

PROBLEM SOLVING AND REPETITION OF PARASUICIDE

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Abstract. Despite promising findings from problem-solving interventions in the treatment of parasuicide, little is known about problem-solving difficulties that distinguish “Non-Repeaters” from “Repeaters”. The present study examined whether problem-solving ability could be used to identify repeaters of parasuicide. Findings are presented from the follow-up part ($N = 35$) of a larger investigation ($N=146$) of non-consecutive hospital-treated cases of parasuicide, interviewed by the National Suicide Research Foundation in Ireland as part of the WHO/EURO Multicentre Study on Suicidal Behaviour. The median interval from initial to follow-up interview was 15 months. The European Parasuicide Study Interview Schedule (EPSIS II) was used in the follow-up interview. Within this schedule, responses to a questionnaire measuring habitual problem-solving style were analysed. Repeaters scored significantly lower than non-repeaters on the following problem-solving dimensions: Active handling, Comforting cognitions and Seek social support. Repeaters scored significantly higher on the Passive reactions dimension. A logistic regression model including these four problem-solving dimensions correctly identified 79% of the repeaters and 82% of the non-repeaters. Despite the limitations of this sample size, these significant differences in problem solving have implications for the treatment of parasuicide. Further work, using larger samples, is required.

Keywords: Parasuicide, repetition, problem-solving dimensions, identifier, treatment.

Introduction

Problem-solving impairment is a significant risk factor for both parasuicide and repetition of parasuicide (Hawton, Fagg, Simkin, Bale, & Bond, 1997; Linehan, Chiles, Egan, Devine, & Laffaw, 1986; McLeavey, Daly, Ludgate, & Murray, 1994; McLeavey, Daly, Murray, O’Riordan, & Taylor, 1987; Pollock & Williams, 1998; Rotheram-Borus, Trautman, Dopkins, & Shrout, 1990). The paucity of problem-solving skills and particularly interpersonal problem-solving skills associated with parasuicide is well illustrated in the proliferation of research in this area (Evans, Williams, O’Loughlin, & Howells, 1992; Kingsbury, Hawton, Steinhardt, & James, 1999; Linehan et al., 1986; MacLeod & Williams, 1992; McLeavey et al., 1987, 1994; Neuringer, 1964; Neuringer & Lettieri, 1971; Rotheram-Borus et al., 1990; Rudd, Joiner, & Rajab, 1996; Sidley & Whitaker, 1997). Problem solving skills are also poorer in psychiatric patients with a parasuicide history (McLeavey et al., 1987).

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Given the importance that parasuicide patients assign to interpersonal problems when asked about the reasons for their attempt, problem-solving skills have become a treatment target in the prevention of repetition (Bancroft et al., 1979; Bancroft, Skrimshire, & Simkin, 1976; Hawton & Fagg, 1992; Linehan et al., 1986). Randomized controlled trials indicate reduced rates of repetition among those assigned to problem-solving interventions compared with those receiving treatment as usual (Hawton et al., 1987; McLeavey et al., 1994; Salkovskis, Atha, & Storer, 1990).

As repetition of parasuicide is common, identification of those attempters most likely to repeat has become an important focus in the prediction of both parasuicide and suicide (Hawton et al., 1998). Repetition also has important implications in the treatment planning of suicide attempters as it is regarded as one of the most significant outcomes after an episode of parasuicide (Owens, Dennis, Read, & Davis, 1994). It is thought to be a sign of ongoing and recurrent distress (Hawton & Fagg, 1992; Hawton et al., 1998) and is the most commonly used outcome criterion in parasuicide treatment intervention studies (Hawton et al., 1998). Findings from the WHO/EURO Multicentre Study indicate that the number of repeaters is increasing (Kerkhof, Schmidtke, Bille-Brahe, De Leo, & Lonnqvist, 1994).

One theory as to why some people repeat acts of deliberate self-harm is that repeaters encounter more chronic problems (Clum, Patsiokas, & Luscomb, 1979). A one-year follow-up study of suicide attempters found that those who made repeat attempts had higher rates of life changes than those who did not (Luscomb, Clum, & Patsiokas, 1978). Repeaters also seem to suffer greater psychiatric disturbance than non-repeaters (Greer & Bagley, 1971; Kerkhof, et al., 1994; Kingsbury et al., 1999; Rudd et al., 1996). Another theory is that repeaters' ability to cope with problems is significantly more limited than those who engage in only one lifetime self-harming act. Pollock and Williams (1998) argue that research needs to explore potential sub-classes of problem-solving difficulty in the parasuicide population.

Few studies have compared problem solving in repeaters and non-repeaters of parasuicide. Kehrer and Linehan (1996) carried out a prospective one-year follow-up study of parasuicide patients with borderline personality disorder and found that neither active nor passive problem solving, as measured by the Means-Ends Problem Solving scale (MEPS), were predictive of further episodes of parasuicide. They argue that while active and passive problem solving may be predictive of *ever* parasuiciding, the generation of inappropriate problem solutions may be a better predictor of *repeated* parasuicide. However, their findings may be limited to this special diagnostic group.

Repeaters' problem-solving ability has also been compared with that of suicide ideators and first ever attempters (Rudd et al., 1996). Repeaters appraised themselves more poorly at problem solving than the other two groups. They were significantly poorer on the Problem-Solving Confidence and Personal Control subscales of the Problem Solving Inventory (Heppner, 1988) and had significantly higher scores on the Approach-Avoidance subscale, when compared with the other two groups.

Research into the problem-solving skills of repeaters of parasuicide as compared with non-repeaters is limited. In addition, the relationships between dimensions of problem solving have not been examined. The present paper aims to cast new light on the association between problem solving and parasuicide. Specifically, it examines the relationships between problem-solving dimensions in parasuicide patients and the use of these dimensions to identify repeaters of parasuicide.

Method

Participants

The participants were patients who presented to the accident and emergency department of one of the three general hospitals in Cork city, Ireland, following an act of parasuicide between 1995 and 1997. The definition of parasuicide used was that devised by the WHO Working Group of the WHO/EURO Multicentre Study on Suicidal Behaviour: "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 recognized therapeutic dosage and which is aimed at realizing changes that the person desires via the actual or expected physical consequences" (Platt et al., 1992). This definition includes cases of deliberate self-harm and suicide attempts but excludes habitual self-mutilation (Bille-Brahe et al., 1994).

A non-consecutive sample ($N = 146$) of parasuicide patients were approached and consented to being interviewed using the European Parasuicide Study Interview Schedule I (EPSIS I). These approaches were made within 72 hours of the individual presenting to the accident and emergency department. Resource limitations made it impossible to recruit a consecutive sample. Generally, recruitment was confined to weekdays. Patients were not interviewed if under 15 years of age, medically unfit or functionally impaired (e.g. significant learning disability).

One-third ($N = 50$) of the above sample did not consent to being contacted for follow-up. Numerous attempts (by post and telephone) were made to contact the remaining 96. These attempts resulted in 35 follow-up interviews using EPSIS II carried out a median of 15 months later (range of follow-up period: 8–27 months) by a senior registrar in psychiatry (HK) and a Masters psychology student (CMcA). On the basis of the relevant sections of the EPSIS I and II, repeaters were identified as patients who engaged in more than one act of parasuicide before their follow-up interview. Non-repeaters were those patients whose index act was their only known act of parasuicide. At their index act, 20 patients of the 35 in the sample were repeaters. Of the total sample, 14 engaged in further acts of parasuicide during the follow-up period. Consultation with the monitoring database indicated that hospital treatment was received by five of these individuals. The repeat acts increased the number of repeaters at follow-up to 24.

Measures

EPSIS I and II are structured interview schedules containing a combination of both standardized and non-standardized scales assessing several areas of inquiry including suicide intent, severity of depressed mood, levels of hopelessness and precipitating problems. Problem solving, the focus of the present paper, was only assessed as part of EPSIS II. It was measured using the 26-item version of the Utrecht Coping List (UCL) (Schreurs, Van de Willige, Tellegen, & Brosschot, 1988). This assesses characteristic style of reacting across situations 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 4-point Likert response format measuring frequency of reaction. 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 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 solutions are considered and planned.

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.

Avoidance/wait (3 items). Avoiding or resigning oneself to the problem, i.e. not changing the situation.

Seek social support (3 items). Seeking comfort, support and sympathy from others, i.e. changing one's perception and arousal.

Passive reactions (4 items). Feeling helpless, pessimistic and overwhelmed by the problem, i.e. not changing the perception or arousal.

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.

Comforting cognitions (2 items). To engage in self-comforting and consoling thoughts, i.e. changing one's perception of the problem.

Statistical analysis

Chi-square analysis was used to compare the EPSIS II sample with those who only completed EPSIS I and with the population of parasuicide cases treated in one of the Cork city hospitals between 1995 and 1997. Reliability analysis used Cronbach's α to measure the internal consistency of the seven problem-solving sub-scales. In the correlation analysis, Pearson's Correlation Coefficient measured the extent of the linear relationship between the pairs of problem-solving dimensions. Further correlation analysis employed partial correlation coefficients to identify linear relationships between pairs of problem-solving dimensions that remained significant when the effects of the other dimensions were taken into account.

The non-parametric Mann-Whitney U test compared the levels of the problem-solving dimensions by gender and by repeater status. Logistic regression analyses, adjusting for sex, were carried out to predict the repeater status of the sample. The problem-solving dimensions that were indicated by the univariate analysis as differentiating between repeaters and non-repeaters were initially entered into separate models. They were then entered into a single multivariate model to assess their independent contribution to the classification of parasuicide cases.

Results

Sample

The characteristics of the EPSIS II sample are detailed in Table 1 in comparison with those who completed the EPSIS I interview only and the total population of parasuicide cases treated in a Cork city hospital between 1995 and 1997. The EPSIS II sample were similar to both groups in terms of their gender, age, marital status, living situation and employment status. A higher proportion of the EPSIS II sample had attained a formal educational qualification. For both EPSIS samples, the index acts were similar in terms of suicide intent. At their index act, the EPSIS II sample were more likely than the parasuicide population to have a previous history of parasuicide. Psychiatric disorder was present to a similar level in all three groups as was a diagnosis of adjustment disorder. Compared to the EPSIS II sample, depression was less common in the parasuicide population whereas substance abuse was more common in those who only completed EPSIS I.

Reliability

Five of the seven subscales had a high degree of internal consistency as measured by Cronbach's α (Table 2). The two subscales with satisfactory internal reliability – Avoidance ($\alpha = 0.58$) and Comforting cognitions ($\alpha = 0.51$) – had the smallest number of items of all scales, which is likely to have limited the internal consistency.

Relationships between problem-solving dimensions

For the total sample, there was a significant positive correlation between Active handling and Comforting cognitions (Table 3). Both these dimensions significantly negatively correlated with Passive reactions but partial correlation analysis indicated that these negative associations were dependent on the relationship between Active handling and Comforting cognitions. Significant positive correlations were found between Avoidance and Palliative reactions and between Seek social support and Expressions of emotions. Figure 1 graphically depicts the system of problem solving for the sample.

Comparisons of the levels of the seven problem-solving dimensions

Non-repeaters scored higher on Active handling, Seek social support (though not quite significantly) and Comforting cognitions, whereas Repeaters scored significantly higher on the Passive reactions dimension (Table 4). Males scored significantly lower than females on Seek social support and higher on Passive reactions.

Classification by repeater status

Logistic regression analysis indicated that low scores on Active handling and Comforting cognitions and high scores on Passive reactions were associated with increased risk of being a repeater (Table 5). After adjustment for gender, low scores on Seek social support was not associated with increased risk of being a repeater. When all four dimensions were

Table 1. Comparison of EPSIS II sample with EPSIS I only sample and hospital-treated parasuicide population

Characteristic	EPSIS II (n = 35)	EPSIS I only (n = 111)	Parasuicide population (n = 1511)
Gender (male)	17 (49%)	51 (46%)	690 (46%)
Age (median)	30 years	29 years	27 years
Marital status (never married)	24 (71%)	70 (64%)	975 (67%)
Living situation (with family/friends)	16 (46%)	46 (43%)	739 (51%)
Education (completed 2nd level, lower cycle) ^{1,2}	28 (85%)	62 (64%) ^{1a}	599 (64%) ^{2a}
Employment status (employed)	9 (27%)	38 (36%)	359 (28%)
Suicide intent (median SIS score)	17	15	not available
Previous parasuicide at index act ²	20 (57%)	59 (55%)	451 (33%) ^{2b}
Presence of psychiatric disorder (ICD-10)	27 (82%)	82 (88%)	983 (85%)
Depression (ICD-10 F30-39) ²	17 (52%)	42 (45%)	416 (36%) ^{2c}
Substance abuse (ICD-10 F10-19) ¹	7 (21%)	37 (40%) ^{1b}	392 (34%)
Adjustment disorder (ICD-10 F43)	9 (27%)	15 (16%)	282 (24%)

1 EPSIS II sample and EPSIS I only sample differ (1a: $\chi^2 = 5.064$, $df = 1$, $p < .05$; 1b: $\chi^2 = 3.697$, $df = 1$, $p = .055$)

2 EPSIS II sample and parasuicide population differ (2a: $\chi^2 = 6.069$, $df = 1$, $p < .05$; 2b: $\chi^2 = 8.922$, $df = 1$, $p < .05$; 2c: $\chi^2 = 3.371$, $df = 1$, $p = .066$)

Table 2. Reliability of UCL dimensions

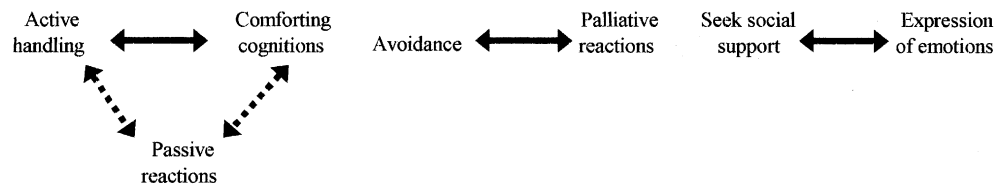
Dimension	Items (<i>n</i>)	Cronbach's α
Active handling	6	0.83
Palliative reactions	4	0.78
Seeking social support	3	0.79
Passive reactions	4	0.77
Expression of emotions	4	0.75
Avoidance	3	0.58
Comforting cognitions	2	0.51

Table 3. Relationships between pairs of UCL dimensions

	Pair of dimensions	Total sample
Active handling	Comforting cognitions	0.568**
Active handling	Passive reactions	-0.516*
Comforting cognitions	Passive reactions	-0.424*
Avoidance	Palliative reactions	0.488*
Seek social support	Expression of emotions	0.448*

* *p*-value < .05

** *p*-value < .001



Note: Positive and negative linear relationships are represented by continuous and broken lines, respectively

Figure 1. Representation of the significant relationships between the UCL dimensions

entered with gender into the same logistic regression model, Passive reactions was the only dimension that independently contributed to the identification of repeaters. However, using the default cut-point of 0.5, this model correctly classified the vast majority of both repeaters (15/19, 79%) and non-repeaters (9/11, 82%).

Discussion

Despite limitations, this study of problem solving among parasuicide patients shows a number of significant results. Firstly, repeaters had greater problem-solving impairment than non-repeaters, scoring lower on three of the four protective problem-solving dimensions (Active handling, Comforting cognitions and Seek social support) and significantly higher on the Passive reactions dimension. These observed differences could be used to derive a tentative problem-solving profile of a repeater in comparison with a non-repeater of parasu-

Table 4. Comparison of UCL dimensions by repeater status and gender

Dimension	Non-repeater (Median)	Repeater (Median)	Mann- Whitney U	<i>p</i> -value	Male (Median)	Female (Median)	Mann- Whitney U	<i>p</i> -value
Active handling	19	13	51.5	0.004	15	15.5	136.5	.584
Palliative reactions	10	10	113.0	0.937	11	9.5	115.5	.478
Avoidance	7	7	122.0	0.867	9	7	110.0	.236
Seek social support	7	5	77.5	0.067	5	7	83.5	.033
Passive reactions	7	11	37.5	0.001	11	8	93.0	.046
Expression of emotions	8	8	104.5	0.821	8	8	108.5	.468
Comforting cognitions	5	4	54.5	0.019	4	5	85.0	.190

Table 5. Results of logistic regression analyses to predict repeater status

Dimension	OR ^a	95% CI	OR ^b	95% CI
Active handling	0.76	0.60–0.95	0.98	0.72–1.35
Seek social support	0.80	0.56–1.13	0.90	0.55–1.47
Passive reactions	1.71	1.18–2.49	1.55	0.99–2.43
Comforting cognitions	0.50	0.26–0.97	0.67	0.29–1.55

^a Odds ratio adjusted for gender

^b Odds ratio adjusted for gender and the other problem-solving dimensions

icide: The repeater is less likely to actively or directly approach problems in a confident manner; less likely to inform him/herself thoroughly about the problem; less likely to consider several alternative courses of action in dealing with the problem; less likely to engage in self-encouraging thoughts or thought-distancing techniques to put his/her problems into perspective; and, less likely to approach other people for support, sympathy or assistance. The repeater is more likely to respond passively to problems and to be overwhelmed by a sense of hopelessness and helplessness.

Important gender differences in problem solving were also identified. Males were significantly less likely to seek social support than females and were significantly more inclined to engage in passive reactions. This supports the findings observed in psychological autopsy studies of suicide where males are significantly less likely to have sought medical attention before death (Kelleher, Keohane, Corcoran, Keeley, & Nielson, 2000).

The second important finding relates to the significant relationships found between the problem-solving dimensions. Active handling, Comforting cognitions and Passive reactions were strongly related. Those who were more likely to actively approach problems were also more likely to engage in self-comforting thoughts and less likely to feel hopeless, helpless or overwhelmed by problems. The significant correlation between Avoidance and Palliative reactions indicated that those who tended to give in or avoid problems were likely to engage in techniques to distract themselves and to make themselves feel better about the problem, rather than to tackle the problem itself. Not surprisingly, there was a significant positive correlation between Expression of emotions and Seeking social support. Those who were inclined to show their feelings, or *express* their worries, anger or annoyance were also more inclined to *share* their anxieties and seek the comfort, support and sympathy of others.

Only three of the five significant correlations in the whole group made significant net contributions to the dimensional structure of the UCL scores. These were the positive correlations between the following pairs: Active handling with Comforting cognitions; Palliative reactions with Avoidance; and Seek social support with Expression of emotions. The relationships between Passive reactions and both Active handling and Comforting cognitions was dependent on the relationship between Active handling and Comforting cognitions. Thus, efforts at reducing passive behaviours in patients may require improvements in both active problem solving and comforting self-statements. In clinical practice, interventions targeting a specific coping skill in this group need to address other related skills to maximize the treatment gains.

A major limitation of this study is that it is based on a small sample. However, across a wide range of variables, the sample was found to be similar to those who were not given a

follow-up interview as well as the population of parasuicide cases treated in hospital over the period. The confinement of the initial recruitment of the EPSIS I sample to weekdays may have introduced a selection bias. A diagnosis of depression was more common than in the parasuicide population while a diagnosis of substance abuse was more common than in those interviewed at follow-up (the EPSIS II sample). The latter were better educated than both the EPSIS I sample and the parasuicide population, which may be related to problem solving. A number of other variables, for example depression (Schmidtke & Schaller, 1992), may influence problem solving. The limited sample size precluded controlling for these. Future studies with larger samples should incorporate such potentially confounding variables. A further limitation is that retrospective comparisons of repeaters and non-repeaters have only limited utility in the prediction of repetition (Hjelmeland, 1996). It may be that the risk factors being identified only become "risk factors" after the event. Nonetheless, the usefulness of these retrospective study findings is that they highlight potential treatment targets in interventions with repeaters of parasuicide.

This paper provides several potential explanations for the role of problem-solving difficulties in repetition of parasuicide. The lesser tendency of repeaters to actively approach and find out about problems may directly increase passivity, hopelessness and helplessness. Williams (1997) observes that suicidal people stop trying to solve problems because they tend to overgeneralize from a problem that cannot be solved to situations in which things can be done. In turn, these unresolved problems are likely to accumulate and overwhelm the individual, providing evidence of his/her inability to cope and further increasing the sense of hopelessness or helplessness. This is likely to be particularly disadvantageous given the nature and extent of the problems known to be encountered by this special risk group (Kerkhof *et al.*, 1994). In a study of problem-solving skills among suicidal psychiatric inpatients, Schotte and Clum (1987) found that as levels of negative life stress increased, confidence in their ability to solve problems decreased.

Repeaters used self-comforting and consoling thoughts less (e.g. other people also have their problems from time to time) making it more likely that they became hopeless. Comforting cognitions may play a role in emotion regulation as an adaptive means of alleviating emotional distress. Impairments in this process are particularly associated with repetition among those diagnosed with borderline personality disorder (Linehan, 1993). It may be that the ability to console oneself is an important adjunct to coping, priming the person to confront a problem. In addition, repeaters were poorer at seeking the support of others, which further reduced opportunities for alleviating their problems. Mobilizing social support plays an important role in problem solving as it can exert protective influence against stressors and may also indirectly buffer against the outcome of stressful events (Milne & Netherwood, 1997). Problem solving and social support have been identified as important mediators between life stress and suicidal ideation (Yang & Clum, 1994).

There are important clinical implications attached to these findings. Targeting any one problem-solving dimension may require targeting another related dimension. For example, improvements in active problem solving are likely to enhance the ability to engage in self-comforting cognitions and vice versa. Problem-solving treatment may be more effective if related sets of problem-solving difficulties are approached in this way. The power of the problem-solving dimensions to correctly classify repeaters and non-repeaters retrospectively has promising implications for the development of instruments that may be clinically useful in identifying repeaters prospectively.

Conclusion

Two major aims of the WHO/EURO Repetition Prediction study, of which the present study forms a part, are to identify personal and social characteristics predictive of repeated suicidal behaviour; and to evaluate existing scales designed to predict suicidal behaviour. The present findings address both aims to some extent. The UCL dimensions were useful in deriving a coping profile of parasuicide patients and in identifying particular coping styles associated with repetition. High levels of sensitivity and specificity were found using a model including four of the seven problem-solving dimensions on the Utrecht Coping List: Active handling, Comforting cognitions, Seek social support and Passive reactions, which made the greatest contribution to the identification of repeaters. The performance of the UCL is encouraging and further work should be done to develop this scale. While it does not yield an overall composite score on which individuals can be compared, its dimensional structure may be more suited to identifying problem-solving approaches that are protective against repetition. Beautrais, Joyce and Mulder (1999) observed that separate features of cognitive style may be correlated and advise against studying a single factor in isolation.

The implications of these findings for problem-solving interventions with parasuicide patients are particularly important. The optimum problem-solving treatment approaches with repeaters are still uncertain, despite promising findings in randomized controlled trials (Hawton et al., 1998). This patient population seems to require more intensive therapeutic input and follow-up. Training an active orientation to problem solving in conjunction with self-comforting thoughts may be a particularly important treatment target.

This study confirms the clinical importance of examining the relationships between problem-solving dimensions in the parasuicide population, rather than approaching problem solving as a set of discrete coping categories. Repeaters of parasuicide in particular had a diminished repertoire with which to address problems and a problem-solving therapy programme may need to be tailored specifically to this high risk group. Given the significant research findings to date in the area of life events and stressors among those who engage in parasuicide, it seems likely in light of these problem-solving differences, that repeaters are a subgroup who are *most* vulnerable in the face of real life difficulty.

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