A Longitudinal View of Triggers and Thresholds of Suicidal Behavior in Depression

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Background: Recurrent brief depressive disorder (RBD) and major depressive disorder (MDD) share the same diagnostic picture of full-blown depression and are both associated with increased suicide attempt rates. However, longitudinal diagnostic shifts from RBD to MDD or vice versa, called "combined depression" (CD), have demonstrated a substantially higher risk of suicide attempts in epidemiologic and clinical studies. Following the stress-diathesis model of suicidal behavior, we compared possible triggers and thresholds for suicidal behavior among patients with RBD, MDD, and CD. RBD and MDD diagnoses were based on DSM-IV criteria. Furthermore, the goal of this study was to determine if impulsivity as an underlying factor could explain high suicide attempt rates in CD.

Method: A structured clinical interview evaluating comorbid Axis I and II disorders and RBD and a battery of instruments assessing suicidal behavior were administered to 101 patients with RBD (N = 27), MDD (N = 33), or CD (N = 41).

Results: Patients with CD showed significantly higher ($p < .05$) scores on measures of suicidal behavior in comparison with RBD and MDD patients. Together with comorbid substance abuse and marital status, CD was among the highest-ranking risk factors for suicide attempts. Impulsivity was identified as a major underlying factor, predicting 80.7% of suicide attempts.

Conclusion: CD seems to be an important clinical risk factor for the prediction of suicide attempts, similar to risk factors such as substance use disorders and borderline personality disorder. All of these factors share the same diathesis for increased impulsivity and suicidal ideation, which could explain comorbidity and suicidal behavior. The coexistence of a greater propensity for suicidal ideation and impulsivity in RBD might also explain why such patients are more prone to attempt suicide, even if they do not, in the case of RBD, meet the duration criteria for MDD.

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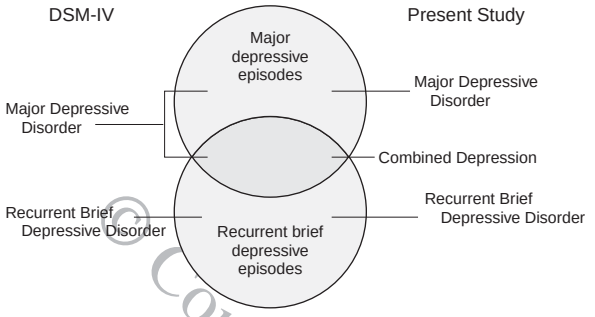
Suicide was the eighth leading cause of death in the United States in 1998,[1,2] and over 4% of the population reported lifetime suicide attempts.[3] It has been proposed that psychiatric disorders are necessary triggers for suicidal acts, accompanied by factors (e.g., impulsivity) that lower the threshold for acting on suicidal thoughts.[4,5] The biological correlate that sets an individual's threshold for acting on suicidal ideation seems to be the serotonergic system, which is affected in both suicidal behavior and major depressive disorder (MDD).[6] However, suicidal behavior can also be triggered by mood disorders that do not meet the total number of required diagnostic criteria of MDD (e.g., dysthymia, minor depression, recurrent brief depressive disorder, subthreshold major depression).[7–9]

Recurrent brief depressive disorder (RBD) is such a disorder, and it has been associated with increased suicide attempt rates in epidemiologic[10–17] and clinical studies.[18] The clinical significance and supportive validation work done on RBD has been reported in psychiatry for more than a century.[19] However, it was not until 1985 that the first operationalized definition of RBD was introduced into psychiatry. The disorder was identified in conjunction with the results of the Zurich Study, a cohort study that enrolled a community sample of young adults who have been followed for over 2 decades to date.[20] In this study, the syndromal and associated features of RBD, the suffi-

Figure 1. Management of Longitudinal Diagnostic Shifts Between Major and Recurrent Brief Depressive Disorder in DSM-IV and in the Present Study[a]



[a]Recurrent brief depressive disorder, which is a distinct mood disorder in ICD-10, can be found in the appendix to DSM-IV as a diagnostic category provided for further study. For clinical use, subjects can be coded as depressive disorder not otherwise specified in DSM-IV.

ciently unique patterns of the course of the disorder, and its clinical significance in terms of impairment and various clinical correlates such as suicidal behavior have been examined.[21] So far, RBD has been independently investigated in 4 community samples[10,13,14,17] and several studies[11,12,15,16] within the comprehensive World Health Organization project "Psychological Problems in General Health Care" (PPGHC) conducted in primary care settings[22] that have demonstrated its significant prevalence and confirmed clinical correlates such as increased suicide attempt rates.

On the basis of these studies, RBD has been integrated as a distinct mood disorder into ICD-10[23] and as a research diagnosis in the appendix to DSM-IV[24] (Figure 1). Furthermore, several clinical studies investigating biological markers[25–27] and drug response[28–39] in such patients supported the concept of RBD.

In contrast to other subthreshold mood disorders such as minor depression and dysthymia, RBD has been defined as presenting the same picture as MDD of full-blown depression symptoms, only failing to meet the mandatory 2-week duration criterion in both ICD-10 and DSM-IV. Additionally, brief depressive episodes must occur approximately once a month and independent of the menstrual cycle within a 12-month observation period.

In the above-mentioned epidemiologic studies, however, the highest suicide attempt rates among subjects with mood disorders were not found in subjects with exclusively either major *or* recurrent brief depressive episodes. Moreover, a specific course pattern of depression with major *and* recurrent brief depressive episodes, called "combined depression" (CD), was reported to increase substantially the risk of attempted suicide in comparison to either major or recurrent brief depressive episodes. The term *combined depression*, which is similar to the term *double depression*, indicating a lifetime co-occurrence of major depressive episodes and dysthymia, was first introduced into the psychiatric literature by Montgomery et al.[18] and was further developed by Angst.[40] The increased risk for suicide attempts observed in CD is intriguing, since CD does not differ from either MDD or RBD with respect to required psychopathologic depression criteria.

Therefore, on the basis of the stress-diathesis model of suicidal behavior,[5] we hypothesized that the reported higher suicide attempt risk in patients with CD in comparison to patients with either major or recurrent brief depressive episodes can be explained mainly by increased impulsivity, which lowers the threshold for acting on suicidal ideation. Furthermore, we intended to investigate common triggers and thresholds of suicidal behavior in a clinical sample of 101 patients with a history of major and/or recurrent brief depressive episodes supported by a structured clinical diagnostic interview and a battery of several psychometric scales on suicidal behavior.

METHOD

Following treatment at the Department of General Psychiatry at the University of Vienna, Vienna, Austria, 101 patients reporting major and/or recurrent brief depressive episodes were recruited from inpatient and outpatient facilities. These patients were between 22 and 77 years of age, 36% were male, and 99% were white.

Recruitment and Clinical Assessment

Beginning in 1998, patients were consecutively recruited during a period of 18 months by the following standardized procedure, starting with a 6-item First Stage Interview (available from the authors on request) that is based on the Composite International Diagnostic Interview section evaluating RBD and is used in PPGHC studies.[22] Minor revisions were made to adapt it to DSM-IV. Items 1 and 2 contained DSM-IV criteria A1 and A2 for MDD except duration of depression, which was asked separately. Patients who experienced depressive episodes lasting more than 14 days continued with Axis I evaluation, and patients with depressions lasting 1 day or less were excluded from the study, in accordance with the definition of RBD in DSM-IV. Furthermore, only patients with recurrent brief depressive episodes (2–14 days) and who met a complete set of obligatory diagnostic criteria (almost-monthly recurrence, functional impairment, depressive periods independent of the menstrual cycle) were diagnosed with RBD. These patients underwent a Second Stage Interview (available from the authors on request), which consists of 56 items assessing DSM-IV research criteria for RBD, mean duration and frequency of brief depressive episodes, age at onset, and DSM-IV course specifiers. Comorbid psychiatric disorders and MDD were assessed in all subjects using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I).[41] Sub-

Table 1. Measures and Potential Triggers/Thresholds of Suicidal Behavior in Patients With and Without a History of Attempting Suicide[a]

	Attempters			Nonattempters			Statistical Analysis		
Measure or Trigger/Threshold	N	Mean	SD	N	Mean	SD	t	df	p[b]
$BSSI_i$ score	39	11.9	10.5	49	2.9	6.3	–4.67	58.9	< .0001[c]
$BSSI_w$ score	39	22.0	8.7	49	10.3	8.0	–6.57	86	< .0001[c]
Questionnaire for Suicidality score	39	30.9	8.1	49	25.6	9.3	–2.83	86	.006[c]
List of Criteria for Chronic Suicidality score	39	30.3	12.4	49	17.7	9.0	–5.34	67.2	< .0001[c]
Hamilton Rating Scale for Depression score	40	18.9	9.6	52	15.0	9.7	–1.91	90	.059
Barratt Impulsiveness Scale score	39	70.7	10.9	49	60.2	8.1	–5.20	86	< .0001[c]
Dimensional borderline personality disorder score (SCID-II)	41	15.1	4.5	51	11.9	3.7	–3.77	90	< .0001

[a]Abbreviations: $BSSI_i$ = Beck Scale for Suicide Ideation at the time of the interview, $BSSI_w$ = Beck Scale for Suicide Ideation at the worst point during the most recent suicidal crisis, SCID-II = Structured Clinical Interview for DSM-IV Axis II Disorders.
[b]Not corrected for multiple comparisons.
[c]Significant ($p < .05$) after Bonferroni correction.

jects who did not meet the diagnostic criteria for MDD or RBD were excluded from the study.

Since the hierarchy of the DSM-IV system determines that the diagnosis of MDD covers both patients with major depressive episodes and those with CD, we had to create mutually exclusive groups to investigate the phenomenon of CD (Figure 1). Patients with MDD were only diagnosed with MDD in the absence of a lifetime history of recurrent brief depressive episodes. Patients with a lifetime history of major *and* recurrent brief depressive episodes were diagnosed with CD. RBD was diagnosed according to the research diagnostic criteria for RBD described in the appendix to DSM-IV. Personality disorders were evaluated categorically and dimensionally using the SCID for Axis II Disorders (SCID-II).[41] Severity of depression was evaluated using the 21-item Hamilton Rating Scale for Depression (HAM-D),[42] and impulsivity was evaluated using the 11th revision of the Barratt Impulsiveness Scale (BIS).[43] A suicide attempt was defined as a self-destructive act sufficiently serious to require medical evaluation and carried out with the intent to end one's life.[5] Suicide attempt rates were adjusted for age according to age differences between the MDD and RBD/CD groups. Suicidal behavior was assessed using the Beck Scale for Suicide Ideation (BSSI) at the time of the interview ($BSSI_i$) and the worst point during the most recent suicidal crisis ($BSSI_w$),[44,45] Questionnaire for Suicidality,[46] List of Criteria for Chronic Suicidality,[47] and Basic Documentation Questionnaire for Suicidal Behavior.[48] Raters were psychiatrists and psychologists with a bachelor's or master's degree. After complete description of the study to the subjects, informed consent was obtained.

Of 101 patients, 27 were diagnosed with RBD; 33, with MDD; and 41, with CD. Forty-four patients reported a previous suicide attempt. Twenty (45%) of these patients had attempted suicide more than once.

Statistical Methods

Differences between attempters and nonattempters were tested by means of the 2-sample t test (with equal or unequal variances as appropriate). One-way analysis of variance or Kruskal-Wallis nonparametric tests were performed to compare means in the RBD, CD, and MDD groups. Odds ratios (ORs) were used as a measure of association between 2 dichotomous variables. In all cases, attempter status was one of these variables. For the purpose of data reduction, we performed a principal component factor analysis with varimax rotation. Factors of the correlation matrix with eigenvalues greater than 1 were retained as significant. A logistic regression model was used to study the multivariate relationships between potential predictors and attempter status. Predictors in this model were selected a priori on the basis of previous research.[5]

RESULTS

Suicide attempters did not differ significantly from nonattempters in mean ± SD age (41.1 ± 12.6 vs. 45.0 ± 12.7 years; $t = 1.52$, $df = 99$, $p = .13$), sex (female, 75.0% vs. 56.1%; $\chi^2 = 3.85$, $df = 1$, $p = .05$), receiving money for any kind of work (54.5% vs. 72.1%; $\chi^2 = 2.51$, $df = 1$, $p = .11$), religious confession (those who formally belong to a religion, as opposed to those who do not; the categorization is related to an Austrian government register) (63.3% vs. 78.4%; $\chi^2 = 1.85$, $df = 1$, $p = .17$), higher education (attending school after the age of 15 years, 40.6% vs. 50.0%; $\chi^2 = 0.66$, $df = 1$, $p = .42$), current employment/education (45.5% vs. 59.1%; $\chi^2 = 1.41$, $df = 1$, $p = .24$), or mean number of lifetime major depressive episodes (6.2 ± 10.5 vs. 3.6 ± 3.7; $U = 356.0$, $p = .06$). Mean Global Assessment of Functioning score (52.7 ± 16.1 vs. 61.8 ± 13.1; $t = 2.99$, $df = 90$, $p = .004$) and marital status (married, 21.2% vs. 43.2%; $\chi^2 = 4.07$, $df = 1$, $p = .04$) differed significantly between attempters and nonattempters. The majority of attempters (75%) reported suicide attempt methods with low lethality, such as intoxication with prescribed psychotropic drugs.

Table 1 shows that attempters and nonattempters did not differ significantly in severity of depression on the

Table 2. Measures and Potential Triggers/Thresholds of Suicidal Behavior in Recurrent Brief Depressive Disorder (RBD), Combined Depression (CD), and Major Depressive Disorder (MDD)[a]

	RBD			CD			MDD			Statistical Analysis[b]	
Measure or Trigger/Threshold	N	Mean	SD	N	Mean	SD	N	Mean	SD	F/χ^2	p[c]
$BSSI_i$ score	23	1.9	3.5	32	11.3	11.2	33	6.1	8.8	12.84[d]	.002*,f
$BSSI_w$ score	23	9.5	7.6	32	21.8	7.5	33	13.6	10.7	14.14[e]	< .0001*,f,g
Questionnaire for Suicidality score	23	23.7	7.8	32	33.0	7.8	33	26.0	9.3	9.65[e]	< .0001*,f,g
List of Criteria for Chronic Suicidality score	23	19.4	10.9	32	27.7	14.0	33	21.8	10.5	3.60[e]	.032[f]
Hamilton Rating Scale for Depression score	26	8.8	5.1	33	19.4	9.8	33	20.3	9.4	23.96[d]	< .0001*,f,h
Barratt Impulsiveness Scale score	23	61.7	10.8	32	69.3	12.8	33	62.8	6.5	10.81[d]	.012f,g
Age-adjusted suicide attempt rate[i]	27	1.4	2.4	41	5.2	7.8	33	2.0	3.9	7.30[d]	.026f,g
Age at onset of affective illness, y	25	24.5	11.2	40	23.2	12.6	28	32.4	13.1	5.51[e]	.006*,g,h

[a]Abbreviations: $BSSI_i$ = Beck Scale for Suicide Ideation at the time of the interview, $BSSI_w$ = Beck Scale for Suicide Ideation at the worst point during the most recent suicidal crisis. [b]df = 2. [c]Not corrected for multiple comparisons. [d]Kruskal-Wallis nonparametric test. [e]ANOVA. [f]CD vs. RBD; post hoc comparison. [g]CD vs. MDD; post hoc comparison. [h]RBD vs. MDD; post hoc comparison. [i]No. of suicide attempts per 100 years.
*Significant ($p < .05$) after Bonferroni correction.

basis of HAM-D score. Ratings of acute (BSSI, Questionnaire for Suicidality) and chronic suicidality (List of Criteria for Chronic Suicidality) and impulsivity (BIS) were all significantly increased in attempters. Furthermore, attempters had significantly higher rates of substance use disorders (65.9% vs. 25.0%; $\chi^2 = 15.61$, df = 1, $p < .001$), a higher dimensional borderline personality disorder score, a greater mean number of comorbid Axis I disorders (2.8 ± 1.9 vs. 1.5 ± 1.5; t = –3.34, df = 73.1, p = .001), and a significantly younger mean age at onset of affective illness (22.6 ± 11.5 vs. 29.4 ± 13.4 years; t = 2.61, df = 89.5, p = .011). Suicidal ideation, which is an important predictor of suicidal behavior, correlated significantly with impulsivity (number of patients for whom BIS and BSSI scores were available = 88; r = 0.39, $p < .0001$).

RBD, CD, and MDD patients did not differ significantly in marital status (married, 36.8% vs. 32.0% vs. 33.3%; $\chi^2 = 0.12$, df = 2, p = .94), sex (female, 55.6% vs. 73.2% vs. 60.6%; $\chi^2 = 2.50$, df = 2, p = .29), or mean Global Assessment of Functioning score (61.3 ± 16.1 vs. 53.5 ± 16.2 vs. 60.1 ± 11.6; F = 2.63, df = 2, p = .078). Brief depressive episodes in RBD and CD typically lasted a few days (mean = 3.62 ± 1.93 days), similar to reports in other studies.[49] However, patients with RBD and CD differed from patients with MDD in mean age (40.0 ± 10.3 and 41.3 ± 13.4 vs. 48.4 ± 12.4 years; F = 4.33, df = 2, p = .016), which can be explained by our consecutive recruitment procedure and the different ages at onset in these types of affective illness, as reported before.[21]

Table 2 demonstrates that patients with CD exhibited significantly higher scores of suicidal ideation during a suicidal crisis, higher scores on measures of acute suicidality, a higher age-adjusted suicide attempt rate, greater impulsivity, and a higher prevalence of comorbid borderline personality disorder (RBD, 11.1% vs. CD, 29.7% vs. MDD, 3.6%; $\chi^2 = 8.75$, df = 2, p = .013) than patients with RBD and MDD. Furthermore, Table 2 shows that patients with CD scored significantly higher on suicidal ideation during the interview and higher than patients with RBD on measures of chronic suicidality. Since, for technical reasons, patients with RBD were not interviewed during one of their unpredictably occurring brief depressive episodes, measures of depression severity showed significantly higher scores in patients with MDD and CD. No significant differences among these 3 groups were found on the following variables: mean number of comorbid Axis I (RBD, 1.9 ± 1.8 vs. CD, 2.5 ± 1.8 vs. MDD, 1.7 ± 1.8; F = 1.77, df = 2, p = .18) or Axis II (0.9 ± 1.1 vs. 1.3 ± 1.4 vs. 0.9 ± 1.2; F = 1.31, df = 2, p = .27) diagnoses, or percentage of patients with substance use disorders (37.0% vs. 56.8% vs. 31.0%; $\chi^2 = 4.94$, df = 2, p = .08). Furthermore, patients with RBD and CD did not differ significantly from those with MDD with respect to the time frame of their initial suicide attempt (RBD + CD, 56.3% vs. MDD, 25.0% before adulthood; $\chi^2 = 3.42$, df = 1, p = .06). However, all of these variables showed the same tendency to indicate differences between CD and RBD/MDD that did not reach statistical significance, which could be explained by the size of investigated samples.

Table 3 displays a priori–chosen risk factors for suicide attempts that were derived from the literature, including 3 mutually exclusive course patterns of depressive episodes (RBD, MDD, CD). A significant increase in the risk for attempting suicide was found for comorbid substance use disorders, marital status (divorced or never married), CD, and female gender within a group of patients suffering from depression. Other risk factors for suicide attempts, such as comorbid cluster B personality disorders, borderline personality disorder, having a relative who attempted suicide, unemployment, no religious confession, having a friend who attempted suicide, and comorbid posttraumatic stress disorder, had greater-than-chance associations with attempter status that did not reach statistical significance, which can be explained by the use of depressive patients as controls. However, for our sample of

Table 3. Association of Suicide Attempter Status With Triggers/Thresholds for Suicidal Behavior in Patients With Major and/or Recurrent Brief Depressive Episodes[a]

Trigger/Threshold	N[b]	OR	95% CI	p
Substance use disorder	93	5.79	2.35 to 14.24	< .0001
Marital status	77	2.82	1.01 to 7.87	.033
Combined depression	101	2.37	1.05 to 5.35	.036
Female sex	101	2.34	0.99 to 5.54	.044
Cluster B personality disorder	92	2.60	0.92 to 7.38	.067
Borderline personality disorder	88	2.87	0.89 to 9.24	.070
First-degree relative who attempted suicide	92	2.02	0.88 to 4.81	.093
Unemployed	76	2.15	0.83 to 5.60	.113
No religious confession	67	2.10	0.71 to 6.17	.174
Major depressive disorder	101	1.80	0.71 to 4.51	.210
Friend who attempted suicide	92	1.83	0.65 to 5.18	.249
Recurrent brief depressive disorder	101	1.56	0.66 to 3.66	.309
Posttraumatic stress disorder	92	1.31	0.39 to 4.43	.658

[a]Abbreviations: CI = confidence interval, OR = odds ratio.
[b]Numbers of patients for whom data were available.

depressive patients, an OR of 1 represents the known increased risk of attempting suicide in such a patient group. The effects of MDD and RBD on the odds of attempting suicide were similar to those of comorbid posttraumatic stress disorder and of having a friend who attempted suicide.

Predictors included in further analyses were selected a priori on the basis of the stress-diathesis model of suicidal behavior proposed by Mann et al.[5] The proposed diathesis impulsivity was evaluated in our data by a factor analysis including variables such as BIS score, comorbid substance use disorders, and borderline personality disorder. Additionally, we included CD in this analysis because we hypothesized that observed high suicide attempt rates with this specific course pattern of depression were mainly caused by increased impulsive behavior in this patient group. Factor analysis generated, as expected, a single factor (total variance explained: 51.3%). Since this factor included only variables that, except for CD, had previously been clearly associated with increased impulsivity, we called this factor the "impulsivity-interdependence factor." We used a logistic regression model in which suicide attempter status was the dependent variable and the impulsivity-interdependence factor (OR = 7.58, 95% confidence interval [CI] = 2.38 to 24.11, p = .0006) and other risk factors (Table 3) with at least a tendency to be significant ($p < .1$), such as female gender (OR = 0.39, 95% CI = 0.08 to 1.79, p = .79), marital status (OR = 4.19, 95% CI = 0.86 to 20.47, p = .08), comorbid cluster B diagnosis (OR = 1.37, 95% CI = 0.22 to 8.43, p = .74), and suicide attempts in relatives (OR = 0.56, 95% CI = 0.14 to 2.29, p = .84), were the independent variables. This model demonstrated a significant impact on suicide attempter status only for the impulsivity-interdependence factor (80.7% prediction quote for lifetime suicide attempts).

DISCUSSION

On the basis of the stress-diathesis model of suicidal behavior proposed by Mann et al.,[5] we compared triggers and thresholds of suicidal behavior between patients with MDD, RBD, and CD, which are all cited in the literature in association with increased suicide attempt rates. Furthermore, we wanted to test the hypothesis that the reported substantially higher suicide attempt risk in patients with a depression course of major *and* recurrent brief depressive episodes (CD) in comparison to either major *or* recurrent brief depressive episodes is mainly driven by an underlying factor that is closely related to impulsive behavior and therefore lowers the threshold for acting on suicidal ideation.

Our data showed that in all 3 groups the impulsivity-interdependence factor predicted 80% of all reported suicide attempts in RBD, CD, and MD patients. Similarly to Mann et al.,[5] who generated an impulsivity/aggression factor, we extracted an impulsivity-interdependence factor. Impulsivity, which has been intensively studied in the context of suicidal behavior,[5,50] has been found to be increased in many suicide attempters who suffer from borderline personality disorder, MDD, panic disorder, substance use disorders, and aggressive behavior and seems to be linked to the serotonergic system. Therefore, it has been proposed that impulsivity may be the underlying propensity lowering the threshold for acting on suicidal ideation.[5,50] Furthermore, the presence of a few clinical conditions, including borderline personality disorder, suicidal ideation, and substance use disorders, particularly alcoholism, has been closely related to highly impulsive behavior per se.[5,50] Therefore, these conditions are suggested to play an important role in the clinical prediction of suicidal behavior.[1,2]

The impulsivity-interdependence factor in our study was extracted from variables that, except for CD, had been selected a priori on the basis of the stress-diathesis model of suicidal behavior proposed by Mann et al.,[5] including BIS score, borderline personality disorder, and comorbid substance use disorders. The fact that CD could be explained by the same factor as these variables contributed to the confirmation of our hypothesis that suicidal behavior in patients with CD is mainly driven by an underlying factor that is closely related to impulsive behavior and therefore lowers the threshold for acting on suicidal ideation. We found it intriguing that, in our study, CD seemed to be as closely related to impulsivity as comorbid substance use and borderline personality disorder. This association differentiates CD from RBD and MDD, which are less closely related to increased impulsivity. Among RBD and MDD patients, only suicide attempters showed a comparable increase in impulsivity in our study.

Current diagnostic manuals such as DSM-IV and structured clinical diagnostic interviews based on such

manuals (e.g., the SCID) do not support coding of natural diagnostic shifts within major diagnostic classes (e.g., mood disorders) or between major diagnostic classes, such as diagnostic shifts between mood and anxiety disorders. This is also the case for a specific course pattern of depression that has been called "combined depression" and describes diagnostic shifts between recurrent brief and major depressive episodes and vice versa. The hierarchy of DSM-IV determines that all non-bipolar patients who experience major depressive episodes will be diagnosed with MDD. Therefore, the DSM-IV diagnosis MDD includes patients experiencing both major *and* recurrent brief depressive episodes (Figure 1). In our investigation of CD, subjects experiencing major depressive episodes were only diagnosed with MDD in the absence of a lifetime history of recurrent brief depressive episodes. Our data clearly demonstrated that, in comparison to RBD and MDD, CD is associated with increased impulsivity, suicidal ideation, and suicide attempt rates. The association between CD and suicide attempter status was in the same range as that of borderline personality disorder and several other suicide attempt risk factors derived from the literature (Table 3) that are thought to be important in the prediction of suicidal behavior.[12] It is noteworthy that, unlike the DSM-IV criteria for major depressive disorder, the definition of CD does not require direct questions on suicidal ideation such as "thoughts of death" or "worthlessness/guilt." Overlapping of diagnostic criteria and suicidal behavior can be an important cause of spurious comorbidity, a false-positive greater-than-chance co-occurrence of 2 conditions.[51] Although all psychiatric diagnostic categories have been shown to be associated with a suicide attempt risk that is greater than chance,[52] only mood disorders and borderline personality disorder are defined by criteria overlapping with suicidal ideation or behavior.[23,24] Therefore, the increased suicide attempt rates found in CD patients underline the close relationship between depressive mood disorders and suicidal behavior.

However, information on CD, which has been shown to be among the most important predictors for suicidal behavior in epidemiologic and clinical studies investigating RBD, is lacking in DSM-IV–based clinical interviews like SCID. This information could be available if the hierarchy of the SCID were different. Therefore, we argue for a more natural way of conducting an interview on depression, i.e., first asking questions related to psychopathologic criteria of depression, and then duration criteria, including separate questioning for RBD and MDD, which will make the information concerning CD easily available. Nevertheless, the substantially different risk of attempted suicide and age at onset of MDD and CD reported in epidemiologic studies,[21,49,53] as well as in our study, support the distinction between these 2 courses of depression.

Remarkably, almost 90% of patients with RBD in our sample were free of comorbid borderline personality disorder. This low comorbidity is in accordance with another study which demonstrated that females with RBD did not meet diagnostic criteria for any DSM-IV personality disorder during 2 different phases of their menstrual cycle.[54] Similar findings have been also reported in the Zurich Study.[21] However, our data are contradictory to some authors' speculations that the phenomenon of RBD might be exclusively explained by the presence of borderline personality disorder,[55–57] which is operationalized by the criterion of affective instability. Affective instability, as defined in DSM-IV, includes reactive brief depressive episodes lasting a few hours to, rarely, a few days. Depressive episodes lasting a few days are characteristic of RBD.[49] This is why speculations arose about RBD possibly representing only the affective syndrome of borderline personality disorder. An essential contribution to the ongoing discussion of the relationship between RBD and borderline personality disorder has been recently provided by a study which demonstrated that brief depressive episodes representing affective instability in borderline personality disorder are significantly distinct from recurrent brief depressive episodes observed in RBD on an endocrinologic level.[27] Nevertheless, with a prevalence of about 30%, comorbid borderline personality disorder was rather prevalent in the CD group. This finding can be explained by looking at a study that investigated the factor structure of the diagnosis of borderline personality disorder.[58] In that study, 3 factors (behavioral dysregulation, unstable relationships, and affective dysregulation) fully explained the diagnosis of borderline personality disorder. One might speculate that CD and borderline personality disorder share the same underlying factor, which we call the "impulsivity-interdependence factor" and which is very similar or possibly even identical to behavioral dysregulation (impulsivity, suicidal behavior). This factor could explain the comorbidity of CD and borderline personality disorder as well as the increased risk of suicide attempts that they have in common.

The extraction of impulsivity as an underlying diathesis of suicidal behavior, which is known to be associated with low serotonergic activity,[6] in a sample of patients suffering from RBD and CD raises the question of why some authors reported a lack of efficacy of serotonergic drugs in RBD.[31,32,59] Recent advances in the methodology of assessment[36,60] and almost 70 published cases of successful treatment of RBD, including open studies reporting successful treatment of RBD with mainly serotonergic drugs,[28–30,33–37,39] bring into question the therapeutic pessimism of previous studies.[31,32,59] Furthermore, most negative studies[32,59] investigated only chronic suicide attempters, which have been shown to be nonresponders in other studies.[37] Therefore, negative results might also be attributable to sampling effects.

Our clinical data on suicidal behavior in patients suffering from MDD, RBD, and CD support epidemiologic findings suggesting that within these 3 groups, only CD is a predictor for a high suicide attempt risk. Furthermore, similarly to the stress-diathesis model of suicidal behavior proposed by Mann et al.,[5] we found that the coexistence of a greater propensity for suicidal ideation and impulsivity in patients with RBD might explain why such patients are more prone to attempt suicide, even if they do not, in the case of RBD, meet diagnostic criteria for MDD.

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