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Coping behavior in depressed patients: a longitudinal study

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Abstract

The relationship of coping behavior to outcome in depressed patients was examined. Subjects ($n=105$) with major depressive disorder ($n=85$), depressive disorder not otherwise specified ($n=7$) or major depressive disorder with axis I comorbidity ($n=13$) were followed for 6 months. Their coping behavior (i.e. rumination, active distraction, cognitive distraction and dangerous activities) was defined using the Comprehensive Assessment List for Affective Disorders. Based on their Hamilton Rating Scale for Depression (HRSD) scores at 6 months, the patients were categorized as having had a good or a poor outcome. Severity of depression and coping behavior were similar among the three diagnostic groups. At baseline assessment, coping behavior was not correlated with either HRSD score or age. However, males were significantly more likely to be engaged in dangerous activity as a coping behavior than females. Patients with a good outcome at 6 months were significantly more likely to use rumination as a coping behavior while patients with a poor outcome were significantly more likely to use dangerous activity. Multiple regression analysis confirmed this finding, indicating that rumination and dangerous activity were significant predictors of outcome at 6 months. Rumination might be associated with good outcomes in depressed patients while dangerous activity might be associated with poor outcomes.

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Keywords: Depression; Coping behavior; Rumination; Dangerous activity; Predictor of outcome

1. Introduction

Coping style in dealing with stressors has been suggested to be a key variable in predicting treatment outcome in depressed patients (Weissman et al., 1978; Shea et al., 1990; Alnaes and Torgersen, 1997; Mazure et al., 2000). While the effects of various coping behaviors on depression have been

reported, no clear picture has emerged. Seeking social support in depressed patients is associated with good outcome, while venting of emotion is linked to poor outcome (Vollrath et al., 1996). Hopelessness is correlated with severity of depression (Cannon et al., 1999), and thoughtfulness is a risk factor for exacerbation of depressive symptoms (Hirschfeld et al., 1989).

Sex differences in coping with mood disorders have also been reported. For example, men are more likely to engage in distracting behaviors that

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dampen their depressive mood, while women are more likely to amplify their mood by ruminating (Nolen-Hoeksema, 1987). Rumination appears to be a poor coping behavior, since it is predictive of depressive disorders, including new onsets of depressive episodes (Nolen-Hoeksema, 2000).

Other studies have evaluated the effects of coping behavior in patients with subclinical depression or dysphoria. Gender differences are also apparent in these subjects, with men employing more coping techniques than women. However, for both sexes, failure to express anger (keeping anger in) was correlated with dysphoria (McDaniel and Richards, 1990). Consistent with these data, studies in victims of a natural disaster (Nolen-Hoeksema and Morrow, 1991), in the bereaved soon after loss of their partners (Nolen-Hoeksema et al., 1997), and in college students (Nolen-Hoeksema et al., 1993) have shown that rumination correlates with persistence of a depressive state and delayed recovery.

Methods used to cope with dysphoric mood have been classified into the following four categories: rumination (absorbed in thought about the dysphoric mood itself, its cause and possible results), active distracting responses (e.g. sports to remove the dysphoric mood), cognitive distracting responses (e.g. talking and reading to remove the dysphoric mood) and dangerous activities (behavior to obtain dangerous stimulation) (Nolen-Hoeksema and Morrow, 1991).

To clarify the effects of coping behaviors on outcomes in depressed patients, we conducted a prospective study to examine the relationship between severity of depression, sex, age and coping behavior. We also identified differences in coping behavior among three subtype of depression and evaluated whether coping behavior would be a predictor of outcome.

2. Methods

2.1. Subjects

This was a joint study at 23 psychiatric medical institutions. Each hospital examined a representative subset of its first-visit patients according to

the study protocol. Cases ($n=1903$) were consecutively selected and a semi-structured interview based on the Psychiatric Initial Screening for Affective Disorder (PISA) was performed (Kitamura, 1992).

Patients ($n=127$) with a broad spectrum of affective disorders, such as depressive symptoms (depressive mood or loss of volition) or manic symptoms (elevated mood, expansive mood and irritable mood) that had persisted for at least 4 days before the interview, were further evaluated using a structured interview based on the Comprehensive Assessment List for Affective Disorders (COALA; Furukawa et al., 1995). Patients were included in this study if they had a diagnosis according to DSM-III-R criteria of major depressive disorder, depressive disorder not otherwise specified or major depression and a concurrent axis I comorbidity. The exclusion criteria were as follows: administration of antidepressants or drugs for psychiatric disorders during the past 3 months; age less than 18 years; IQ below 70; and severe dementia, or hearing impairment that would make assessment difficult. Informed consent was obtained from all subjects.

The final study group consisted of 105 subjects (44 males, 61 females) with major depression (MD, $n=85$), depressive disorder not otherwise specified (D-NOS, $n=7$) and MD with axis I comorbidity ($n=13$). Comorbid conditions consisted of the following diagnoses: dysthymic disorder ($n=5$), anxiety disorders ($n=5$), alcohol dependence ($n=1$), anorexia nervosa ($n=1$) and sexual desire disorders ($n=1$). Twenty-two patients were excluded because they had other psychiatric diagnoses, such as anxiety disorder ($n=5$), schizophrenia ($n=2$), bipolar disorder ($n=9$) and dementia ($n=3$). Table 1 presents the demographic and clinical features of the subjects. Ninety-five patients completed the study, but one of them had an incomplete baseline evaluation. Even if monthly evaluations were not completed, we included patients for whom 6-month assessments on the Hamilton Rating Scale for Depression were available. The 10 patients that dropped out did so early in the study.

Table 1
Demographic variables and clinical features ($n = 105$)

Variables	Diagnostic groups			Significance χ^2 test or ANOVA
	MD $n = 85$	D-NOS $n = 7$	MD and axis I disorders $n = 13$	
Gender (male/female)	37/48	4/3	3/10	NS
Age at interview, mean (S.D.)	44 (14)	44 (17)	44 (20)	NS
Age at onset, mean (S.D.)	44 (16)	37 (16)	42 (13)	NS
Marital state				
With spouse	32	2	4	NS
Without spouse	53	5	9	
Education				
≤ 9 years	60	5	9	NS
9 to 12 years	11	1	3	
> 12 years	14	1	1	
Index episode duration (months)	7.8 (15)	5.7 (4)	3.8 (6)	NS
Index episode HRSD, mean (S.D.)	23.3 (8)	27.4 (9)	23.1 (7)	NS
Index episode GAS, mean (S.D.)	48 (12)	52 (9)	46 (13)	NS
Major depression, single episode	63			
Coping				
Ruminataion, mean (S.D.)	3.4 (1.2)	2.4 (1.3)	2.9 (1.7)	NS
Active distraction, mean (S.D.)	1.7 (1.1)	1.1 (0.4)	1.4 (1.0)	NS
Cognitive distraction, mean (S.D.)	2.3 (1.3)	2.1 (1.3)	1.9 (1.3)	NS
Dangerous activity, mean (S.D.)	1.5 (1.0)	1.9 (1.5)	1.5 (1.2)	NS
TCA 1 month, mean (S.D.) (mg/day)	92 (66)	92 (53)	122 (61)	NS
TCA 6 months, mean (S.D.) (mg/day)	44 (64)	45 (51)	50 (61)	NS

MD, major depression; D-NOS, depressive disorder not otherwise specified; HRSD, Hamilton Rating Scale for Depression; GAS, Global Assessment Scale; TCA, tricyclic antidepressant.

2.2. Procedures

Depressive symptoms were assessed using the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960; Williams, 1988; Potts et al., 1990). Information used in the HRSD assessment was obtained in semi-structured interviews accord-

ing to the protocol of the COALA (Furukawa et al., 1995). The inter-rater reliability of the HRSD was 0.95. The Global Assessment Scale (GAS; Endicott et al., 1972) was another instrument used to evaluate patients. Inter-rater reliability was 0.78 (Furukawa et al., 1995). We also used the COALA, which contains a questionnaire that spe-

Table 2
Coping methods dealing with dysphoric mood

Please indicate what you generally do, when you fall down, sad or depressed.

Rumination: absorbed in thought about the dysphoric mood itself, its cause, and possible results.

Active distracting response: such as sports to remove the dysphoric mood.

Cognitive distracting response: such as talking and reading to remove the dysphoric mood.

Dangerous activities: behavior to obtain dangerous stimulation to remove the dysphoric mood.

e.g. drive recklessly, drink too much.

1. never, 2. rarely, 3. sometimes, 4. often, 5. always

cifically assesses coping with dysphoric mood (Furukawa et al., 1995). The coping behaviors were categorized into four styles: rumination, active distracting response, cognitive distracting response and dangerous activity (Table 2). The inter-rater reliabilities were 0.95, 0.95, 0.87 and 0.96, respectively (Furukawa et al., 1995).

Patients were assessed at the first consultation (baseline), and every month thereafter for 6 months. Patients were considered to have had a good outcome at 6 months if they had an HRSD score ≤ 5 and showed a $\geq 50\%$ decrease compared with their baseline score. Patients who did not meet these criteria were considered to have had a poor outcome.

Pharmacotherapy comprised the following medications: imipramine (150 mg), amitriptyline (150 mg), mianserin (60 mg) or maprotiline (75 mg). Dosage was adjusted by the treating physician.

2.3. Statistical analysis

Correlations between coping style and HRSD score or age were analyzed using Spearman's rank correlation coefficient. The good and poor outcome groups were compared using Student's *t*-test, chi-square test and analysis of variance. The effect of coping methods on outcomes was evaluated using multiple regression analysis. The statistical software Statistica Pro (version 5.5, 1999 edition) was used for the analysis. Statistical significance was accepted at $P < 0.05$.

3. Results

3.1. Associations between coping and other clinical variables at baseline

HRSD: Coping methods at baseline were not correlated with depression severity as indicated by the HRSD score (rumination: $n = 104$, $r = -0.05$, $P = 0.6$; active distraction: $n = 104$, $r = 0.11$, $P = 0.3$; cognitive distraction: $n = 104$, $r = 0.17$, $P = 0.08$; dangerous activity: $n = 104$, $r = 0.14$, $P = 0.1$).

Age: Coping methods at baseline were not correlated with age (rumination: $n = 105$, $r = -0.19$, $P = 0.06$; active distraction: $n = 105$, $r =$

0.05 , $P = 0.6$; cognitive distraction: $n = 105$, $r = -0.18$, $P = 0.07$; dangerous activity: $n = 105$, $r = -0.17$, $P = 0.09$).

Sex: There was a significant gender difference in dangerous activity. Males showed a higher dangerous activity score than females (males, $n = 44$, mean \pm S.D. = 1.89 ± 1.24 ; females, $n = 61$, mean \pm S.D. = 1.25 ± 0.85 , $t = 3.11$, $P = 0.002$).

Three diagnostic groups and four assessment points (baseline, 1 month, 3 months, and 6 months) were also compared (Table 3). There were no significant differences in HRSD score among the diagnostic groups, indicating that severity of depression was similar across groups ($F = 0.21$, $P = 0.81$). In addition, no coping behavior was disproportionately used by any diagnostic group. There were, however, some coping behaviors that were used significantly more over time: specifically, active distraction and dangerous activities.

Coping: 'Active distraction' did not show a significant difference for diagnostic group ($F = 0.32$, $P = 0.731$), the assessment time point was significant ($F = 3.68$, $P = 0.01$), and the diagnosis \times time interaction was not significant ($F = 1.4$, $P = 0.22$). 'Dangerous activities' also did not show a significant effect of diagnostic group ($F = 0.15$, $P = 0.86$), time of assessment was significant ($F = 11.0$, $P = 0.000002$), and diagnosis \times time was not significant ($F = 0.83$, $P = 0.55$).

3.2. Comparison of HRSD, coping and other clinical variables between the good and poor outcome groups

Table 4 presents the findings in good vs. poor outcome groups. Patients with an HRSD score at 6 months ≤ 5 , showing a $\geq 50\%$ decrease compared with the first evaluation, were classified as the good outcome group ($n = 49$). The remaining patients constituted the poor outcome group ($n = 46$).

Baseline GAS and HRSD scores were not significantly different between the two outcome groups. Rumination was more common in the good outcome group, and dangerous activity was more frequent in the poor outcome group. There was no

Table 3
Diagnostic groups and timing, ANOVA

Variables	Diagnostic groups			Significance 2-way ANOVA	Significance of group difference Scheffe'
	Major depression	Depression (NOS)	MD and axis I disorder		
HRSD, mean (S.D.) 0 month	23.3 (8)	27.4 (9)	23.1 (7)	Diagnosis, NS Time, $P < 0.00000$	Baseline > 1 month > 3 months > 6 months
1 month	9.1	5.3	13.5		
3 months	4.7 (5.4)	4.5 (2.1)	6 (3)	Diagnosis × time, ns	
6 months	6.6 (7.0)	12.2 (6.9)	6.8 (6.4)		
(Coping)				NS	
rumination, 0 month	3.4 (1.2)	2.4 (1.3)	2.9 (1.7)		
1 month	1.8 (1.5)	1.3 (1.4)	2.1 (1.7)		
3 months	1.6 (1.7)	2.7 (1.5)	1.3 (1.3)		
6 months	1.6(1.3)	1 (1.3)	1.1 (1.7)		
Active distraction, 0 month	1.7 (1.1)	1.1 (0.4)	1.4 (1.0)	Diagnosis, NS Time, $P < 0.01$	Baseline, 1 month, 3 months > 6 months
1 month	1.8 (1.4)	0.6 (0.5)	1.7 (1.5)		
3 months	1.1 (1.3)	2 (1.7)	1.7 (1.9)	Diagnosis × time, ns	
6 months	0.7 (1.2)	0.5 (0.5)	0.4 (0.5)		
Cognitive distraction, 0 month	2.3 (1.3)	2.1 (1.3)	1.9 (1.3)	NS	
1 month	1.6 (1.4)	1 (1.1)	1.9 (1.5)		
3 months	1.3 (1.5)	1 (0)	1.8 (1.9)		
6 months	0.8 (1.3)	1.5 (2.1)	0.5 (0.7)		
Dangerous activity, 0 month	1.5 (1.0)	1.9 (1.5)	1.5 (1.2)	Diagnosis, NS Time, $P < 0.00002$	Baseline > 1 month, 3 months > 6 months
1 month	0.7 (0.5)	0.7 (0.5)	0.8 (0.4)		
3 months	0.6 (0.7)	1 (0)	0.7 (0.5)	Diagnosis × time, ns	
6 months	0.5 (0.7)	0.7 (0.8)	0.4 (0.5)		

Table 4
Comparison of good and poor outcome groups

(Baseline)	Good outcome <i>n</i> =49 Mean (S.D.)	Poor outcome <i>N</i> =46 Mean (S.D.)	<i>t</i>	<i>P</i>
Rumination	3.5 (1.1)	3 (1.4)	2.2	0.03
Active distracting response	1.7 (1)	1.7 (1.1)	−0.002	0.9
Cognitive distracting response	2.2 (1.2)	2.4 (1.4)	−0.76	0.45
Dangerous activities	1.3 (0.7)	1.7 (1.3)	−2.2	0.03
HRSD, baseline	23.9 (8.3)	23.3 (8.7)	0.3	0.75
GAS, baseline	47 (13)	49 (11)	−0.9	0.4
(1 month)	<i>n</i> =45 Mean (S.D.)	<i>N</i> =44 Mean (S.D.)	<i>t</i>	<i>P</i>
Rumination	1.8 (1.7)	1.7 (1.4)	0.3	0.8
Active distracting response	1.4 (1.2)	1.7 (1.5)	−1.2	0.2
Cognitive distracting response	1.6 (1.4)	1.6 (1.4)	0.2	0.9
Dangerous activities	0.7 (0.5)	0.8 (0.5)	−1.3	0.2
HRSD, 1 month	9.4 (8.1)	9.7 (7.4)	−2	0.8
GAS, 1 month	64 (15)	63 (13)	0.02	0.98
TCA, 1 month (mg/day)	97 (73)	97 (60)	−0.003	1
(3 months)	<i>n</i> =32 Mean (S.D.)	<i>N</i> =28 Mean (S.D.)	<i>t</i>	<i>P</i>
Rumination	1.6 (1.8)	1.6 (1.5)	0.04	0.97
Active distracting response	1.2 (1.5)	1.4 (1.4)	−0.63	0.53
Cognitive distracting response	1.1 (1.4)	1.6 (1.7)	−1.4	0.16
Dangerous activities	0.6 (0.8)	0.7 (0.5)	−0.3	0.8
HRSD, 3 months	3.7 (5.7)	6.2 (3.2)	−1.6	0.12
GAS, 3 months	67 (17)	67 (11)	0.14	0.89
(6 months)	<i>n</i> =49 Mean (S.D.)	<i>N</i> =46 Mean (S.D.)	<i>t</i>	<i>P</i>
Rumination	0.9 (3.7)	1.6 (1.6)	−1.1	0.3
Active distracting response	0.3 (0.9)	1 (1.1)	−2.9	0.01
Cognitive distracting response	0.5 (1.2)	1.2 (1.4)	−2.6	0.01
Dangerous activities	0.2 (0.4)	0.8 (0.8)	−4.4	0
HRSD, 6 months	1.8 (1.9)	12.5 (6.1)	−11.2	0
GAS, 6 months	77 (16)	65 (19)	3.4	0.001
TCA, 6 months (mg/day)	48 (58)	52 (71)	−0.3	0.8

P<0.05.

difference in imipramine-equivalent tricyclic anti-depressant dosage at 1 month or 6 months.

3.3. Coping behaviors as predictors of outcome

Multiple regression analysis was used to determine if coping methods predicted outcome. Outcome at 6 months was the dependent variable and the HRSD score at baseline, coping at baseline, sex and age were the independent variables (Table

5). Dangerous activity [$\beta=0.34$, $P=0.001$, $n=94$, $R=0.46$, $F(7,86)=3.27$] and rumination at baseline [$\beta=-0.25$, $P=0.02$, $n=94$, $R=0.46$, $F(7,86)=3.27$] were significant predictors of outcome.

4. Discussion

In this study, we prospectively investigated the effects of coping behavior on outcome in depressed

Table 5
Predictors of 6-month outcome

<i>n</i> = 94 (Independent variables)	β	<i>t</i> (86)	<i>P</i>
Sex	−0.07	−0.65	0.52
Age	0.02	0.16	0.87
HRSD (baseline)	0.04	0.04	0.97
Rumination	−0.25	−2.44	0.02*
Active distracting response	0.01	0.11	0.91
Cognitive distracting response	0.03	0.27	0.78
Dangerous activity	0.34	3.33	0.001*

Dependent variable: HRSD at 6 months.

$R = 0.46$.

$F(7,86) = 3.27$, $P < 0.004$.

patients. At baseline there was no relationship between severity of depression or age and coping behavior. There was, however, a significant gender difference in coping behavior (dangerous activities). Consistent with a previous study, males showed higher dangerous activity scores than females (Nolen-Hoeksema, 1987). Unlike that study, however, we did not observe a higher rumination score among female patients.

There was no significant difference in coping behavior among the three diagnostic groups. This is not surprising, as coping behaviors would not necessarily be expected to be related to any subtype of depression. A comparison between these groups and non-depressed controls would be interesting as it might suggest coping behaviors that are characteristic of depression.

The use of active distraction and dangerous activity decreased over time while rumination and cognitive distraction were stable over time. It is possible that active distraction and dangerous activity are affected more by depression severity than are rumination and cognitive distraction.

Consistent with this interpretation, the vulnerability state model describes three aspects of a person's functioning: relatively stable aspects (vulnerability model), coping biases dissipating when symptoms remit (state model), and a state exaggerating pre-existing trait-like coping biases (combined vulnerability-state model) (Hoffart and Martinsen, 1993). Thus, our data suggest that rumination and cognitive distraction are consistent

with the vulnerability model, whereas active distraction and dangerous activity are consistent with the state model.

We also found that rumination was associated with good outcome and dangerous activity was associated with poor outcome. Others have found in patients with subclinical depression that rumination is associated with the development of full-fledged depression (Nolen-Hoeksema and Morrow, 1991; Nolen-Hoeksema, 1991; Nolen-Hoeksema et al., 1993, 1997; Nolen-Hoeksema, 2000). This is not necessarily inconsistent with our findings as different coping behaviors may be associated with developing and recovering from depression. For example, rumination is a symptom that might be related to the onset and, indeed, aggravation of depression. Once pharmacotherapy has been introduced, however, as in the present study, rumination appears to become a predictor of good outcome.

There have been no prospective studies on the use of dangerous activity as a coping style. One study suggested that coping by using alcohol or drugs temporarily relieved depressed mood but ultimately led to a poor outcome (Dixit and Crum, 2000). These data are consistent with our findings. In addition, engaging in dangerous activities coupled with a poor treatment response may be indicative of comorbid personality disorders, particularly borderline personality disorder. Thus, when depression is complicated by personality disorders, dangerous activities may be strong predictors of poor outcome (Shea et al., 1990; Alnaes and Torgersen, 1997). Patients were not assessed for personality disorders in our study, and this question remains an interesting one for further research.

Another cognitive personality style associated with poor outcome of depression is marked neuroticism (Eccleston and Scott, 1991). Patients with marked neuroticism in the early stages of treatment partially recover but continue to have mild unresolved symptoms, similar to the poor outcome group in our study. Neuroticism is considered to be an integrated parameter of hostility, dependence and self-reproach. Based on our current findings, the association between neuroticism and dangerous activity should be further evaluated.

Nagayama et al. (1991) evaluated responses to antidepressants in depressed patients, and reported that the outcome after 4 weeks could be predicted 1 week after the initiation of treatment, but the severity of depression and clinical symptoms before treatment were not predictive factors. Similarly, in our study, the severity of depression and clinical symptoms before treatment did not predict outcome. However, the coping methods (dangerous activity, rumination) used before treatment predicted 6-month outcomes.

4.1. Limitations

Our study is a preliminary investigation with a small sample size. In addition, we adapted a coping questionnaire to determine coping styles. We have not as yet examined the reliability and validity of this questionnaire. Finally, a comparison of our patients with normal controls would be of interest.

5. Conclusion

Our data suggest that rumination may have a favorable effect on the outcome of depression, whereas dangerous activity may have an unfavorable effect. Analysis of coping styles at intake may help to predict treatment outcomes and thereby aid in selection of treatment methods.

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