

## **Comment on “Factor structure of the Rutter Teacher Questionnaire in Portuguese children”**

### **Comentário sobre “Estrutura fatorial do Questionário de Rutter para Professores numa amostra de crianças portuguesas”**

Dear Editor,

Factor analysis (FA) is a statistical procedure widely used in psychological research, especially in evaluating latent variables. Despite its widespread popularity, in our milieu FA has an incipient use. FA is consistent with data reduction, as to determine the number and nature of factors represented by a pool of items and their correlation. Each factor captures items of the questionnaire with a similar pattern of variation among the studied individuals,

hence having a probable common cause; for example, symptoms of depression. FA allows establishing which items belong to each factor and its influence on the construct that is being assessed with the test.<sup>1</sup> Therefore, it is important to conduct FA before the Cronbach's alpha test (method concerned about the homogeneity of the scale items -internal consistency), because the latter assumes that there are correlations between items of the test.

Psychometrically tested instruments can add information for a more precise clinical judgment. When an instrument is adapted for another culture, it is crucial to re-test its factorial structure as it may vary, and results could become imprecise. In this regard, the article by Pereira et al. entitled “Factor structure of the Rutter Teacher Questionnaire in Portuguese children”, which examined psychometric properties of this Questionnaire (Rutter B2), is timely.<sup>2</sup> They found good psychometric properties, conducting both FA and internal consistency, assuring reliability. However, comparing to original and other versions, some items were associated with different factors and all three factors explained just 38.88% of the total variance.<sup>2</sup>

One can say that Pereira et al. could have found more expressive results if they had based some of the FA methodological steps on recent recommendations.<sup>1,3,4</sup> FA was conducted using the Kaiser criteria (K1) and the scree test for determining the number of factors to retain. There is robust evidence that K1 overestimates the number of factors, because factor retention is based on an arbitrary rule (eigenvalues greater than 1).<sup>1,4,5</sup> Scree test, which involves examining the plot of the eigenvalues for breaks or bends, may work better than K1,<sup>3</sup> mainly with strong factors, nevertheless it can show variation in interrater reliability, because the decision is subjective.<sup>1,3-5</sup> Recently, several studies that compared methods of factor retention have been evaluated. Parallel analyses (PA) are based on a FA with random data similar to the original test, and resulted factors with eigenvalues lower than the delivered through the PA are not considered. There is evidence that PA is one of the most accurate methods,<sup>4,6</sup> being scree test used as an adjunct, but not by itself.<sup>1,4,5</sup>

Of note also, Pereira et al. have chosen to use varimax (orthogonal) rotation, the most common choice, but this kind of rotation is based on the supposition of non-correlation among the factors. In social sciences, however, some correlation among factors is expected, therefore the orthogonal rotation can lose valuable information.<sup>1,3</sup> Oblique rotation examines the pattern matrix for the loadings of the factor/items and the factors of the correlation matrix, revealing any correlation between factors, and consequently could offer a more accurate and reproducible solution.<sup>1,3</sup>

Each of these issues has a deep effect on the factor structure result. Aiming at contributing to better solutions using FA for

the factor structure of the Rutter B2, authors could consider the discussed issues. Despite the restrictions of FA for the use of linear equations to represent psychological phenomena, this method continues as an important tool to assess construct validity.

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## Disclosures

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Érico de Moura Silveira Júnior	HCPA	CAPES	-	-	-	-	-
Simone Hauck	HCPA	-	-	-	-	-	-

\* Modest

\*\* Significant

\*\*\* 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: HCPA = Hospital de Clínicas de Porto Alegre; CAPES= Coordenação de Aperfeiçoamento de Pessoal de Nível Superior.

For more information, see Instructions for authors.

## References

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