



## Research report

## Cross-cultural adaptation, validation and factor structure of the Insight Scale for Affective Disorders



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## ARTICLE INFO

## Article history:

Received 25 February 2015

Accepted 2 March 2015

Available online 7 March 2015

## Keywords:

Insight

Awareness

Bipolar disorder

Validation

Adaptation

Factor analysis

## ABSTRACT

**Background:** In the last few decades, several tools for studying insight in bipolar disorders have been used. Olaya and colleagues developed the Insight Scale for Affective Disorders (ISAD), which consists of a scale measuring insight through hetero evaluation for patients with mood disorders. The objective of this work is to translate and adapt the original English version of the ISAD to Brazilian Portuguese (ISAD-BR) and to conduct an evaluation of its psychometric properties.

**Methods:** Adaptation procedures included translation/back-translation and consultation with a panel of experts. 95 patients with the diagnosis of Type 1 bipolar disorder were evaluated with the final version of the ISAD-BR, which was applied, simultaneously, but independently, by two examiners. Internal consistency and inter-rater reliability were explored and the latent structure of the scale was investigated with principal axis factoring and promax rotation. A second-order factor analysis was conducted to test if the scale had a hierarchical factor structure.

**Results:** The ISAD-BR showed good internal consistency and good inter-rater reliability. The analysis pointed to a four-factor solution of the ISAD-BR: awareness of symptoms associated with activity/energy; awareness of having a disorder; awareness of self-esteem and feelings of pleasure; and awareness of social functioning and relationships. The second order factor analysis indicated a hierarchical factor structure for the ISAD-BR, with the four lower-order factors loading on a single higher-order factor.

**Conclusions:** Insight into bipolar disorder is a multidimensional construct, covering different aspects of the condition and its symptomatology. Nevertheless, insight about activity/energy changes may be a crucial aspect of insight into bipolar disorder.

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## 1. Introduction

Several studies with patients with bipolar disorder (BD) have investigated insight about the illness and its symptoms (Silva et al., 2014b; Látalova, 2012). The level of awareness about this disorder, its symptoms or psychosocial effects can significantly influence the course of the illness, affecting, for example, patient adherence to treatment (Cely et al., 2011; Sajatovic et al., 2009; Copeland et al., 2008; Yen et al., 2005).

Studies on insight have shown that this is a complex phenomenon (Amador et al., 1993). According to this view, insight should not be understood as a binary variable, but rather as a graded and multifaceted characteristic. For this reason, multidimensional measures have been widely used in the study of insight. These dimensions include, for example, insight about the disease, accompanying symptoms and the need for treatment.

In the last few decades, several tools for studying insight in bipolar disorders have been used. Some studies (Adidas et al., 2008; Cassidy, 2010; Schuepbach et al., 2006; Silva et al., 2015) have used specific items from evaluation scales, such as the Scale for Manic States (Cassidy et al., 1998), the Young Mania Rating Scale (Young et al., 1978) or the Hamilton Depression Scale (Hamilton, 1960). Other studies (Amador et al., 1994; Dell'Osso et al., 2000; Dias et al.,

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2008; Ghaemi et al., 1995; Pini et al., 2001) used instruments designed to assess insight of patients with psychosis, such as the Insight and Treatment Attitudes Questionnaire (McEvoy et al., 1989), the Scale to Assess Unawareness of Mental Disorder (Amador et al., 1993) and the Schedule for Assessment of Insight (David et al., 1992). However, these tools were validated in samples of patients with non-affective psychotic disorders, and as result do not reflect the symptomology and the course of illness of mood disorders such as bipolar disorder.

Some scales that specifically measure insight in mood disorders have been created, such as the Mood Disorder Insight Scale (Sturman and Sproule, 2003) and the Beck Cognitive Insight Scale (Beck et al., 2004). Both of these scales are self-assessment scales for patients with mood disorders. However, insight evaluations done through self-assessments may lead to discrepant results in comparison with objective evaluations (Silva et al., 2013; Silva et al., 2014a). Considering this, Olaya et al. (2012) developed the Insight Scale for Affective Disorders (ISAD), which consists of an insight scale measured through assessments done through hetero evaluation for patients with mood disorders. The “Insight Scale for Affective Disorders” (ISAD) was developed based on the “Scale to Assess Unawareness of Mental Disorders” (Amador et al., 1994). It consists of a multidimensional scale that evaluates 17 items. For each symptom, insight is scored in a graded manner (from 1 to 5), ranging from full awareness to complete unawareness.

The objective of this work is to translate and adapt the original English version of the ISAD to Brazilian Portuguese (ISAD-BR) and to explore its psychometric properties. In addition, the factor structure of the original scale has not been investigated, and this is also explored in the current study. For this purpose, a sample of hospitalized patients and outpatients who had been diagnosed as having bipolar disorder was assessed with the ISAD-BR by two different examiners. The relationship between insight and clinical variables, such as mania, depression and global severity was also explored.

## 2. Material and methods

### 2.1. Adaptation

The adaptation started out by obtaining a translation into Portuguese of the original scale that was done by three translators who were not psychiatrists but were native Portuguese speakers fluent in English. The translations were done independently, with three Portuguese versions of the scale being produced. The next step involved merging the three different versions. A group of three Brazilian psychiatrists compared the different translations and evaluated any semantic discrepancies (including any linguistic or conceptual issues). After this was done, a consensus was obtained and a single, final version was produced. The final version was translated back into English by two native English speakers working independently of each other. The same group of three psychiatrists merged the two translations.

This version was sent to the authors of the original scale (Olaya et al., 2012) to assess whether each item in this translated version was a faithful copy of the original version. Subsequently four suggested modifications were made to three items: 8, 13 and 16. As a result, the terms “slowness”, “difficulties with concentration”, “attention liability” and “impaired social life”, that were present in this version, were replaced, respectively, by “sluggishness”, “short attention span”, “distractibility” and “poor social relationships”. These changes influenced the choice of the terms that were subsequently used in the final Brazilian Portuguese version. After obtaining approval from the creators of the original scale, the process of validation of the scale was carried out.

### 2.2. Validation

#### 2.2.1. Participants

The study was carried out in a research clinic and in an outpatients ward of the Institute of Psychiatry at the Federal University of Rio de Janeiro, between November 2013 and November 2014. The inclusion criteria for the study were: being diagnosed with bipolar disorder type I or type II according to the criteria of the DSM-5 (American Psychiatric Association, 2013); being 18 years old or older; and providing informed consent to take part in the study. The patients were randomly selected among those who attended the clinic or were hospitalized. The study was approved by the local ethics committee.

#### 2.2.2. Measures

In each session, the affective state of patients was assessed by means of the criteria using DSM-5 for manic episodes and major depressive episodes. Also the following scales were used: Hamilton Depression Scale (HAM-D) (Hamilton, 1960), Young Mania Rating Scale (YMRS) (Young et al., 1978), and Clinical Global Impressions Scale for use in bipolar psychotic illness (CGI-BP) (Spearling et al., 1997). The final version of the ISAD-BR was then applied independently by two examiners.

#### 2.2.3. Data analysis

To investigate internal consistency, Cronbach's alpha was calculated for the full scale, separately for items 1 to 3 and 4 to 17 (following the original procedure by Olaya et al. (2012)), and also for the extracted factors. In order to establish inter-rater reliability, the Intraclass Correlation Coefficient (ICC) was calculated. In addition, convergent and discriminant validity of the scale was explored. Correlations were calculated to establish the relationship of ISAD-BR factors with clinical variables, such as the YMRS and HAM-D total scores and insight items (respectively 11 and 17); Pearson or Spearman rho correlations were used according to the variable. For the correlational analysis, results were considered significant if  $p < .001$ , to account for the effect of multiple testing.

The Kaiser–Meyer–Olkin (KMO) measure was calculated to evaluate sampling adequacy in order to carry out an exploratory factor analysis. It has been proposed that KMO values should be equal to or above .60 in order to perform and interpret satisfactorily a factor analysis solution (Tabachnick and Fidell, 2001). A principal axis factoring (PAF) extraction method was used instead of principal components analysis because the latter procedure inflates variance estimates, since it does not discriminate shared from unique variance (Costello and Osborne, 2005). An oblique factor rotation method was employed (promax,  $\delta = 0$ ) because of potential correlation among the factors. Examination of scree-plot, inspection of eigenvalues and parallel analysis (Hayton et al., 2004) were employed to determine the number of factors. The parallel analysis was performed using SPSS syntax (O'Connor, 2000). Factor loadings above .40 were considered relevant (Matsunaga, 2010).

To test whether the ISAD-BR has a hierarchical factor structure, a second-order factor analysis was conducted on the extracted factors, following the same procedures described above. Based on the second-order factor analysis, Schmid and Leiman (1957) orthogonalization procedure was employed to investigate item loading in the higher- and lower-order factors. This procedure was also carried out using SPSS syntax (Wolff and Preising, 2005). Factor loadings are generally lower than those observed in the original exploratory factor analysis because the Schmid–Leiman procedure allows the higher-order factor to account for as much of the correlation among the items as possible, with the lower-order factors being reduced to residual factors uncorrelated with each

other and with the higher-order factor. Therefore, factor loadings equal to or greater than .25 are generally considered satisfactory (Wolff and Preising, 2005).

### 3. Results

The sample was composed of 95 patients with the diagnosis of Type 1 bipolar disorder. None of the patients obtained a diagnosis of type II bipolar disorder. Socio-demographic and clinical characteristics of the sample are described in Table 1.

The mean score for each ISAD-BR item, as well as the level of agreement between raters, can be seen in Table 2. ICC values were very high, indicating good inter-rater reliability. Cronbach's alpha for the full scale was high ( $\alpha=.90$ ), indicating excellent internal consistency (George and Mallery, 2003); consistency remained good when calculating separately Cronbach's alpha for the items 1 to 3 ( $\alpha=.77$ ) and 4 to 17 ( $\alpha=.89$ ). The mean of corrected item-total correlation coefficients was moderate ( $r=.55$ ), ranging from  $r=.77$  for item 9 ("Awareness of suffering from fatigue or an excess of energy") to  $r=.18$  for item 15 ("Awareness of having symptoms of confusion-disorientation"). Items 6 and 15 were excluded from further analyses considering their low correlation and the fact that their removal would lead to a slight increase in internal consistency of the scale ( $\alpha=.91$ ).

#### 3.1. Exploratory factor analysis

The KMO analysis revealed a value of .86, indicating good sampling adequacy and that the correlation matrix was suitable for factor analysis. The examination of scree plot, inspection of

eigenvalues and parallel analysis led to a four-factor solution which accounted for 69.8% of the variance. Results from the structure and pattern matrix were similar, with the latter being reported here because these are typically more conservative and not inflated by overlap between factors (Brown, 2006; Hatcher, 1994). Table 3 depicts the pattern of rotated factor loadings for this four-factor solution.

The four-factor solution of the ISAD-BR presented a well-defined structure, with all items having salient loadings in a single factor exclusively. There were no hyperplane items. The first factor was responsible for 39.8% of the variance with an eigenvalue of 6.8. This factor consisted of seven items related to specific BD symptoms, covering in particular the activity/energy domain. Factor loadings were high and yielded excellent internal consistency ( $\alpha=.81$ ). The second factor explained 9.1% of the variance with an eigenvalue of 1.5, and incorporated four items associated with awareness of having a disorder (awareness of illness). Factor loadings were moderate to high, and internal consistency was good ( $\alpha=.78$ ). The third factor was responsible for 7.8% of the variance with an eigenvalue of 1.3, and was composed of two items related to awareness of self-esteem and feelings of pleasure. It had high factor loadings and acceptable internal consistency ( $\alpha=.67$ ). Finally, the fourth factor explained 7.6% of the variance, with an eigenvalue of 1.3, and contained two items associated with awareness of social functioning and relationships. It showed moderate to high factor loadings and acceptable internal consistency ( $\alpha=.63$ ).

#### 3.2. Hierarchical factor analysis

The second order factor analysis lead to a one factor solution with eigenvalue equal to 2.4, accounting for 60.9% of the variance, and three other factors with eigenvalues smaller than one (.84, .44 and .29, respectively). These results suggest a hierarchical factor structure for the ISAD-BR, with the four lower-order factors loading on a single higher-order factor. Table 4 shows that the hierarchical matrix had a good simple structure. The higher-order factor accounted for 65.0% of the variance and yielded salient loading on all items. The four lower-order factors explained relatively less of the variance, with the exception of two items which had higher loadings on Factors III and IV than in the higher-order factor. Item loadings across the lower-order factors had a pattern similar to that observed in Table 3, suggesting the same factor labels, the exception being some items from Factor I which loaded heavily on the higher-order factor. There were no hyperplane items, but item 5 loaded both on Factors III and IV.

#### 3.3. Correlations between ISAD factors

As shown in Table 5, ISAD-BR lower-order factors showed moderate correlations with each other. Specifically, Factor IV showed overall weak correlations with other factors, while correlations between Factors I, II and III were moderate to strong. In a similar manner, the higher-order factor showed strong correlations with lower-order Factors I, II and III, but a weak to moderate correlation with Factor IV.

#### 3.4. Relationship between ISAD factors and clinical variables

Results of the correlational analysis can be seen in Table 6. In terms of clinical characteristics, higher mania (YMRS) and illness severity (CGI-BP) were associated with poorer insight, for the total score and all subscales. There was a trend for more preserved insight of clinical condition (Factor II) with higher depression, but this did not reach statistical significance. Comparison between the ISAD-BR and insight items of the YMRS and HAM-D scales indicated positive correlations with item 11 of the YMRS for the

**Table 1**  
Socio-demographic and clinical characteristics of participants.

| Variable         | Euthymia (n=33)<br>mean (SD)/range | Mania (n=32) mean<br>(SD)/range | Depression (n=30)<br>mean (SD)/range |
|------------------|------------------------------------|---------------------------------|--------------------------------------|
| Age              | 46.9 (11.4)/23–70                  | 46.0 (11.0)/26–66               | 49.2 (12.5)/28–78                    |
| Gender*          | 23/10                              | 18/14                           | 20/10                                |
| YMRS             | 1.4 (2.1)/0–7                      | 24.3 (9.1)/9–41                 | 3.1 (2.8)/0–10                       |
| HAM-D            | 2.8 (2.6)/0–10                     | 3.5 (2.6)/0–10                  | 16.1 (6.3)/2–28                      |
| CGI-BP<br>global | 1.2 (.4)/1–2                       | 4.8 (1.2)/3–7                   | 4.5 (1.0)/3–6                        |

YMRS—Young Mania Rating Scale; HAM-D—Hamilton Depression Rating Scale; CGI-BP—Clinical Global Impression scale/bipolar version.

\* # female/male

**Table 2**  
Mean score for each ISAD item and rater, with ICC values.

| Items   | Rater 1 mean (SD) | Rater 2 mean (SD) | ICC |
|---------|-------------------|-------------------|-----|
| ISAD 1  | 2.3 (1.5)         | 2.3 (1.5)         | .99 |
| ISAD 2  | 1.7 (1.2)         | 1.8 (1.3)         | .93 |
| ISAD 3  | 2.1 (1.6)         | 2.1 (1.6)         | .93 |
| ISAD 4  | 2.5 (1.7)         | 2.5 (1.7)         | .97 |
| ISAD 5  | 1.8 (1.3)         | 1.7 (1.3)         | .95 |
| ISAD 6  | 1.4 (1.0)         | 1.3 (.9)          | .90 |
| ISAD 7  | 1.9 (1.4)         | 1.9 (1.4)         | .95 |
| ISAD 8  | 3.0 (1.9)         | 2.9 (1.9)         | .98 |
| ISAD 9  | 2.4 (1.7)         | 2.3 (1.7)         | .98 |
| ISAD 10 | 2.7 (1.7)         | 2.8 (1.8)         | .98 |
| ISAD 11 | 2.9 (1.7)         | 2.9 (1.7)         | .99 |
| ISAD 12 | 3.0 (1.7)         | 3.0 (1.8)         | .98 |
| ISAD 13 | 2.7 (1.8)         | 2.8 (1.8)         | .99 |
| ISAD 14 | 2.5 (1.6)         | 2.8 (1.7)         | .98 |
| ISAD 15 | 2.8 (2.0)         | 3.0 (2.2)         | .80 |
| ISAD 16 | 1.8 (1.4)         | 1.7 (1.3)         | .97 |
| ISAD 17 | 4.5 (1.3)         | 4.3 (1.4)         | .99 |

**Table 3**  
Factor loadings for the ISAD items.

| Item             | Item                                                                         | ISAD factors |            |            |            | Communalities |
|------------------|------------------------------------------------------------------------------|--------------|------------|------------|------------|---------------|
|                  |                                                                              | I            | II         | III        | IV         |               |
| 11               | Awareness of suffering from slowed speech or verbosity/garrulousness         | <b>.88</b>   | -.04       | -.05       | .03        | .71           |
| 8                | Awareness of suffering from sluggishness or psychomotor agitation            | <b>.82</b>   | -.04       | .21        | -.20       | .79           |
| 12               | Awareness of suffering from bradypsychia/idea flight                         | <b>.81</b>   | .13        | -.05       | -.20       | .69           |
| 9                | Awareness of suffering from fatigue or an excess of energy.                  | <b>.77</b>   | .01        | .05        | .09        | .70           |
| 4                | Awareness of suffering from a depressed/expansive or irritable mood          | <b>.67</b>   | -.02       | .05        | .19        | .59           |
| 7                | Awareness of suffering from insomnia or hypersomnia                          | <b>.58</b>   | .04        | -.21       | .18        | .35           |
| 13               | Awareness of having a short attention span/showing distractibility           | <b>.51</b>   | .13        | .02        | .14        | .45           |
| 2                | Awareness of treatment efficacy for current symptoms or preventing relapses. | -.11         | <b>.79</b> | .16        | -.04       | .64           |
| 1                | Awareness of suffering from an affective disorder.                           | .08          | <b>.72</b> | .06        | -.02       | .64           |
| 3                | Awareness of consequences of the illness on work, family and social life.    | .15          | <b>.65</b> | -.28       | .12        | .47           |
| 17               | Awareness of suffering from delusions and hallucinations                     | .06          | <b>.43</b> | .30        | .01        | .46           |
| 10               | Awareness of suffering from feelings of uselessness/guilt or grandiosity.    | .16          | .01        | <b>.76</b> | -.10       | .72           |
| 5                | Awareness of suffering a marked increase/reduction in pleasurable activities | -.18         | -.01       | <b>.73</b> | .29        | .55           |
| 16               | Awareness of having poor social relationships.                               | -.03         | .08        | .06        | <b>.80</b> | .68           |
| 14               | Awareness of having an untidy appearance.                                    | .34          | -.13       | .18        | <b>.46</b> | .47           |
| Eigenvalue       |                                                                              | 6.8          | 1.5        | 1.3        | 1.3        |               |
| Variance (%)     |                                                                              | 39.8         | 9.1        | 7.8        | 7.6        |               |
| Cronbach's Alpha |                                                                              | .90          | .78        | .67        | .63        |               |

Factor loadings obtained with principal axis factoring and promax rotation; loadings greater than .4 are presented in bold.

**Table 4**  
Hierarchical ISAD structure with factor loadings for higher- and lower-order factors.

| Item         | Higher-order factor | Lower-order factors |            |            |            |
|--------------|---------------------|---------------------|------------|------------|------------|
|              |                     | I                   | II         | III        | IV         |
| 11           | <b>.74</b>          | <b>.36</b>          | -.03       | -.03       | .03        |
| 8            | <b>.79</b>          | <b>.34</b>          | -.03       | .15        | -.19       |
| 12           | <b>.73</b>          | <b>.34</b>          | -.08       | -.03       | -.19       |
| 9            | <b>.77</b>          | <b>.32</b>          | .01        | .03        | .08        |
| 4            | <b>.69</b>          | <b>.28</b>          | -.02       | .03        | .18        |
| 7            | <b>.47</b>          | .24                 | .03        | -.15       | .17        |
| 13           | <b>.63</b>          | .21                 | .08        | .01        | .13        |
| 2            | <b>.60</b>          | -.05                | <b>.51</b> | .11        | -.04       |
| 1            | <b>.66</b>          | .03                 | <b>.47</b> | .04        | -.02       |
| 3            | <b>.47</b>          | .06                 | <b>.42</b> | -.19       | .11        |
| 17           | <b>.60</b>          | .02                 | <b>.28</b> | .21        | .01        |
| 10           | <b>.66</b>          | .07                 | .01        | <b>.53</b> | -.09       |
| 5            | <b>.46</b>          | -.07                | -.01       | <b>.51</b> | <b>.27</b> |
| 16           | <b>.36</b>          | -.01                | .05        | .04        | <b>.75</b> |
| 14           | <b>.51</b>          | .14                 | -.08       | .12        | <b>.43</b> |
| Variance (%) | 65.0                | 7.6                 | 8.5        | 7.8        | 11.1       |

Factor loadings greater than .25 are presented in bold.

**Table 5**  
Correlations between higher- and lower-order ISAD factors.

| Variable            | Higher-order factor | Lower-order factors |      |      |      |
|---------------------|---------------------|---------------------|------|------|------|
|                     |                     | I                   | II   | III  | IV   |
| Higher-order factor | 1.00                |                     |      |      |      |
| Factor I            | .97                 | 1.00                |      |      |      |
| Factor II           | .81                 | .68                 | 1.00 |      |      |
| Factor III          | .77                 | .64                 | .56  | 1.00 |      |
| Factor IV           | .39                 | .36                 | .25  | .24  | 1.00 |

total score and all subscales of the ISAD-BR, but this relationship was not found with item 17 of the HAM-D, despite a trend for a positive relationship in the case of Factor III.

#### 4. Discussion

Research on insight in patients with bipolar disorder has been carried out by groups in several countries (Silva et al., 2014b;

**Table 6**  
Correlations between ISAD subscales and clinical variables.

| Variable    | YMRS       | HAM-D | CGI-BP     | 11 YMRS    | 17 HAM-D |
|-------------|------------|-------|------------|------------|----------|
| Total score | <b>.88</b> | .07   | <b>.72</b> | <b>.74</b> | .05      |
| Factor I    | <b>.83</b> | -.12  | <b>.70</b> | <b>.66</b> | -.05     |
| Factor II   | <b>.74</b> | -.20  | <b>.49</b> | <b>.67</b> | -.01     |
| Factor III  | <b>.54</b> | .06   | <b>.60</b> | <b>.40</b> | .19      |
| Factor IV   | <b>.48</b> | -.07  | <b>.38</b> | <b>.38</b> | .13      |

Significant results are presented in bold.

Látalova, 2012). Various scales or specific items of measurement of insight have been used in published studies (Adida et al., 2008; Cassidy, 2010; Schuepbach et al., 2006; Silva et al., 2015). However, the ISAD, created by Olaya et al. (2012), distinguishes itself by being the first hetero evaluation scale instrument into insight developed for patients with mood disorders. In addition, it allows for a more complete assessment of insight, addressing bipolar disorders in a comprehensive manner whilst at the same time investigating insight into several specific symptoms.

The process of adaptation allowed for the study to be more closely aligned to our culture than merely using a literal translation. The use of three translators and two subsequent translations (and two other translators) allowed for different versions to be compared and merged which gave us a better choice of selected terms. The approval of the ISAD-BR from the group that created the original scale ensured that the final version was faithful to the original version.

The ISAD-BR showed good internal consistency and good inter-rater reliability. These psychometric results are similar to those obtained with the original scale (Olaya et al., 2012). Specifically, internal consistency was slightly higher for the full scale and for the specific subscales in relation to the original scale. The extracted factors also yielded good internal consistency. The level of agreement between raters was very high, indicating good inter-rater reliability. The final version of the ISAD-BR can be found in Appendix.

The factor analysis indicated a four-factor solution. Factor I accounted for 39.8% of the variance and included the following items: “awareness of the presence of slowed speech or verbosity”, “awareness of the presence of sluggishness or psychomotor agitation”, “awareness of the presence of bradypsychia/idea flight”, “awareness of the presence of fatigue or excess energy”, “awareness

of the presence of insomnia or hypersomnia”, “awareness of short attention span/showing distractibility” and “awareness of a depressed/expansive or irritable mood”. The largest part of the variance of the scale was explained by this factor. In addition, the items that are a part of this factor show good internal consistency. It is interesting to note that, except for “awareness of short attention span/showing distractibility” and “awareness of a depressed/expansive or irritable mood”, all other items are related to insight of symptoms associated with activity/energy. In addition, the hierarchical structure indicated by the second-order factor analysis suggests that the “awareness of short attention span/showing distractibility” item has a less salient loading on Factor I than the others items. Previous studies (Cheniaux et al., 2014) have shown that alterations of activity/energy levels represent the main characteristics of mania. These findings indicate that insight of the symptoms covering activity/energy levels also exert greater importance in relation to the awareness of other symptoms, in the various phases of bipolar disorder.

Factor II has good internal consistency and is formed by evaluation items on global insight that cover: “awareness of suffering from an affective disorder (mood)”, “awareness of treatment efficacy for current symptoms or preventing relapses” and “awareness of the consequences of the illness on work, family and social life”. It also covers an evaluation of awareness of having delusions and hallucinations. This factor refers to insight into wider clinical characteristics of BD. The ISAD is based on the SUMD scale (Amador et al., 1993), which incorporated the three general items for the evaluation of insight, although the SUMD has been developed and validated for use in patients with schizophrenia. Having specifically considered these three items, Olaya et al. (2012), in the process of validating the original scale with patients with mood disorders, found lower scores than those of Amador et al. (1993), who had studied, individuals with schizophrenia. Several studies have compared the insight in patients with schizophrenia and bipolar disorder patients, using these three items contained in SUMD, covering a general evaluation of insight. Most of them found a greater level of insight in bipolar patients than those with schizophrenia in at least one of the subtypes of insight assessed (i.e. general insight, or insight about the disease, the treatment, or about its social consequences (Braw et al., 2012; Calatayud et al., 2012; Daneluzzo et al., 2002; Fennig et al., 1996; Govil et al., 2008; Masson et al., 2001; Michalakeas et al., 1994; Pini et al., 2004, 2001; Varga et al., 2007; Yen et al., 2002; Young et al., 1998)). It is possible that the greater presence of psychotic symptoms, in addition to increased cognitive impairment and the onset of schizophrenia (Cheniaux et al., 2008) may be responsible for greater impairment of insight in this mental disorder. In this sense, the present study shows that the item “awareness of having delusions and hallucinations” was the item that had higher scores in our sample of patients with bipolar disorder.

Factor III is made up of the following items: “awareness of a marked increase/reduction in pleasurable activities” and “awareness of present feelings of uselessness or guilt, or exaggerated self-esteem or grandiosity”, which are associated with the feeling of pleasure and perceived feelings of guilt/self-esteem. Factor IV is made up of the following items: “awareness of untidy appearance” and “an awareness of having poor social relationships”; both are associated with insight of social interactions. The third and fourth factors had relatively lower internal consistency and were composed of only two items. It has been suggested that the minimum number of three items per factor is critical (Velicer and Fava, 1998), which might indicate that these two factors are not very stable. Nevertheless, the solution with four factors proved the best in the current dataset, with communalities dropping considerably in alternative models with fewer factors.

A second-order factor analysis indicated that the four factors loaded onto a higher-order factor, suggesting a hierarchical structure for the ISAD. Most items yielded high loadings in the higher-

order factor, which accounted for almost two-thirds of the variance. The higher-order factor exhibited strong correlations with lower-order Factors I, II and III but a weak correlation with Factor IV. Factor IV also correlated weakly with the other lower-order factors, which may suggest some independence of insight for social interaction in relation to general insight about bipolar disorder. The moderate to strong correlations between Factors I, II and III, and also with the higher-order factor, suggest that while insight in BD may be a multidimensional construct, it is related mainly to insight about activity/energy symptoms, guilt/self-esteem and insight about having a disorder.

An analysis of the results showed that an increase in the severity of mania (YMRS) and of the general severity of the affective disorder (CGI-BP) was associated with poor levels of insight. These findings are in agreement with previously published data, showing that patients with bipolar disorder involving mania showed greater impairment of insight than patients in depression or euthymia. Also patients with more severe symptoms presented lower levels of insight than milder cases (Silva et al., 2014b; Látalova, 2012). Similar to the original validation study of the scale, the present study used a heterogeneous sample of patients in their various affective states (mania, depression and euthymia), and also at various levels of severity (measured by CGI-BP).

A comparison was made between the ISAD-BR and the insight items of the YMRS and HAM-D scales. The total ISAD-BR score and subscale scores correlated positively with item 11 of the YMRS, but not with the item 17 the HAM-D. This correlation between the ISAD and the item of insight from the YMRS was also observed in the validation study of the original scale (Olaya et al., 2012), suggesting the convergent validity of ISAD-BR. Unlike the present study, the validation study of the original scale found a positive correlation between the ISAD and item 17 of the HAM-D. One potential reason for this discrepancy is that a larger proportion of the sample studied by Olaya and colleagues had type II bipolar disorder, which may have led to more frequent depressive symptoms than in the current study.

One limitation of the current study refers to the size of the sample investigated, with large samples typically being recommended for studies using factor analysis. Nevertheless, the number of cases per item is within recommended ranges (Bryant and Yarnold, 1995; De Winter et al., 2009). In addition, it has been noted that the issue of sample size in studies using factor analysis, as in other fields of statistics, is influenced by a number of factors (Stevens, 2002). In particular, in the case of our sample communalities were high and the KMO was meritorious (Hutcheson and Sofroniou, 1999), suggesting that our sample was of adequate size to run the analysis, which was confirmed by the well-defined structure of the factor matrix.

## 5. Conclusions

The ISAD-BR has good internal consistency and good inter-rater reliability, which supports its validity. This version will allow for other studies to be conducted looking in greater detail at the insight of individuals in our culture who have bipolar disorder. The factor analysis showed that the items of awareness about symptoms covering activity/energy explained most of the variance of the scale, with better explanatory power in relation to the total score. This may suggest that activity and energy levels are central symptoms to understand insight and cognitive disturbance in bipolar disorder.

## Conflict of interest

No conflict declared.

**Role of funding source**

Nothing declared.

**Acknowledgments**

There are no acknowledgments.

**Appendix A***Escala de consciência de morbidade para transtornos afetivos (do humor)*

Indique o escore apropriado com um X: 0=não pode ser avaliado ou item não relevante; 1=consciência; 3=consciência moderada; 5=sem consciência.

0 1 2 3 4 5

- 1 Consciência de sofrer de um transtorno afetivo (do humor).
- 2 Consciência da eficácia do tratamento para os sintomas atuais ou para prevenir recidivas.
- 3 Consciência das consequências da doença sobre o trabalho, família e vida social.
- 4 Consciência de apresentar humor deprimido/expansivo ou irritável (conforme apropriado).
- Consciência de apresentar acentuado(a) aumento/redução de atividades prazerosas (conforme apropriado).
- Consciência de apresentar ganho/perda significativo(a) de peso (conforme apropriado).
- Consciência de apresentar insônia ou hipersonia (conforme apropriado).
- Consciência de apresentar alentecimento ou agitação psicomotor(a) (conforme apropriado).
- Consciência de apresentar fadiga ou excesso de energia.
- Consciência de apresentar sentimentos de inutilidade ou culpa, ou autoestima aumentada ou grandiosidade.
- Consciência de apresentar lentidão da fala ou verborragia/tagarelice (conforme apropriado).
- Consciência de apresentar bradipsiquismo/fuga de idéias (conforme apropriado).
- Consciência de apresentar baixo nível de atenção/distração.
- Consciência de apresentar aparência desleixada.
- Consciência de apresentar sintomas de confusão-desorientação.
- Consciência de ter relações sociais pobres.
- Consciência de apresentar delírios e alucinações (conforme apropriado)

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