieving the successful outcome. Although the original MEPS used 10 stories, the present study used only 5 of these as Platt and Spivack (1975) have demonstrated that a valid assessment of problem-solving can be achieved using this abbreviated format.

Two scores were of interest, namely the number of relevant means and an overall effectiveness rating of the solutions offered. With regards to the relevant means measure, Platt and Spivack (1975) reported an inter-rater reliability coefficient of 0.82. For the effectiveness rating the procedure adopted by Evans et al. (1992) was duplicated, satisfactory reliability being demonstrated in the present study as described within the body of the text (p75).

The female version of the MEPS is provided overleaf. The male form is the same apart from the gender of the protagonist.

MEPS

INSTRUCTIONS

I AM GOING TO PRESENT YOU WITH SOME PROBLEM
SITUATIONS PEOPLE OFTEN EXPERIENCE IN EVERY DAY LIFE. I
WANT YOU TO TELL ME THE IDEAL STRATEGY FOR
OVERCOMING THE GIVEN PROBLEM SITUATION AND TO
DESCRIBE IT IN SUCH A WAY THAT ANOTHER PERSON COULD
FOLLOW YOUR PLAN OF ACTION.

THE FIRST PROBLEM IS A PRACTICE ONE, (PRESENT MEPS A).
WHAT WOULD BE THE BEST THING TO DO IN ORDER TO SOLVE
THIS PROBLEM?

MEPS A

MRS ATKINS WAS LISTENING TO THE PEOPLE
SPEAKING AT A MEETING ABOUT HOW TO MAKE
THINGS BETTER IN THE NEIGHBOURHOOD. SHE
WANTED TO SAY SOMETHING IMPORTANT AND HAVE
A CHANCE TO BE A LEADER TOO.

THE STORY ENDS WITH HER BEING ELECTED LEADER
AND PRESENTING A SPEECH.
You begin the story at the meeting when she wanted to have a
chance to be leader.

MEPS 1

JULIA LOVED HER BOYFRIEND VERY MUCH, BUT THEY
HAD MANY ARGUMENTS. ONE DAY HE LEFT HER.
JULIA WANTED THINGS TO BE BETTER.

THE STORY ENDS WITH EVERYTHING BEING FINE
BETWEEN HER AND HER BOYFRIEND.
You begin the story with her boyfriend leaving her after an
argument.

MEPS 2

MRS COLLINS HAD JUST MOVED IN THAT DAY AND
DIDN'T KNOW ANYONE. MRS COLLINS WANTED TO
HAVE FRIENDS IN THE NEIGHBOURHOOD.

THE STORY ENDS WITH MRS COLLINS HAVING MANY
GOOD FRIENDS AND FEELING AT HOME IN THE
NEIGHBOURHOOD.
You begin the story with Mrs Collins in her room immediately
after arriving in the neighbourhood.

MEPS 3

ONE DAY ANNE SAW A VERY HANDSOME MAN SHE
HAD NEVER SEEN BEFORE WHILE EATING IN A
RESTAURANT. SHE WAS IMMEDIATELY ATTRACTED TO
HIM.

THE STORY ENDS WHEN THEY GET MARRIED.
You begin when Anne first notices the man in the restaurant.

<u>MEPS 4</u>

JOAN NOTICES THAT HER FRIENDS SEEMED TO BE AVOIDING HER. JOAN WANTED TO HAVE FRIENDS AND BE LIKED.

THE STORY ENDS WHEN JOAN'S FRIENDS LIKE HER AGAIN.

You begin where she first notices her friends avoiding her.

<u>MEPS 5</u>

JILL IS HAVING TROUBLE GETTING ALONG WITH HER
BOSS ON HER JOB. JILL IS VERY UNHAPPY ABOUT THIS.

THE STORY ENDS WITH JILL'S BOSS LIKING HER.
You begin the story where Jill isn't getting along with her boss.

Appendix 6: AUTOBIOGRAPHICAL MEMORY TEST

AUTOBIOGRAPHICAL MEMORY TEST (AMT) (Williams and Broadbent, 1986)

The cue words used, and the procedure followed, was identical to that adopted in the previous studies of autobiographical memory specificity (Williams and Broadbent, 1986; Evans et al., 1992).

Williams and Broadbent (1986) have demonstrated that a reliable distinction can be made between specific and general autobiographical memories.

The response sheet used in the present series of experiments is enclosed overleaf.

AUTOBIOGRAPHICAL MEMORY TEST

POSITIVE	NEGATIVE
HAPPY	SORRY
SAFE	ANGRY
INTERESTED	CLUMSY
SUCCESSFUL	HURT (emotionally)
SURPRISED	LONELY

Appendix 7: MODIFIED STROOP TASK STIMULUS CARDS

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DIAGRAM	POTTERY
POTTERY	EGYPT
EGYPT	FRAMEWORK
INDIRECT	DIAGRAM
EGYPT	POTTERY
FRAMEWORK	EGYPT
POTTERY	FRAMEWORK
INDIRECT	SALAD
DIAGRAM	INDIRECT
POTTERY	EGYPT
EGYPT	SALAD
FRAMEWORK	POTTERY
EGYPT	SALAD
INDIRECT	FRAMEWORK
SALAD	DIAGRAM
FRAMEWORK	POTTERY
DIAGRAM	FRAMEWORK
SALAD	EGYPT
INDIRECT	SALAD
POTTERY	DIAGRAM
FRAMEWORK	SALAD
DIAGRAM	EGYPT
INDIRECT	INDIRECT
SALAD	POTTERY
FRAMEWORK	INDIRECT
EGYPT	SALAD
POTTERY	DIAGRAM
SALAD	FRAMEWORK
INDIRECT	INDIRECT
DIAGRAM	DIAGRAM

EXCITED	TENDER
TENDER	PEACEFUL
PEACEFUL	CHEERFUL
JOY	EXCITED
PEACEFUL	TENDER
CHEERFUL	PEACEFUL
TENDER	CHEERFUL
JOY	AMAZED
EXCITED	JOY
TENDER	PEACEFUL
PEACEFUL	AMAZED
CHEERFUL	TENDER
PEACEFUL	AMAZED
JOY	CHEERFUL
AMAZED	EXCITED
CHEERFUL	TENDER
EXCITED	CHEERFUL
AMAZED	PEACEFUL
JOY	AMAZED
TENDER	EXCITED
CHEERFUL	AMAZED
EXCITED	PEACEFUL
JOY	JOY
AMAZED	TENDER
CHEERFUL	JOY
PEACEFUL	AMAZED
TENDER	EXCITED
AMAZED	CHEERFUL
JOY	JOY
EXCITED	EXCITED

GUILTY	GRIEF
GRIEF	UPSET
UPSET	DEPRESSION
ASHAMED	GUILTY
UPSET	GRIEF
DEPRESSION	UPSET
GRIEF	DEPRESSION
ASHAMED	SOLEMN
GUILTY	ASHAMED
GRIEF	UPSET
UPSET	SOLEMN
DEPRESSION	GRIEF
UPSET	SOLEMN
ASHAMED	DEPRESSION
SOLEMN	GUILTY
DEPRESSION	GRIEF
GUILTY	DEPRESSION
SOLEMN	UPSET
ASHAMED	SOLEMN
GRIEF	GUILTY
DEPRESSION	SOLEMN
GUILTY	UPSET
ASHAMED	ASHAMED
SOLEMN	GRIEF
DEPRESSION	ASHAMED
UPSET	SOLEMN
GRIEF	GUILTY
SOLEMN	DEPRESSION
ASHAMED	ASHAMED
GUILTY	GUILTY

SUICIDE	DESPAIR
DESPAIR	BLEAK
BLEAK	DESPERATE
HOPELESS	SUICIDE
BLEAK	DESPAIR
DESPERATE	BLEAK
DESPAIR	DESPERATE
HOPELESS	GLOOM
SUICIDE	HOPELESS
DESPAIR	BLEAK
BLEAK	GLOOM
DESPERATE	DESPAIR
BLEAK	GLOOM
HOPELESS	DESPERATE
GLOOM	SUICIDE
DESPERATE	DESPAIR
SUICIDE	DESPERATE
GLOOM	BLEAK
HOPELESS	GLOOM
DESPAIR	SUICIDE
DESPERATE	GLOOM
SUICIDE	BLEAK
HOPELESS	HOPELESS
GLOOM	DESPAIR
DESPERATE	HOPELESS
BLEAK	GLOOM
DESPAIR	SUICIDE
GLOOM	DESPERATE
HOPELESS	HOPELESS
SUICIDE	SUICIDE

Appendix 8: SELF-AWARENESS TASK (used prior to the modified Stroop Task)

TO WHAT EXTENT DO THE FOLLOWING WORDS DESCRIBE HOW YOU FEEL AT THE PRESENT TIME?

Use the following scale :-
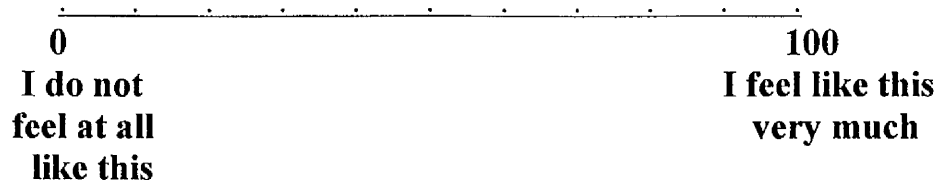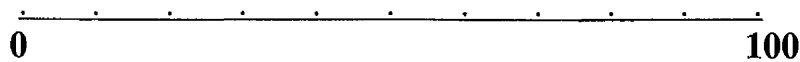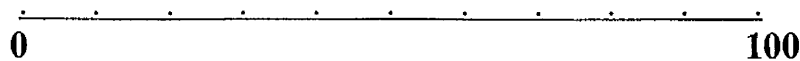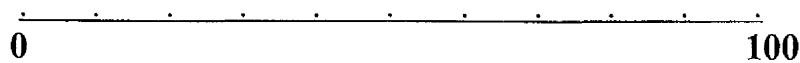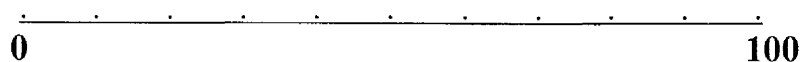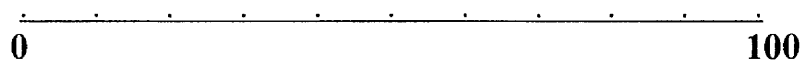
```
._____._____._____._____._____._____._____._____._____._____.
0                                                        100
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0   **100**
I do not   **I feel like this**
feel at all   **very much**
like this

1. SUICIDE

```
._____._____._____._____._____._____._____._____._____._____.
0                                                        100
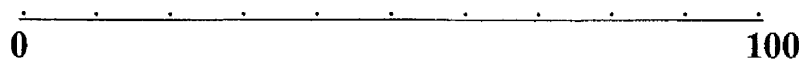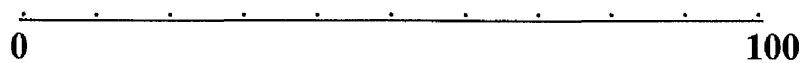```
**0**                                              **100**

## 2. JOY

```
._____._____._____._____._____._____._____._____._____._____.
0   100
```
**0**                                              **100**

## 3. SOLEMN

```
._____._____._____._____._____._____._____._____._____._____.
0   100
```
**0**                                              **100**

## 4. BLEAK

```
._____._____._____._____._____._____._____._____._____._____.
0   100
```
**0**                                              **100**

## 5. CHEERFUL

```
._____._____._____._____._____._____._____._____._____._____.
0   100
```
**0**                                              **100**

## 6. ASHAMED

```
._____._____._____._____._____._____._____._____._____._____.
0   100
```
**0**                                              **100**

## 7. DESPERATE

0                                                                     100

## 8. TENDER

0                                                                     100

## 9. UPSET

0                                                                     100

## 10. DEPRESSION

0                                                                     100

## 11. PEACEFUL

0                                                                     100

## 12. GUILTY

0                                                                     100

## 13. HOPELESS

0                                                                     100

## 14. AMAZED

0                                                                     100

## 15. GLOOM

0                                        100

## 16. GRIEF

0                                        100

## 17. EXCITED

0                                        100

## 18. DESPAIR

0                                        100
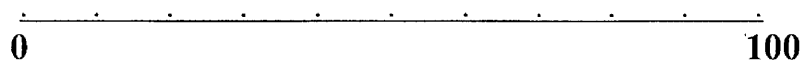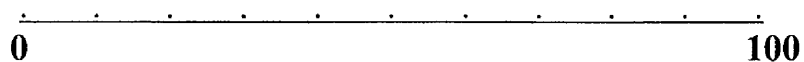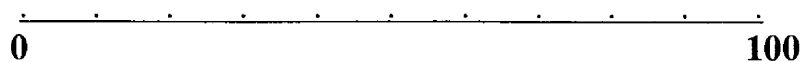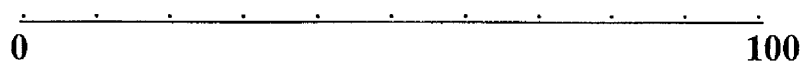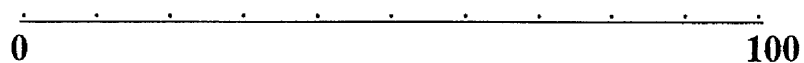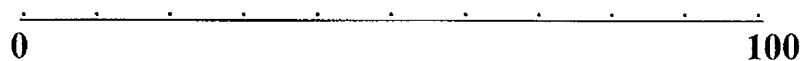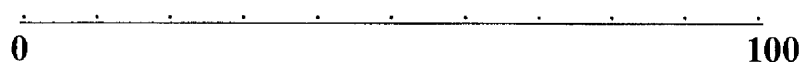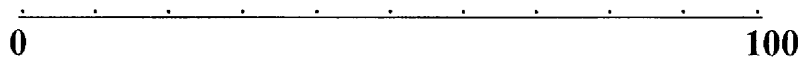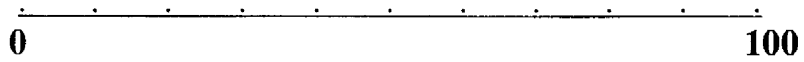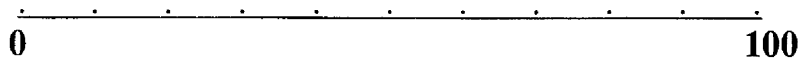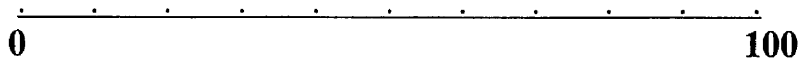
Appendix 9: PERSONAL FUTURE TASK

PERSONAL FUTURE TASK (MacLeod et al., 1993)

The format used was exactly as described in the original MacLeod et al. (1993) study, with five future time periods being presented.

The recording sheets for the orientation task, positive anticipation task, and negative anticipation task are included overleaf.

# PERSONAL FUTURE TASK

## ORIENTATION TASK

THINK OF EXAMPLES OF THINGS YOU MIGHT BE DOING
OR THAT MIGHT HAPPEN TO YOU IN THE:-

NEXT 24 HOURS

NEXT WEEK

NEXT MONTH

NEXT YEAR

NEXT 10 YEARS

# PERSONAL FUTURE TASK

## ±ve

THINKOF EXAMPLES OF THINGS YOU ARE LOOKING FORWARD TO IN THE:-

NEXT 24 HOURS

NEXT WEEK

NEXT MONTH

NEXT YEAR

NEXT 10 YEARS

# PERSONAL FUTURE TASK

## -ve

THINK OF EXAMPLES OF THINGS YOU ARE NOT
LOOKING FORWARD TO IN THE:-

       NEXT 24 HOURS

       NEXT WEEK

       NEXT MONTH

       NEXT YEAR

       NEXT 10 YEARS

Appendix 10: INFORMATION SHEET/CONSENT FORM

# INFORMATION SHEET FOR PATIENTS

You are being asked to help with a research study which aims to learn more about why some people attempt to harm themselves.

If you agree to be involved in this study you will be asked to see a Clinical Psychologist on up to 3 occasions over the next 12 months. One each occasion you will be interviewed, (either in your own home or at North Manchester General – which ever you prefer), and will be asked to complete some questionnaires and answer some questions about your current well being. Each interview will take about 1 hour.

This project will <u>not</u> involve psychological treatments, these, if you agree, will be provided from other sources.

Even after giving your consent you are free to withdraw from the research project at any time. Similarly, the Clinical Psychologist will end your participation in the study if he should think that to continue is not in your best interests.

**Entry into the project, or declining to do so, will in no way prejudice any other treatments offered by any of the psychiatric services.**

Further information about the research will be given prior to being asked for your written consent to participate in the project. Any questions you may have will be answered at this time.

# CONSENT FORM

I……………………………………of………………………………
………………………………………
………………………………………
………………………………………

give my consent to enter the research study which I understand aims to learn more about why some people deliberately self-harm.

Further details of the study have been provided by Gary Sidley (Clinical Psychologist).

Signature of patient……………………………… Date………………

# Brief Clinical Reports

# The Relationship Between Problem-Solving and Autobiographical Memory in Parasuicide Patients

## Gary L. Sidley and Kim Whitaker

### North Manchester General Hospital

## Rachel M. Calam and Adrian Wells

### University of Manchester

The relationship between effectiveness of interpersonal problem-solving and specificity of autobiographical memory was examined for 35 patients admitted to an inner-city District General Hospital following a deliberate drug-overdose. The results replicated those of Evans, Williams, O'Loughlin and Howells (1992) in finding a significant correlation between ineffective problem-solving and the over-general retrieval of autobiographical memories, giving further support to the suggestion that an over-general memory database may underpin the problem-solving deficits characteristic of parasuicide patients. However, the correlation coefficient computed was notably lower than in the Evans et al. study and an attempt is made to explain this discrepancy on the basis of differences in the levels of psychopathology between the patients involved in each study.

## Introduction

Parasuicide is a prevalent problem and, based on the Registrar-General's conservative figures for England and Wales, accounts for 70,000–80,000 admissions to hospital each year. Hawton and Catalan (1987) found parasuicide to be the most common cause of emergency admission to hospital for females and second only to heart disease for men. The high prevalence, together with the rarity of clinical interventions which have demonstrably reduced parasuicide repetition (see MacLeod, Williams, & Lineham, 1992, for a review), make it increasingly important to further our understanding of the psychological processes involved in an individual's decision to commit an act of deliberate self-harm.

There is persuasive evidence that parasuicide patients display a deficit in their ability to solve interpersonal problems. Scotte and Clum (1987) found psychiatric

in-patients with high levels of suicide ideation to be inferior on the Means-End Problem Solving Test (MEPS, Platt, Spivack, & Bloom, 1975) to a group of equally depressed but non-suicidal in-patient controls. Similarly, McLeavey, Daly, Murray, O'Riordan and Taylor (1987) discovered that a group of patients admitted to a Casualty Department following deliberate self-poisoning exhibited significantly poorer interpersonal problem-solving skills on the MEPS as compared to a hetero-geneous group of psychiatric patients without a parasuicide history. Analogous deficits in problem-solving have also been measured in adolescent female para-suicides (Rotherham-Borus, Trautman, Dopkins, & Shrout, 1990).

Further, albeit qualitative, evidence of problem-solving deficiencies in parasuicide patients is provided by Williams (1986) with his finding that the most frequently endorsed reason for taking an overdose of drugs was that the "situation was so unbearable I didn't know what else to do". In addition, there are indications that the solutions to problems which parasuicide patients offer tend to be passive, with an over-reliance on others (Linehan, Camper, Chiles, Strohsal, & Shearin, 1987; Orbach, Bar-Joseph, & Dror, 1990).

Overgeneral memory recall, in the form of experiencing disproportionate difficulty remembering specific events from our past, appears to be a phenomenon of general clinical importance and may possibly underpin the problem-solving deficit found in parasuicide. Wahler and Afton (1980), in relation to a Parent Training Program, dis-covered that those women who had persistent difficulty in recalling specific incidents of how their children annoyed them did not improve their relationships with their children as the treatment progressed. More recently, Brittlebank, Scott, Williams and Ferrier (1993) demonstrated that depressed patients with a greater degree of over-generality of autobiographical memory at the beginning of treatment responded signif-icantly less well to clinical intervention, which in this study was largely chemotherapy.

With regards to parasuicide patients, empirical investigation has shown them to be significantly more overgeneral in their autobiographical memories in comparison to both matched patients residing on medical wards (Williams & Broadbent, 1986; Evans et al., 1992) and to non-patient controls (Williams & Dritschel, 1988). The generality of autobiographical memory in these studies was measured using the Autobiographical Memory Test (Williams & Broadbent, 1986) in which the patient is prompted to retrieve a specific memory to a sequence of cue words and the first response given is deemed to be overgeneral if it describes a situation in which either no time period is referred to or spans longer than one day. For example, in response to the cue word "successful" the memory "when I pass exams" would be scored as general, whereas "last summer when I found out I had passed my Maths 'O' level" would be scored as specific.

In addition to replicating the finding that individuals who have deliberately self-harmed display significantly overgeneral autobiographical memories, the study of Evans et al. (1992) also found a highly significant correlation coefficient of 0.67 between low effectiveness of problem-solving strategies and overgeneral recall in a group of 12 parasuicide patients. This strong association is consistent with the possibility that efficient problem-solving may be reliant on satisfactory retrieval of

specific autobiographical memories, as such memories are likely to provide a more helpful and varied database from which to construct solutions to important real life problems (see Williams, 1996, pp 6–7 for discussion). The observation that the few interventions which have been shown to have any positive impact on parasuicide repetition have tended to incorporate a substantial problem-solving component (Salkovskis, Atha & Storer, 1990; Linehan, 1993) lends further importance to the task of elucidating the psychological underpinnings of problem-solving deficits as a means of refining our clinical interventions for parasuicide patients. As a step towards this end, the demonstration by Evans et al. (1992) of a link between problem-solving effectiveness and overgeneral memories requires replication.

The present study aims to explore the robustness of the association between ineffective problem-solving and overgeneral autobiographical memories by attempting to replicate the Evans et al. (1992) study with a larger, and more psychologically distressed group of parasuicide patients deemed to be of at least moderately high risk of parasuicide repetition. In addition to measures of memory generality and problem solving skills, mood and degree of hopelessness were also assessed in order to gauge the level of psychological disturbance in this cohort of patients and to facilitate comparisons with the groups of parasuicide patients described in related studies.

## Method

### Subjects

Patients admitted to the Accident and Emergency Department of North Manchester General Hospital following a deliberate drug overdose were screened intermittently over a 12–month period. Thirty-five patients (21 males and 14 females; average age 32.1 years; age range 19 to 51 years) met the following inclusion criteria: age between 16 to 65 years, the parasuicide resulted in an admission to an in-patient medical ward, no evidence of psychotic disorder or organic disorder, and identified as statistically being at medium to high risk of repeating parasuicide on the basis of scoring 5 or more of the eleven sociodemographic risk factors as described by Kreitman and Foster (1991). On the basis of the information provided by the patient at initial interview, a diagnostic classification was made using the Research Diagnostic Criteria (Spitzer, Endicott, & Robins, 1978). Twenty-five patients met the criteria for definite and three for probable major depressive disorder. Of the remainder, four patients were identified as displaying minor depressive disorder and three a mood disturbance as a reaction to short-term crisis. Most patients (74% and 71% respectively) had a history of previous parasuicide and contact with the psychiatric services.

### Measures

*Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).* This 21–item self-report questionnaire measures the intensity of depressive symptoms. Scores range from 0 to 63.

*Beck Hopelessness Scale (BHS) (Beck, Weissman, Lester, & Trexler, 1974).* This 20-item self-report scale has been found to be associated with severity and frequency of suicidal ideation (Nekanda-Trepka, Bishop, & Blackburn, 1983) and with suicidal

intent (Dyer & Kreitman, 1984), as well as predicting parasuicide repetition (Petrie, Chamberlain, & Clarke, 1988) and completed suicide (Beck, Brown, & Steer, 1989). Scores range from 0 (no hopelessness) to 20 (high hopelessness).

*Means Ends Problem Solving Test (MEPS) (Platt et al., 1975)*. This test of inter-personal problem-solving provides the respondent with the beginning of a story (for example, a person moving into a new neighbourhood and wants to get to know his neighbours) and a successful ending (for example, he has many good friends in the neighbourhood) and asks the respondent to provide the middle part of the story by generating the appropriate means of achieving the successful outcome. Although the original MEPS used 10 stories, the present study employed only 5 of these as it has previously been demonstrated that a valid assessment of problem-solving can be achieved using an abbreviated format (Platt & Spivack, 1975). From the responses provided by the patients, two scores were obtained: number of relevant means, and the overall likely effectiveness of the solutions offered. In order to compute an effectiveness rating, the procedure adopted by Evans et al. (1992) was duplicated in that problem solutions provided by the patients were evaluated on a three point Likert scale (0 – "not at all effective"; 1 – "effective"; 2 – "very effective"). The two present authors individually conducted and subsequently scored the MEPS assessment, and a total score of effectiveness was obtained for each patient ranging from 0 (not at all effective) to 10 (extremely effective). In order to check the reliability of this effectiveness rating, the responses from a random sample of 12 patients were independently scored by the two authors and a correlation of 0.92 was found for the effectiveness ratings, thus suggesting a satisfactory level of reliability.

*Autobiographical Memory Test (AMT) (Williams & Broadbent, 1986)*. The cue words used, and the procedure followed, was identical to that adopted in the previous Williams and Broadbent (1986) and Evans et al. (1992) studies. Five positive words (*happy, safe, interested, successful* and *surprised*) and five negative words (*sorry, angry, clumsy, hurt* and *lonely*) were read aloud to each patient in the order given above but alternating between positive and negative words. The latency to the first word of each response was timed using a stop-watch. If subjects offered a memory which was not specific a standard prompt was given ("can you think of a specific time, one particular occasion"), and the cumulative time to all subsequent responses was recorded. Patients were given 60 seconds to come up with a specific memory, and if no such memory was provided within this period, a time of 60 seconds was recorded. A memory was deemed specific if it referred to an occasion which did not span more than one day (Williams and Broadbent (1986) have demonstrated that this distinction between specific and general memories can be reliably made). Of particular interest in this study was the number of first responses that were specific, potential scores for each patient ranging from 0 (no specific first responses given) to 10 (a specific first response given for each cue word).

## Procedure

Subjects who gave their consent were interviewed as soon as practicable after recovery from the overdose (range 1 to 18 days, mean 4.3 days, mode 2 days). A brief history was taken, together with sociodemographic details sufficient to ensure

each patient displayed at least 5 risk factors (Kreitman & Foster, 1991) for further parasuicide. For those patients satisfying the inclusion criteria, the assessments were administered in the order shown above (together with one other assessment not reported in this study). The total time spent with each patient was approximately 75 minutes, incorporating both interview and test administration, breaks being taken at the patient's request or at any sign of fatigue.

## Results

The scores for all subjects on each assessment measure are summarized in Table 1. One patient failed to complete the BDI, hence only 34 sets of data were obtained on this measure.

TABLE 1 The means and standard deviations for scores on the BDI, BHS, MEPS effectiveness, and total number of specific memories given as first response

| Measure | N | Means | SD |
| --- | --- | --- | --- |
| BDI | 34 | 30.0 | 13.1 |
| BHS | 35 | 11.8 | 6.1 |
| MEPS effectiveness | 35 | 4.0 | 2.5 |
| AMT sp. memories | 35 | 5.4 | 2.2 |

Because the data did not meet all the assumptions for parametric tests, MEPS effectiveness and the BHS scores being skewed towards impaired problem-solving and high hopelessness respectively, the Spearman-Rank Coefficient ($r$) was used to determine the correlations between each of the four variables and the results are shown in Table 2. Unsurprisingly, the values obtained for the Beck Depression Inventory and Beck Hopelessness Scale were highly correlated. With regards to the association between effectiveness of problem-solving and the specificity of autobiographical memory, a significant correlation of 0.38 ($p<.01$) was found. Mood, as measured by the BDI, correlated significantly with problem-solving effectiveness ($r = 0.30$, $p<.04$) but not with the specificity of autobiographical memory.

TABLE 2 Correlations (Spearman-Rank) between scores on the BDI, BHS, MEPS effectiveness and total specific memories given as first response

| | BDI | BHS | MEPS effectiveness | Total specific memories |
| --- | --- | --- | --- | --- |
| BDI | — | | | |
| BHS | 0.65*** | — | | |
| MEPS effectiveness | –0.30* | –0.20 | — | |
| Total specific memories | –0.15 | 0.002 | 0.38** | — |

*$p<.04$; **$p<.01$; ***$p$, .0001

In order to explore whether the significant correlation between problem-solving effectiveness and memory specificity could largely be explained by mood, a partial correlation coefficient between these two parameters was calculated while controlling for scores on the BDI. The value of this coefficient was 0.36 ($p<.019$) suggesting that the relationship between ineffective problem-solving and overgeneral autobiographical memories is not mood dependent.

As to the possibility that a general sluggishness to respond was responsible for the significant correlation between problem-solving effectiveness and memory specificity, the relationship between the latency to give a response (any response) to the AMT cue words and problem-solving effectiveness was explored. The correlation was found to be low (–0.106) and non-significant, indicating that general unresponsiveness can not account for the correlation between effective problem-solving and memory specificity.

## Discussion

The main aim of this study was to confirm the finding of Evans et al. (1992) of a significant correlation between problem-solving effectiveness and the specificity of autobiographical memory. Using a larger sample of a parasuicide patients, the present study replicated the significant association between ineffective problem-solving as measured by the MEPS and the over-generality of personal memories given in response to the AMT cue-words. This significant correlation was not due to a prevailing sluggishness to respond, nor was it a direct consequence of depressed mood. Thus, the present study demonstrates that the relationship between ineffective problem-solving and over-general autobiographical memory is a robust one in parasuicide patients; those individuals who have greatest difficulty providing effective solutions to interpersonal problems also tended to have greatest difficulty retrieving specific memories.

Although comfortably reaching an acceptable level of significance, the correlation coefficient of 0.38 computed between the effectiveness of problem-solving and the specificity of autobiographical memory is notably lower than that of 0.67 found by Evans and her colleagues. The source of this discrepancy may be found in the differing characteristics of the subjects used in each study. There are indications that the patients involved in the present study displayed higher levels of psychiatric symptomatology. Thus, whereas 11 of the 12 patients in Evan's study were deemed to have mood disturbance in response to a short-term crisis, 71% of participants in the present study were characterized as displaying a definite major depressive disorder with a further 9% meeting the criteria for probable major depressive disorder. Although the hopelessness level was only marginally higher than that in the previous study, almost three-quarters of the current patients had a history of previous parasuicide, and a similar number reported prior contact with the psychiatric services, the latter two characteristics not having been reported in the Evans et al. (1992) study but likely to have been significantly less common. It is plausible to suggest that, for patients displaying relatively mild psychological distress in response to a short-term crisis, problem-solving deficits are likely to be a purer feature of the clinical picture,

less obscured by other psychopathology when compared to the patients in the present study who display greater psychiatric disturbance. These more disturbed patients, the majority with a parasuicide history, may often engage in deliberate self-harm as a means of mood-regulation or communication, rather than as a primary response to a problem situation.

Two further points are worthy of note. Unusually for research with parasuicide patients, in the present study males outnumber females at a ratio of 3 to 2. However, when males were compared to females no significant differences were found on either problem-solving effectiveness nor with regards to the specificity of autobiographical memory, suggesting that gender differences between the subjects in the present study and those in the Evans et al. (1992) study cannot account for the discrepancy in the correlation coefficient values. Secondly, consistent with previous research (Williams & Dritschel, 1988; Brittlebank et al., 1993) the correlation between specificity of autobiographical memory and mood (as measured by the BDI) was not significant, a finding suggestive of overgenerality being a trait rather than state characteristic.

In conclusion, the relationship between poor interpersonal problem-solving and over-general autobiographical memory appears a robust one, although a stronger association between these two variables may exist for a sub-group of parasuicide patients for whom the apparent insolubility of current life problems is the *prime* precipitant of the parasuicide. The correlation between problem solving ability and specificity of memory provides a theoretical rationale for the clinical effectiveness of interventions that encourage repeated practice at going beyond a general description of either past parasuicides (the Dialectical Behaviour Therapy of Lineham, 1993) or current problems (the problem-solving strategies of Salkvoskis et al., 1990). Further research might usefully explore whether overgenerality in autobiographical memory can be modified by direct clinical intervention. If this is the case, such an intervention could prove to be an effective secondary preventative strategy for some patients who use parasuicide as a response to what seem to be insurmountable problems of living.

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# The prediction of parasuicide repetition in a high-risk group

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**Objectives.** This study explores whether the specificity of risk assessment for parasuicide repetition can be improved by measurement of two psychological variables (overgenerality of autobiographical memory and future fluency for positive events) in the immediate aftermath of the index parasuicide.

**Design.** In a longitudinal study, parasuicide patients deemed to be at high risk of repetition on the basis of sociodemographic factors (Kreitman & Foster, 1991) were followed-up over a 12-month period.

**Method.** As soon as practicable after taking a deliberate drug overdose, patients completed the Autobiographical Memory Test, the Personal Future Test and the Beck Hopelessness Scale. The relative power of each of these measures, together with the number of sociodemographic risk factors, in predicting parasuicide repetition was investigated using a forward step-wise logistic regression analysis.

**Results.** The most potent short-term predictor of parasuicide repetition was found to be scores on the Beck Hopelessness Scale, whereas in the longer term the number of previous parasuicides was the major predictor.

**Conclusion.** For the heterogeneous parasuicide population as a whole, psychological variables are unlikely to improve upon the Beck Hopelessness Scale, sociodemographic risk factors and clinical interview in the prediction of parasuicide repetition.

Parasuicide, defined as deliberate self-harm which is not lethal, constitutes a widespread problem for clinical services with, on average, 10 such cases per week presenting to each District General Hospital in England and Wales (Macleod, Williams & Linehan, 1992). Given this high prevalence, in the immediate aftermath of a parasuicide it is important to be able to predict those patients who are likely to

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repeat the act in the near future so that scarce professional services can be targeted at this more vulnerable group.

The usefulness of statistical estimates of risk such as that provided by sociodemographic predictors of parasuicide (Kreitman & Foster, 1991) are significantly limited by their low specificity in that they identify as at risk many patients who do not go on to repeat. Thus, with regards to the 11 sociodemographic risk factors suggested by Kreitman & Foster (1991), (namely a history of previous parasuicide, diagnosis of personality disorder, alcohol consumption above the medically recommended limits, previous psychiatric treatment, unemployment, social class V, drug abuse, criminal record, history of violence over the previous 5 years, aged 25 to 54 years, and not married), a high-risk patient who endorses eight or more of these factors would only have a slightly higher than 40% chance of repeating the parasuicide within the subsequent 12 months. Therefore, for every 100 patients statistically identified as high risk on the basis of these factors, almost 60 will not repeat. In an attempt to improve the specificity of risk assessment, the present study explores the relative strengths of sociodemographic risk factors, the Beck Hopelessness Scale (BHS) (Beck, Weissman, Lester & Trexler, 1974), and two psychological parameters (generality of autobiographical memories and future fluency for specific positive events) measured in the short-term aftermath of the index parasuicide in predicting those who will repeat self-harm over the following 12-month period.

It has been known for some time that hopelessness about the future is intimately associated with suicidal behaviour. The concept of hopelessness has typically been assessed using the BHS (Beck *et al.*, 1974) and scores on this self-rating questionnaire have been shown to be a powerful predictor of parasuicide repetition (Petrie, Chamberlain & Clarke, 1988) and completed suicide (Beck, Brown & Steer, 1989; Fawcett *et al.*, 1990).

More recently, the relative importance of positive and negative anticipation has been explored (MacLeod, Rose & Williams, 1993). Using a 'future fluency' test in which participants were asked to generate occurrences in the future they were either looking forward to or not looking forward to, it was found that parasuicide participants were less able to think of future positive events when compared to controls whereas there was no difference in their fluency for events they were not looking forward to. MacLeod, Pankhania, Lee & Mitchell (1997) replicated this finding and, by comparing depressed parasuicides with non-depressed parasuicides, found that lack of positive anticipation is independent of mood state. These studies suggest that the basis of hopelessness may be the reduced prediction of *positive* events, important or trivial, and this pessimism seems to apply for both the immediate and long-term future. The possibility that future fluency for positive events might constitute the 'active ingredient' of hopelessness indicates that its power in predicting parasuicide repetition deserves further empirical investigation.

It has been consistently demonstrated that parasuicide patients display some difficulties with interpersonal problem solving (Linehan, Camper, Chiles, Strohsal & Shearin, 1987; McLeavey, Daly, Murray, O'Riordan & Taylor, 1987; Orbach, Bar-Joseph & Dror, 1990; Rotherham-Borus, Trautman, Dopkins & Shrout, 1990; Schotte & Clum, 1987). Furthermore, an enhanced degree of overgenerality in

autobiographical memory has been measured in patients who have recently taken a deliberate drug overdose (Evans, Williams, O'Loughlin & Howells, 1992; Williams & Broadbent, 1986; Williams & Dritschel, 1988). Measurement of the generality of autobiographical memory has been achieved using the Autobiographical Memory Test (Williams & Broadbent, 1986), in which the patient is prompted to retrieve a specific memory to a sequence of cue words and the first response given is judged to be over-general if it describes a situation in which either no time period is referred to or spans longer than 1 day. For example, a specific response to the cue word 'excited' would be 'when I watched the England football team draw with Italy to qualify for the World Cup Finals' whereas an over-general response would be 'when I watch football'.

The demonstration by Evans *et al.* of a significant correlation between over-general recall and low effectiveness of problem-solving, a finding replicated by Sidley, Whitaker, Calam & Wells (1997), suggests that the origin of the deficit in interpersonal problem-solving skills of parasuicide patients might lie in the lack of specificity of their autobiographical memories. Further support for a link between problem-solving ability and memory specificity is provided by Goddard, Dritschel & Burton (1996), who found a significant positive correlation in non-clinically depressed students. It is possible that the degree of over-generality in autobiographical memory might *predict* those parasuicide patients most at risk of further self-harm because the problem-solving process for such patients may be intrinsically impaired with the result that they see no constructive way out of their current life crisis. Furthermore, the extent to which the over-generality of autobiographical memory contributes to hopelessness warrants further investigation as it is conceivable that an inability to generate specific memories to nurture the problem-solving process might result in the perception of an intolerable future.

The present study used a longitudinal follow-up of parasuicidal patients to determine the degree with which the likelihood of future self-harm behaviour can be predicted by measurement of risk factors and each of these psychological parameters—generality of autobiographical memory and future fluency for positive events—in the period shortly following the index parasuicide. The hypotheses to be tested were that those patients who will repeat parasuicide within the subsequent 12 months will display significantly fewer specific memories and significantly less future fluency for positive events, as measured shortly after the index parasuicide, in comparison to those patients who do not go on to repeat. It was also hypothesized that there would be significant negative correlations between scores on the Beck Hopelessness Scale and both future fluency for positive events and specificity of autobiographical memory.

## Method

### Participants

Sixty-six patients (mean age 33.6 years; age range 19–58 years) admitted to the Accident and Emergency Department of North Manchester General Hospital following a deliberate drug overdose took part in this study. There were 36 males and 30 females. The inclusion criteria were that the patients were aged 16–65 years, the parasuicide necessitated admission to an in-patient medical ward, no evidence of a psychotic disorder or organic impairment was present, and the patient was identified as at medium to high risk of repeating self-harm in the future on the basis of exhibiting 5 or more of the 11

sociodemographic risk factors described by Kreitman & Foster (1991). If a patient reported a previous history of deliberate self-harm, he or she was asked how many times in the past parasuicide had resulted in immediate medical attention at a casualty department. A diagnostic classification was made based on information provided at initial interview using the Research Diagnostic Criteria (Spitzer, Endicott & Robbins, 1978) with 47 patients meeting the criteria for definite and 3 for probable major depressive disorder. Of the remainder, 12 patients were identified as displaying minor depressive disorder and 4 a mood disturbance as a reaction to a short-term crisis. Seventy-nine per cent of the cohort had a history of previous parasuicide and 73% had previously had contact with the psychiatric services.

All 66 participants completed the Autobiographical Memory Test, the Beck Hopelessness Scale and the Beck Depression Inventory. A subsample of these ($N = 36$; mean age $= 32.3$ years; range 18–51 years; comprised of 22 males and 14 females) also completed the Personal Future task and one other assessment reported elsewhere. (The other subsample, $N = 30$, also completed two other assessments that have no relevance to the present study).

## Measures

*Autobiographical Memory Test (AMT; Williams & Broadbent, 1986)*. The cue words used, and the procedure followed, were identical to that used in the previous Williams & Broadbent (1986) and Evans *et al.* (1992) studies. Five positive words (*happy, safe, interested, successful*, and *surprised*) and five negative words (*sorry, angry, clumsy, hurt*, and *lonely*) were read aloud to each patient in the order given above but alternating between positive and negative words. If participants offered a memory that was not specific a standard prompt was given ('can you think of a specific time, one particular occasion') and the cumulative time to all subsequent responses was recorded. Patients were given 60 seconds to come up with a specific memory, and if no such memory was provided within this period a time of 60 seconds was noted. A memory was deemed specific if it referred to an occasion which did not span more than 1 day. For each patient, scores were obtained for number of first responses which were specific (values ranging from 0 to 5 for positive cue words and 0 to 5 for negative cue words) and for mean latency to the first specific response.

Williams & Broadbent (1986) have demonstrated that a reliable distinction can be made between specific and general memories. In the present study, a random sample of 12 patients' responses was scored independently by two researchers for the specific/general distinction. Kappa coefficients of 0.84 and 0.90 were computed for responses to positive cue words and negative cue words, respectively, suggesting an acceptable level of inter-rater reliability.

*Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock & Erbaugh, 1961)*. This 21-item self-report questionnaire measures the intensity of depressive symptoms. Scores range from 0 to 63.

*Beck Hopelessness Scale (BHS; Beck* et al. *1974)*. Scores on this 20-item self-report scale range from 0 (no hopelessness) to 20 (maximum hopelessness). The BHS has been found to be associated with severity and frequency of suicidal ideation (Nekanda-Trepka, Bishop & Blackburn, 1983) and suicidal intent (Dyer & Kreitman, 1984), as well as predicting parasuicide repetition (Petrie, Chamberlain & Clarke, 1988) and completed suicide (Beck *et al.*, 1989; Fawcett *et al.*, 1990).

*Personal Future Task (PFT; MacLeod* et al., *1993)*. Five future time periods—next 24 hours, next week, next month, next year and next 10 years—were verbally presented to each patient in the above order, one at a time. There were three versions of the task.

(1) *orientation task*: each patient was given the verbal instruction 'I am interested in how you think about the future. I am going to give you some future time periods and for each one I want you to tell me as many things as you can that you might be doing or that might happen to you during each period of time. It does not matter whether the things you mention are important or trivial. Try not to repeat the same things over different time periods'. Thirty seconds were allowed for each time period and the experimenter wrote down the patient's responses. This orientation task constituted an open-ended practice version and, based on the responses, further clarification was given to the patient if necessary until it was clear that they fully understood the task.

(2) *looking forward to* (*LFT*) *task*: the procedure was as described above in the orientation task, except in this version each patient was asked 'to think of things you are looking forward to'. Each patient was told that it was all right to mention things already reported in the orientation task if they so wished.

(3) *Not looking forward to* (*Not-LFT*) *task*: in this version for each time period the patient was asked 'to think of things you are not looking forward to'.

## *Procedure*

Consenting participants were interviewed as soon as practicable following recovery from deliberate overdose (range = 0–18 days, mean = 3.1 days, SD = 3.7). Details about the circumstances leading up to the parasuicide were sought together with sociodemographic details sufficient to ensure that each patient displayed at least five risk factors (Kreitman & Foster, 1991) for further parasuicide. This latter criterion made it likely that a significant proportion of the cohort would repeat the self-harm in the near future. For those patients satisfying the inclusion criteria, the assessments were administered in the following order: *Subsample, 1* (1) BDI → (2) BHS → (3) (one other assessment reported elsewhere) (4) AMT → (5) PFT; *Subsample 2*, (1) BDI → (2) BHS → (3) AMT → (4) (two other assessments not reported here).

The total time spent with each patient was on average approximately 75 minutes, incorporating both interview and test administration. Attempts were made to follow-up each patient at 1 month, 6 months and 12 months after the index parasuicide to determine whether any further parasuicides had occurred, this information being acquired by a combination of approaches including interviews held in the patient's home, outpatient appointments, postal questionnaire completion or, for those who did not arrive for follow-up appointments, hospital records regarding admission to Manchester hospitals as a result of further deliberate self-harm. A patient was deemed to have repeated parasuicide if deliberately inflicted self-harm had resulted in medical treatment in a hospital setting.

## Results

### *Autobiographical memory*

A comparison of the index AMT variables, together with index BDI and BHS scores, for those patients who repeated parasuicide and those who did not repeat are shown in Table 1 for follow-up periods of 1, 6 and 12 months.

An initial analysis employing independent $t$-tests (1-tailed) revealed that, at 1-month follow-up, the repeaters differed significantly from the non-repeaters in being more hopeless ($t$ (63) = −2.2, $p < .025$), in generating fewer positive specific autobiographical memories ($t(63) = 2.05, p < .025$), and in having longer latencies to retrieve specific memories to positive cue words ($t(62) = 2.1, p < .025$)[1]. At 6-months follow-up only the BHS continued to significantly distinguish between the two groups ($t(63) = −1.9, p < .05$). Twelve months after the index parasuicide, no differences were found between repeaters and non-repeaters on any of the psychological variables under investigation. However, a comparison of the number of sociodemographic risk factors (Kreitman & Foster, 1991) did distinguish between the two groups at 6 months ($t(62) = −2.46, p < .025$) and at 12-month follow-up ($t(61) = −2.89, p < .005$), the repeaters having significantly more of these risk factors, although there were no differences on this parameter at 1-month follow-up.

In order to explore the relative predictive potential of these variables in distinguishing those who will go on to repeat parasuicide from those who will not, the variables hypothesized to distinguish repeaters and non-repeaters were entered as

[1] In the independent $t$-test analyses the degrees of freedom differ because of missing or incomplete data.

**Table 1.** A comparison of index AMT specific memory scores, AMT latencies, BDI, BHS and number of risk factors (Kreitman & Foster, 1991) for parasuicide repeaters and non-repeaters at 1-month, 6-months and 12-months follow-up

| Variable | 1-month follow-up | | 6-months follow-up | | 12-months follow-up | |
|---|---|---|---|---|---|---|
| | Repeaters $N = 10$ Mean (SD) | Non-repeaters $N = 55$ Mean (SD) | Repeaters $N = 20$ Mean (SD) | Non-repeaters $N = 45$ Mean (SD) | Repeaters $N = 25$ Mean (SD) | Non-repeaters $N = 40$ Mean (SD) |
| AMT total specific | 3.7 | 4.8 | 4.5 | 4.7 | 4.5 | 4.7 |
| memories | (2.5) | (2.0) | (2.3) | (2.1) | (2.3) | (2.0) |
| AMT positive | 1.3** | 2.1** | 1.9 | 2.1 | 1.9 | 2.1 |
| specific memories | (1.3) | (1.2) | (1.3) | (1.2) | (1.3) | (1.3) |
| AMT negative | 2.4 | 2.7 | 2.6 | 2.6 | 2.6 | 2.6 |
| specific memories | (1.7) | (1.2) | (1.5) | (1.2) | (1.5) | (1.1) |
| AMT positive latency | 42.0** | 33.6** | 36.5 | 34.2 | 36.7 | 33.7 |
| (secs) | (11.9) | (11.9) | (12.7) | (12.0) | (13.0) | (11.7) |
| AMT negative | 30.1 | 26.3 | 26.8 | 26.9 | 26.4 | 27.2 |
| latency (secs) | (15.9) | (12.7) | (13.8) | (13.0) | (13.0) | (13.4) |
| BDI | 36.9 | 29.3 | 33.0 | 29.3 | 31.6 | 29.7 |
| | (14.3) | (13.4) | (16.2) | (12.4) | (15.8) | (12.4) |
| BHS | 15.7** | 11.4** | 14.1* | 11.2* | 13.2 | 11.3 |
| | (6.1) | (5.8) | (6.4) | (5.5) | (6.2) | (5.6) |
| Risk factors | 7.3 | 7.0 | 7.7** | 6.8** | 7.6*** | 6.7*** |
| | (1.1) | (1.4) | (1.3) | (1.3) | (1.2) | (1.3) |

*$p < .05$; **$p < .025$; ***$p < .005$.

covariates in a forward step-wise logistic regression analysis. Also, to investigate the relative contribution of each patient's number of previous parasuicides in comparison to the other sociodemographic risk factors (i.e. the number of risk factors excluding previous parasuicide), these two parameters were entered separately. The results of this analysis are summarized in Table 2 for follow-ups of 1 month, 6 months, and 12 months.

The logistic regression analysis suggested high hopelessness, as measured by the BHS, was the best predictor of further suicidal behaviour in the short-term, but that in the longer term (6 months or more after the index parasuicide) the number of previous parasuicides became the most powerful prognostic indicator. At 1-month follow-up, a BHS cut-off score of 19 or 20 correctly identified six (60%) of the ten repeaters and 49 (91%) of the 54 non-repeaters. By 12-months follow-up, a cut-off of 2 or more previous parasuicides correctly identified 14 (58%) of the 24 repeaters and 34 (87%) of the 39 non-repeaters. Autobiographical memory specificity, latency to retrieve or the number of specific memories, did not significantly add to the predictive model.

**Table 2.** Summary of results from logistic regression analysis involving the forward step-wise entry of autobiographical memory specificity for positive cue words, latency to retrieve specific memories to positive cue words, BHS scores, number of previous parasuicides, and the number of other sociodemographic risk factors in predicting parasuicide repetition (A = observed no, predicted no; B = observed no, predicted yes; C = observed yes, predicted no; D = observed yes, predicted yes)

| Step | Variable included | $\chi^2$ for improvement | P | A | B | C | D | Correctly classified (%) |
|------|------------------|------------------------|---|---|---|---|---|--------------------------|
| 1-month follow-up | | | | | | | | |
| 0 | | | | 54 | 0 | 9 | 0 | 85.7 |
| 1 | BHS | 4.31 | .04 | 54 | 0 | 9 | 0 | 85.7 |
| 6-months follow-up | | | | | | | | |
| 0 | | | | 44 | 0 | 19 | 0 | 69.8 |
| 1 | Previous parasuicide | 8.68 | .003 | 39 | 5 | 15 | 4 | 68.3 |
| 12-months follow-up | | | | | | | | |
| 0 | | | | 39 | 0 | 24 | 0 | 61.9 |
| 1 | Previous parasuicide | 17.1 | .0001 | 35 | 4 | 11 | 13 | 76.2 |

**Table 3.** A comparison of index scores on the PFT, BDI, BHS and sociodemographic risk factors for parasuicide repeaters and non-repeaters at 1-month, 6-months and 12-months follow-up

| | 1-month follow-up | | 6-months follow-up | | 12-months follow-up | |
|---|---|---|---|---|---|---|
| Variable | Repeaters N = 8 Mean (SD) | Non-repeaters N = 28 Mean (SD) | Repeaters N = 13 Mean (SD) | Non-repeaters N = 23 Mean (SD) | Repeaters N = 17 Mean (SD) | Non-repeaters N = 19 Mean (SD) |
| Future fluency positive 'looking forward to' | 6.1 (4.1) | 8.7 (6.5) | 6.1* (4.2) | 9.3* (6.7) | 7.5 (5.6) | 8.7 (6.6) |
| Future fluency negative 'not looking forward to' | 4.9 (2.9) | 5.7 (5.9) | 4.7 (3.6) | 6.0 (6.2) | 4.7 (3.7) | 6.2 (6.6) |
| BHS | 15.5* (6.1) | 10.9* (6.0) | 14.2* (6.5) | 10.6* (6.0) | 13.0 (6.4) | 10.9 (6.3) |
| BDI | 32.8 (14.6) | 30.2 (13.4) | 33.2 (15.6) | 29.4 (12.3) | 33.9 (13.7) | 27.9 (12.9) |
| Risk factors | 7.7 (1.8) | 6.7 (1.4) | 7.6** (1.6) | 6.5** (1.3) | 7.5** (1.4) | 6.4** (1.3) |

*$p < .05$; **$p < .025$.

*Personal Future*

A comparison of the index PFT variables, BDI and BHS scores, together with the number of risk factors, for those patients who repeat parasuicide and those who do not repeat are shown in Table 3.

At 1-month follow-up only the BHS significantly distinguished the repeaters from the non-repeaters ($t(34) = -1.9$, $p < .05$). By 6-months follow-up the repeaters continued to be significantly more hopeless ($t(34) = -1.72$, $p < .05$) and had significantly poorer future fluency for positive events ($t(34) = 1.78$, $p < .05$). The number of sociodemographic risk factors did significantly distinguish between the two groups at 6-months follow-up ($t(31) = -2.12$, $p < .025$) and at 12-months follow-up ($t(31) = -2.39$, $p < .025$), but not at 1-month follow-up.

To investigate the power of these variables to predict parasuicide repetition, future fluency for positive events, the scores on the BHS, the number of previous parasuicides and the number of other sociodemographic risk factors were entered as covariates into a forward step-wise logistic regression analysis, the results of which are shown in Table 4 for 1-month, 6-months and 12-months follow-up.

**Table 4.** Summary of results from logistic regression analysis involving the forward step-wise entry of future fluency, BHS, number of previous parasuicides and other sociodemographic risk factors in predicting parasuicide repetition

| Step | Variable included | $\chi^2$ for improvement | $P$ | A | B | C | D | Correctly classified (%) |
|---|---|---|---|---|---|---|---|---|
| 1-month follow-up | | | | | | | | |
| 0 | | | | 30 | 0 | 4 | 0 | 88.2 |
| 1 | Previous parasuicide | 5.74 | .02 | 29 | 1 | 3 | 1 | 88.2 |
| 6-months follow-up | | | | | | | | |
| 0 | | | | 23 | 0 | 11 | 0 | 67.7 |
| 1 | Previous parasuicide | 7.8 | .005 | 20 | 3 | 8 | 3 | 67.7 |
| 12-months follow-up | | | | | | | | |
| 0 | | | | 19 | 0 | 15 | 0 | 55.9 |
| 1 | Previous parasuicide | 15.3 | .0001 | 17 | 2 | 5 | 10 | 79.4 |

The most potent predictor of parasuicide repetition in this subsample of patients was found to be the number of previous parasuicides, this being the case for 1-month, 6-months and 12-months follow-up. The logistic regression analysis showed that future fluency for positive events did not significantly add to the predictive model.

*Components of hopelessness*

The degree to which the two psychological variables under investigation (over-generality of autobiographical memory and future fluency for positive events) might contribute to hopelessness was investigated by means of a correlational analysis. Pearson Product–Moment correlation coefficients were calculated between scores on the BHS and each of the following four parameters: future fluency for positive events, future fluency for negative events, latency to retrieve specific memories to positive cue words and number of specific positive memories.

There was a highly significant negative correlation ($r = -.49$, $p < .01$) between hopelessness and future fluency for positive events, suggesting that an inability to predict enjoyable occurrences might be an important component of hopelessness. In contrast, the correlation between BHS and future fluency for negative events was low ($r = .11$, n.s.). There were very weak and non-significant correlations between hopelessness and the autobiographical memory parameters.

In light of previous research (Salter & Platt, 1990) suggesting a significant positive correlation between 'elapsed time' (the time between index parasuicide and the assessment interview) and suicidal intent, in the present study the relationships between the length of this time-lag and the dependent variables (BHS, AMT variables, PFT variables, and number of sociodemographic risk factors) were investigated. No significant correlations were found, suggesting that the length of the delay between index parasuicide and time of the assessment had no major influence on the outcome of the present study.

## Discussion

The primary purpose of these studies was to determine if the specificity with which we identify those parasuicide patients at risk of imminent self-harm repetition could be improved by measurement of the generality of autobiographical memory and future fluency for positive events shortly after the index parasuicide.

The results obtained from this group of 66 parasuicide patients lends further weight to the value of the BHS as a short-term predictor of future suicidal behaviour. These findings are consistent with those of Petrie *et al.* (1988), who found hopelessness to be the variable most closely related to suicidal ideation around the time of the index hospitalization but a rather weaker, albeit still significant, predictor of further self-harm at 6-months follow-up. The hypothesis that future fluency for positive events would be the 'active ingredient' of hopelessness and would significantly predict subsequent parasuicide was not supported by the data. Despite the means for the groups of repeaters and non-repeaters being in the predicted direction (significantly so at 6-months follow-up) logistic regression analysis showed future fluency to make no significant contribution to the identification of those patients who go on to parasuicide again.

With regards to the generality of autobiographical memory, although the group of patients that went on to repeat parasuicide tended on average to generate fewer specific memories to positive cue words and to take longer to retrieve such memories, these differences only approached statistical significance at 1-month

follow-up and, importantly, the logistic regression analysis demonstrated that these autobiographical memory variables did not significantly enhance the specificity or sensitivity of the predictive model. Thus, our hypotheses concerning the link between the generality of autobiographical memory and subsequent parasuicide were not supported by the data, suggesting that these parameters may not be of generic value for routine risk assessment.

Although the generality of autobiographical memory when measured in a heterogeneous group of patients who have recently self-harmed was not able to predict accurately those who would go on to repeat the parasuicide in the near future, it is conceivable that the AMT may have some clinical utility in relation to the subgroup of parasuicides for whom problem-solving deficits are prominent. Given that a significant correlation has been demonstrated between problem-solving deficits and over-general autobiographical memory (Evans *et al.*, 1992; Sidley *et al.*, 1997), future research might usefully explore the potential of over-general memory to predict future parasuicide in a subgroup of patients who are demonstrably lacking in problem-solving skills and whose index self-harm has been precipitated by practical life problems which are perceived by the patients to be insoluble.

The number of sociodemographic risk factors, which includes previous parasuicide, as described by Kreitman & Foster (1991) was confirmed as a significant predictor of future self-harm in the medium term, that is at 6-months and 12-months follow-up. However, splitting the risk factors into number of previous parasuicides and other risk factors (for example history of alcohol abuse, criminal record, past contact with the psychiatric services), and analysing the contribution of each separately, revealed the former to be a highly significant predictor of future deliberate self-harm at 6 months and 12 months follow-up. The other risk factors did not make any further significant contribution to the predictive model.

Although the relatively small sample size and associated potential for Type II error indicate that it would be premature to totally dismiss the utility of memory specificity and future fluency for positive events in predicting parasuicide repetition, collectively these findings suggest that for routine clinical practice with the wide range of parasuicide patients who present to hospital services, the most useful indices to supplement the clinical interview in the assessment of risk for future suicidal behaviour are the BHS and the number of previous incidences of deliberate self-harm. However, as recently proposed by Hjelmeland (1996), the predictors of repetition might be highly dependent upon the stage of the 'suicidal career' the patients are in. In the present study a relatively high risk group was deliberately selected, with 79 % already having a history of parasuicide prior to the index attempt and, during the period of the study, this group of historical repeaters comprised 24 of the 25 patients who did repeat during the 12-months follow-up period. This observation, together with previous empirical evidence that those with and without a parasuicide career may respond differentially to offers of support (the Green Card Study of Morgan, Jones & Owen, 1993; and personal communication), suggest the value of exploring the utility of psychological measures on a larger and less chronic group of parasuicide patients. Indeed, the utility of scores on the BHS and number of previous parasuicides in predicting repetition might be less impressive when applied to a typical clinical situation where 1-year repetition rates are significantly less

than those measured in the deliberately selected 'high risk' group who participated in the current study.

Interestingly, despite the lack of support for the hypothesis that future fluency for positive events would significantly predict parasuicide repetition, correlational analysis supported the contention of MacLeod *et al.* 1993, 1997) that lack of *positive* anticipation, not over-prediction of negative events, forms the basis of hopelessness, a highly significant correlation coefficients of −.49 being computed between positive future fluency and scores on the BHS, whereas there was a low and non-significant correlation between the BHS and negative future fluency. The absence of any significant correlation between the BHS and the AMT parameters suggests that relative difficulty in identifying specific memories from one's past may have no relevance to the emergence of hopelessness.

A limitation of the present study is the number of drop-outs before the end of the 12-month follow-up period (23 from a total of 66). Although a database check about admission to local hospitals with self-inflicted injuries was carried out, it is conceivable that some parasuicide repetitions might not have been detected (for example, those admitted to hospitals outside the region) leading to false negatives in the data. However, the fact that drop-outs did not differ significantly from non-drop-outs on any of the measures taken suggests that any bias from this source is unlikely to be substantial.

In summary, neither of the two psychological parameters (over-generality of AMT and future fluency for positive events) was found to enhance the prediction of parasuicide repetition in a heterogeneous group of high-risk patients over and above the utility of scores on the BHS and number of previous parasuicides. However, the significant differences found between repeaters and non-repeaters on future-fluency for positive events and generality of autobiographical memories, together with the significant correlation between hopelessness and future positive fluency, raise the possibility that these psychological parameters might have clinical relevance to *subgroups* of parasuicide patients, the impacts of which are diluted when the whole group of parasuicide patients is investigated. Future research, therefore, might usefully explore the role of each of these psychological variables with particular patients whose parasuicides appear to be motivated by discrete difficulties (for example life-problems perceived as insoluble, high hopelessness in the absence of major life difficulties, intolerable affect), a series of single-case designs being an appropriate first step in the investigative process.

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