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Original article

Factor structure and cultural factors of disruptive behaviour disorders symptoms in Italian children

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Abstract

Objective: Poor parent and teacher awareness for attention-deficit/hyperactivity disorder (ADHD) and the scepticism of many clinicians on the prevalence of the disorder, make Italy an interesting environment in which to verify neuropsychological constructs generated in a predominantly Northern American cultural contest. The aim of the study was to verify, by factor confirmatory analysis, the empirical validity of the DSM constructs underlying the diagnostic criteria for developmental disruptive behaviour disorders in Italian school-age children.

Methods: Scores for DSM-IV inattention and hyperactivity/impulsivity, for oppositional defiant disorder (ODD) and for conduct disorder (CD) symptoms in 6–12 years old Italian children were analysed from 1575 parent and 1085 teacher forms of the disruptive behaviour disorders questionnaires collected in four different Italian regions.

Results: Reliability indicates high internal consistencies for both parent and teacher rating of inattention, hyperactivity/impulsivity, and oppositionality, but not for conduct problems. In accordance with the literature, a relatively low inter-rater convergent and discriminant validity correlation was observed comparing measures obtained by between parents and teachers. Confirmatory factor analysis of both parent and teacher data showed a better fit for a four-factor model, indicating a factor structure in accordance with the DSM-IV taxonomy. When completed by parents and teachers of clinically assessed ADHD, dyslexic or normal children, the disruptive behavioural disorder questionnaires showed a significant predictive diagnostic value.

Conclusion: Although an informant variance higher that dimensional (trait) variance was observed, the study provides support for DSM-IV taxonomy for developmental disruptive disorders, showing construct validity of ADHD. ODD and CD could also be distinguished from each other.

Keywords: ADHD; Disruptive behaviours; Rating scales; Confirmatory factor analysis

1. Introduction

Attention-deficit/hyperactivity disorder (ADHD) is one of many labels applied to one of the most prevalent conditions in child psychiatry, and, undoubtedly, the most controversial. Epidemiological studies in the United States suggest that the prevalence of ADHD in school age children is approximately 3–7% [28], a figure consistent with studies in a number of other countries [45]. Outside Northern America, however, the disorder is more controversial. Despite increasing worldwide awareness and recognition of the disorder, several clinicians in Europe and elsewhere have continued to view ADHD with skepticism, and to question whether significant numbers of children suffer from the disorder and whether it truly warrants specific treatment.

In Italy, neither methylphenidate nor dextroamphetamine are available on the market, although the former can be imported after formal approval by the National Ministry of Public Health and dispensed by Hospital Pharmacy after obtaining written informed consent by the parents. These restrictions on the availability of psychostimulants, the low

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acceptance of the concept of comorbidity (formulation of multiple diagnosis) and the psychodynamic–psychoanalytical education of professionals, have led to the frequent formulation of the only comorbid diagnosis or to non-committal labels such as "developmental difficulties" or "problem child" [16]. Different cultural values and social attitudes, however, may have induced higher social acceptance of mild to moderate forms of ADHD compared to Northern America or Northern Europe [15,29,49].

To date, no extensive epidemiological studies on ADHD have been carried out in Italy. A few school-based surveys suggest a comparable prevalence of hyperactivity and inattention to that reported in Northern Europe or the United States [16,36]. These surveys, however, have been carried out using only a single informant such as the teacher, and in specific regions of Italy. It should be taken into account that no specific instruments for ADHD validated with Italian psychometric norms are currently available: arbitrary cut-off or Northern American norms are currently used to assess child behaviour [10,16,31]. For all these reasons, in Italy awareness of the disruptive behavioural disorders (DBDs), identified by categorical criteria is extremely low in a significant portion of clinicians and in the majority of parents. Thus, the country represents an interesting environment in which to verify neuropsychological constructs mainly generated in a Northern American cultural context.

The main aim of the present study was to verify by factor confirmatory analysis, using three different factorial models, the empirical validity of the DSM constructs underlying the diagnostic criteria for developmental disruptive behaviour disorders in Italian school-age children. The study also generated operating characteristics for DSM-IV inattention and hyperactivity/impulsivity, as well as for oppositional defiant disorder (ODD) and conduct disorder (CD) symptoms such as descriptive scores of both parent and teacher, specific for age and gender groups as well as measures of the sensitivity and specificity of the questionnaires.

2. Subjects and methods

2.1. Material

The DBD rating scale contains four scales (including 42 items) and has been translated from the original US version [38,39] into Italian (using two-ways back-translation). The inattention (nine items) and hyperactivity/impulsivity (nine items) scales are composed of the DSM-IV items for ADHD. The other two scales are composed of the DSM-IV items for ODD (eight items) and for CD (15 items), respectively. Items were rated on a four-point scale ranging from 0 (not at all applicable), to 3 (greatly applicable). Details of normative data and percentile are reported elsewhere [32,33]: according to the minimum number of symptoms required by DSM-IV for ADHD, ODD or CD, in the present study "categorical" cut-off were six out of nine symptoms with score of 2 or higher for inattention and hyperactivity/impulsivity, 4/8 for ODD, 3/15 for CD.

2.2. Confirmatory factor analysis

In the DSM-IV, a four-factor model underlies the taxonomy of the disruptive behaviour disorders: a distinction is made between symptoms of inattention, hyperactivity/impulsivity, ODD and CD. To examine to what extent the factor structure of the DBD converges with this four-factor model, confirmatory factor analysis (CFA) was employed. CFA is aimed at testing the adequacy of a hypothesised factor structure for a set of variables. In addition to a four-factor model, two other models were examined using CFA: a two-factor model in which ADHD (inattention and hyperactivity/impulsivity) and antisocial behaviour disorders were delineated (ODD and CD), and a one-factor model in which symptoms of ADHD and antisocial behaviour disorders were hypothesised to load on a single factor.

Childhood psychiatric symptoms do not fulfil the factor analytic requirement of normally distributed variable. When variable are skewed and categorical rather than distributed normally the chi-square statistic in maximal likelihood (ML) estimation does not follow the theoretical chi-square distribution. For the present study, polychoric correlation coefficients were calculated: this procedure yielded correlation matrices that were not positive definite, making ML procedures unsuitable. Weighted least squares estimation was considered unsuitable because of the limited sample size. Since other procedures were not suitable, unweighted least squares estimation was used. Analyses were conducted using Lisrel 8 [25].

For each of these models four fit indices were calculated to assess the extent to which the DBD data match each of the three models: the root mean square error of approximation (RMSEA), the root mean square residual (RMR), the goodness-of-fit index (GFI), and finally the comparative fit index (CFI). The lower the value for RMSEA and RMR, the better the fit of a model. For GFI and CFI, smaller values indicate a better fit. CFAs were conducted on parent and teacher data separately. According to Hu and Bentler [24], the following cut-off values were considered appropriate: 0.95 for the CFI, 0.06 for the RMSEA and 0.8 for the standardised root mean square residual (SRMR; equal to RMS when polychoric correlations are used).

In this CFA, cases with a score of 0 on all questions were not excluded from the analysis. However, items for which all cases scored 0 were excluded from the CFA. The rationale for testing three types of models (one-, two- and four-factor model) is the following: a four-factor model is comparable to the DSM-IV nomenclature for disruptive behaviour disorders which distinguishes between ODD, CD and ADHD, with the latter being subdivided in hyperactivity–impulsivity and inattentiveness. In the four-factor model, ODD and CD are distinguished as two separate disorders characterised by antisocial behaviour, whereas hyperactivity–impulsivity and inat-