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The factor structure of lifetime depressive spectrum in patients with unipolar depression

G.B. Cassano[*], **A. Benvenuti**, **M. Miniati**, **S. Calugi**, **M. Mula**, **L. Maggi**, **P. Rucci**, **A. Fagiolini**, **F. Perris**, and **E. Frank**
Department of Psychiatry, Neurobiology, Pharmacology and Biotechnology, School of Medicine, University of Pisa, Italy

Department of Psychiatry, University of Pittsburgh School of Medicine, United States

Department of Psychiatry, University of Naples SUN, Naples, Italy

Abstract

Background—While previous attempts to elucidate the factor structure of depression tended to agree on a central focus on depressed mood, other factors were not replicated across studies. By examining data from a large number of items covering the range of depressive symptoms, the aim of the present study is to contribute to the identification of the structure of depression on a lifetime perspective.

Methods—The study sample consisted of 598 patients with unipolar depression who were administered the Mood Spectrum Self-Report (lifetime version) in Italian (*N*=415) or English (*N*=183). In addition to classical exploratory factor analysis using tetrachoric correlation coefficients, an IRT-based factor analysis approach was adopted to analyze the data on 74 items of the instrument that explore cognitive, mood and energy/activity features associated with depression.

Results—Six factors were identified, including `Depressive Mood', `Psychomotor Retardation', `Suicidality', `Drug/Illness related depression', `Psychotic Features' and `Neurovegetative Symptoms', accounting overall for 48.3% of the variance of items.

Limitations—Clinical information on onset of depression and duration of illness is available only for 350 subjects. Therefore, differences between sites can only be partially accounted using available data.

Conclusions—Our study confirms the central role of depressed mood, psychomotor retardation and suicidality and identifies the factors `Drug/Illness related depression', `Psychotic features' and the neurovegetative dysregulation not captured by the instruments most frequently used in previous studies. The identification of patients with specific profiles on multiple factors may be useful in achieving greater precision in neuroimaging studies and in informing treatment selection.

Keywords

Depression; Spectrum; Suicidality; Factor; Retardation; Mood

[*]Corresponding author. Department of Psychiatry, Neurobiology, Pharmacology and Biotechnologies, University of Pisa, via Roma 67 - 56100 Pisa, Italy. Tel.: +39 050 835419; fax: +39 050 21581. gcassano@psico.med.unipi.it (G.B. Cassano)..

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1. Introduction

Current classification systems describe prototypes of mood disorders that overlook the heterogeneity of clinical syndromes in terms of pattern of symptoms, onset, course and response to treatment.

Attempts to define clinical characteristics of subtypes of depression have been already extensively made, based on clinical presentation (atypical vs. melancholic vs. psychotic), type of onset (early-onset, late-onset, post-partum depression, etc.), course of illness (single episode or recurrent depression), or treatment response (Rush, 2007).

The heterogeneity of clinical presentation of depression has been considered to explain why a high number of patients fail to reach a complete or a sustained recovery. Indeed, long term recovery from depression is still a goal to reach, given that more than 10% of patients never fully recover from a depressive episode (Kennedy and Giacobbe, 2007), and 20–40% of patients display long-lasting depressive symptomatology (Keitner et al., 2006).

In order to identify clusters of depressive symptoms for a refined description of clinical subtypes of depression, a number of studies have carried out exploratory factor analysis of items included in the most commonly administered rating scales for depression, such as the Hamilton Rating Scale for Depression (HAM-D), the Center for Epidemiologic Studies Depression Scale (CES-D), the Beck Depression Inventory (BDI), the Zung Self-Rating Depression Scale (SDS) and the Montgomery-Asberg Depression Rating Scale (MADRS) (Mowbray, 1972; Cassano et al., 1976; O'Brien and Glaudin, 1988; Marcos and Salamero, 1990; Gibbons et al., 1993; Keogh and Reidy, 2000; Whisman et al., 2000; Helm and Boward, 2003; Suzuki et al., 2005; Shafer, 2006; Ward, 2006; Berk et al., 2007; Romera et al., 2008; Vanheule et al., 2008). In general, factor analyses of these instruments have consistently identified a `depressive factor' and a `somatic/neurovegetative factor'. Other factors identified were “psychomotor retardation” (Schrijvers et al., 2007) and “suicidality” (Witte et al., 2006). However, the instruments on which factor analyses were carried out include criterion symptoms for a depressive episode and do not comprise atypical symptoms, subthreshold or sub-syndromal depressive features that may be clinically significant because they represent precursors, prodromes, residuals of a full-blown episode, or isolated features of depression (Judd et al., 1997). These manifestations are part of the `mood spectrum' that considers as clinically meaningful depressive features that may occur throughout the lifetime, sometimes isolated, rather than as part of a temporally circumscribed clinical syndrome (Cassano et al., 1999, 2002). In order to evaluate mood spectrum features using a standardized assessment, researchers of the Spectrum Project have developed and validated the Mood Spectrum questionnaire (MOODS-SR) designed to collect signs and symptoms of depression, mania, rhythmicity and vegetative functions (Fagiolini et al., 1999; Dell'Osso et al., 2002).

The aim of this study is to analyze the factor structure of the depressive component of MOODS-SR in patients with unipolar depression, recruited in different studies conducted in the framework of the Spectrum Project. We focused on depression items because we were interested in defining conceptually homogeneous dimensions of depression to be used as separate measures in place of a total score of depression.

2. Methods

2.1. Participants

The sample includes 598 patients with unipolar depression (459 F, 139 M, mean age=38.6, SD=12.2, range 18–67) collected in 4 studies (see Table 1). Study 1 includes 41 Italian

patients with unipolar depression participating in an ongoing study aimed at comparing the compare the clinical characteristics and genetic profile of mood disorders (Mula et al., 2008). Study 2 includes female participants in a study aimed at comparing mood spectrum and anorectic–bulimic spectrum across eating disorders, mood disorders and controls. Study 3 includes US and Italian male and female patients aged 18–66 years participating in the study "Depression: the search for treatment-relevant phenotypes" (Frank et al., 2008). These patients had non-psychotic depression and no history of mania or hypomania. Study 4 includes 87 Italian patients with unipolar depression with (*N*=10) or without (*N*=77) psychotic symptom recruited for a multicenter Italian study aimed at validating an interview to assess the psychotic spectrum (Sbrana et al., 2005).

2.2. Instruments

The MOODS-SR questionnaire, developed in English and Italian, was derived from the corresponding structured interview (Fagiolini et al., 1999) and is focused on the presence of manic and depressive symptoms, traits and lifestyles that may characterize the `temperamental' affective dysregulation that make up both fully syndromal and sub-threshold mood disturbances. The latter include symptoms that are either isolated or clustered in time and temperamental traits that are present throughout individual's lifetime. The MOODS-SR consists of 161 items coded as present or absent for one or more periods of at least 3–5 days in the lifetime. Items are organized into 3 manic–hypomanic and 3 depressive domains each exploring mood, energy and cognition, plus a domain that explores disturbances in rhythmicity (i.e. changes in mood, energy and physical well-being according to the weather, the season and the phase of menstrual cycle, etc.) and in vegetative functions, including sleep, appetite and sexual function. The sum of the scores on the three manic–hypomanic domains constitutes the score for the manic–hypomanic component and that for the three depressive domains the depressive component. For the purpose of the present report, we selected 74 items from the MOODS-SR lifetime version, 62 encompassing depressive symptoms and features and 12 exploring rhythmicity/vegetative function features related to depression. The instrument was administered in the English version to 183 US patients and in the Italian version to 415 Italian patients.

2.3. Statistical analyses

An exploratory factor analysis (EFA) was conducted using tetrachoric correlation coefficients. These coefficients measure the association between dichotomous items and are based on the assumption that the response to any particular item can be thought of in terms of the crossing of a threshold on an underlying latent continuous distribution (i.e., the latent trait). Respondents with a response strength greater than the threshold will answer `yes', otherwise they will respond `no'. By assuming that the response process is normally distributed and knowing the proportion of subjects that respond affirmatively to the items, tetrachoric correlations for all distinct 74(74–1)/2=2701 pairs of items were estimated. The matrix of tetrachoric correlations was then subjected to unweighted least squares factor analysis and then rotated orthogonally using the varimax method (Kaiser, 1958) and the promax method (Hendrickson and White, 1964), to allow for a possible correlation of factors, as suggested by Fabrigar et al. (1999).

The number of factors was determined by inspecting the scree plot, and considering their interpretability and consistency with the criteria that guided the construction of the instrument. Items with a cross-loading on multiple factors were assigned to the factor with the highest loading.

In addition to classical exploratory factor analysis, an IRT-based factor analysis approach was adopted to analyze the data. While classical factor analysis makes use of information

derived from pair-wise correlations of items, IRT-based factor analysis make use of all information in each patient's pattern of item responses, *i.e.* item pairs, triplets, quadruplets, etc. and is therefore called full-information factor analysis (FIFA). This procedure is limited in terms of the number of factors that can be estimated, typically no more than 5 or 6 dimensions. Furthermore, when the number of latent dimensions (k) is large and the number of items is large (n), a minimum of $n(k+1)$ subjects is required to accurately estimate the unknown parameters in the model, and in general the number of subjects should be on the order of ten times the number of items (see Gibbons et al., 2007). In IRT models, the item difficulty, or threshold, parameter b is the point on the latent scale θ where a person has a 50% chance of responding positively to the item. Items with high thresholds are less often endorsed. The slope, or discrimination, parameter a describes the strength of an item's discrimination between people with trait levels (θ) below and above the threshold b. The a parameter may also be interpreted as describing how an item may be related to the trait measured by the scale (Linden and Hambleton, 1997). Differential item functioning (DIF) analysis, a 1-parameter logistic model that estimates only the item threshold under the assumption that the discrimination parameter is constant, was carried out in order to determine whether site or gender had an effect on the latent dimensions identified and whether the individual items measured the latent dimensions in a different way in females and males and in US and Italian participants. In order to establish whether a DIF effect was in place, a model without covariates was first fit and compared with the DIF model. The difference between the log-likelihood of the fit of the DIF and of the non-DIF models is distributed as a chi-square and was used to test the improvement of the DIF model over the non-DIF model.

Analyses were conducted using TESTFACT, Version 4.0 (2003) and BILOG-MG, version 3.0 (2003).

3. Results

The frequency of endorsement of the 74 items of the depressive component of the MOODS-SR is provided in Table 2. Items are organized by decreasing frequency. In our sample, feeling guilty and being sad or empty were the most commonly endorsed items.

3.1. Factor analysis

A classical factor analysis was first carried out. By inspecting the scree plot, a change in the curvature was observed after the 6th factors, suggesting that 6 factors are sufficient to summarize the variance of the items in a parsimonious way and that the subsequent factors are nuisance factors.. After comparing 5- 6- and 7- solutions using the varimax and the promax method, a 6-factor varimax solution was selected as the best in terms of interpretability. This solution accounted overall for 48.3% of the variance of the 74 items. Factor 1 accounted for 28.7% of the variance, the other five factors accounted for 5.2%, 4.2%, 3.8%, 3.2% and 3.0% of the variance, respectively. Factor loadings obtained using varimax rotation are shown in Table 3, arranged in decreasing order within factors. Based on items contents, factors were labeled as:

3.1.1. Factor 1. Depressive mood—This factor includes a number of symptoms and temperamental features that span depressed mood, loss of interests and loneliness, with principal loadings on “persistently sad or empty, blue or down in the dumps” (0.713), “serious, introverted or gloomy” (0.707), “lost interest in hobbies or sport” (0.701), “purposeless, as if everything had lost its significance” (0.690), “lonely” (0.663), “deeply annoyed” (0.624) and “difficulty making new friends” (0.624).

3.1.2. Factor 2. Psychomotor retardation—This factor includes psychomotor retardation in different areas of daily activities, physical weakness and tiredness, with principal loadings on “slowed down” (0.725), “passive, sluggish” (0.718), “difficulty starting to do anything” (0.717), “speech or thinking seemed slowed down” (0.688), “fatigued, weak, or tired for the smallest task” (0.679), “trouble getting out of bed in the morning” (0.630) and “your housework deteriorated” (0.612).

3.1.3. Factor 3. Suicidality—This factor includes items related with suicidal ideation, plans and attempts, with principal loadings on “suicide attempt” (0.865), “want to die or hurt yourself” (0.783), “specific plan to hurt or kill yourself” (0.756), “suicide attempt requiring medical attention” (0.730) and “wishing not to wake up in the morning” (0.645).

3.1.4. Factor 4. Drug/illness related depression—This factor describes the tendency to feel depressed when ill or after having taken substances, with principal loading on “depressed when stopping any of these substances” (−0.687) and “depressed when drinking lots of alcohol or using substances” (−0.635).

3.1.5. Factor 5. Psychotic features—This factor includes paranoid thoughts and psychotic symptoms, with principal loading on “you felt surrounded by hostility, as if everybody was against you” (0.743), “everyone was talking about you” (0.702) and “others were causing all of your problems” (0.610).

3.1.6. Factor 6. Neurovegetative symptoms—This factor includes a number of items that describe problems with sleep, appetite and sexual function, with principal loadings on “repeatedly wake up in the middle of the night and had difficulty falling sleep” (0.568) and “less sexually active” (0.524).

Results of the 6-factor solution obtained with promax rotation are provided in the Appendix A for comparison. While the first 5 factors coincided to a large extent with those generated by the varimax solution, the items that made up the factor “neurovegetative symptoms” did not cluster together. The last factor derived with promax solution, “hopelessness,” included only two items (“gloomy future” and “wishing to run away from your current life”) with a weak loading on multiple factors.

3.2. DIF analysis by gender and site

The 63 items with a factor loading >0.40 in the varimax solution were retained for subsequent IRT analyses. Full information factors analysis was carried out first. Although the ratio between subjects and items (9.5:1) was close to the ten-to-one ratio recommended for carrying out the analysis, the model failed to converge (data available on request).

DIF analysis was conducted separately on the items belonging to the 6 factors to examine the gender effect. Comparisons between the models without covariates and the DIF models indicated that the latter had a significantly better fit to the data. While no or minor effects on the latent dimensions were found, indicating that population mean scores on the latent dimensions were similar for males and females, some items differed between genders. These included q26 (indifferent about everything that happened to you or your family) and q97 (hear voices), that were more frequent in males and q11 (crying very easily), q15 (nothing you put on looked or felt right) and q155 (difficulty becoming sexually aroused), that were more frequent in females, q65 (fatigued weak, or tired for the smallest task), q90 (difficulty making even minor decisions).

DIF analysis by site revealed remarkable differences between sites. US participants had higher scores (lower thresholds) on 4 of the 6 latent dimensions estimated, including neurovegetative function (−0.782), depressive mood (−0.576), suicide (−0.357), psychomotor retardation (−0.301). Item differences between sites included sleep (q139, q141), appetite (q152, q153), suicide behavior (q107), hearing voices (q97), feeling guilty or remorseful (q93), housework/performance deteriorated (q89), crying very easily (q11) nostalgic (q2), lost interest in how you looked (q14), lost pleasure in your social life (q21), indifferent about everything that happened to you or your family (q26).

4. Discussion

In our study, based on a sizeable pool of subjects with major depression and using items drawn from a validated instrument, a six-factor solution was identified with classical factor analysis using a sound methodology for dichotomous items. Our solution accounted for 48.3% of variance of the items, in line with other studies that explored the factor structure of depression.

MOODS-SR items reflecting DSM-IV criteria for a depressive episode were frequently endorsed in our population and can be found in all identified factors (see Tables 2 and 3 highlighted in bold). However, a number of other features encompassing temperamental traits and atypical symptoms also displayed a high frequency (Table 2) and high loadings on each factor (Table 3) and clustered with criterion symptoms of depression. This is of even greater interest when one considers that this is the first study investigating factors of depression from a lifetime perspective.

The first identified factor, *Depressive mood*, includes “core” symptoms of depression, anhedonia and temperamental features.

Anhedonia is recognized as an important component of depression (Akiskal, 1986; Loas and Boyer, 1996; Leventhal et al., 2006) and is one of the diagnostic criteria for the DSM-IV diagnosis of major depression with melancholia (Rush and Weissenburger, 1994). It is defined as a reduced capacity or inability to experience pleasant emotions and was introduced as one of the core symptoms of the endogenous (or melancholic) subtype of major depression in the DSM-III (1980). The development of anhedonia as a construct was influenced by Klein's conceptual framework of “endogenomorphic” depression, that refers to a particular type of depression characterized by a pervasive impairment of the capacity to experience pleasure or to respond affectively to the anticipation of pleasure (Klein, 1974). Anhedonia was found to correlate significantly with neuroticism, introversion and morbid risk of depression in first-degree relatives of individuals with depression (Schrader, 1997). Furthermore, in his classification of chronic depression, Akiskal described a condition characterized by the presence of neurovegetative change and anhedonia as an antidepressant-responsive form of chronic depression (Akiskal, 1983).

Kraepelin (1923) described four basic affective temperaments (manic, depressive, irritable and cyclothymic) and suggested that they could color the symptoms pattern of acute mood episodes. In that tradition, the baseline affective temperament was characterized, with an emphasis on the role of the latter for the final phenomenology and prognosis of mood disorders (Akiskal et al., 1977; Cassano et al., 1989; Placidi et al., 1998; Akiskal et al., 1998, 2006). The depressive temperament includes at least five of the following characteristics, with an onset before age 21:1) gloomy, pessimistic, humorless; 2) quiet, passive and indecisive; 3) skeptical, hypercritical or complaining; 4) brooding and given to worry 5) conscientious or self-disciplining; 6) self-critical, self-reproaching and self-derogatory; 7) preoccupied with inadequacy, failure and negative events. Several of these features are

present in this factor, further supporting the close relationship between core features of depression and its temperamental correlates.

The second factor, *Psychomotor retardation*, parallels another central feature of depression and includes the contra-polar features of mania, which is characterized by psychomotor activation (Cassidy et al., 2002; Hantouche et al., 2003; Benazzi, 2004; Angst et al., 2005; Koukopoulos et al., 2005; Picardi et al., 2008; Cassano et al., 2008; Schrijvers et al., 2007). Psychomotor changes are reported to be `nearly always present' in the melancholic subtype of major depressive episode in DSM-IV-TR, and are believed by some researchers to be markers of melancholia (Parker and Hadzi-Pavlovic, 1996; Rush and Weissenburger, 1994; Parker, 2000). The identification of patients with psychomotor retardation may have important practical implications in the light of current literature linking retardation to severity of the depression in general (Benazzi, 2002) and of melancholic depression in particular (Parker, 2000). Moreover, in our opinion, the role of psychomotor retardation deserves further investigation in the light of a clinical distinction between unipolar and bipolar depression.

The third factor, *Suicidality*, encompasses suicidal ideation, attempts and severity of attempts. Various studies have confirmed that patients with an affective disorder have a higher risk of suicide attempts than the general population with a case-fatality prevalence (suicides divided by total subjects) varying from 2.0% in outpatients with affective disorders to 6% in suicidal inpatients (Bostwick and Pankratz, 2000). In our sample, up to 45% of patients reported suicidal ideation over the lifetime, but only 18% reported a suicide attempt, in line with the figures reported by Balestrieri et al. (2006). In spite of the large number of studies on suicidality, few of them have focused on the process that lead from weariness of life to death wishes, suicidal plans, suicidal attempts and completed suicide. The “suicidality” factor of the MOODS-SR allows the assessment of each separate step of the suicidal process together with the severity of any previous attempts from a lifetime perspective. In a recent study Cassano et al. (2004) found that the number of manic–hypomanic items endorsed on the lifetime mood spectrum assessment was linked with an increased likelihood of lifetime and current suicidal ideation in patients with recurrent unipolar depression.

The fourth factor, *Drug/Illness-Related Depression*, explores the occurrence of mild or severe mood dysregulations (energy fluctuations, moods instability, or emotional liability) reported by patients during common and not severe physical illnesses (namely, flu, or cold). For example, mood manifestations, including severe depressive episodes, have been described in subjects who are sensitized to tree pollen as exacerbated or triggered by the use of common drugs, such as antihistamines or vasoconstrictors (Widmer et al., 2000; Rondon et al., 2007).

It is well documented that patients with depressive spectrum features are sensitive to substance withdrawal, as occurs with benzodiazepines or alcohol, or that they may be unusually sensitive and reactive to ingested substances, including prescribed or over-the-counter medication, street drugs, or commonly used beverages (Winokur et al., 1998; Chengappa et al., 2000). Because these signs and symptoms have been described in patients with depression as markers `underlying soft bipolarity', past research has focused on their clinical significance (Akiskal et al., 2006).

The fifth Factor, *Psychotic features*, includes paranoid thoughts and psychotic symptoms. The presence of psychotic symptoms in patients with affective disorders has been described since the first observations on *dementia praecox* and the manic depressive illness (Kraepelin, 1904) and it is widely reported also among patients with major depressive episodes (Maj et

al., 2007). Psychotic symptoms during a depressive episode seems to be related to an increased likelihood of underlying bipolarity (Cassano et al., 2004; Goes et al., 2007) especially in patients with recurrent depression. Wood et al. (2002) found that a specific genotype, allegedly associated with the occurrence of full-blown psychotic syndromes, was associated with paranoid ideation and psychoticism in major depressive disorder. More recently (Iga et al., 2007) a polymorphism of brain-derived neurotrophic factor (BDNF) gene has been associated with psychotic features in patients with major depression.

The sixth factor, *Neurovegetative Symptoms*, explores symptoms of neurovegetative and rhythm disruption such as diurnal mood variation with morning worsening, early morning awakening, marked loss of appetite or marked weight-loss or loss of libido. Long-lasting sleep, appetite and sexual function problems may reduce daily life functioning and work performance. These symptoms have been traditionally considered as `somatic', or `melancholic' core features of full-blown depressive episodes, and associated with `endogenous depression', in epidemiological and clinical studies. However, physical and neurovegetative symptoms proved to be useful for subtyping subjects in the NCS Survey (Sullivan et al., 1998) and were frequently reported as residual manifestations of a major depressive episode (Fava, 1999). Moreover, they have been associated with an increased duration of the depressive episode and high risk of chronic course and recurrences (Cassano and Savino, 1997). Finally, it must be acknowledged that neurovegetative episodic sub-threshold neurovegetative dysregulations, even if egosyntonic and adaptive, may represent a vulnerability for a full-fledged mood episodes of both manic and depressive polarity (Fava, 1999). Because `behavioral activation is more important than mood change per se in diagnosing BP-II hypomania', disturbances and rhythmic changes in eating, sexual activity, or sleep, have been considered of relevance when ambiguities regarding the boundaries between unipolar and bipolar disorders were explored (Akiskal, 2005).

Our results suggest that the factors identified were approximately invariant between genders, and that only a limited number of items differentiated males from females. These include items related to depressed mood `indifferent about everything that happened to you or your family', `crying very easily', `nothing you put on looked or felt right', neurovegetative symptoms `difficulty becoming sexually aroused', psychomotor retardation `fatigued weak, or tired for the smallest task', `difficulty making even minor decisions' and one psychotic feature `hear voices.' This is consistent with the literature that fails to provide clear-cut evidence of gender differences in symptoms in patients with depression (Frank et al., 1988; Young et al., 1990). On the contrary, the differences on factors between sites were more pronounced. This was however expected because, despite the adoption of similar inclusion/exclusion criteria between US and Italian participants to Study 3 (Depression: the Search for Treatment-Relevant Phenotypes), the US patients exhibited longer duration of illness (median 10.6 vs. 3 years, Mann–Whitney Z=−6.26, pb0.001) and younger age of onset of depression (24.1±12.5 vs. 30.9±10.8, t-test=−5.2, p<0.001). Therefore, the differences between Italian and US participants may represent a proxy for a higher severity of illness and should not be interpreted as genuine variations between sites. However, because in the other studies information on age of onset and duration of illness was not recorded in the database, differences between sites can only be partially accounted using available data.

Our results should be interpreted keeping in mind that the factors identified with orthogonal (varimax) rotation are uncorrelated to each other. While this assumption is at variance with the expectation that depression factors are correlated, it allowed us to generate a solution that is conceptually clear, consistent with our aim to derive distinct dimensions of depression and in line with the literature that identified similar factors using other instruments.

In conclusion, our study provided further evidence that patients with unipolar depression exhibit a number of lifetime symptoms, in additions to classical DSM-IV criteria, including temperamental traits, atypical signs or isolated symptoms, all of them contributing to the final structure of depressive spectrum. Future research should be aimed at differentiating unipolar and bipolar depression.

The identification of patients with specific profiles on multiple factors could be used to achieve higher precision in clinical diagnosis and in brain imaging or neurobiological studies than is currently achieved using subjects who simply meet with the same DSM-IV diagnosis. Better psychopathological characterization of patients may inform treatment selection and ultimately result in better treatment outcome.

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Appendix

A

Factor loadings derived from a 6-factor solution with promax rotation (bolded items reflecting DSM-IV criteria for a depressive episode, and bolded italicized items reflecting those with a factor loading <0.40 in absolute value).

	Depressive mood	Psychomotor retardation	Suicidality	Drug/illness-related depression	Psychotic features	Hopelessness
10. persistently sad or empty, blue or down in the dumps	**0.553**	0.094	−0.017	−0.012	0.022	−0.191
4. serious, introverted or gloomy	**0.538**	−0.119	0.048	−0.099	0.087	0.025
13. purposeless, as if everything had lost its significance	**0.512**	0.135	0.081	−0.095	−0.067	−0.184
25. lost interest in hobbies or sport	**0.509**	0.073	−0.012	−0.129	−0.058	0.059
3. lonely	**0.494**	−0.062	−0.033	0.102	0.097	0.054
12. constantly complaining	**0.466**	−0.025	−0.317	−0.120	0.228	−0.090
6. deeply annoyed	**0.465**	−0.065	−0.056	−0.091	0.069	0.094
22. difficulty making new friends	**0.455**	−0.045	0.058	−0.098	−0.109	0.090
8. lost your capacity to laugh, have fun, enjoy your life?	**0.448**	0.030	0.208	−0.132	0.083	−0.275
11. crying very easily	**0.438**	−0.078	0.071	−0.100	0.079	−0.151
15. nothing you put on looked or felt right	**0.431**	0.095	−0.150	−0.059	0.047	−0.085
5. bored	**0.413**	−0.088	0.017	−0.157	0.065	0.090
7. the littlest thing could make you sad?	**0.413**	0	0.021	−0.016	0.122	0.047
26. indifferent about everything that happened	**0.401**	0.105	−0.097	−0.074	−0.158	0.079

	Depressive mood	Psychomotor retardation	Suicidality	Drug/illness-related depression	Psychotic features	Hopelessness
to you or your family						
1. frustrated and defeated	***0.393***	0.020	−0.030	0.105	0.166	−0.019
27. lost interest or pleasure in all or almost all the things you usually enjoyed	***0.372***	0.194	0.135	−0.087	−0.091	0.077
21. lost pleasure in your social life	***0.370***	0.088	0.096	−0.081	−0.167	0.126
2. nostalgic	***0.351***	−0.105	0.042	0.083	0.150	−0.061
23. lost interest in your romantic life	***0.349***	0.039	0.053	−0.138	−0.180	0.120
9. you found it unusually hard to take rejections, particularly those involving friendships or romantic relationships?	***0.337***	−0.055	−0.067	−0.031	0.203	0.068
14. lost interest in how you looked	***0.325***	0.199	0.113	−0.125	−0.119	−0.211
84. disappointed in yourself	***0.206***	0.150	0.126	0.077	0.136	0.189
153. appetite decrease	***0.198***	−0.010	−0.017	0.030	−0.175	0.079
151. craving sweets or carbohydrates	***0.178***	−0.054	−0.109	−0.030	−0.012	0.076
59, physically “slowed down”	−0.096	**0.646**	−0.191	−0.189	0.082	0.032
58. difficulty starting to do anything	0.088	**0.583**	−0.214	−0.014	−0.062	0.205
60. speech or thinking seemed slowed down	0.080	**0.569**	−0.129	−0.056	−0.099	0.134
62. passive, sluggish	0.105	**0.563**	−0.094	0.097	−0.049	0.110
65. fatigued weak, or tired for the smallest task	0.081	**0.499**	0.079	−0.049	0.023	0.144
63. trouble getting out of bed in the morning	−0.042	**0.470**	0.066	0.097	−0.146	0.124
61. time as passing very slowly, hanging heavy	0.064	**0.469**	−0.047	−0.026	0.093	0.098
89. your housework/ performance deteriorated	0.021	**0.435**	0.031	0.062	−0.033	0.133
64, difficulty take to care of yourself	0.119	**0.426**	0.073	0.008	−0.095	0.111
90. difficulty making even minor decisions	0.123	***0.388***	−0.140	0.085	0.228	0.135
132. difficult to work in the early morning	−0.013	***0.387***	0.006	0.037	−0.110	0.099
92. mentally dull or confused	−0.058	***0.335***	0.026	−0.159	0.124	0.135
91. trouble thinking or concentrating	−0.064	***0.308***	−0.078	−0.048	0.233	0.137
101. using sleep as an escape	0.079	***0.267***	0.081	0.072	0.015	0.148
88. problems with your memory	−0.015	***0.237***	−0.024	−0.042	0.092	0.113
66. difficulty to sit still or lie down	−0.103	***0.217***	−0.113	0.006	0.190	0.084

	Depressive mood	Psychomotor retardation	Suicidality	Drug/illness-related depression	Psychotic features	Hopelessness
142. need much more sleep	−0.065	***0.213***	0.017	0.043	−0.101	0.113
138. you felt sleepy all the time	−0.033	***0.210***	−0.087	0.072	0.051	0.117
106. suicide attempt	−0.002	−0.167	**0.684**	−0.021	−0.016	0.199
105. specific plan to hurt or kill yourself	0.117	−0.133	**0.576**	0.032	0.015	0.195
104. want to die or hurt yourself	0.123	−0.104	**0.569**	−0.025	0.084	0.237
107. suicide attempt requiring medical attention	0.031	−0.086	**0.563**	−0.107	0.021	0.181
103. wishing not to wake up in the morning	0.010	0.002	**0.443**	0.030	0.087	0.226
102. life was not worth living	0.198	0.071	***0.382***	−0.001	−0.022	0.207
155. difficulty becoming sexually aroused	−0.008	0.099	***−0.148***	0.029	−0.098	0.097
19. depressed when stopping any of these substances	0.144	0.020	0.009	**−0.680**	−0.030	0.113
18. depressed when drinking lots of alcohol or using substances	0.231	−0.186	0.081	**−0.652**	−0.176	0.200
20. became depressed as a result of using alcohol, sleeping pills, anti–anxiety drugs, nicotine, caffeine, stimulants or similar substances even though you took them in order to feel better	0.107	−0.013	0.113	**−0.606**	−0.157	0.161
17. depressed when taking medications	0.164	0.038	−0.285	**−0.563**	0	0.128
98. heard voices clearly	**−0.440**	0.271	0.197	**−0.440**	0.152	0.078
16. depressed during physical illnesses	0.178	0.073	−0.233	**−0.440**	0.051	0.040
140. repeatedly wake up in the middle of the night and had difficulty falling sleep	−0.264	−0.298	−0.040	***−0.306***	0.199	0.094
141. repeatedly wake up much earlier	−0.193	−0.242	−0.026	***−0.266***	0.166	0.077
154. less sexually active	−0.017	−0.041	0.045	***−0.179***	−0.120	0.091
152. appetite increased	0.046	0.031	0.061	***−0.172***	−0.164	0.097
150. no food that appealed	0.011	0.144	0.072	***−0.167***	−0.131	0.091
95. you felt surrounded by hostility, as if everybody was against you	0.087	−0.051	0.003	0.088	**0.545**	0.155
96. everyone was talking about you	0.085	−0.035	−0.054	−0.027	**0.507**	0.134
94.others were causing all of your problems	0.092	−0.156	−0.002	0.081	**0.478**	0.096
97. heard voices	−0.313	0.081	0.174	−0.368	***0.369***	0.092
83. very vulnerable	0.067	0.166	0.082	0.111	***0.365***	0.176

	Depressive mood	Psychomotor retardation	Suicidality	Drug/illness-related depression	Psychotic features	Hopelessness
93. you felt guilty or remorseful	0.036	0.026	0.088	0.092	***0.321***	0.182
85. body transformed	0.080	0.078	0.030	−0.152	***0.257***	0.088
87. need to take refuge in religion or player?	−0.075	−0.070	0.064	−0.063	***0.231***	0.085
139. repeatedly difficulty falling sleep	−0.205	−0.067	−0.136	−0.096	***0.226***	0.090
82. preoccupied with yourself and your own problems, thoughts and feelings	−0.013	0.084	0.159	0.201	***0.222***	0.150
81. hypercritical or skeptical	0.183	−0.030	−0.006	0.111	***0.186***	0.109
86. very preoccupied with money	0.131	0.051	0.026	−0.117	***0.182***	0.083
99. gloomy future	0.069	0.138	0.124	0.096	0.114	***0.183***
100. wishing to run away from your current life	0.152	0.045	0.113	0.105	0.133	***0.153***

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Table 1

Clinical and demographic characteristics of the study sample (*N*=598).

Studies	*N*	% F	Age, mean (SD)	Diagnostic interview
Study 1	41	68.3%	48.5 (13.0)	SCID
Study 2	101	100%	30.3 (6.0)	MINI
Study 3	350	69.2%	39.2 (12.2)	SCID
Study 4	87	69.0%	41.9 (11.7)	SCID

Table 2

Frequency of endorsement of items (bolded items reflecting DSM-IV criteria for a depressive episode).

Item	Item endorsement
93. you felt guilty or remorseful	0.823
10. persistently sad or empty, blue or down in the dumps?	0.809
82. preoccupied with yourself and your own problems, thoughts and feelings	0.805
4. serious, introverted or gloomy	0.797
3. lonely	0.786
83. very vulnerable	0.772
84. disappointed in yourself	0.765
58. difficulty starting to do anything	0.752
2. nostalgic	0.751
13. purposeless, as if everything had lost its significance	0.749
21. lost pleasure in your social life	0.741
25. lost interest in hobbies or sport	0.741
63. trouble getting out of bed in the morning	0.740
1. frustrated and defeated	0.731
7. the littlest thing could make you sad?	0.725
99. gloomy future	0.725
11. crying very easily	0.724
139. repeatedly difficulty falling sleep	0.717
9. you found it unusually hard to take rejections, particularly those involving friendships or romantic relationships?	0.716
62. passive, sluggish	0.715
27. lost interest or pleasure in all or almost all the things you usually enjoyed	0.710
22. difficulty making new friends	0.704
8. lost your capacity to laugh, have fun, enjoy your life?	0.701
140. repeatedly wake up in the middle of the night and had difficulty falling sleep	0.701
65. fatigued weak, or tired for the smallest task	0.687
100. wishing to run away from your current life	0.682
6. deeply annoyed	0.672
101. using sleep as an escape	0.671
91. trouble thinking or concentrating	0.670
5. bored	0.669
138. you felt sleepy all the time	0.662
23. lost interest in your romantic life	0.643
141. repeatedly wake up much earlier	0.642
92. mentally dull or confused?	0.633
14. lost interest in how you looked	0.629
142. need much more sleep	0.617
90. difficulty making even minor decisions	0.615
88. problems with your memory	0.613
89. your housework/performance deteriorated	0.608

Item	Item endorsement
61. time as passing very slowly, hanging heavy	0.599
15. nothing you put on looked or felt right	0.592
59, physically “slowed down”	0.581
154. less sexually active	0.581
64, difficulty take to care yourself	0.576
155. difficulty becoming sexually aroused	0.575
102. life was not worth living	0.567
60. speech or thinking seemed slowed down	0.513
12. constantly complaining	0.510
151. craving sweets or carbohydrates	0.508
152. appetite/weight increased	0.495
132. difficult to work in the early morning	0.486
81. hypercritical or skeptical	0.461
26. indifferent about everything that happened to you or your family	0.456
104. want to die or hurt yourself	0.454
153. appetite/weight decrease	0.450
95 you felt surrounded by hostility, as if everybody was against you	0.448
103. wishing not to wake up in the morning	0.447
150. no food that appealed	0.416
66. difficulty to sit still or lie down	0.380
94.others were causing all of your problems	0.355
16. depressed during physical illnesses	0.353
96. everyone was talking about you	0.345
87. need to take refuge in religion or prayer?	0.337
105. specific plan to hurt or kill yourself	0.328
86. very preoccupied with money	0.283
85. body transformed	0.282
107. suicide attempt requiring medical attention	0.272
20. became depressed as a result of using alcohol, sleeping pills, anti-anxiety drugs, nicotine, caffeine, stimulants or similar substances even though you took them in order to feel better	0.188
106. suicide attempt	0.182
18. depressed when drinking lots of alcohol or using substances	0.165
19. depressed when stopping any of these substances	0.133
17. depressed when taking medications	0.113
98. heard voices clearly	0.090
97. heard voices	0.063

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Table 3

Factor loadings derived from a 6-factor solution with varimax rotation (bolded items reflecting DSM-IV criteria for a depressive episode, and bolded italicized items reflecting those with a factor loading <0.40 in absolute value).

ITEM	Depressive mood	Psychomotor retardation	Suicidality	Drug/illness-related depression	Psychotic features	Neurovegetative symptoms
10. persistently sad or empty, blue or down in the dumps	**0.713**	0.281	0.098	−0.075	0.089	0.023
4. serious, introverted or gloomy	**0.707**	0.137	0.146	−0.142	0.159	0.165
25. lost interest in hobbies or sport	**0.701**	0.264	0.104	−0.175	0.054	0.201
13. purposeless, as if everything had lost its significance	**0.690**	0.332	0.209	−0.152	0.041	0.028
3. lonely	**0.663**	0.171	0.087	0.100	0.147	0.203
6. deeply annoyed	**0.624**	0.149	0.053	−0.131	0.137	0.200
22. difficulty making new friends	**0.624**	0.166	0.141	−0.125	−0.001	0.236
7. the littlest thing could make you sad?	**0.589**	0.214	0.135	−0.068	0.243	0.174
8. lost your capacity to laugh, have fun, enjoy your life?	**0.586**	0.203	0.343	−0.179	0.158	−0.076
21. lost pleasure in your social life	**0.583**	0.310	0.229	−0.112	−0.011	0.290
27. lost interest or pleasure in all or almost all the things you usually enjoyed	**0.573**	0.399	0.281	−0.138	0.050	0.099
5. bored	**0.572**	0.134	0.108	−0.190	0.147	0.213
12. constantly complaining	**0.567**	0.118	−0.175	−0.185	0.310	0.028
15. nothing you put on looked or felt right	**0.561**	0.237	−0.033	−0.113	0.096	0.060
26. indifferent about everything that happened to you or your family	**0.557**	0.260	0.007	−0.110	−0.057	0.192
1. frustrated and defeated	**0.550**	0.211	0.092	0.093	0.270	0.129
11. crying very easily	**0.536**	0.085	0.128	−0.136	0.114	−0.010
23. lost interest in your romantic life	**0.510**	0.197	0.125	−0.157	−0.057	0.247
9. you found it unusually hard to take rejections, particularly those involving friendships or romantic relationships?	**0.479**	0.144	0.046	−0.081	0.321	0.154
14. lost interest in how you looked	**0.462**	0.332	0.219	−0.169	−0.013	−0.038
2. nostalgic	**0.457**	0.082	0.117	0.080	0.223	0.062
84. disappointed in yourself	**0.447**	0.409	0.304	0.018	0.322	0.275
81. hypercritical or skeptical	***0.316***	0.145	0.090	0.122	0.294	0.205
59. physically “slowed down”	0.101	**0.725**	−0.040	−0.281	0.232	−0.062

ITEM	Depressive mood	Psychomotor retardation	Suicidality	Drug/illness-related depression	Psychotic features	Neurovegetative symptoms
62. passive, sluggish	0.325	**0.718**	0.068	0.055	0.089	0.102
58. difficulty starting to do anything	0.275	**0.717**	−0.042	−0.095	0.083	0.138
60. speech or thinking seemed slowed down	0.250	**0.688**	0.015	−0.131	0.047	0.074
65. fatigued weak, or tired for the smallest task	0.288	**0.679**	0.211	−0.125	0.186	0.111
63. trouble getting out of bed in the morning	0.190	**0.630**	0.183	0.087	0.022	0.236
89. your housework/performance deteriorated	0.241	**0.612**	0.162	0.001	0.125	0.229
61. time as passing very slowly, hanging heavy	0.217	**0.594**	0.083	−0.106	0.233	−0.006
64, difficulty take to care yourself	0.312	**0.576**	0.180	−0.053	0.048	0.079
90. difficulty making even minor decisions	0.334	**0.574**	0.039	−0.009	0.406	0.109
132. difficult to work in the early morning	0.180	**0.524**	0.113	−0.009	0.035	0.221
92. mentally dull or confused	0.163	**0.505**	0.147	−0.217	0.312	0.205
91. trouble thinking or concentrating	0.156	**0.482**	0.070	−0.117	0.431	0.220
101. using sleep as an escape	0.274	**0.466**	0.226	0.057	0.157	0.290
88. problems with your memory	0.169	***0.393***	0.089	−0.087	0.241	0.256
99. gloomy future	0.304	***0.381***	0.289	0.053	0.298	0.367
66. difficulty to sit still or lie down	0.054	***0.322***	−0.005	−0.043	0.322	0.152
106. suicide attempt	0.101	0.048	**0.865**	−0.004	0.107	−0.025
104. want to die or hurt yourself	0.276	0.177	**0.783**	−0.031	0.239	0.167
105. specific plan to hurt or kill yourself	0.207	0.092	**0.756**	0.035	0.132	0.029
107. suicide attempt requiring medical attention	0.134	0.100	**0.730**	−0.102	0.143	−0.006
103. wishing not to wake up in the morning	0.220	0.251	**0.645**	0.018	0.250	0.294
102. life was not worth living	0.360	0.320	**0.578**	−0.023	0.151	0.250
19. depressed when stopping any of these substances	0.235	0.098	0.039	**−0.687**	0.082	0.120
18. depressed when drinking lots of alcohol or using substances	0.330	−0.017	0.120	**−0.635**	−0.043	0.230
20. became depressed as a result of using alcohol, sleeping pills, anti-anxiety drugs, nicotine, caffeine, stimulants or similar substances even though you took them in order to feel better	0.210	0.089	0.164	**−0.597**	−0.015	0.182

ITEM	Depressive mood	Psychomotor retardation	Suicidality	Drug/illness-related depression	Psychotic features	Neurovegetative symptoms
17. depressed when taking medications	0.223	0.067	−0.216	**−0.577**	0.059	0.130
16. depressed during physical illnesses	0.237	0.117	−0.162	**−0.466**	0.095	0.040
95 you felt surrounded by hostility, as if everybody was against you	0.212	0.147	0.122	0.054	**0.743**	0.061
96. everyone was talking about you	0.204	0.142	0.064	−0.094	**0.702**	0.071
94.others were causing all of your problems	0.108	−0.007	0.065	0.031	**0.610**	−0.055
83. very vulnerable	0.233	0.373	0.211	0.085	**0.568**	0.133
97. heard voices	−0.190	0.118	0.243	−0.402	**0.535**	−0.190
93 you felt guilty or remorseful	0.218	0.246	0.237	0.085	**0.523**	0.309
85. body transformed	0.167	0.159	0.096	−0.196	***0.386***	−0.009
82. preoccupied with yourself and your own problems, thoughts and feelings	0.125	0.220	0.289	0.252	***0.356***	0.139
87. need to take refuge in religion or prayer	0.021	0.048	0.104	−0.081	***0.348***	0.137
98. heard voices clearly	−0.254	0.287	0.266	−0.466	***0.299***	−0.148
86. very preoccupied with money	0.229	0.151	0.092	−0.156	***0.293***	0.048
140. repeatedly wake up in the middle of the night and had difficulty falling sleep	−0.057	−0.061	0.018	−0.288	0.367	**0.568**
154. less sexually active	0.155	0.132	0.103	−0.166	0.028	**0.524**
155. difficulty becoming sexually aroused	0.156	0.210	−0.047	0.025	0.017	**0.508**
152. appetite/weight increased	0.213	0.192	0.126	−0.166	−0.003	**0.500**
153. appetite/weight decreased	0.299	0.155	0.060	0.031	−0.054	**0.457**
151. craving sweets or carbohydrates	0.279	0.123	−0.014	−0.037	0.082	**0.453**
139. repeated difficulty falling sleep	−0.011	0.090	−0.040	−0.108	0.379	**0.446**
141. repeatedly wake up much earlier	−0.032	−0.049	0.020	−0.254	0.303	**0.442**
142. need much more sleep	0.158	0.383	0.118	0.022	0.054	**0.439**
138. you felt sleepy all the time	0.184	0.390	0.045	0.036	0.178	**0.434**
150. no food that appealed	0.166	0.281	0.159	−0.177	0.015	***0.305***
100. wishing to run away from your current life	0.286	0.237	0.249	0.117	0.277	***0.292***