Maternal ratings of ODD symptoms: Subtypes versus severity in a general community sample of children

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Background and aims: Oppositional Defiant Disorder (ODD) is a common childhood disorder (American Psychiatric Association [APA], 2000; APA, 2013). The aim of the present study was to ascertain the optimal structure for the ODD symptoms by identifying whether ODD is a qualitatively distinct entity (categorical) or is a continuum, with high levels on this continuum reflecting ODD (quantitative or dimensional view).

Methods: Mothers’ ratings of the ODD symptoms of 457 children, aged 3 to 15 years, as presented in the disruptive behavior rating scale were obtained. Confirmatory factor analysis (CFA), latent class analysis (LCA), and factor mixture modelling (FMM) were applied to determine the best model for oppositional defiant disorder (ODD) symptoms in children.

Results: The findings provided most support for a FMM with 3 classes (unaffected odd class, at risk class, and affected class) and 3 factors (oppositional, antagonistic, and negative affect).

Conclusion: The findings are discussed in relation to dimensional, categorical, and hybrid (categorical/dimensional) models of ODD symptoms.

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1. Introduction

Oppositional Defiant Disorder (ODD) is a common childhood disorder [1,2], and refers to a recurrent pattern of negativistic, defiant, disobedient, and hostile behaviors toward authority figures that persists for at least six months [2]. For diagnosis, the DSM-IV [3] and the DSM-IV-TR [1] included eight ODD symptoms (see Fig. 1 for description of symptoms) organised together under one group, thereby implying support for a unidimensional model for these symptoms. With some minor changes to wordings, the DSM-5 involves the same eight symptoms, but they are placed into three symptom groups: angry/irritable (comprising symptoms for temper, anger, and being touchy), vindictiveness (comprising the symptom for being spiteful), and argumentative/defiant behaviour (comprising symptoms of arguing, annoying, defiance, and blaming). Although the three symptom groups highlighted in the DSM-5 hint at the possibility that ODD might be multidimensional, it is still viewed in unidimensional and categorical terms, with the disorder being either present or absent, based on the presence of at least four of any of the eight symptoms, and functional impairment.

1.1. Categorical versus dimensional perspectives of ODD symptoms

While severity of ODD is considered in the DSM-5, this is viewed in terms of the number of settings in which the ODD symptoms are present. Mild severity of ODD is inferred when the symptoms are present in only one setting, while moderate (and severe) levels are inferred when ODD symptoms are present in two (or three or more) settings. There is, however, strong evidence that, even within the same setting, individuals have a high degree of heterogeneity with regard to their manifested ODD symptoms [4–6]. This raises questions about how best to characterize the latent structure of ODD. The central question is whether ODD is a qualitatively distinct entity (categorical) or is a continuum, with high levels on this continuum reflecting ODD (quantitative or dimensional view). Although arguments about the latent structure of ODD have often been framed in terms of whether it is categorical or dimensional, it is conceivable that ODD may have a categorical latent structure (i.e., types or categories) with varying levels of severity within the categories (dimensional). Understanding the latent structure of ODD symptoms is important as it has implications for refining the...
diagnostic criteria for ODD and for developing better measures for assessing ODD. Such knowledge can, in turn, contribute to better treatment and understanding of the aetiology of ODD.

1.2. Examining categorical, dimensional, and categorical/dimensional models for a measure

Generally, factor analysis (FA) and latent class analysis (LCA) can be used to explore quantitatively and qualitatively latent models, respectively. FA, which is based on the common factor model, can be viewed as representing a set of regression equations in which the relevant observed items are regressed onto a latent factor. This means that the latent factor captures the shared variances of the relevant observed indicators. The scores in such factors are assumed to be continuous, and thus reflect different levels of severity of the construct being measured. LCA postulates discrete latent variables defining class membership that explain the covariance among observed indicators. Individuals are grouped into their most likely class based on their observed symptoms. As such, individuals within a class are more similar than individuals between different classes. LCA assumes that observed indicators within each class are independent (uncorrelated), and that individuals in a class do not differ systematically in terms of severity. Consequently, LCA can model types or classes, but not severity within classes. The number of categories in the latent variable for class membership, resulting from the LCA, represents the number of different types of the disorder.

A technique called Factor Mixture Modelling (FMM; [7]) combines LCA and FA into a single general model. FMM allows modelling of the underlying latent structure to be simultaneously categorical and dimensional as it is a hybrid of both categorical and continuous latent variable models. The heterogeneity of individuals in a sample is modelled using LCA. Unlike the conventional LCA, which specifies that the observed variables have zero correlations, the observed variables within classes (i.e., types) in the FMM are correlated. These covariations are modelled using FA, and these within-class factors can capture potential severity differences within classes (or types). Therefore, when applied to ODD symptoms, FMM enables these symptoms to be modelled as belonging to different types (categorical), while allowing for differences in symptom severity within each type (dimensional). To date, while there are studies that have used FMM to examine the latent structure of psychological disorders, such as ADHD (e.g., [8–10]), this has not been done for ODD. The current study used latent model procedures that can model the ODD symptoms categorically (i.e., LCA), dimensionally (i.e., CFA), and simultaneously as categorical and dimensional (i.e., FMM), in order to evaluate the structure of the ODD symptoms in a group of children from the general community.

1.3. Latent structure of ODD symptoms using CFA procedures

To date, several factor models and latent class models have been proposed as structural models of ODD. In this respect, the three ODD symptom groups in the DSM-5 correspond to an earlier, a priori,
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