

# ADHD Stimulant Response. Clinical Prediction Research

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## Introduction

Methylphenidate therapy is considered first-line drugs for ADHD. Currently there are no methods available to predict which patients will respond.

## Objective

In the present study we investigated whether an indicator of clinical response to methylphenidate could be developed for children with ADHD, using psychopathological, cognitive and social measures.

## Method

77 children with ADHD were included between 5 and 14 years old with no history of medication and without psychiatric comorbidity. It was an open study in which all patients were treated with MPH for 4 weeks. Response criteria chosen a priori consisted of (1) *Clinical Global Impression Severity Scale* <3 and (2) *Children's Global Assessment Scale* >70 at 4 weeks. Of 77 subjects, 52 were classified as good responders (67.5%) and 25 patients (32.5%) and non-responders to MPH. Clinical variables were assessed using questionnaires completed by parents as *The Child Behavior Checklist* and *Conner's Parent Rating Scale*. Neurophysiological test used for measure cognitive variables were *Wechsler Intelligence Scale for Children* and *Conners' Continuous Performance Test*. Social variables were assessed age, genere, schooling, divorced parents, adopted children, immigrants children, institutionalization.

## Results

By regression analysis multivariate to the prediction of clinical response to MPH is obtained that the most important psychopathological variables to classify were anxiety disorders (OR = 6.36; p = 0.016), aggression (OR = 5.50; p = 0.024), externalizing problems (OR = 5.50; p = 0.024), total problems (OR = 3.96; p = 0.046) and severe dysregulation (OR = 4.12; p = 0.048) obtained in the *Child Behavior Checklist*. The presence "Pouts and sulks" symptom (OR = 6.56; p = 0.015) and the simultaneity of the three symptoms of severe emotional lability (OR = 6.96; p = 0.013) in the *Conner's Parent Rating Scale* were significantly associated with poor response to MPH.

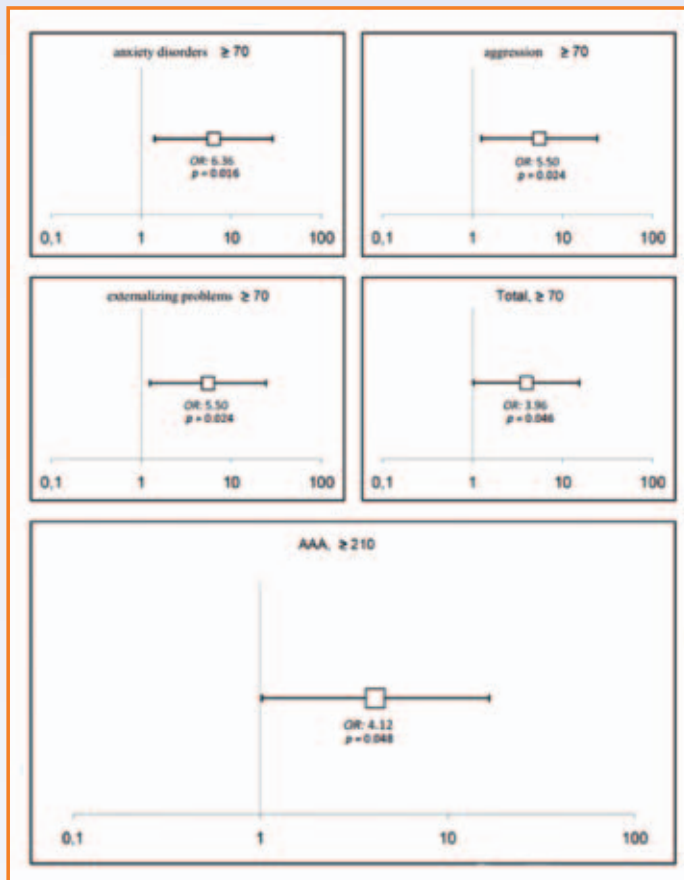
The age and the institutionalization were significantly associated with poor response to MPH. Regarding cognitive variables, mean baseline scores did not show significantly differences between good response group and poor response group. Furthermore, *Conners' Continuous Performance Test* did not show significantly differences in both groups.

This study suggests that the prediction of response to MPH in children with ADHD, it is an encouraging step towards the search for a reliable and clinically useful method to reduce the number of children exposed to MPH unnecessarily.

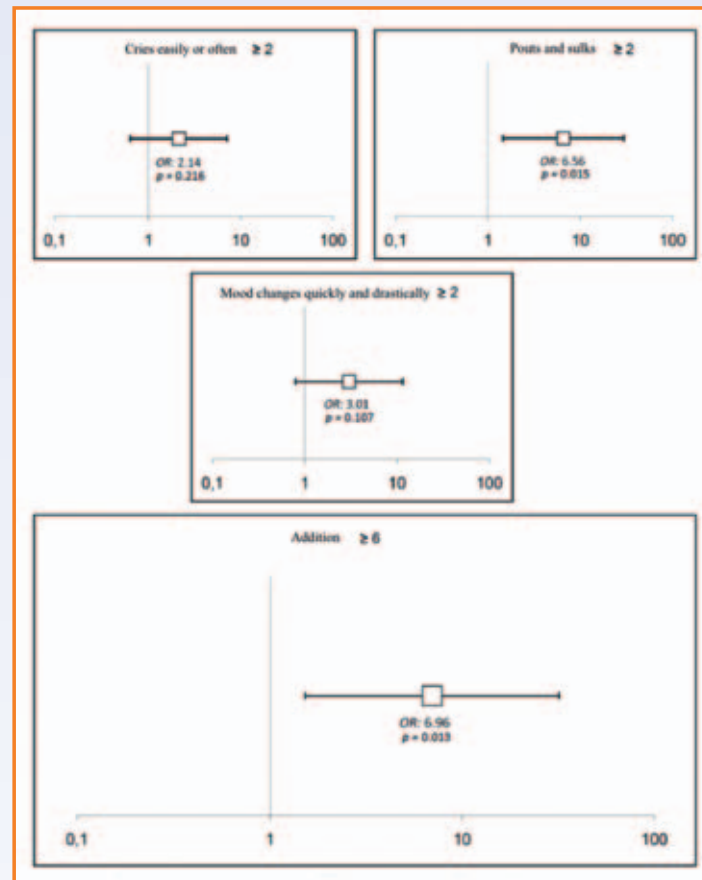
## Sociodemographic variables evaluated in baseline depending on response to MPH (n = 77)

Variable	Good Response (n = 52)		Poor Response (n = 25)		p*	Cohen's d'
	Mean (SD)	(%)	Mean (SD)	(%)		
Age	9,27 (2,46)	-	7,76 (1,51)	-	<0,01	0,739
Gender ♂		76,9		76	0,93	-
Schooling, yes		100		100	-	-
Divorced parents, yes		15,4		24	0,36	-
Adopted, yes		5,8		16	0,14	-
Immigrants, yes		15,4		28	0,19	-
Institutionalization, yes		0		8	0,04	-

\* T-test for quantitative variables in two independent samples.  
χ<sup>2</sup> test for qualitative variables.



Odds Ratio CBCL graphic representation in logarithmic scale including the variables: Anxiety disorders, Aggression, Externalizing problems, Total and CBCL AAA ≥210. Multivariate model adjusted by gender, Total Intellectual Capacity, MPH dose, adoption, immigration and institutionalization.



Odds Ratio CPRS graphic representation in logarithmic scale including the variables: Cries easily or often (item 7), Pouts and sulks (item 21), Mood changes quickly and drastically and severe emotional lability symptoms: Addition item 7+item 21+item 33. Multivariate model adjusted by gender, Total Intellectual Capacity, MPH dose, adoption, immigration and institutionalization.

## Conclusions

The effectiveness of MPH treatment decrease in ADHD children with emotion dysregulation based on parent-reported problems in *The Child Behavior Checklist* and emotional lability in the *Conners' Parent Rating Scale*. Furthermore, the study shows that MPH treatment is less effective with early childhood and with institutionalization background.

**Clinical Implications:** This study shows evidence that children with ADHD and Emotional Dysregulation exhibit poor response to MPH. Additionally; it supports the idea that a dimensional diagnostic process can help to determine MPH response. Furthermore, the age is considered as a predictor of treatment response.

It suggests that the prediction of response to MPH in children with ADHD, it is an encouraging step towards the search for a reliable and clinically useful method to reduce the number of children exposed to MPH unnecessarily.

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