



Effects of Dimensional and Categorical Classification on the Clinical Manifestation of Major Depressive Disorder

Majör Depresif Bozukluğun Klinik Görünümünde Boyutsal ve Kategorik Sınıflandırmanın Etkileri

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ABSTRACT

Introduction: The aim of this study was to combine the dimensional concept with the categorical system in major depressive disorder (MDD) to reduce the complexity of the diagnosis. Furthermore, it was aimed to match categorical and dimensional approaches in a clear and simple manner.

Method: The study included a patient group of 131 consecutive outpatients diagnosed with MDD according to the DSM-IV diagnosis criteria, and a control group of 99 people that is matched with the patient group by gender, age and education level. All subjects completed the Beck Depression Inventory, the Beck Anxiety Inventory and the Toronto Alexithymia Scale (TAS).

Results: Cronbach's alpha values for the analysis of the internal consistency of the scale for the patients group, control group and the total participants were determined as .94-.97, .87-.92 and .93-.96, respectively. Nine factors were obtained from the results of exploratory factor analysis. According to the Screeplot, it was decided that the two-factor structure represents best. Although depression and anxiety are two distinct dimensions, the relationship between them was found to be significantly significant. This was valid for both patient and control groups. When the relationship between the DSM-IV diagnosis criteria and all variables (depression and its sub-dimensions, anxiety and its sub-dimensions and the number of symptoms) was evaluated, the number of symptoms was found to be significantly related with all of the criteria.

Conclusion: The number of symptoms and the severity of illness are found to be important in the clinical manifestation of MDD. The relationship of the severity of the illness with sleep and appetite seems weaker. While loss of interest was mainly predicting the disorder, weight changes, psychomotor changes, difficulty in concentration, fatigue, and worthlessness were determined not to be predictors of the manifestations. According to dimensional approach, somatic anxiety and deterioration in performance predict the presence of the disorder. According to categorical and dimensional approaches, some of the DSM-IV criteria (#2, #1, #9, #4, number of symptoms, severity of symptoms, somatic anxiety, performance deterioration) are seen to contribute to the matchability between the approaches. (*Archives of Neuropsychiatry 2014; 51: 233-241*) **Key words:** Depression, anxiety, categorical approach, dimensional approach, alexithymia

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ÖZET

Giriş: Bu çalışmada Majör Depresif Bozukluk (MDB)'ün tanınan karmaşasını azaltmak için boyutsal kavramları kategorik sistemle birleştirme amacıyla teorik düzeyin yanı sıra kategorik ve boyutsal yaklaşımlar arasında açık ve basit eşlenebilirlik araştırıldı.

Yöntem: Bu çalışmaya ayaktan başvuran 131 ardışık DSM-IV tanı ölçütlerine göre MDB tanısı konmuş hasta yaş, cinsiyet ve eğitim olarak eşleştirilmiş 99 sağlıklı kontrol alındı. Tüm katılımcılara Beck Depresyon Ölçeği, Beck Anksiyete Ölçeği ve Toronto Aleksitimi Ölçeği verildi.

Bulgular: Hasta, kontrol ve toplam tüm gruptaki depresyon ve anksiyete ölçeğinin iç tutarlılığı analizinde Cronbach alfa değerlerinin sırasıyla, 0,94-0,97; 0,87-0,92 ve 0,93-0,96 arasında olduğu saptandı. Açımlayıcı faktör analizi sonuçlarına göre 9 faktör elde edildi. Scree grafiği eğrisinin belirgin olarak değişimine bakılarak iki faktörlü yapının en iyi açıkladığına karar verildi. Depresyon ve anksiyetenin birbirinden ayrı iki farklı boyut olmasına rağmen birbirleri ile arasındaki ilişkinin oldukça yüksek olduğu, bu durumu hem hasta hem de sağlıklı grupların sağladığı belirlendi. DSM-IV'e göre her bir tanı ölçütünün değişkenlerle olan ilişkilerine bakıldığında, hem depresyon hem de anksiyete alt-boyutlarıyla ve halen sürmekte olan belirti sayısının ile olan ilişkilerinde; belirti sayısının tüm ölçütlerle güçlü ilişkide olduğu bulundu.

Sonuç: Belirti sayısı ve hastalık şiddetinin, MDB klinik görünümünde önemli olduğu görülmektedir. Hastalık şiddetiyle uyku ve iştah arasındaki ilişkinin zayıf olduğu görülmektedir. İlgili kaybının hastalık varlığını en fazla yordarken; kilo değişikliği, psikomotor değişim, yorgunluk, değersizlik ve yoğunlaşma güçlüğü hastalık varlığını yordamamaktadır. Boyutsal yaklaşıma göre somatik anksiyete ve performansta bozulma hastalık varlığını yordamaktadır. Kategorik ve boyutsal yaklaşımda; DSM-IV ölçütlerinde yer alan bazı maddelerin (#2, #1, #9 ve #4), belirti sayısının, hastalık şiddetinin, somatik anksiyete ve performansta bozulmanın yaklaşımlar arası eşlenebilirliğe katkısı olabileceğini göstermektedir. (*Nöropsikiyatri Arşivi 2014; 51: 233-241*)

Anahtar kelimeler: Depresyon, anksiyete, kategorik yaklaşım, boyutsal yaklaşım, aleksitimi

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Introduction

Depressive disorders, the leading cause of disability in the world (1,2,3), are among the most common psychological conditions (1). Widespread consensus that the etiology of depression is heterogeneous (4,5,6) has led to attempts to develop a theory of this disorder that accounts for its varied subtypes, dimensions, and symptom clusters (7). Major depression remains an important public health problem requiring attention (8).

Although current psychiatric classification approaches have described the symptoms of depression categorically, numerous researchers have underscored the importance and appropriateness of a dimensional approach (5,9). Supporters of a dimensional model believe that psychiatric disorders represent points on a continuum, whereas advocates of a categorical model construe these conditions as qualitatively different from one another (9,10).

For example, Mesulam (11) classified the symptoms of depression in four dimensions: cognitive, mood, circadian, and motor. According to this model, attention problems, cognitive disturbance, decreased motivation, impaired executive functions, memory problems, and feelings of guilt and apathy belong to the cognitive dimension; dysphoria, anhedonia, hopelessness, suicidal thoughts, and symptoms of anxiety belong to the mood dimension; sleep and appetite problems and decreased libido and energy belong to the circadian-dysregulation dimension; and motor retardation, agitation, and restlessness belong to the dimension of motor problems.

According to the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV;), a categorical model, a minimum of five symptoms, at least one of which is depressed mood or loss of interest, must be present to diagnose a major depressive episode (MDE). These are viewed as the core symptoms of depression, and other symptoms are seen as contributing equally to the diagnosis.

Beck (12) suggested that three types of deterioration in cognitive functioning are associated with the cognitive model of depression, according to which this disorder involves spending too much time on negative thoughts concerning self, the world, and the future. Beck underscored the contribution of negative thoughts that arise automatically in certain situations to the exacerbation of dysphoric moods. More specifically, such negative thoughts involve information-processing errors, such as extreme generalization and personalization, selective abstraction, and an "all-or-nothing" approach. According to this model, individuals shift to negative information-processing strategies when depressed. In other words, positive data about various life events are ignored, and an individual becomes interested in and attentive to collecting and processing negative data. The tendency to drift in a negative direction during cognitive processing leads to activation of depressive schemas, which in turn, leads to the emergence of a depressed mood. In this context, individuals experience themselves as worthless and failures and are simultaneously pre-occupied with thoughts reflecting hopelessness about the future. All these depressive schemas contain themes such as worthlessness, helplessness, and being disliked; these lead to a depressed mood, which reinforces the

focus on negative data and leads to a loss of interest in and desire to perform activities with the potential of giving pleasure (13).

The aim of this study was to assess the relationship between the categorical structure of the DSM-IV and Beck's cognitive model of a dimensional structure as well as to clarify the contributions of each model to understand this disorder in a clinical sample and a healthy control group. Due to the potentially confounding effects of anxiety and alexithymia on the structure of depression, we controlled for these two factors. Indeed, alexithymia presents in clinical situations as a trait/dimension/personality characteristic that can overlap with depression and that, therefore, can create diagnostic confusion (14,15).

We hypothesized that the relationship between each diagnostic criterion and its related dimension would differ and that these relationships would not be influenced by the existence of anxiety or alexithymia. We also hypothesized that the first two of the nine criteria (core symptoms) according to both the DSM-IV and its dimensional equivalent would be predictive of the presence of the disorder.

Method

Participants and Procedure

This study was conducted as part of an investigation of the features of the somatic dimension of MDE. All patients were diagnosed according to the DSM-IV diagnostic criteria. A total of 131 patients admitted to the psychiatric outpatient clinics at Istanbul Erenköy Psychiatric and Neurological Disorders Training and Research Hospital, Samsun Mehmet Aydın Training and Research Hospital, and Izmir Tepecik Training and Research Hospital comprised the patient group. Members of the healthy control group were recruited from the community to match the clinical sample with respect to age, sex, and educational level. Patients younger than 18 years, with impaired general health or possibly debilitating physical or neurological conditions, with psychotic disorders or a psychotic mood episode, or who presented a severe suicide risk were not included in the study. Individuals with more than five criteria of MDE (seven people) were excluded from the control group to avoid the possible inclusion of individuals with MDEs in this group. As a result, the study included 131 consecutive outpatients with MDE who had been referred to the hospital and 99 sex-, age-, and education-matched healthy control subjects.

This study was approved by Sütçü İmam University. All participants were informed about the study and provided written consent.

Measurements

Beck Depression Inventory (BDI)

There are four options for each of the 21 items. Each item is scored between 0 and 3. The sum of these scores provides the total score for depression. Higher total scores indicate more severe depressive symptoms (16). The study by Beck et al. (17) identified four sub-dimensions via factor analysis: "Negative Feelings about the Self (NFS)" (items: #1-3, 7, 9, and 14); "Feelings of Guilt (FG)" (items: #5, 6, and 8); "Performance Deterioration (PD)" (items: #4, 10-13, 15, and 17); and "Somatic Concerns (SC)" (items: #16, 18-21).

Beck Anxiety Inventory (BAI)

It measures the severity of anxiety symptoms individuals experience. It is a self-administered Likert-type questionnaire, consisting of 21 items each scored on a 0-3 scale. A higher total score indicates greater degree of anxiety. It was developed by Beck and colleagues (18). In Turkey, validity and reliability studies were performed by Ulusoy et al. (19). A factor analysis identified two factors in this measure: "Subjective Anxiety (SA)" (items: #1, 4, 5, 7-11, 14-17, and 19) and "Somatic Symptoms (SS)" (items: #2, 3, 6, 12, 13, 18, 20, and 21).

20-item Toronto Alexithymia Scale (TAS-20)

It is a scale investigating alexithymia, defined as not recognizing one's own feelings and excitement. It is a self-administered Likert-type questionnaire, consisting of 20 items and scored on a 1-5 scale. The TAS-20 was developed by Bagby and colleagues (20). According to the results of factor analysis, there are three subscales of TAS-20, such as Difficulty in Identifying Feelings (TAS-A), Difficulty in Describing Feelings (TAS-B) and Externally Oriented Thinking (TAS-C), and these three subscales were confirmed by the Turkish adaptation study (21).

Statistical Analysis

The SPSS 9.0 statistical program was used to analyze the data obtained in this study. Categorical data were compared with chi-square tests, and continuous data were compared with Student's t-tests for comparing sociodemographic with clinical data due to the normal distribution of the groups according to the Kolmogorov-Smirnov test. The internal consistency of all groups (together and separately) was tested using Cronbach's alpha test. An explanatory model was used for factor analysis, and principal component analysis and varimax rotation were applied. A scree plot was used to determine the optimal number of factors.

Pearson's correlations were used to examine correlations among variables. Due to the effects of confounding variables, the total scores for anxiety and alexithymia were treated as covariates in both the comparison and the partial correlation analyses.

The logistic regression model treated group as a dependent variable and each diagnostic criterion of the DSM-IV as an independent variable. The second model examined the sub-dimensions of depression, anxiety, and alexithymia to determine the predictors of MDEs.

Results

Patients experiencing a MDE and members of the control group were 18-56 years of age (38.9 ± 13.1 years, 35.7 ± 15.1 years, respectively) and had finished at least primary education (6.9 ± 2.4 years, 7.8 ± 3.5 years, respectively). No statistically significant differences were found with respect to sex, education, age, or occupational status. The sociodemographic and clinical characteristics of the MDE and control groups are presented in Table 1 and Table 2. Married people constituted a higher percentage of the control (44.2%) than the patient (22.4%) group. As expected, BDI total and sub-dimension scores, BAI total and sub-dimension scores, and TAS total TAS-A and TAS-B sub-dimension scores were higher in the patient than in the control group.

Assessments of the total sample and of subgroups (patients, healthy controls) found that the Cronbach's alphas for the internal consistency of the BDI, BAI, and BDI+BAI were .92, .93, and .96, respectively, for all participants; .94, .95, and .97, respectively, for patients; and .87, .90, and .92, respectively, for the control group (Table 3). Because of the strong relationship between the two variables, depression and anxiety were combined. Nine factors were obtained from the factor analysis of the combined data from the BDI and the BAI. Based on the scree plot, we chose a two-factor (depression and anxiety) solution (Table 4).

Relationships between categorical and dimensional approaches as well as their respective contributions to MDEs were examined in both patients and healthy control subjects. We did not address the validity of the diagnosis of depression but instead focused on issues related to clinical utility with an eye toward contributing to future investigations.

The correlations between the dimensional variables on the BDI (NFS, FG, PD, and SC), BAI (SA and SC), and TAS and the number of symptoms are summarized in Table 5. The correlations between sub-dimensions and between sub-dimensions and number of symptoms were moderately strong. However, no significant relationship between the TAS-C sub-dimensions ($r=.01-.15$) and the other dimensions were identified.

Data showing correlations between the sub-dimensions of depression and anxiety and between the number of symptoms and each diagnostic criterion (of the DSM-IV) reflected a strong correlation between all diagnostic criteria and number of symptoms (Table 6). Additionally, total scores for anxiety and alexithymia were assessed separately and then employed as a combined covariate (first each variable individually, and then together) given their possibly confounding effect on the correlation between diagnostic criteria and depression. The following relationships between the diagnostic criteria and the sub-dimensions were observed: sleep problems (diagnostic criterion #4) was not mostly correlated [weak correlation with overall BDI ($r=.23$), NFS ($r=.24$), and PD ($r=.23$); appetite problems (diagnostic criterion #3) was weakly correlated ($r=.13-.47$); concentration difficulties (diagnostic criterion #8) was weakly-to-moderately correlated ($r=.22-.40$); and other criteria exhibited moderate-to-strong correlations.

In terms of the DSM-IV diagnostic criteria, the following predicted the presence of a MDE according to the logistic regression analysis (in order of importance): loss of interest (diagnostic criterion #2), ($p=.01$, $r=.20$); depressed mood (diagnostic criterion #1), ($p=.02$, $r=.12$); recurrent thoughts of death (diagnostic criterion #9), ($p=.03$, $r=.11$); and sleep problems (diagnostic criterion #4) ($p=.04$, $r=.10$) (Table 7). The ability of each of the sub-dimensions of depression, anxiety, and alexithymia to predict the presence of a MDE is presented in Table 8. SA, one sub-dimension of the BAI, and PD, one sub-dimension of the BDI, were able to predict the presence of this disorder.

Discussion

This study examined the relationships between variables included in categorical and dimensional models. The relationships

between these variables and the respective contribution of each to this disorder were examined in patient and control groups. The validity of depression was not discussed in this study; our aim was to contribute to clinical practice. Information gained from this study should be used in future research.

Because major depressive disorder (MDD) is both common and under-diagnosed in community samples, it constitutes a considerable public health problem. Recurrent thoughts of death were reported by 3.4% of the healthy group, however, symptoms such as sleep difficulties and low energy were observed in nearly half of the healthy group. Moreover, we found statistically

significant differences between the groups in the total and sub-dimension scores for depression (independent of anxiety and alexithymia). Despite the close relationship with anxiety and alexithymia reported in the extant literature, these significant differences support the notion that the structure of depression differs from those of anxiety and alexithymia.

The internal consistency of the BDI+BAI was quite high among all patients (Cronbach's alpha: .92-.96), indicating that the symptoms of depression and anxiety were strongly correlated and overlapped with one another. On the other hand, the factor structures of the BDI and BAI significantly differed in the control

Table 1. Comparison of sociodemographic and clinic variables (categorical data)

	Group	%	χ^2	p
Gender (%female)	Control (n=99)	76.1	1.093	N.S
	Depression (n=131)	82.6		
Occupation (%employee)	Control (n=99)	85.2	.075	N.S
	Depression (n=131)	83.7		
Social security (%exist)	Control (n=99)	95.5	.949	N.S
	Depression (n=131)	91.9		
Marital status (%single; married; other)	Control (n=99)	45.5, 46.6, 8.0	10.288	.006
	Depression (n=131)	22.4, 67.1, 10.6		
Economy (%low; middle; high)	Control (n=99)	63.6, 28.4, 8.0	9.493	.009
	Depression (n=131)	75.6, 10.5, 14.0		
Medical problem (%exist)	Control (n=99)	19.8	.002	N.S
	Depression (n=131)	19.8		
Smoking (%exist)	Control (n=99)	58.1	.003	N.S
	Depression (n=131)	58.1		
Depressive mood (%exist)	Control (n=99)	19.0	51.112	<.001
	Depression (n=131)	76.2		
Loss in interest (%exist)	Control (n=99)	24.2	62.301	<.001
	Depression (n=131)	79.2		
Loss/gain weight or appetite problem (%exist)	Control (n=99)	21.0	5.982	.014
	Depression (n=131)	36.6		
Sleep problems (%exist)	Control (n=99)	47.0	11.996	.001
	Depression (n=131)	71.3		
Psychomotor agitation or retardation (%exist)	Control (n=99)	7.0	39.973	<.001
	Depression (n=131)	46.5		
Fatigue or loss of energy (%exist)	Control (n=99)	57.0	13.782	<.001
	Depression (n=131)	81.2		
Feelings of worthlessness and guilt (%exist)	Control (n=99)	14.0	34.961	<.001
	Depression (n=131)	53.5		
Concentration problems (%exist)	Control (n=99)	25.0	24.373	<.001
	Depression (n=131)	59.4		
Recurrent thoughts of death (%exist)	Control (n=99)	5.0	34.628	<.001
	Depression (n=131)	39.6		

Table 2. Comparison of sociodemographic and clinic variables (continuous data)

	Group	Mean	S.D	t	p
Age	Control (n=99)	35.7	15.1	-1.572	N.S
	Depression (n=131)	38.9	13.1		
Education	Control (n=99)	7.8	3.5	-.608	N.S
	Depression (n=131)	6.9	2.4		
TAS-A	Control (n=99)	14.8	6.5	-6.084	.001
	Depression (n=131)	20.3	6.8		
TAS-B	Control (n=99)	11.5	3.6	-6.092	<.001
	Depression (n=131)	14.8	4.2		
TAS-C	Control (n=99)	20.1	4.8	-2.792	.006
	Depression (n=131)	21.9	4.0		
TAS-TOTAL	Control (n=99)	46.4	10.3	-7.412	<.001
	Depression (n=131)	57.0	10.0		
Number of symptom	Control (n=99)	1.9	1.2	-22.290	<.001
	Depression (n=131)	6.3	1.4		
NFS*	Control (n=99)	7.5	2.7	-7.053	<.001
	Depression (n=131)	11.7	4.6		
FG	Control (n=99)	4.4	1.9	-5.718	<.001
	Depression (n=131)	6.3	2.5		
PD*	Control (n=99)	10.8	3.8	-7.737	<.001
	Depression (n=131)	16.4	5.4		
SC*	Control (n=99)	6.9	2.5	-5.421	<.001
	Depression (n=131)	9.4	3.2		
BDI-TOTAL	Control (n=99)	29.5	9.1	-7.607	<.001
	Depression (n=131)	43.8	13.7		
Subjective anxiety	Control (n=99)	8.3	8.3	-9.670	<.001
	Depression (n=131)	19.8	13.7		
Somatic symptoms	Control (n=99)	5.4	4.7	-9.094	<.001
	Depression (n=131)	12.6	10.0		
BAI-TOTAL	Control (n=99)	13.7	10.9	-10.000	<.001
	Depression (n=131)	32.4	22.1		

NFS: Negative Feelings about the Self, FG: Feelings of Guilt, PD: Performance Deterioration
 SC: Somatic Concerns, TAS: Toronto Alexithymia Scale, BDI: Beck Depression Inventory,
 BAI: Beck Anxiety Inventory.

*covariance of BAI scores and TAS scores:

NFS_F:19.117, p<.001; FG_F:19.888, p<.001; PD_F:34.326, p<.001; SC_F:46.278, p<.001,

S.D: Standard Deviation, N.S: Non-significant.

Table 3. Reliability analysis of BDI and BAI

Item no	Total			Control			Patient		
	Ci-t	Cd	Ca	Ci-t	Cd	Ca	Ci-t	Cd	Ca
BDI	.39-.75	.91-.92	.94	.21-.63	.86	.87	.39-.74	.91-.92	.92
BAI	.39-.78	.93	.94	.41-.66	.89-.90	.90	.39-.78	.93	.93
BDI+BAI	.43-.79	.96	.97	.21-.67	.92	.92	.37-.76	.95	.95

Ci-t: corrected item-total correlations, Cd: Cronbach alpha (if item deleted), Ca: Cronbach alpha
 BDI: Beck Depression Inventory, BAI: Beck Anxiety Inventory.

group when two groups were together. In the patient group, these two structures overlapped with each other; this was particularly pronounced for several anxiety items that also loaded into the depression structure. Separate self-report scales were used to

assess depression and anxiety in all groups. However, depressive symptoms were more pronounced than anxiety symptoms in patients with a MDE. Our results are consistent with previous findings showing that the severity of anxiety experienced by patients with depression was nearly identical to that experienced by patients with anxiety disorders, and that it is the presence of depressive symptoms that determines the differential diagnosis (4).

With one exception, all sub-dimensions were strongly correlated with one another, and our results support the need for considering anxiety and alexithymia in investigations of depression. Only "externally oriented thinking" an item within the cognitive sub-dimension of alexithymia that did not distinguish between patient and control groups, was not associated with other sub-dimensions. This result is consistent with previous findings and shows that the contribution of this sub-dimension to both depression and somatization remains questionable (22,23).

Additionally, number of symptoms was strongly correlated with all diagnostic criteria. However, no relationship between number of symptoms and diagnostic criterion #4 (sleep problems) was found in mostly, and only a weak correlation between this variable and diagnostic criterion #3 (appetite problems) was observed. In the absence of significant physical illness, depression may not be significantly correlated with appetite or sleep problems. It has been suggested that the diagnostic criteria for major depression underscore cognitive and affective rather than vegetative symptoms because the issue of somatic symptoms complicates the diagnosis, especially in those with medical conditions (24). In this scheme, the dimension including circadian dysregulation in Mesulam's model would constitute a separate sub-dimension. Our results may also suggest the existence of a different subtype of (categorical) or a different level of severity for (continuum) depression. Our examination of whether these relationships were affected by alexithymia indicated the relationship between the total score and criterion #4, and the correlation with criterion #8 (concentration problems) decreased when alexithymia was taken covariant. The structure of alexithymia affected the relationship between all the sub-dimensions of depression and the diagnostic criteria, with its effects on recurrent thoughts of death less pronounced than that on other criteria and its relationship with SC did not vary. Likewise, because anxiety mediated the relationships between all criteria and sub-dimensions, the correlations between these variables decreased or disappeared when anxiety was included in the analyses. Additionally, independent of anxiety, recurrent thoughts of death was correlated with NFS; feelings of worthlessness and guilt (criterion #7) was correlated with FG; psychomotor agitation or retardation (criterion #5), feelings of worthlessness and guilt (criterion #7), and concentration difficulties (criterion #8) were correlated with PD; and weight and appetite change (criterion #3) was correlated with SC. The relationships between recurrent thoughts of death and scores on both the overall and the sub-dimension subscales of self-assessment measures persisted irrespective of the values of the two variables. It should be noted that thoughts about death could be loaded into the structure of anxiety in healthy controls, even though screening tests for anxiety do not address this issue (25). However, recurrent thoughts of death were included in the depressive factor in the

Table 4. Factor analysis of BDI and BAI

	Total		Patient		Control	
	1	2	1	2	1	2
BAI.1	.64			.66	.47	
BAI.2	.71			.67	.58	
BAI.3	.74			.75	.63	
BAI.4	.75			.70	.69	
BAI.5	.49	.46	.51	.36	.43	
BAI.6	.72			.70	.62	
BAI.7	.71			.62	.67	
BAI.8	.74			.73	.68	
BAI.9	.60	.34	.38	.52	.50	
BAI.10	.49	.34	.43	.42	.46	
BAI.11	.71	.43	.42	.69	.65	.32
BAI.12	.70	.36	.38	.64	.57	
BAI.13	.61	.43	.50	.56	.50	
BAI.14	.66	.47	.47	.61	.62	
BAI.15	.64	.36	.40	.55	.65	
BAI.16	.43		.36		.50	
BAI.17	.44	.38	.44		.41	
BAI.18	.60			.57	.52	
BAI.19	.45			.52	.51	.49
BAI.20	.60			.65	.49	
BAI.21	.58			.54	.46	.31
BDI.1	.45	.60	.69		.49	.41
BDI.2	.33	.70	.68			.69
BDI.3		.55	.57		.37	.45
BDI.4	.34	.69	.67	.36		.69
BDI.5		.60	.56			.58
BDI.6		.52	.53			.36
BDI.7		.67	.73			.47
BDI.8		.68	.60			.67
BDI.9		.72	.73			.65
BDI.10	.32	.48		.39		.59
BDI.11		.57	.42			.64
BDI.12	.37	.66	.70	.34		.59
BDI.13	.35	.62	.69			.46
BDI.14		.61	.55			.65
BDI.15	.36	.52	.51	.30		.43
BDI.16		.43	.45			
BDI.17	.42	.58	.65	.42		.44
BDI.18		.49	.46			.45
BDI.19		.43	.49			.35
BDI.20		.53	.62			.45
BDI.21	.30	.37	.43			
Eigenvalue	16.487	2.537	15.127	2.877	10.461	3.407
% variance	39.256	6.042	36.016	6.850	24.908	8.111

Table 5. Pearson's correlations (r) of clinical variables (n=101)

	2	3	4	5	6	7	8	9	10	11	12	13
1	.93**	.74**	.92**	.81**	.68**	.68**	.60**	.35**	.31**	-.09	.32**	.54**
2		.68**	.78**	.68**	.60**	.58**	.55**	.29**	.27**	-.08	.25*	.45**
3			.58**	.41**	.48**	.50**	.39**	.34**	.24*	-.15	.36**	.26**
4				.66**	.67**	.65**	.60**	.38**	.40**	-.01	.41**	.55**
5					.54**	.55**	.45**	.16	.10	-.08	.11	.45**
6						.97**	.92**	.41**	.39**	-.09	.42**	.41**
7							.79**	.42**	.43**	-.05	.47**	.43**
8								.34**	.27**	-.11	.30**	.32**
9									.45**	-.09	.82**	.24*
10										.07	.73**	.33**
11											.38**	-.05
12												.28**

1. BDI-total, 2. BDI-Negative Feelings about the Self, 3. BDI-Feelings of Guilt, 4. Performance Deterioration, 5. Somatic Concerns, 6. BAI-total, 7. Subjective Anxiety, 8. Somatic Symptoms, 9. TAS-A, 10. TAS-B, 11. TAS-C, 12. TAS-total, 13. Number of Symptom, N.S: Non-significant. *p<.01, **p<.001

patient group. This result may suggest the need for assessing this symptom differently in those with and without MDEs.

In terms of the DSM-IV diagnostic criteria, the presence of a MDE was predicted most strongly by loss of interest; this was followed by depressed mood, recurrent thoughts of death, and sleep problems. This model explained 83.33% of the variance. Loss of interest in all activities is an important part of anhedonia (26), which has been suggested as the most important symptom in the differential diagnosis of depression (24). Numerous investigators have addressed the effect of loss of interest on depression and its relationship with other criteria (27,28,29). Our assessment of the DSM-IV diagnostic criteria indicated that anhedonia and depressed mood constitute the core symptoms of depression. Moreover, our hypothesis that recurrent thoughts of death and sleep problems would be predictive of depression was confirmed. McKenzie and colleagues (29) studied individuals with medical illnesses and, consistent with our findings, reported that loss of interest, suicidal thoughts, and feelings of worthlessness were predictive of depression. Kroenke and colleagues (25) showed that the Patient Health Questionnaire-2 (PHQ-2), which addresses only two core symptoms, was strongly correlated with the PHQ-9, which addresses nine diagnostic criteria and was the original version of the PHQ used for screening in primary care and research settings. Although the two core symptoms were predictive of depression, different sub-dimensions may affect different subtypes of the disorder. However, the results of studies focused on the severity and appearance of depression in terms of non-core symptoms have been ambiguous. Zimmerman and colleagues (24) conducted the MIDAS project at Rhode Island Hospital and noted that five symptoms (weight gain, weight loss, psychomotor retardation, indecisiveness, and suicidal ideation) were not independent of the diagnosis. They also claimed that they were candidates for the absence of symptoms of weight

gain, weight loss and indecision in the diagnostic criteria (30). This project also reported that lack of reactivity, anxiety, and anger symptoms should be included in the diagnostic criteria for depression, and they were problematic in contributing to the diagnosis (31).

We found that, SC, drawn from the anxiety sub-dimension, and PD, drawn from the depression sub-dimension, predicted the presence of depression. One advantage of the dimensional structure would be that SC, an important contributor to the index episode, would be included in the anxiety sub-dimension. This is consistent with the effect of SC on the core diagnostic criteria, which are predictive of MDEs. The SC sub-dimension was also more strongly correlated with the core criteria than with the other criteria. Thus, our hypothesis that the dimensional structure corresponding to the core diagnostic criteria will predict MDEs was confirmed. Another predictor of MDEs, the PD sub-dimension of depression, was also strongly correlated with the two core symptoms of the disorder and may contribute to the manifestation of this disorder.

Each of diagnostic criteria makes a unique and unequal contribution to the diagnosis of depression. Moreover, depression, as both a criterion and a sub-dimension, emerged as distinct from anxiety and alexithymia. Indeed, each sub-dimension of depression contributes differently to the phenomenology of the disorder and is strongly correlated with anxiety and alexithymia. Recurrent thoughts of death are the least predictive of some manifestations of a MDE. In addition to the core symptoms, thoughts of death and sleep problems are predictive of MDEs. In terms of the dimensional structure, somatic symptoms and impaired functioning emerged as most strongly predictive of MDE.

Table 6. Spearman's and Partial correlations between the clinical variables (r) (n=101)

	Depressive mood	Decreased interest or pleasure	Weight changes	Sleep disturbances	Psychomotor agitation or retardation	Fatigue	Feelings of worthlessness or guilt	Indecisiveness	Suicidal ideas
1	.52**	.61**	.32**	.23*	.45**	.50**	.50**	.37**	.51**
1	.40**	.53**	.34**	.18	.39**	.44**	.43**	.27*	.48**
1 1	.12	.25*	.13	.17	.33**	.28**	.34**	.24*	.33**
1 1 1	.11	.26*	.18	.15	.33**	.28**	.33**	.20	.35**
2	.50**	.59**	.29**	.24*	.36**	.42**	.43**	.30**	.50**
2	.24*	.15*	.09	.07	-.07	.08	.10	-.06	.27*
2 1	.09	.22	.05	.13	.21*	.16	.25*	.10	.32**
2 1 1	.11	.04	.07	-.08	-.07	.05	.09	-.13	.23*
3	.34**	.36**	.13	.21	.24*	.44**	.41**	.31**	.32**
3	.15*	.13	.03	.11	-.14	.04	.03	<-.01	.18*
3 1	.05	.07	-.02	.16	.13	.26*	.28**	.20	.17
3 1 1	.05	.05	<-.01	.02	-.14	.01	.01	-.04	.13
4	.54**	.58**	.24*	.23*	.47**	.47**	.52**	.40**	.47**
4	.18*	.19*	.04	.08	-.08	.11	.05	-.08	.22*
4 1	.20	.26*	.02	.15	.38**	.27*	.39**	.30**	.26*
4 1 1	.02	.08	-.01	-.07	-.09	-.08	.03	-.18*	.17*
5	.39**	.49**	.47**	.15	.38**	.41**	.28**	.27*	.43**
5	.26*	.24*	.08	.14	.09	.05	.18*	.03	.33**
5 1	-.01	.17	.38**	.07	.23*	.20	.07	.13	.25*
5 1 1	.15	.16	.06	.04	.13	.01	.20*	-.01	.31**
6	.56**	.58**	.30**	.14	.27*	.42**	.37**	.26*	.40**
7	.54**	.59**	.29**	.16	.26*	.40**	.41**	.26*	.43**
8	.50**	.51**	.27*	.11	.25*	.38**	.29**	.22*	.29**
9	.52**	.54**	.53**	.47**	.77**	.51**	.59**	.64**	.64**

1. BDI-total, 2. BDI-Negative Feelings about the Self, 3. BDI-Feelings of Guilt, 4. Performance Deterioration, 5. Somatic Concerns, 6. BAI-total, 7. Subjective Anxiety, 8. Somatic Symptoms, 9. Number of Symptom.
*p<.05, **p<.01, |: partial correlation coefficient controlling for TAS scores, |1|: partial correlation coefficient controlling for BAI scores, |1|1|: partial correlation coefficient controlling for TAS scores and BAI scores.

Table 7. Regression analysis of the diagnostic criteria of existence of depression (n=200)

Variables	OR/Exp (B)	df	p
Criteria_1	3.00	1	.02
Criteria_2	5.99	1	.00
Criteria_3	1.73	1	.31
Criteria_4	2.65	1	.04
Criteria_5	1.42	1	.63
Criteria_6	1.04	1	.93
Criteria_7	1.11	1	.85
Criteria_8	1.22	1	.67
Criteria_9	5.54	1	.03
Constant		1	.04

a Dependent Variable: GROUP

Table 8. Regression analysis of the subdimensions of variables of existence of depression (n=200)

		Unstandardized Coefficients		Standardized Coefficients	t	p
Model		B	Std. Error	Beta		
1	(Constant)	.08	.052		1.627	.11
	Somatic symptoms	.04	.005	.548	8.884	<.01
2	(Constant)	-.11	.089		-1.206	.23
	Somatic symptoms	.03	.006	.403	4.949	<.01
	Performance Deterioration	.02	.008	.216	2.656	.01

a Dependent Variable: GROUP

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