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Problem-solving ability and repetition of deliberate self-harm: a multicentre study

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ABSTRACT

Background. While recent studies have found problem-solving impairments in individuals who engage in deliberate self-harm (DSH), few studies have examined repeaters and non-repeaters separately. The aim of the present study was to investigate whether specific types of problem-solving are associated with repeated DSH.

Method. As part of the WHO/EURO Multicentre Study on Suicidal Behaviour, 836 medically treated DSH patients (59% repeaters) from 12 European regions were interviewed using the European Parasuicide Study Interview Schedule (EPSIS II) approximately 1 year after their index episode. The Utrecht Coping List (UCL) assessed habitual responses to problems.

Results. Factor analysis identified five dimensions – Active Handling, Passive-Avoidance, Problem Sharing, Palliative Reactions and Negative Expression. Passive-Avoidance – characterized by a pre-occupation with problems, feeling unable to do anything, worrying about the past and taking a gloomy view of the situation, a greater likelihood of giving in so as to avoid difficult situations, the tendency to resign oneself to the situation, and to try to avoid problems – was the problem-solving dimension most strongly associated with repetition, although this association was attenuated by self-esteem.

Conclusions. The outcomes of the study indicate that treatments for DSH patients with repeated episodes should include problem-solving interventions. The observed passivity and avoidance of problems (coupled with low self-esteem) associated with repetition suggests that intensive therapeutic input and follow-up are required for those with repeated DSH.

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INTRODUCTION

Repetition of deliberate self-harm (DSH) or parasuicide is common. The WHO/EURO Multicentre Study on Suicidal Behaviour found that 56% of patients medically treated for DSH had made previous attempts and that 29% made a further attempt within 12 months of their index act (Kerkhof & Arensman, 2004). Rates of repetition are increasing (Hawton *et al.* 1997) and those presenting to hospital with DSH are now more likely to have a history of DSH and to engage in further acts, than was previously observed (Henriques *et al.* 2004). Repetition is regarded as an important outcome following an episode of DSH (Owens *et al.* 1994; Kerkhof & Arensman, 2004) because it reflects ongoing or recurrent distress (Hawton & Fagg, 1995; Hawton *et al.* 1999) and is associated with increased risk of suicide (Zahl & Hawton, 2004). Repetition is the most commonly used outcome measure in treatment evaluation studies, which may be due to an individual's inability to resolve his or her problems and difficulties. There is evidence to suggest that the acquisition of problem-solving skills may reduce the likelihood of repetition of DSH (Linehan *et al.* 1987; Hawton *et al.* 1998) and may also bring about better results than control treatment with regard to depression, hopelessness and problems (Townsend *et al.* 2001).

While problem-solving impairment has been found to be significantly associated with DSH (Linehan *et al.* 1987; McLeavey *et al.* 1987; Rotheram-Borus *et al.* 1990; Pollock & Williams, 1998, 2004), few studies have compared problem solving of repeaters with that of non-repeaters. Compared with suicide ideators and first-ever attempters, repeaters have been found to score significantly lower on problem-solving confidence and personal control and significantly higher on approach-avoidance (Rudd *et al.* 1996). In studies of patients with a diagnosis of borderline personality disorder (BPD), the generation of inappropriate, and to a lesser extent, passive problem solutions [as measured by the Means-Ends Problem Solving scale (MEPS)] were found to be predictive of repetition within 12 months (Kehrer & Linehan, 1996) while poorer engagement in the coping strategy of comforting cognitions has been independently associated with repetition (Rietdijk *et al.* 2001).

In one prospective study of hospital-treated DSH patients (Sakinofsky & Roberts, 1990), greater perceived severity of personal problems was associated with increased risk of repetition within 3 months, although the rate of repetition was similar among those who had problems that resolved and those who did not. Problem score was the first variable to emerge from a stepwise discriminant function analysis that included gender along with 17 other important baseline continuous variables including previous DSH, suicide intent, lethality, depression score, locus of control, powerlessness and other variables. In a prospective 18-month follow-up study of 50 consecutive hospital-treated DSH patients (Dieserud *et al.* 2003), low self-appraised problem-solving capacity and a low sense of self-efficacy (i.e. a lack of trust in one's own ability to cope with problems) predicted repetition of attempt within 18 months, even when sex, age, previous suicide attempt, suicide intent and lethality were controlled for. Low self-efficacy was the best predictor of repetition. Baseline assessment was carried out an average of 20·4 days following the index attempt, which suggests that self-efficacy is a stable predictor of repetition. The main methodological limitations of these studies is their use of different terminology (attempted suicide, parasuicide, deliberate self-harm) their small sample sizes and in several cases, the use of a single diagnostic group (BPD), which limits the extent to which the study findings can be generalized.

The principal aim of the present study is to compare problem-solving dimension scores of repeaters with non-repeaters from a large sample of patients presenting with DSH, and to investigate whether any of these problem-solving styles is independently associated with repetition of DSH.

METHOD

Participants

The participants were 836 medically treated DSH patients from 12 European regions who were followed-up in the Repetition Prediction part of the WHO/EURO Multicentre Study on Suicidal Behaviour. The WHO Working Group of the WHO/EURO Multicentre Study

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on Suicidal Behaviour devised the following definition of parasuicide/attempted suicide:

> An act with nonfatal outcome in which an individual deliberately initiates a non-habitual behaviour, that without intervention from others will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognised therapeutic dosage and which is aimed at realising changes that the person desires via the actual or expected physical consequences (Platt *et al.* 1992).

This definition includes acts that are interrupted before a self-harm injury is sustained, for example a person removed from a bridge before jumping off, but excludes episodes of self-harm by individuals who do not understand the meaning or the outcome of their act, for example, due to a learning disability or severe mental disorder (Bille-Brahe *et al.* 1994).

The terms 'parasuicide', 'attempted suicide' and 'deliberate self-harm' were used interchangeably by the WHO/EURO Multicentre Study on Suicidal Behaviour. The term 'deliberate self-harm' (DSH) is used in the present paper to reflect the diversity of motives involved in this behaviour, ranging from the 'wish to die' to 'trying to get attention'. However, we acknowledge that the WHO study definition was not intended as a definition of DSH. Across 12 participating regions, a non-consecutive sample of 1598 DSH patients aged 15 years and over who were medically treated for an episode meeting the WHO definition of parasuicide as outlined earlier were interviewed using the European Parasuicide Study Interview Schedule I (EPSIS I). These interviews generally took place within 72 hours of the DSH act. Follow-up interviews were carried out using EPSIS II with 836 of these individuals (52·3%) approximately 1 year later. On the basis of the relevant sections of EPSIS I and II, repeaters were identified as patients who had engaged in more than one DSH act. Non-repeaters were those patients whose index act was their only known episode of DSH at the time of follow-up.

Measures

EPSIS I and II are structured interview schedules that include a number of standardized and non-standardized scales assessing several areas of inquiry, including suicide intent, severity of depressed mood, levels of hopelessness and self-esteem, precipitating problems, and lifetime experiences.

Problem solving was assessed using the 26-item version of the Utrecht Coping List (UCL; Schreurs *et al.* 1988) at follow-up (EPSIS II). The scale assesses characteristic style of reacting to problems, e.g. 'using a direct approach in order to solve a problem' and also situation-specific coping, e.g. 'showing one's anger with those responsible for the problem'. Each item is positively scored on a four-point Likert response format measuring frequency of reaction ('Seldom or Never', 'Sometimes', 'Often', 'Very Often'). Higher scores indicate greater use of the problem-solving approach. The scale is theoretically based on the assumption that types of coping are not mutually exclusive but operate in various combinations. Schreurs *et al.* (1988) propose that coping can be categorized into three main types: changing the situation or problem; changing the perception of the situation; or reducing the arousal. The original factor structure of the UCL is composed of the following seven problem-solving dimensions, providing separate scores on each dimension rather than an overall composite score.

Active Handling (*6 items*). This is characterized by an active approach to problem solving in which steps are taken to solve the problem itself, i.e. changing the situation. The problem is approached directly, thought about, and several solutions are considered and planned, e.g. 'Making several alternative plans for handling a problem'.

Palliative Reactions (*4 items*). This involves efforts at changing the feelings elicited by the problem, i.e. changing the arousal, which include a number of avoidance strategies such as distraction or time out, e.g. 'Directing one's thoughts towards other matters'.

Avoidance/Wait (*3 items*). Avoiding or resigning oneself to the problem, i.e. not changing the problem itself, e.g. 'Trying to avoid difficult situations as much as possible'.

Seek Social Support (*3 items*). Seeking comfort, support and sympathy from others, i.e. changing one's perception and arousal, e.g. 'Sharing one's worries with someone'.

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Passive Reactions (*4 items*). Feeling helpless, pessimistic and overwhelmed by the problem, i.e. not changing the perception or arousal, e.g. 'Being totally pre-occupied with the problems'.

Expression of Emotions (*4 items*). To express one's feelings about the problem (including anger and annoyance) to others, i.e. to change one's arousal, e.g. 'Showing one's anger with those responsible for the problem'.

Comforting Cognitions (*2 items*). To engage in self-comforting and reassuring thoughts, i.e. changing one's perception of the problem and changing one's arousal, e.g. 'Telling oneself that other people also have their problems from time to time'.

The internal consistency of the UCL has been examined among different norm groups, generally revealing relatively similar values of Cronbach's α (Schreurs *et al.* 1993). Based on a large sample of mainly male employees of the Dutch Railway Company ($n=1200$, 93% males), the alphas appeared to be ranging from sufficient (0·64) for the subscale *Expression of Emotions* to good (0·82) for the subscale *Active Handling*. A study among 164 medical students with an equal representation of males and females revealed alphas ranging from sufficient (0·63) for the subscales *Palliative Reactions* and *Comforting Cognitions* to good (0·88) for the subscale *Seek Social Support*.

With regard to the construct validity of the UCL, evidence has been found for two underlying dimensions: (1) a reactive and defensive coping style, represented by the subscales *Avoidance*, *Passive Reactions* and *Expression of Emotions*, explaining 35% of the variance and (2) an active and assertive coping style, represented by the subscales *Active Handling*, *Comforting Cognitions* and *Seek Social Support* explaining 19% of the variance. The subscale *Palliative Reactions* appeared to be represented on both dimensions. With regard to the question as to whether the UCL coping styles should be interpreted as 'trait' or 'state' measures, Sanderman & Ormel (1992) found that the subscales are relatively stable and, therefore, should be positioned between trait and state measures.

Suicide intent was assessed using the Suicide Intent Scale at EPSIS I (SIS; Beck *et al.* 1974*a*). It consists of 15 items, which assess the severity of the wish to die associated with a recent episode of self-harm. Each item is scored 0–2 giving a total score range of 0–30, with higher scores indicating a greater suicide intention.

Levels of depressive symptomatology were assessed at EPSIS I using the Beck Depression Inventory (BDI; Beck *et al.* 1961), a 21-item scale that assesses the severity of depression in psychiatrically diagnosed adolescents and adults. Respondents are asked to indicate on a series of statement groupings, which statement best describes how they have been feeling over the previous several days, e.g. 'I feel disappointed in myself'. Responses are scored on a 0–3 Likert scale and summed to provide a global depression score.

Scores obtained on the Beck Hopelessness Scale (BHS; Beck *et al.* 1974*b*) administered at the EPSIS I interview were also examined. This 20-item questionnaire assesses negative expectations and pessimism about one's future (e.g. 'I look forward to the future with hope and enthusiasm') and is scored on a true-false style response format. Half of the items are keyed in the opposite direction to minimize response bias. Each item is scored 0 or 1 and summed to provide a total score ranging from 0–20, with higher scores indicating greater hopelessness.

Self-esteem was assessed in both EPSIS I and II interviews using the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) a 10-item self-report scale that assesses respondents' current level of self-esteem and global self-worth (e.g. 'At times I think I am no good at all'). Each item is scored on a four-point Likert response format, measuring level of agreement (ranging from 'strongly agree' to 'strongly disagree'). Total scores range from 10 to 40, with higher scores indicating higher self-esteem. The RSE has been found to have high internal consistency ($\alpha=0·89$) in a study by Dori & Overholser (1999) and adequate test–retest reliability (Fleming & Courtenay, 1984).

The General Health Questionnaire (GHQ-30; Goldberg *et al.* 1976) was administered as part of the EPSIS II assessment schedule. The GHQ was designed as a self-report screening test for the purpose of detecting psychiatric disorders in respondents (e.g. 'Have you recently been feeling unhappy and depressed?'). The shortened 30-item GHQ is one of the most commonly used

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and the most widely validated versions. Responses are scored 0, 0, 1, 1 in ascending order, with higher scores indicating greater disorder. The internal consistency of the GHQ-30 has been examined among a number of different norm groups, all of which appear to reveal similar values of Cronbach's α. The alphas appear to be good, ranging from 0·84 in a sample of students in Hong Kong ($n=72$) (Chan, 1985), to 0·90 in a community sample (Goodchild & Duncan-Jones, 1985), to 0·93 in a sample of English schoolchildren ($n=129$; Keyes, 1984). In terms of validity, Goldberg & Williams (1988) report a median sensitivity score (based on 29 studies of the GHQ-30 against the Diagnostic Interview Schedule) of 81%. The median specificity of the GHQ-30 in these same studies was 80%.

Problem drinking was established on the basis of responses to two measures – the CAGE questionnaire (Ewing, 1984) administered at EPSIS I, and the question: 'Do you consider alcohol to be a problem for you at the present time?' as asked at EPSIS II. The CAGE is a brief four-item questionnaire used to detect alcoholism in adolescents and adults, e.g. 'In the past year, have you ever felt guilty about your drinking behaviour?' Those responding 'yes' to two or more items were categorized as problem drinkers. Sensitivity rates of 93% and 93·8% respectively and specificity rates of 76% and 85·5% respectively, have been reported for the CAGE in the identification of problem drinkers in a sample of psychiatric patients (Bernadt *et al.* 1982) and in a sample of general medical inpatients (Castells & Furlanetto, 2005). Those who indicated in response to the question: 'Do you consider alcohol to be a problem for you at the present time?' that alcohol was either a minor or a major problem for them were categorized as problem drinkers.

Statistical analysis

The EPSIS II sample was compared with those who only completed EPSIS I with respect to a range of variables using the χ^2 test and Student's t test as appropriate. Factor analysis using principal components was used to examine the structure of the responses. Varimax rotation was used to aid the interpretation of the derived factors. Comparison was made with the original seven-factor structure.

One-way ANOVA was used to examine the effects of repeater status, gender and their interaction on the scores on the five problem-solving dimensions derived from the factor analysis. Separate logistic regression analysis was carried out to assess the association between each of the problem-solving dimensions and repeater status. All five problem-solving dimensions were then entered into a single multivariate model with sex, age, self-esteem and general health scores and problem drinking, to assess which variables were independently associated with repetition. In the logistic regression analyses, problem-solving, self-esteem and general health scores were categorized as low, medium and high based on the lower, middle and upper tertiles. Because the data were derived from 12 regions, we investigated whether the results of the logistic regression changed when the clustered nature of the data was taken into account. A two-level multilevel logistic regression model with centre defined as the higher level showed almost identical results, indicating that there was no effect of the clustering of the data. Therefore, only the results from the standard logistic regression analyses are presented.

RESULTS

Sample

Table 1 describes the EPSIS II sample in comparison with those who completed the EPSIS I interview only, with respect to 11 variables that relate to their demographic characteristics, index act and psychological symptoms assessed at EPSIS I interview. Using Bonferroni's adjustment (significance level $=0·05/11=0·0045$), the EPSIS II sample was significantly different to the EPSIS I sample only in relation to three variables: gender, education and problem drinking. Those who were not successfully followed-up were more likely to be men and to have a low level of education and to score within the range of problem drinking on the CAGE questionnaire.

Factor analysis of responses to the UCL

The factor analysis of the 26-item UCL yielded five factors as opposed to the seven factors originally derived by the developers of the scale (Table 2). The five factors accounted for 53·0% of the total variance. The five factors *Active*

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Table 1. *Comparison of EPSIS II sample with EPSIS I only sample based on characteristics assessed at EPSIS I*

Characteristic	EPSIS II ($n=836$)	EPSIS I only ($n=762$)	χ^2/Student's t	df	p value
Gender					
Male	303 (36%)	330 (43%)	8·205	1	0·004
Female	532 (64%)	432 (57%)			
Age (mean)	36 years	35 years	$t=1·554$	1585	0·120
Marital status					
Single	389 (47%)	367 (48%)	3·191	4	0·526
Married	222 (27%)	184 (24%)			
Education level					
Low	338 (41%)	366 (49%)	10·930	2	0·004
Moderate	399 (48%)	327 (43%)			
High	93 (11%)	62 (8%)			
Previous deliberate self-harm at index act	478 (58%)	417 (57%)	0·015	1	0·902
Suicide intent at index act (mean SIS score)	13·31	13·67	$t=0·974$	1312	0·330
Method of index act					
Self-poisoning only	694 (83%)	602 (80%)	4·230	2	0·121
Self-injury	88 (12%)	92 (11%)			
Both	46 (6%)	60 (8%)			
Problem drinking (CAGE score >1)	249 (32%)	247 (37%)	4·604	1	0·032
Depression (mean BDI score)	24·4	24·2	$t=0·269$	1327	0·788
Hopelessness (mean BHS score)	10·5	11·0	$t=1·508$	1078	0·132
Self-esteem (mean RSE score)	26·33	26·25	$t=0·286$	1435	0·775

EPSIS, European Parasuicide Study Interview Schedule; SIS, Suicide Intent Scale; BDI, Beck Depression Inventory; BHS, Beck Hopelessness Scale; RSE, Rosenberg Self-Esteem Scale.

Using Bonferroni's adjustment, the significance level = 0·05/11 = 0·0045.

Handling, *Passive-Avoidance*, *Problem Sharing*, *Palliative Reactions*, and *Negative Expression* explained 20·2%, 12·1%, 8·9%, 6·7% and 5·2% of the variance respectively, all with eigenvalues >1. Based on the Varimax rotation, the original items that loaded on two separate factors (*Passive Reactions* and *Avoidance/Wait*) now loaded on one factor that was interpreted as *Passive-Avoidance*. With the exception of one item, the same items loaded on the *Active Handling* and *Palliative Reactions* factors as in the original analysis. The original *Expression of Emotions* factor was reduced from four to two items ('Showing one's anger with those responsible for the problem' and 'Showing one's annoyance') and was named *Negative Expression*. The additional items: ('Showing one's feelings' and 'Showing that there are things that are bothering you') now loaded on the *Seeking Social Support* factor. This factor was named *Problem Sharing*.

Comparisons of the levels of the five problem-solving dimensions

The mean scores on four of the five problem-solving dimensions were significantly different when compared by repeater status and gender (Tables 3 and 4). On average, repeaters scored higher on the *Passive-Avoidance* factor and lower on the *Active Handling* factor. Repeaters also scored higher on the *Negative Expression* factor. However, there was a significant interaction between repeater status and gender in relation to this factor (Table 4), whereby repeaters had higher levels of *Negative Expression* compared with non-repeaters in men only (mean = 3·1 *v.* 2·7, $t=3·30$, df = 250, $p<0·01$). Overall, men scored lower on the *Problem Sharing* factor. The significant interaction effect indicated that this difference was more pronounced among non-repeaters (mean = 7·3 males *v.* 8·8 females, $t=5·04$, df = 260, $p<0·001$) than it was among repeaters (mean = 7·5 males *v.* 8·1 females, $t=2·48$, df = 383, $p<0·05$). However, while these differences were statistically significant, their magnitude, as summarized by the η^2 statistic, was relatively small.

Relationship between the five problem-solving dimensions and repeater status

All five problem-solving dimensions together with gender, age, self-esteem scores (Cronbach's

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Table 2. *Factor structure of the Utrecht Coping List (UCL)*

Factor	No. of items	Items	Factor loadings
Active Handling ($\alpha = 0{\cdot}80$)	7	Finding out all about the problem	0·74
		Making several alternative plans for handling a problem	0·69
		Considering different solutions to the problem	0·69
		Making a direct intervention when problems occur	0·65
		Using a direct approach in order to solve the problem	0·63
		Considering problems as a challenge	0·63
		Realising every cloud has a silver lining	0·42
Passive-Avoidance ($\alpha = 0{\cdot}79$)	7	Being totally pre-occupied with the problems	0·74
		Feeling unable to do anything	0·72
		Worrying about the past	0·71
		Taking a gloomy view of the situation	0·70
		Giving in, in order to avoid difficult situations	0·59
		Resigning oneself to the situation	0·55
		Trying to avoid difficult situations as much as possible	0·45
Problem Sharing ($\alpha = 0{\cdot}82$)	5	Sharing one's worries with someone	0·76
		Asking someone to help	0·75
		Seeking sympathy and comfort from somebody	0·75
		Showing there are things which are bothering you	0·74
		Showing one's feelings	0·70
Palliative Reactions ($\alpha = 0{\cdot}66$)	5	Looking for distraction	0·73
		Directing one's thoughts towards other matters	0·68
		Trying to dispel one's worries temporarily by taking a break	0·66
		Trying to make oneself feel better one way or the other	0·63
		Telling oneself that other people also have their problems from time to time	0·33
Negative Expression ($\alpha = 0{\cdot}63$)	2	Showing one's anger with those responsible for the problem	0·69
		Showing one's annoyance	0·70

Table 3. *Comparison of mean (standard deviation) UCL dimension scores by repeater status and gender*

	Non-repeater		Repeater		Male		Female	
Dimension	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)
Active Handling	10·7	(2·5)	9·9	(2·8)	10·3	(2·7)	10·0	(2·8)
Passive-Avoidance	9·3	(2·6)	11·0	(3·0)	10·4	(3·1)	10·5	(2·9)
Problem Sharing	8·2	(2·5)	7·9	(2·7)	7·4	(2·5)	8·4	(2·7)
Palliative Reactions	7·1	(1·8)	7·0	(1·8)	7·1	(1·8)	7·0	(1·8)
Negative Expression	2·9	(1·0)	3·0	(1·1)	2·9	(1·1)	2·9	(1·0)

UCL, Utrecht Coping List.

$\alpha = 0{\cdot}90$), general health scores (Cronbach's $\alpha = 0{\cdot}97$) and problem drinking were entered as predictor variables in a multivariate logistic regression analysis with repetition (more than one lifetime DSH act) as the dependent variable. *Passive-Avoidance* was significantly associated with repetition when considered alongside gender and age (Table 5). High scores on *Active Handling* were significantly (but more weakly) associated with reduced risk of repetition. There was evidence that the association between *Passive-Avoidance* and repetition was not independent of self-esteem, as the odds ratio associated with being a repeater for those with high *Passive-Avoidance* was reduced from 3·61 to 1·72 with adjustment for the effect of self-esteem.

When the repeaters were further categorized so as to identify those who repeated during the follow-up period, of the 785 participants for whom repetition during follow-up could be established, 232 (29·6%) did repeat. Re-analysis of the data to test whether problem-solving ability at EPSIS II retrospectively predicted repetition of DSH over the '12 months' follow-up period led to similar but weaker associations

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Table 4. *ANOVA results comparing the effects of repeater status, gender and their interaction on the Utrecht Coping List (UCL) dimension scores*

Dimension	Effect	*F*	df	*p*	η^2
Active Handling	Repeater	9·068	1, 749	0·003	0·012
	Gender	0·629	1, 749	0·428	0·001
	Repeater * Gender	1·822	1, 749	0·177	0·002
Passive-Avoidance	Repeater	56·410	1, 756	0·000	0·069
	Gender	0·542	1, 756	0·462	0·001
	Repeater * Gender	0·097	1, 756	0·755	0·000
Problem Sharing	Repeater	1·422	1, 750	0·233	0·002
	Gender	28·013	1, 750	0·000	0·036
	Repeater * Gender	5·310	1, 750	0·021	0·007
Palliative Reactions	Repeater	0·185	1, 750	0·667	0·000
	Gender	0·432	1, 750	0·511	0·001
	Repeater * Gender	1·490	1, 750	0·223	0·002
Negative Expression	Repeater	5·812	1, 762	0·016	0·008
	Gender	0·648	1, 762	0·421	0·001
	Repeater * Gender	6·515	1, 762	0·011	0·008

Repeater * Gender represents the effect of the interaction of repeater status and gender on the dimension score.

η^2 indicates the proportion of the variation in the UCL dimension scores that is due to the effect of the independent variables.

Table 5. *Results of logistic regression analyses to assess the association between the five problem-solving dimensions and repetition*

Dimension/variable	OR[a]	95% CI	OR[b]	95% CI
Active Handling				
Low (ref. group)	1·00	—	1·00	—
Medium	0·71	0·49–1·05	0·93	0·57–1·52
High	0·46***	0·32–0·67	0·96	0·57–1·63
Passive-Avoidance				
Low (ref. group)	1·00	—	1·00	—
Medium	2·08***	1·44–3·00	1·44	0·88–2·33
High	3·61***	2·43–5·35	1·72	0·94–3·13
Problem Sharing				
Low (ref. group)	1·00	—	1·00	—
Medium	0·88	0·60–1·28	1·04	0·64–1·69
High	0·71	0·48–1·03	0·85	0·51–1·39
Palliative Reactions				
Low (ref. group)	1·00	—	1·00	—
Medium	0·73	0·50–1·05	0·88	0·56–1·40
High	0·92	0·63–1·35	0·91	0·56–1·49
Negative Expression				
Low (ref. group)	1·00	—	1·00	—
Medium	1·18	0·80–1·74	1·17	0·74–1·86
High	1·40	0·95–2·06	1·31	0·81–2·13
General Health				
Low (0–20 ref. group)	—	—	1·00	—
Medium (21–38)	—	—	0·83	0·52–1·33
High (39–90)	—	—	1·18	0·65–2·13
Self-esteem				
High (30–40 ref. group)	—	—	1·00	—
Medium (25–29)	—	—	1·50	0·93–2·43
Low (10–24)	—	—	2·28**	1·22–4·27
Problem drinking				
No (ref. group)	—	—	1·00	—
Minor problem	—	—	1·38	0·78–2·43
Major problem	—	—	2·86**	1·51–5·43
Gender				
Male (ref. group)	—	—	1·00	—
Female	—	—	1·06	0·71–1·59
Age (years)				
15–24 (ref.group)	—	—	1·00	—
25–34	—	—	1·27	0·74–2·17
35–44	—	—	1·71	0·98–2·97
45–54	—	—	1·16	0·68–1·97

[a] Odds ratios derived from five separate logistic regression models, each including a problem-solving dimension, gender and age group.

[b] Odds ratios derived from the multivariate logistic regression model including all five problem-solving dimensions, the general health, self-esteem and problem drinking variables and gender and age group.

*** $p<0·001$, ** $p<0·01$, * $p<0·05$.

between the problem-solving dimensions and risk of repetition.

DISCUSSION

As a specific coping response to problems, a combination of greater passivity and avoidance – described in this study as Passive-Avoidance – is independently associated with increased risk of repetition of DSH, when considered alongside gender and age group. This coping style is characterized by a preoccupation with problems, worrying about the past, feeling unable to do anything and taking a gloomy view of the situation. In addition, this response to problems involves a greater likelihood of giving in, so as to avoid difficult situations, the tendency to resign oneself to the situation, and to try to avoid problems. The association was no longer significant when the remaining four problem-solving dimensions, together with general health, problem drinking and self-esteem were included in the regression.

Particularly after the inclusion of self-esteem, the association between repetition of DSH and high Passive Avoidance was weakened. Higher self-esteem may protect against repetition of DSH in those who score high on Passive-Avoidance. As an individual disposition, self-esteem is believed to moderate the relationship between life events and suicidal behaviour. Low self-esteem may increase the likelihood that an individual makes negative appraisals during stressful experiences (Sandin *et al.* 1998). In an earlier study of hospitalized DSH patients (Petrie *et al.* 1988) baseline measures of

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self-esteem were found to be the best predictor of a repeated act at 6 months compared with depression, hopelessness, cognitive rigidity, assertiveness and social anxiety. Petrie *et al*. (1988) proposed that high self-esteem might operate by encouraging a more positive attitude among DSH patients in their ability to deal with problems, acting as a longer term protective factor against repeated DSH. Low self-esteem has also been associated with future DSH among adolescents even when gender and depression are controlled for (Lewinsohn *et al*. 1994).

Repeaters scored significantly lower than non-repeaters on the Active Handling dimension (tackling problems positively and proactively), and high scores on this dimension were significantly associated with reduced risk of repetition, when considered alongside age and gender. However the association was weaker than that of Passive-Avoidance. Repeaters were also significantly more inclined to engage in negative emotional expression (showing one's anger or annoyance) but this was confined to the males and was not independent of the effects of the other variables. Males were significantly less inclined to share problems although this gender difference was particularly evident among non-repeaters.

Two major aims of the WHO/EURO Repetition-Prediction study were to identify personal and social characteristics predictive of repeated suicidal behaviour; and to evaluate existing scales designed to predict suicidal behaviour. However, unlike many of the other scales included in the EPSIS II interview schedule, the UCL was not used as a baseline assessment (in EPSIS I) but as an outcome measure at follow-up (Kerkhof *et al*. 1993; Kerkhof, personal communication, 1999). Associations could only be examined between the predictor variables (problem-solving styles, self-esteem, general health, problem drinking) and repetition retrospectively. When the associations were also examined for prospective repeaters, i.e. those who repeated between EPSIS I and II, they were found to be similar but weaker in magnitude. Retrospective studies have already been criticized for their limited utility in the prediction of repetition (Hjelmeland, 1996). Nevertheless, the UCL dimensions are useful in deriving a coping profile of DSH patients and in identifying a distinct coping style associated with repetition, which should now be investigated further in a prospective study.

The attrition rate in this study is similar to rates obtained in previous follow-up studies with this difficult-to-engage population (Arensman & Kerkhof, 1996; Hawton *et al*. 1998; Amsel & Mann, 2001). The most frequently reported reasons for attrition were patients relocating, refusing follow-up in the EPSIS I interview or refusing follow-up when contacted to complete the EPSIS II interview. Although those who were not successfully followed up were more likely to be men, to have a low level of education, and to have a drink problem, the sample interviewed at follow-up were similar to the original sample on variables relating to psychological symptoms (including depression and hopelessness), self-esteem, clinical history (previous DSH), characteristics of the index act (including suicide intent and method used) and demographic characteristics (including age and marital status). We were unable to determine whether EPSIS I interviewees were representative of the population of DSH patients who presented to hospital in the participating regions. A previous comparison based on nine regions found that women and those who had taken an overdose were overrepresented in those interviewed while they were broadly similar in relation to age and previous attempts (Bille-Brahe *et al*. 1996). It is also conceivable that a passive avoidant approach to problems is influenced by mood, but it was not possible to control for levels of depression or hopelessness in the present study as they were only assessed at EPSIS I interview. An earlier study of problem solving among DSH patients found that while levels of depression, hopelessness and suicide ideation reduced over a 6-week interval, their tendency to engage in passive problem solving stayed the same (Pollock & Williams, 2004). The effect of mood on Passive-Avoidance in DSH patients with repeated episodes needs to be investigated further.

The findings point to a habitual coping style among DSH repeaters characterized by a combination of passive and or avoidant reactions to problems, that may contribute to a process of sensitization, in which the association between negative life events and episodes of DSH is weakened with an increasing number of episodes (Joiner & Rudd, 2000). Williams (1997)

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observed that suicidal people stop trying to solve problems because they tend to over-generalize from a problem that cannot be solved to situations in which things can be done. Passivity and avoidance in relation to problems are likely to be maintained if repeaters feel hopeless when faced with problems (Sakinofsky *et al*. 1990; Milnes *et al*. 2002).

These findings may go some way towards informing the content and format of treatment programmes designed to reduce repetition of DSH, given that the optimal treatment approaches are still uncertain, despite promising findings reported from randomized controlled trials (Hawton *et al*. 1998). The observed passivity and avoidance of problems associated with repetition of DSH in this study indicates the need for intensive therapeutic input and follow-up, as low self-esteem may hinder clients in coping with problems. In terms of treatment format, the active involvement of a therapist is favourable over self-help-only approaches. The failure of a recent trial (using a cognitive therapeutic approach) to reduce repetition (Tyrer *et al*. 2003) in which over one-third of the active treatment sample received a treatment manual alone without any treatment sessions, suggests that reliance purely on a self-help approach among DSH repeaters is ineffective in reducing repetition (Arensman *et al*. 2004). Interventions to reduce repetition are likely to be more effective if based on direct coaching by the therapist in an active and positive approach to problems through appropriate problem-solving skills training and modelling. Programme duration should be determined by clients' mastery in implementing problem-solving skills with their own problems, so that there are opportunities to increase self-efficacy and self-esteem.

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DECLARATION OF INTEREST

None.

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