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Original article

The Conners Parent Rating Scale: Psychometric properties in typically developing 4- to 12-year-old Belgian French-speaking children



L'échelle de Conners pour parents : propriétés psychométriques chez des enfants francophones âgés de 4 à 12 ans

C. Catale*, M. Geurten, C. Lejeune, T. Meulemans

Department of psychology: cognition and behavior, neuropsychology unit, university of Liège, boulevard du Rectorat, B33, Sart Tilman, 4000 Liège, Belgium

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ABSTRACT

Introduction. – The Conners Parent Rating Scale – 48 items (CPRS) is one of the most widely used behavioral scales in clinical and research settings with children.

Objective. – The principal aim of this study was to validate the five-factor structure of the French version of the CPRS in 4- to 12-year-old Belgian French-speaking children. Secondly, a sample of children with Attention Deficit and Hyperactivity Disorder (ADHD) was assessed and their ADHD CPRS profile was examined.

Methods. – A total of 382 typically developing children from 4 to 12 years old were included in this study. Furthermore, 15 children (aged 6 to 12 years old) diagnosed with ADHD participated in this study.

Results. – Confirmatory factor analysis shows that the CPRS presents good psychometric properties and has a factor structure similar to the original version. Furthermore, the CPRS shows high rates of sensitivity and specificity when the ADHD and control group scores are compared.

Conclusions. – This study confirms the original five-factor structure of the CPRS when used with French-speaking children. Our results highlight the fact that the CPRS is a reliable measure of parental perception of their children's disruptive behaviors, and encourage the use of culturally adapted normative data for 4- to 12-year-old children.

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R É S U M É

Introduction. – L'échelle de Conners à 48 items est une des échelles les plus souvent utilisées en clinique et en recherche.

Objectifs et méthode. – L'objectif principal de cette étude est de valider la structure factorielle de la version francophone de cette échelle dans une population d'enfants belges âgés de 4 à 12 ans. Un échantillon d'enfants présentant un trouble déficitaire de l'attention avec/sans hyperactivité a également été évalué dans le cadre de cette étude.

Résultats et conclusion. – Les analyses factorielles confirmatoires montrent que l'échelle de Conners présente de bonnes qualités psychométriques et une structure factorielle similaire à celle observée dans la version originale. De plus, l'échelle de Conners montre de hauts taux de sensibilité et de spécificité dans la distinction des enfants avec trouble de l'attention de leurs pairs sans troubles attentionnels.

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1. Introduction

Behavioral, cognitive and emotional disturbances are reported in numerous developmental or acquired disorders arising during childhood such as attention deficit and hyperactivity disorder (ADHD), traumatic brain injury, and autism (e.g., Anastopoulos et al., 2011; Hurley & Taber, 2002; Simonoff et al., 2008).

* Corresponding author.

E-mail address: corinne.catale@ulg.ac.be (C. Catale).

One common way of obtaining an everyday picture of these disturbances is to use inventories that describe behaviors involving specific cognitive processes such as executive functions (e.g., the Childhood Executive Functioning Inventory – CHEXI; [Thorell & Nyberg, 2008](#)) or specific emotional dimensions such as anxiety (e.g., State Trait Anxiety Inventory for Children – STAI-C; [Spielberger, 1973](#)). However, with the purpose of doing more wide-ranging screening, other questionnaires have been formulated to provide global inventories that assess both cognitive and emotional behaviors. The best-known questionnaires of this kind are the Child Behaviour Checklist (CBCL; [Achenbach & Rescorla, 2001](#)) and the Conners Rating Scales (CRS; [Conners, 1970](#)); both questionnaires aim to document specific problematic behaviors in children with developmental disorders.

The Conners Parent Rating Scale (CPRS) and its different versions ([Conners, 1970](#); [Conners, Sitarenios, Parker, & Epstein, 1998a](#); [Goyette, Conners, & Ulrich, 1978](#)) are principally intended to be used as clinical and research tools with children suffering from neurodevelopmental disorders, and particularly ADHD. The Conners Rating Scale (CRS) has been used successfully by numerous practitioners and multiple versions have been created for the assessment of children (including parent and teacher forms, see the Conners Rating Scales-Revised, CRS-R; [Conners et al., 1998a](#)), adolescents (the Conners-Wells Adolescent Self-Report Scale, CASS-L; [Conners, 1997](#)) and adults (the Conners Adult ADHD Rating Scales – CAARS; [Conners, Erhardt, & Sparrow, 1999](#)).

The first version of the Conners Parent Rating Scale (CPRS-93; [Conners, 1973](#)) included 93 items which assessed problematic behavior in children within 25 different areas (e.g., peer relationships, temper, sleep disturbances, etc.) in order to identify “hyperkinetic” children and to analyze the effectiveness of drug treatments.

In 1978, [Goyette et al. \(1978\)](#) have examined the psychometric properties of an abridged 48-item version (CPRS-48). This scale was shortened and reworded in order to simplify administration and interpretation. In their study, [Goyette et al. \(1978\)](#) had selected a sample of 570 3–17 years old children (representing 277 families) living in Pittsburgh. Using exploratory factorial analysis with varimax rotation, [Goyette et al. \(1978\)](#) obtained a five-factor structure including only items that loaded on each factor for both parents. This shorter rating form provides a qualitative and quantitative (based on normative data) picture of children’s emotions and behavior, based on five subscales assessing:

- Conduct Problems;
- Learning Problems;
- Psychosomatic;
- Impulsive-Hyperactive;
- and Anxiety.

In addition to these scales, the CPRS-48 allows for another factor: the Hyperactivity Index (HI), which includes the 10 items that are considered to be the most sensitive to treatment effects. The HI index (also used as a single scale, the Conners Abbreviated Symptom Questionnaire – ASQ) can be viewed as an overall measure of psychopathology ([Conners, 1989](#)). Coefficients of congruence were calculated in order to compare the CPRS-48 and the CPRS-93 for identical or similar items between the scales. The coefficients ranged between .63 (learning problems) to .94 (conduct problem). Interrater reliability among factor scores showed significant correlations ranging from .46 to .57.

Later, [Conners \(1997\)](#) revised the CPRS (CPRS-R), notably by focusing the revised scales on behaviors directly linked to ADHD and its associated behaviors and by updating item content with regard to the recent theoretical advances concerning ADHD. More

recently, a newer revision of the scale, the Conners 3rd Edition, has been developed ([Conners, 2008](#)).

From a psychometric point of view, factor analysis studies of the different versions of the CPRS have suggested some differences in the structure of the scale depending on the kind of population, for example clinical versus typically developing children, or the type of scale used ([Cohen, DuRant, & Cook, 1988](#); [Kumar & Steer, 2003](#); [O’Connor, Foch, Sherry, & Plomin, 1980](#)). The psychometric properties of these versions are generally acceptable, with good reliability ([Glow, Glow, & Rump, 1982](#)) and satisfactory convergent validity with other cognitive tasks or scales (e.g., [Schaughency & Fagot, 1993](#); [Weissberg, Ruff, & Lawson, 1990](#)). From a clinical point of view, although it has been noted that the different versions of the original CRS show little validity in discriminating among psychiatric disorders ([Gianarris, Golden, & Greene, 2001](#)), they are of interest in providing a behavioral picture of clinical populations such as intellectually disabled children diagnosed with ADHD symptoms ([Handen, McAuliffe, Janosky, Feldman, & Breaux, 1994](#)) or in allowing for a useful profile comparison of typically developing children and children with genetic or neurodevelopmental disorders such as Fragile X ([Lachiewicz & Dawson, 1994](#)), very low birth weight ([Zelkowitz, Papageorgiou, Zelazo, & Weiss, 1995](#)), and ADHD ([Conners et al., 1998a](#); [Gau, Soong, Chiu, & Tsai, 2006](#)). The scale also helps to differentiate ADHD subtypes, although for this purpose, multi-method evaluations must also be included to achieve a better identification ([Hale, How, Dewitt, & Coury, 2001](#)).

To date, the different versions of the CPRS have been translated (or adapted) into several languages including French (CPRS; [Dugas, Albert, Halfon, & Nedey-Sayag, 1987](#)), Turkish (CPRS; [Dereboy, Şenol, Şener, & Dereboy, 2007](#)), Bengali dialect (CPRS; [Pal, Chaudhury, Das, & Sengupta, 1999](#)), and Chinese (CPRS-R; [Gau et al., 2006](#)). However, culturally adapted normative data are still lacking and this is particularly true of the French adaptations of the Conners scales (including the CPRS, but also the CPRS-R and the Conners 3rd Edition).

Currently, the CPRS-48 remains the most widely used and recommended scale in clinical setting in French-speaking European countries (for a presentation of the French adaptation of the 48-item version of this scale, see [Wodon, 2008](#)), which is probably explained by its ease and rapidity of completion. Furthermore, the French version as well as the English version of the CPRS-48 is also widely used in several recent studies with typically developing children or children with developmental or acquired disorders (e.g., [Catale, Marique, Closset, & Meulemans, 2009](#); [Lejeune, Catale, Willems, & Meulemans, 2013](#); [Shaw et al., 2011](#)) which highlights its usefulness in research with developmental typically and atypically population.

However, to our knowledge, the factor structure of this French adaptation has never been verified through adequate statistical analyses such as exploratory or confirmatory factor analyses ([Deplus, 2007](#)). Furthermore, normative data for French-speaking European countries do not exist for this adaptation. Consequently, several authors (e.g., [Wodon, 2008](#)) suggest using the normative data from the study by [Goyette et al. \(1978\)](#). If their relevance for French-speaking populations is not confirmed, this could be problematic for two main reasons. Considering that normative data describe typical behaviors or attitudes in a specific population at a precise place and time, we can question the relevance of using the 34-year-old normative data from [Goyette et al. \(1978\)](#) in assessing children without considering the period’s influence on children’s behavior (including changes in politics and the economy, the family environment, and multimedia since 1978). Secondly, these normative data come from the United States and should be used with caution in a French-speaking European culture. This latter point is particularly challenging considering that some cultural differences

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