

## 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 ( $t(62) = 2.1, p < .025$ )<sup>1</sup>. 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

<sup>1</sup> 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	Non-repeaters	Repeaters	Non-repeaters	Repeaters	Non-repeaters
	N = 10	N = 55	N = 20	N = 45	N = 25	N = 40
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	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 positive specific memories	1.3** (1.3)	2.1** (1.2)	1.9 (1.3)	2.1 (1.2)	1.9 (1.3)	2.1 (1.3)
AMT negative 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 positive 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 negative 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)

\*  $p < .05$ ; \*\*  $p < .025$ ; \*\*\*  $p < .005$ .

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

Variable	1-month follow-up		6-months follow-up		12-months follow-up	
	Repeaters	Non-repeaters	Repeaters	Non-repeaters	Repeaters	Non-repeaters
	N = 8	N = 28	N = 13	N = 23	N = 17	N = 19
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	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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