Validity and reliability of the Structured Clinical Interview for Mood Spectrum - Brazilian Version (SCIMOODS-VB)

Validade e confiabilidade da versão brasileira da Entrevista Clínica Estruturada para o Espectro do Humor (SCIMOODS-VB)

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Abstract

Objective: The aim of this study was to translate the Structured Clinical Interview for Mood Spectrum into Brazilian Portuguese, measuring its reliability, validity, and defining scores for bipolar disorders. **Method**: Questionnaire was translated (into Brazilian Portuguese) and back-translated into English. Sample consisted of 47 subjects with bipolar disorder, 47 with major depressive disorder, 18 with schizophrenia and 22 controls. Inter-rater reliability was tested in 20 subjects with bipolar disorder and MDD. Internal consistency was measured using the Kuder Richardson formula. Forward stepwise discriminant analysis was performed. Scores were compared between groups; manic (M), depressive (D) and total (T) threshold scores were calculated through receiver operating characteristic (ROC) curves. **Results:** Kuder Richardson coefficients were between 0.86 and 0.94. Intraclass correlation coefficient was 0.96 (CI 95 % 0.93-0.97). Subjects with bipolar disorder had higher M and T, and similar D scores, when compared to major depressive disorder (ANOVA, $p < 0.001$). The sub-domains that best discriminated unipolar and bipolar subjects were manic energy and manic mood. M had the best area under the curve (0.909), and values of M equal to or greater than 30 yielded 91.5% sensitivity and 74.5% specificity. **Conclusion**: Structured Clinical Interview for Mood Spectrum has good reliability and validity. Cut-off of 30 best differentiates subjects with bipolar disorder vs. unipolar depression. A cutoff score of 30 or higher in the mania sub-domain is appropriate to help make a distinction between subjects with bipolar disorder and those with unipolar depression.

Descriptors: Bipolar disorder; Mood disorders; Diagnosis; Interview, psychological; Psychology, clinical

Resumo

Objetivo: *Traduzir e validar para o português a Entrevista Clínica Estruturada para Distúrbios do Humor, mensurando sua validade, confiabilidade, bem como definindo os escores para transtornos bipolares.* ***Método:*** *A entrevista foi traduzida (para o português) e novamente traduzida para o inglês. A amostra incluiu 47 indivíduos com transtornos bipolares, 47 com transtorno depressivo maior, 18 com esquizofrenia e 22 controles. A confiabilidade entre avaliadores foi testada em 20 indivíduos com transtornos bipolares e transtorno depressivo maior. A consistência interna foi mensurada por meio da fórmula de Kuder Richardson. Análise discriminante foi realizada. Escores dos diversos grupos foram comparados; limiares para mania (M), depressão (D) e valores totais foram calculados usando curvas de* "receiver operating characteristic" *(ROC).* ***Resultados:*** *Coeficientes de Kuder Richardson ficaram entre 0,86 e 0,94. O coeficiente de correlação intraclasse foi de 0,96 (IC 95% 0,93-0,97). Participantes com transtornos bipolares apresentaram escores M e T aumentados, e escores D semelhantes aos do grupo transtorno depressivo maior (ANOVA, $p < 0,001$). Os subdomínios que melhor discriminaram indivíduos com doença uni ou bipolar foram energia maníaca e humor maníaco. M apresentou a melhor área sob a curva (0,909); valores de M igual ou superiores a 30 associaram-se a sensibilidade de 91,5% e especificidade de 74,5%.* ***Conclusão:*** *Entrevista Clínica Estruturada para Distúrbios do Humor apresenta boa validade e reliabilidade. Escore de mania igual ou superior a 30 adequadamente diferencia transtornos bipolares de depressão unipolar.*

Descritores: *Transtorno bipolar; Transtornos do humor, Diagnóstico; Entrevista psicológica; Psicologia clínica*

Introduction

The Structured Clinical Interview for Mood Spectrum (SCI-MOODS) and its self-reported version (MOODS-SR) were designed to measure mood disorders as dimensional constructs.[1,2] They cover a broad range of symptoms such as the core symptoms of the DSM-IV and of ICD-10, as well as personality traits and characteristics or behaviors related to mood disorders.[3] They were developed in English and Italian simultaneously, facilitating cultural adaptation of the instrument. Furthermore, the MOODS-SR was validated in Spanish.[4] Factor analysis of the MOODS-SR helped to describe the structure of the manic

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component of bipolar disorder (BD), as well as the depressive structure of major depressive disorder (MDD); findings were consistent with previous reports about the structure of these diagnostic entities.[5,6] The MOODS-SR, last month version, was sensitive to change after MDD treatment both with selective serotonin reuptake inhibitors (SSRI) or interpersonal therapy.[7] The SCI-MOODS and MOODS-SR have good reliability.[2] Threshold scores of the SCI-MOODS or MOODS-SR that enable bipolar to be distinguished from unipolar disorders have not been established.

Accordingly, the aim of this study was to translate the current lifetime version of the SCI-MOODS,[8] validating it into Brazilian Portuguese. We determined its discriminant validity, reliability and the scores that differentiated BD from MDD with good sensitivity and specificity.

Method

1. Subjects

The sample consisted of subjects attending an outpatient clinic; age ranged from 18-60 years old, and both genders were included. Participants were selected through the Structured Clinical Interview for DSM-IV (SCID-I/P) (20), applied by a trained psychiatrist, with a DSM-IV criteria (12) for bipolar (n = 47), unipolar (n = 47), and schizophrenic disorder (n = 18). All patients were considered clinically stable by their physicians. Patients with alcohol or substance use disorders (except nicotine) in the 3 months prior to the study were excluded, as well as those with organic mental syndromes or cognitive deficits that precluded them from providing informed consent. Mood disorder patients were also excluded if they had psychotic symptoms or were severely ill. Healthy volunteers (n = 22), used as controls, were recruited among normal volunteers used in the study of the "Psychobiology of Mood Regulation due to Antidepressant Effects" (Projeto FAPESP No 01/00189-9).[8]

All applicable local and international standards and ethical requirements were followed and the study was approved by the Research Ethics Committee of the Universidade de São Paulo (Protocol n. 427/07). Adequate understanding was assured and written informed consent were obtained from all participants.

2. Instruments

The lifetime SCI-MOODS 3.0 version (19) consists of 161 questions divided in four domains: "mood," "energy," "cognition," and "rhythmicity and vegetative functions." The first three domains are further divided into depressive and manic sub-domains. The "mood" construct refers to positive or negative emotions; "energy" refers to changes in activities or in energy levels; "cognition" focuses on negative/positive ideas and psychotic symptoms; "rhythmicity and vegetative functions" assesses changes in sleep, appetite, sexual functions, premenstrual and somatic symptoms and seasonality. Most of the questions are about symptoms lasting from 3 to 5 days. The interview typically lasted 1 hour.

3. Procedures

The first draft of the Brazilian version (SCI-MOODS-VB) was translated by the first author (RR), reviewed by mood disorder experts (RAM and DHM), and by a Brazilian Portuguese teacher. It was then back-translated by an English (American) teacher without previous knowledge of psychopathology.

All selected subjects were interviewed once (SCI-MOODS, SCID-I/P) by the same psychiatrist (RR), except the healthy volunteers. For inter-rater reliability analysis, the first 10 unipolar and 10 bipolar subjects enrolled in our study were simultaneously rated by two psychiatrists trained in using the SCI-MOODS-VB.

4. Statistical analysis

The reliability of the SCI-MOODS-VB was determined by two methods: (1) Inter-rater reliability, calculated by the intraclass correlation coefficient with two-way mixed effect models; and (2) the internal consistency of domains and sub-domains, calculated by using the Kuder-Richardson formula (KR-20). Scores of T, M, D and sub-domains were compared between groups by analysis of variance (ANOVA) followed by post hoc test of Dunnett C for unequal variances.

Table 1 - Mean SCI-MOODS-BV scores

	Bipolar disorder		Unipolar disorder		Schizophrenia		Controls	
	m	sd	m	sd	m	sd	m	sd
dm[2]	19.1	0.5	18.0	0.6	13.2	1.4	1.9	0.9
mm[1]	17.1	0.5	9.2	0.7	10.2	0.8	4.7	0.8
de[2]	6.9	0.3	5.4	0.4	5.4	0.4	0.2	0.1
me[1]	9.8	0.3	5.7	0.4	5.7	0.4	1.3	0.3
dc[2]	19.8	0.5	16.8	0.7	16.7	1.2	0.7	0.4
mc[3]	12.2	0.6	7.1	0.6	11.4	0.9	2.9	0.6
r[2]	16.4	0.6	14.2	0.6	12.3	1.0	3.5	0.8
D[2]	45.9	1.1	40.3	1.4	35.4	2.5	2.9	1.4
M[1]	39.2	1.2	22.0	1.4	27.3	1.8	8.8	1.4
T[1]	101.5	2.2	76.4	2.4	75.1	4.6	15.2	3.2

[1] bipolar > unipolar, schizophrenia > control; [2] bipolar, unipolar, schizophrenia > control; [3] bipolar, schizophrenia > unipolar > control; m = mean; sd = standard deviation; dm = depressive mood; mm = manic mood; de = depressive energy; me = manic energy; dc = depressive cognitive function; mc = manic cognitive function; r = rhythmicity; DS = depressive score; MS = manic score; TS = total score.
For all statistical differences ANOVAs' and Dunnett C's $p < 0.05$

Stepwise forward discriminant analysis was performed based on Wilks' lambda method for mood disorder subjects, in order to determine which of the SCI-MOODS-VB sub-domains could differentiate bipolar from unipolar subjects. A probability of 0.01 was used as criterion for retaining the variable in the equation, while those associated with > 0.10 were removed. The equality of covariance matrices was tested using Box's M, which was significant at $p < 0.05$, showing mild deviance of multivariate normality ($p = 0.04$), acceptable as a function of the power of the technique.[9]

A receiver operating characteristic (ROC) curve using T, M and D to distinguish bipolar from unipolar subjects was performed. The ROC curve tests the best trade-off between sensitivity and specificity and was used to calculate the threshold score of the SCI-MOODS-VB for bipolar disorder diagnosis. In addition to the area under the curve (AUC), positive and negative predictive values and kappa or diagnostic agreement between SCID-I/P and SCI-MOODS-VB were calculated.

All statistical analyses were made using SPSS software, version 12.0.

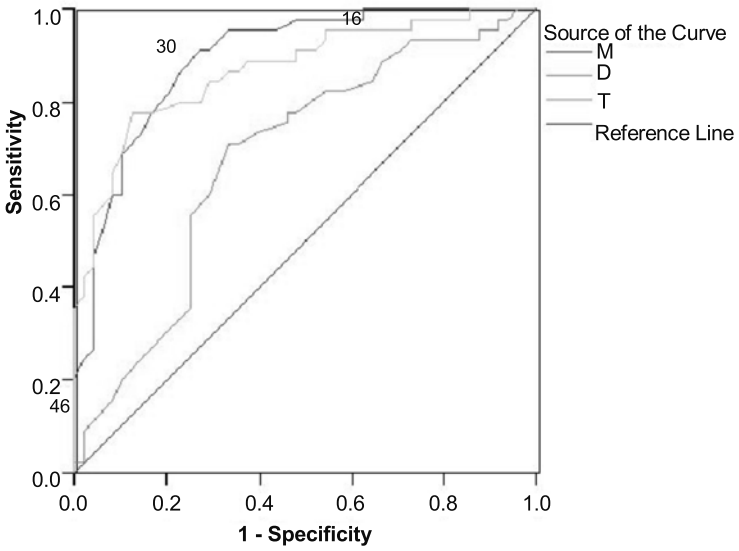

Figure 1 – Receiver operating characteristic (ROC) curve for bipolar and unipolar subjects

Results

According to the SCID-I/P, while bipolar subjects were mostly type I (80.8%), the majority of unipolar patients were recurrent (74.5%), and schizophrenic were predominantly disorganized (66.7%). Schizophrenic subjects were less likely to be married ($p = 0.002$), working or studying ($p < 0.001$). Controls were younger than participants in the other groups ($p = 0.002$)

The reliability of the SCI-MOODS-VB was high, as showed by inter-rater reliability and internal consistency: the intraclass correlation coefficient was 0.96 (CI 95% 0.93-0.97 $p < 0.001$). The Kuder-Richardson coefficient for the sub-domains ranged from 0.86 and 0.94. For the domains, it ranged from 0.87 and 0.94.

When groups were compared using ANOVA, statistically significant differences appeared for all SCI-MOODS-VB scores (total, manic, depressive and sub-domains, $p < 0.001$). Using m for mean and sd for standard deviation, the scores of individuals with BD were higher (total m = 101.5; sd = 2.2, depressive m = 45.9; sd = 1.1, manic m = 39.2; sd = 1.2) than those obtained from unipolar subjects (m = 76.4; sd = 2.4, m = 40.3; sd = 1.4, m = 22.0; sd = 1.4) and healthy participants (m = 15.2; sd = 3.2, m = 2.9; sd = 1.4, m = 8.8; sd = 1.4, respectively) (Dunnett C, $p < 0.05$). Subjects with schizophrenia scored lower than bipolar subjects in the manic score (m = 27.3; sd = 1.8 vs. m = 39.2; sd = 1.2) and manic sub-domains, except for manic cognition (Dunnett C, $p < 0.05$). Schizophrenic and unipolar subjects scored higher in manic and manic sub-domains than healthy subjects. Patient from all groups were more likely to have depressive symptoms, as compared to controls (Dunnett C, $p < 0.05$).

Discriminant analysis showed that the sub-domains that best discriminated unipolar from bipolar disorders were manic energy and manic mood. The percentage of cases correctly classified when just these two sub-domains were used was 85.1% (91.5% bipolar and 78.7% unipolar). A cross-validation procedure to minimize bias in the classification rate was performed, excluding one case. The percentage did not change.

A ROC curve for bipolar and unipolar subjects was plotted (Figure 1). The best area under the curve (AUC) was 0.909 for M. The AUC were 0.877 and 0.674 for T and D, respectively. For M the best threshold score was 30, yielding a sensitivity of 91.5%, specificity of 74.5%, and positive predictive value of 78.2% and negative predictive value of 89.7%. The diagnostic concordance or kappa for M scores above or equal to 30 on the SCI-MOODS-VB and SCID-I/P questionnaires was 66% for BD.

Discussion

The primary purpose of this study was to verify whether the SCI-MOODS-VB could differentiate well-established diagnostic groups (bipolar and unipolar disorders and schizophrenia) from each other, as well as from normal controls. As expected, bipolar subjects had more manic symptoms than participants with other diagnoses, and the SCI-MOODS-VB had good discriminant validity, confirming the original validation study.[1]

Depressive subjects were also more likely to have manic symptoms as compared to healthy subjects. This supports the view that major depression and bipolar disorder belong to the same clinical dimension. Cassano et al. used the SCI-MOODS to show that unipolar subjects also have several (hypo) manic symptoms in their lifetimes.[10] Depressive and (hypo)manic symptoms had high correlation in bipolar and unipolar subjects. These (hypo) manic symptoms were not benign: for each observed symptom, the odds of suicidality increased by 4.2%.

Using discriminant analysis, we found that manic energy and mood were the sub-domains that best discriminated bipolar and unipolar subjects. The original validity study reported a different result: besides manic energy, manic cognition and depressive mood were the most discriminant factors.[1] Differences in the sample and number of items used in each interview (161 vs. 140) could explain these findings.

The score that best discriminated bipolar and unipolar disorder was M; when equal or higher than 30 it had excellent sensitivity and

good specificity. The clinical impact of this interview is based on its positive and negative predictive values. A study conducted by Angst and Cassano with an Italian validation sample (140 questions) applied a cutoff of 22. In our sample, this score would yield a sensitivity of 97.9%, but specificity of only 53.2% and kappa of 51.1%. This sensitivity would be excellent for screening use.[11] However, the SCI-MOODS contains too many questions for this purpose.

Our findings should be interpreted with caution. Our subjects with mood disorders and schizophrenia were selected from tertiary centers. No severity scale was used at the interview. All subjects except healthy volunteers were interviewed by the same psychiatrist, who was not blinded to the subjects' diagnoses. The items of SCI-MOODS-VB are totally structured, minimizing this bias. The threshold scores should be validated in the general population.

Conclusion

SCI-MOODS-VB is reliable, with good discriminant validity. The manic score of 30 or higher distinguished bipolar from unipolar subjects. Manic energy and manic mood were the subdomains that best discriminated bipolar and unipolar subjects. Further research should enroll a larger number of patients with type II BD, and with bipolar spectrum.

Disclosures

Writing group member	Employment	Research grant[1]	Other research grant or medical continuous education[2]	Speaker's honoraria	Ownership interest	Consultant/ Advisory board	Other[3]
Roberto Ratzke	UFPR	-	-	AstraZeneca* Novartis*	-	-	-
Doris Hupfeld Moreno	GRUDA-IPq-FMUSP	-	-	Abbott* AstraZeneca*	-	Abbott* AstraZeneca*	Abbott* Torrent*
Clarice Gorenstein	LIM-23/USP	-	-	-	-	-	-
Ricardo Alberto Moreno	GRUDA-IPq-FMUSP	FAPESP*	BMS** AstraZeneca** Servier**	-	-	CEIP ABTB ABP A. Lopes Munis Advogados Mattos Muriel Kestener Advogados	Segmento Farma Editoras Artmed Editora Lopso Editora Editora Planmark DOC Editora Phoenix Comunicação Integrada Solução Editora

** Modest*
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**** Significant: Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.*
Note: UFPR = Universidade Federal do Paraná; GRUDA-IPq-HC-FMUSP = Mood Disorders Unit, Instituto de Psiquiatria, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo; LIM-23 = Laboratory of Clinical and Experimental Psychopharmacology Medical Investigation-23, Institute of Psychiatry, Universidade de São Paulo; FAPESP = Fundação de Amparo à Pesquisa do Estado de São Paulo; CEIP = Centro de Estudos do Instituto de Psiquiatria; ABTB = Associação Brasileira de Transtorno Bipolar; ABP = Associação Brasileira de Psiquiatria.
For more information, see Instructions for Authors.

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