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BRIEF COMMUNICATION

Problem-solving in suicide attempters

L. R. POLLOCK[1] AND J. M. G. WILLIAMS

From the Institute of Medical and Social Care Research, University of Wales, Bangor; and University of Oxford, Department of Psychiatry, Warneford Hospital, Oxford

ABSTRACT

Background. Recent research studies on the psychological processes underlying suicidal behaviour have highlighted deficits in social problem-solving ability, and suggest that suicide attempters may, in addition, be passive problem-solvers. The aim of this study was to examine problem-solving in suicide attempters (including passivity) and to see whether the deficits are mood-dependent.

Method. Two groups, a suicide attempter group and a non-suicidal psychiatric control group completed measures of depression, hopelessness, suicidal ideation and social problem-solving ability shortly after admission, and again 6 weeks later. In addition, a non-psychiatric control group provided baseline data at a single time point.

Results. The suicide attempter group displayed poorer problem-solving ability than matched psychiatric controls and this difference persisted despite change in mood. However, although suicidal patients were more passive in their problem-solving style than non-psychiatric controls, they were not significantly more passive than psychiatric controls. Problem-solving did not change with improving mood.

Conclusions. Although passivity is not unique to suicidal patients, in combination with the smaller number and less effective alternatives generated, it may increase vulnerability.

INTRODUCTION

In recent years there has been an increasing focus on the psychological processes that underlie deliberate self-harm (DSH). One component that emerges consistently is social problem-solving ability. In general, we know that suicide attempters are poor interpersonal problem-solvers (Schotte & Clum, 1982; Evans *et al.* 1992; Rudd *et al.* 1994). Most of these studies use the Means-Ends Problem-solving Test (MEPS) (Platt *et al.* 1975) to assess problem-solving, the most common outcome measure of which is the number of 'relevant means' produced for each problem. However, as Linehan *et al.* (1987) point out, a problem solution on the standard MEPS can be scored as 'relevant' even if it reflects a passive solution (i.e. a solution in which the protagonist takes no active part in solving the problem but relies on the actions of others or the passage of time to solve the problem). Scoring these as equivalent to a response in which the protagonist takes the initiative and is active in solving the problem seems to obscure a potentially important difference.

In fact, two studies have noted the fact that suicide attempters are less active problem solvers, but their evidence is slightly contradictory. First, Linehan *et al.* (1987) found that compared with patients who had no history of serious DSH, those with such a history were less active in their problem-solving and also more passive than in-patients with suicide ideation but no history of suicidal behaviour. Secondly, Orbach *et al.* (1990) administered three problem situations to their patients (though their results were based

[1] Address for correspondence: Dr L. Pollock, Psychology Department, Park Street Clinic, Newtown, Powys SY16 1EG.

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on an analysis of only the first story). In contrast to Linehan *et al*. their results suggested that suicidal ideators were more passive in their solutions than both non-suicidal individuals and patients with a history of DSH. Of concern in this study is the fact that results are based on only one problem situation and the DSH group consisted of only 13 participants.

These studies suggest that the dimension of passivity in problem-solving may be an important component of what makes these individuals vulnerable to a suicidal crisis. However, the results were based on very small numbers, and the passivity issue was not the main focus of the studies. Furthermore, each of these was carried out before the assessment of the effectiveness of problem solutions was developed (Marx *et al*. 1992). It is possible that whether active or passive solutions for a problem is relevant depends on the context, and that it is how effective either type of solution is likely to be that is critical.

The aim of the present study therefore was, first, to examine the passivity dimension in DSH patients in relation to their problem-solving performance, comparing them in a cross-sectional design with both a psychiatric and a non-psychiatric control group. Only if both control groups are used can we determine which aspect of interpersonal problem-solving is characteristic of suicidal patients rather than psychiatric patients in general. Secondly, neither of the two previous studies examined how far such problem-solving deficits were simply the result of disturbed mood. We examined this in two ways: first, by co-varying out mood at the first time point; secondly, by adding a longitudinal component for the two clinical groups so that the association of problem-solving performance with changes in mood over time (6 weeks) might be examined.

METHOD

Participants

Psychiatric diagnoses for the clinical groups were based on criteria from the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R). Information was gathered by the psychiatrist and psychologist in admission interviews with the patient and from observations by other hospital staff. The principal diagnoses (formal diagnosis) for the suicide attempter group were depressive episode ($N=14$), adjustment disorder ($N=6$), dysthymia ($N=2$), bipolar disorder ($N=1$) and substance abuse ($N=1$). For the psychiatric control group the main diagnoses were anxiety disorders ($N=7$), major depressive episode ($N=7$), adjustment disorder ($N=3$), dysthymia ($N=3$), substance abuse ($N=2$), other disorders ($N=2$).

Twenty-four adults (10 males and 14 females) were recruited from consecutive referrals to the adult clinical psychology service or acute admission wards of the Mid-Wales Psychiatric Hospital. To be included in the suicidal group, these individuals had to be first-time attempters, who had engaged in overt, self-destructive behaviour and verbalized an intent to inflict lethal self-harm. Types of attempts were drug overdose (92%), self-cutting (4%) and attempted drowning (4%).

The psychiatric control group consisted of 24 adults recruited from referrals to the adult clinical psychology service or the acute admission wards of the Mid-Wales Psychiatric Hospital. These patients had no previous history of suicidal behaviour. The composition of this group was selected to match that of the attempter group with regard to age, gender, educational level and in- or out-patient status.

The normal control group consisted of 24 people recruited from the community. To be included in this group individuals had to have no previous history of suicidal behaviour, no history of ever having used the mental health services, and to match the other two groups with regard to age, gender and educational level.

Each group consisted of 10 males and 14 females, age range was 21 to 72 years and education ranged from 8 to 18 years.

Measures

The measures used included the Scale for Suicidal Ideation (SSI) (Beck *et al*. 1979), the Beck Depression Inventory (BDI) (Beck & Steer, 1987) and the Beck Hopelessness Scale (BHS) (Beck *et al*. 1974). Interpersonal problem-solving was assessed using five items from the Means-Ends Problem-solving Test (MEPS) (Platt *et al*. 1975). The MEPS consists of a series of five scenarios in which the participant is given the beginning and end of a story and is required

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to complete the middle portion, which links the beginning to the end. The story is scored for the number of 'relevant means' given, and also rated by independent judges for the effectiveness of the solutions produced, following Marx *et al.*'s (1992) procedure (available from the authors). In addition, for the present study, each item solution was scored as 'active' or 'passive', giving a range of scores for each participant of 0–5 (higher scores reflecting more active solutions). A solution was scored as active if in the solution the protagonist took the initiative and was active in solving the problem. A solution was scored as passive if the protagonist took no active part in solving the problem but relied on the actions of others or the passage of time for the problem to resolve itself.

Procedure

For the parasuicide group, all assessments took place within 7 days of the suicide attempt if medically possible. Following initial screening, informed consent was obtained from the participant. Suicide attempters were questioned about the circumstances surrounding their suicide attempt, their suicidal ideation and other related factors. On the basis of this information the interviewer completed the SSI. The participants then completed the psychological measures. Controls who met the inclusion criteria for the study were assessed in a similar way. After an interval of 6 weeks the participants in the suicidal group and the non-suicidal psychiatric control group were contacted again and retested.

RESULTS

In a preliminary analysis of the data, analyses of variance were performed to determine whether there were significant differences between groups in age and educational level. No significant differences emerged for these variables (age, $F(2, 69) = 1{\cdot}38$, $P < 0{\cdot}26$; education, $F(2, 69) = 1{\cdot}22$, $P < 0{\cdot}30$).

The means and standard deviations of all variables are shown in Table 1. Except where specifically mentioned, results were analysed using a multivariate analysis of variance. MANOVA was selected because of the intercorrelations among the dependent measures.

Table 1. *Means* (*standard deviations*) *of problem-solving and mood variables*

Measure / Group	Time 1 Mean (S.D.)	Time 2 Mean (S.D.)
MEPS		
Relevant means		
Suicidal patients	9·5 (3·1)	8·7 (3·3)
Psychiatric controls	13·1 (4·3)	14·4 (4·2)
Normal controls	15·9 (4·7)	—
Effectiveness		
Suicidal patients	11·5 (2·7)	11·3 (4·7)
Psychiatric controls	16·1 (4·3)	16·8 (4·9)
Normal controls	22·7 (5·5)	—
Active/passive		
Suicidal patients	3·7 (1·4)	3·5 (1·4)
Psychiatric controls	4·1 (1·2)	4·1 (1·2)
Normal controls	4·8 (0·5)	—
BDI		
Suicidal patients	29·2 (9·2)	21·5 (11·2)
Psychiatric controls	17·7 (8·0)	14·2 (8·7)
Normal controls	4·5 (4·5)	—
BHS		
Suicidal patients	13·5 (5·3)	11·8 (5·1)
Psychiatric controls	10·2 (6·2)	9·8 (6·0)
Normal controls	2·8 (1·9)	—
SSI		
Suicidal patients	10·6 (5·1)	5·7 (4·0)
Psychiatric controls	3·5 (1·7)	1·12 (1·5)
Normal controls	0·5 (0·8)	—

MEPS, Means-End Problem-Solving Procedure; BDI, Beck Depression Inventory; BHS, Beck Hopelessness Scale; SSI, Scale for Suicidal Ideation.

This was followed by univariate analyses of variance. *Post hoc* analyses were carried out using the Tukey test.

In the first MANOVA, total scores on the BDI, BHS and SSI served as the dependent variables and group membership as the independent variable. The results of the analysis showed a significant effect for Group, ($F(6, 134) = 25{\cdot}31$, $P < 0{\cdot}0001$). Univariate analyses of variance showed that on the BDI and SSI, there was a significant group effect ($F(2, 69) = 53{\cdot}25$, $P < 0{\cdot}00001$ and $F(2, 69) = 65{\cdot}83$, $P < 0{\cdot}00001$ respectively). *Post hoc* analyses showed that each of the groups differed significantly from the other on both depression and suicidal ideation. On the Hopelessness Scale, univariate analysis of variance showed a significant effect for Group $F(2, 69) = 30{\cdot}46$, $P < 0{\cdot}00001$). *Post hoc* comparisons showed that the suicidal group and the psychiatric control group differed significantly from the normal control group, but they did not differ significantly from each other.

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The MEPS task

A MANOVA showed a significant group effect ($F(4, 136) = 22{\cdot}30$, $P < 0{\cdot}0001$), with the suicidal group responding with fewer relevant means ($F(2, 69) = 14{\cdot}55$, $P < 0{\cdot}0001$) and less effective solutions ($F(2, 69) = 40{\cdot}80$, $P < 0{\cdot}0001$), than the other two groups. *Post hoc* analyses showed that on 'relevant means' the suicidal group differed significantly from the other two groups but the psychiatric and normal control groups did not differ from each other. On effectiveness scores, the three groups differed significantly from each other.

In order to determine that the differences between the groups on the relevant means and effectiveness scores were not due to mood we performed a multivariate analysis of covariance removing the effects of mood. This showed a significant difference between the groups ($F(4, 134) = 12{\cdot}29$, $P < 0{\cdot}0001$). Univariate analyses of variance revealed that there was no longer significant differences between the groups on relevant means ($F(2, 68) = 2{\cdot}45$, $P < 0{\cdot}09$), but the significant difference between the groups on the effectiveness scores remained ($F(2, 68), = 13{\cdot}26$, $P < 0{\cdot}0001$).

An analysis of variance was used to compare the passivity of solutions on the MEPS for the three groups. The results showed that there was a significant difference between the groups ($F(2, 69) = 5{\cdot}93$, $P < 0{\cdot}004$), with the suicidal group producing fewest active solutions. *Post hoc* comparisons showed that the suicidal group differed significantly from the normal control group but not the psychiatric control group, and, the psychiatric control group did not differ from the normal control group.

Mood and suicide ideation at Time 2

A Group × Time MANOVA on the BDI, BHS and SSI showed a significant Group main effect ($F(3, 90) = 24{\cdot}67$, $P < 0{\cdot}0001$) and a significant main effect for Time ($F(3, 90) = 9{\cdot}76$, $P < 0{\cdot}0001$). The Group × Time interaction was not significant ($F(3, 90) = 1{\cdot}18$, $P < 0{\cdot}31$). Follow-up univariate analyses of variance were used to examine respondents' scores at Time 2 on the BDI, SSI and BHS. The analyses of variance showed that the two groups differed on the BDI ($F(1, 46) = 6{\cdot}47$, $P < 0{\cdot}01$), and the SSI ($F(1, 46) = 26{\cdot}58$, $P < 0{\cdot}00001$), but not the BHS ($F(1, 46) = 1{\cdot}53$, $P < 0{\cdot}22$).

MEPS at Time 2

A Group × Time analysis was carried out covarying out depression and suicidal ideation. There was a significant main effect for Group ($F(2, 89) = 4{\cdot}76$, $P < 0{\cdot}011$), due to the suicidal group still producing fewer and less effective means than the psychiatric control group ($F(1, 44) = 12{\cdot}02$, $P < 0{\cdot}001$ and $F(1, 44) = 4{\cdot}73$, $P < 0{\cdot}035$), respectively. However, there was no significant effect for Time ($F(2, 89) = 0{\cdot}45$, NS) and the Group × Time interaction was not significant ($F(2, 89) = 2{\cdot}45$, $P < 0{\cdot}09$).

A Group × Time analysis of covariance on passivity of responses revealed that the suicidal and psychiatric controls did not differ from each other (Group main effect, $F(1, 43) = 0{\cdot}11$, NS), neither was there a significant effect for Time ($F(1, 92) = 0{\cdot}03$, NS), and no significant Group × Time interaction ($F(1, 92) = 0{\cdot}29$, NS). This non-significance, at both Time 1 and Time 2, was not due to the unreliability of the measure. The test–retest correlation for the passivity scores was highly significant at 0·78 ($P = 0{\cdot}0005$) in the DSH group, and although it was a more modest 0·41 ($P = 0{\cdot}045$) in the psychiatric controls, these results suggest that the tendency to remain passive remained stable over time despite the large changes in mood.

DISCUSSION

The aim of this study was, first, to determine whether suicide attempters are uniquely passive in their approach to interpersonal problem-solving when compared with a control group of non-suicidal psychiatric patients and a normal control group. Our results showed that suicide attempters produced significantly fewer problem-solving means than the other two groups and these means were significantly less effective. This supports the findings of previous research in this area (Schotte & Clum, 1982; Linehan *et al*. 1987). However, when we compared the groups on the degree of passivity of their problem-solving solutions we found that the suicidal attempter group, while differing from non-psychiatric controls, did not generate fewer

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active solutions than a matched psychiatric control group. Secondly, we wished to determine whether the problem-solving deficits persisted over time and were independent of mood. We found that, whereas depression, hopelessness and suicide ideation levels reduced over the following 6 weeks, there was no change in problem-solving performance.

Several limitations of the study need to be taken into account before discussing its implications. First, no independent, non-blind measure of passivity was taken, so it was possible that the allocation of each response on the MEPS to one or other category was open to bias. Secondly, it is impossible from this study alone to distinguish passivity in problem-solving *versus* general behavioural passivity, and future studies should attend to this aspect. Thirdly, it is clear that, at Time 2, both patient groups were still showing mood disturbance. Therefore, it is not possible to say whether the problem-solving measures might have changed if patients had achieved remission or recovery. However, the focus in this paper is not on recovery, but on mood change. Had problem-solving performance been mood-dependent, one would have expected some change in performance given the degree of mood change over time, even though remission was not achieved.

Does this study have treatment implications? The fact that suicidal patients did not differ from psychiatric patients does not mean that they do not have problems with passivity. They were the most passive group in this study, and whereas the psychiatric control group did not differ from non-psychiatric controls, the suicidal group did significantly differ. These patients cannot generate as many alternative solutions to their problems, so it is critical that the few that they do generate should be effective. They are not; and the fact that they tend also to be passive is likely to have a cumulative negative effect on their abilities. A number of recent reviews of psychosocial treatment studies for deliberate self-harm behaviour have suggested that problem-solving therapy seems to show encouraging results (Linehan, 1997; Hawton *et al*. 1998). It is important that problem-solving therapy focuses on these qualitative deficits and teaches patients to develop strategies for overcoming them. This requires that patients take an active role in understanding their behaviour and generating and implementing adaptive solutions (Heard, 2000).

It is important to note that all aspects of problem-solving deficits were independent from mood. Covarying out mood at Time 1 made no difference to the group differences in the effectiveness of problem-solving, and the large change in mood between Time 1 and 2 had no impact at all on problem-solving. It is likely therefore, that treatments that focus only on bringing about mood change will be unlikely to modify this fundamental aspect of suicidal vulnerability.

REFERENCES

Beck, A. T. & Steer, R. A. (1987). *Manual for the Beck Depression Inventory*. The Psychological Corporation: San Antonio, TX.

Beck, A. T., Weissman, A., Lester, D. & Trexler, L. (1974). The measurement of pessimism: The Hopelessness Scale. *Journal of Consulting and Clinical Psychology* **42**, 861–865.

Beck, A. T., Kovacs, M. & Weissman, A. (1979). Assessment of suicidal ideation: the Scale for Suicidal Ideators. *Journal of Consulting and Clinical Psychology* **47**, 343–352.

Evans, J., Williams, J. M. G., O'Loughlin, S. & Howells, K. (1992). Autobiographical memory and problem-solving strategies of parasuicide patients. *Psychological Medicine* **22**, 399–405.

Hawton, K., Arensman, E., Townsend, E., Bremner, S., Feldman, E., Goldney, R., Gunnell, D., Hazell, P., van Heeringen, K., House, A., Owens, D., Sakinofsky, I. & Traskman-Bendz, L. (1998). Deliberate self-harm: systematic review of efficacy of psychosocial and pharmacological treatments in preventing repetition. *British Medical Journal* **317**, 441–447.

Heard, H. L. (2000). Psychotherapeutic approaches to suicidal ideation and behaviour. In *The International Handbook of Suicide and Attempted Suicide* (ed. K. Hawton and K. v. Heeringen), pp. 503–518. John Wiley and Sons Ltd: Chichester.

Linehan, M. M. (1997). Behavioral treatments of suicidal behaviors: definitional obfuscation and treatment outcomes. In *The Neurobiology of Suicide: From the Bench to the Clinic*, Vol. 836 (ed. D. M. Stoff and J. J. Mann), pp. 302–328. The New York Academy of Sciences: New York.

Linehan, M. M., Camper, P., Chiles, J. A., Strosahl, K. & Shearin, E. (1987). Interpersonal problem solving and parasuicide. *Cognitive Therapy and Research* **11**, 1–12.

Marx, E. M., Williams, J. M. G. & Claridge, G. C. (1992). Depression and social problem-solving. *Journal of Abnormal Psychology* **101**, 78–86.

Orbach, I., Bar-Joseph, H. & Dror, N. (1990). Styles of problem-solving in suicidal individuals. *Suicide and Life-Threatening Behavior* **20**, 56–64.

Platt, J. J., Spivack, G. & Bloom, W. (1975). *Manual for the Means-End Problem-Solving Procedure (MEPS): A Measure of Interpersonal Problem-Solving*. Hahneman Medical College and Hospital, Department of Medical Health Sciences, Hahneman Community MH/MR center: Philadelphia.

Rudd, M. D., Rajab, M. H. & Dahm, P. F. (1994). Problem-solving appraisal in suicide ideators and attempters. *American Journal of Orthopsychiatry* **64**, 136–149.

Schotte, D. E. & Clum, G. A. (1982). Suicide ideation in a college population: a test of a model. *Journal of Consulting and Clinical Psychology* **50**, 690–696.

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