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# Suspicion of ADHD by teachers in relation to their perception of students' cognitive capacities: do cognitively strong students escape verdict?

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#### **ABSTRACT**

Teachers play a crucial role in the diagnostic process of Attention-Deficit/Hyperactivity Disorder (ADHD) in students: They are often the first to identify ADHD-related behaviors in children and to signal them to parents. Research has demonstrated that the recognition and labeling of certain behaviors as evidential for ADHD by teachers vary with respect to student characteristics. This study examines if and how the association between teacher perception of students' ADHD-related behaviors and teacher suspicion of ADHD in students is moderated by teacher perception of students' cognitive capacities. Multilevel analysis was carried out on data collected in 2017 and 2018 from 939 students and 108 teachers in 15 Flemish (Belgium) and 16 Québec (Canada) schools in the context of a collaborative research project on ADHD-prevalence and identification. Results show that, when teachers perceive ADHD-related behaviors in students, they more readily suspect ADHD when students are cognitively stronger. This study suggests that teachers are more inclined to free cognitively stronger students from the blame of ADHD-related behaviors by administering them an ADHD-label.

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#### **KEYWORDS**

Suspicion of ADHD; differential labeling; cognitive capacities

#### Introduction

Teachers are often the first to identify behaviors related to Attention-Deficit/Hyperactivity Disorder (ADHD) in children and to signal them to parents (Fabiano et al. 2013; Sayal et al. 2006; Sax and Kautz 2003; Snider, Busch, and Arrowood 2003). They occupy a unique observational position in which they have the opportunity to constantly compare a student's behavior to the behavior of other students in the classroom (Elder 2010; Salmon and Kirby 2009). This position, according to research, allows teachers to take on an informal role as 'disease-spotters' (Phillips 2006). Therefore, teachers and other school staff are mandated to screen for potential behavioral and academic problems in their students (Singh 2006). Furthermore, teachers play a crucial part in the diagnostic

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process of ADHD in students: They are often asked by medical practitioners to fill out ADHD behavioral ratings regarding a student (American Psychiatric Association 2013; Narad et al. 2015).

The diagnostic process of ADHD as a whole is largely based on subjective assessments of student behavior by teachers and parents (Groenewald, Emond, and Sayal 2009; Gualtieri and Johnson 2005; Sayal, Letch, and Abd 2008). This subjectivity is evident on two accounts: (a) the low agreement between parent and teacher ratings regarding the presence of ADHD-related behaviors in children (Antrop et al. 2002; Gomez 2007; Hartman et al. 2007; Murray et al. 2007; Wolraich et al. 2004) and (b) the selectivity with which teachers would suspect ADHD in some students, but not in others, depending on student, teacher, class, and school characteristics (Bokhari and Schneider 2011; DuPaul et al. 2014; Glass and Wegar 2000; Mashburn et al. 2006; Schneider and Eisenberg 2006). This study aims to contribute to the research on teacher selectivity in labeling students with ADHD by considering the effect of teacher perception of students' cognitive capacities on the probability that teachers will label students with ADHD. More precisely, the effect of teacher perception of a student's cognitive capacities on the relationship between teacher perception of ADHD-related behaviors in a student and the actual suspicion of ADHD being present in a student is examined.

In prior research, teacher selectivity in ratings of ADHD-related behaviors in students, but also in suspicion of ADHD by teachers and student referral for ADHD, became apparent in gender differences. Research demonstrated that teachers were more likely to perceive hyperactive and inattentive behaviors in boys than in girls (Anastopoulos et al. 2018; DuPaul et al. 2014; Gershon 2002). Other student characteristics that were related to teacher perception and actions were students' age and socioeconomic status. A student's birth month, relative to the region-specific school cutoff date, influenced teachers' assessment of the presence of ADHD-related behaviors in students: Teachers observed more ADHD-related behaviors in students who were younger compared to their classmates (DuPaul et al. 2014; Elder 2010). Furthermore, student socioeconomic status has been shown to be negatively related to teacher reports of ADHD-related behaviors in students (Lawson et al. 2017; Russell et al. 2014).

Research on the topic of teacher selectivity in labeling students with ADHD is highly relevant, since an ADHD-label considerably changes teacher attitudes and teacher perceptions of those students carrying it around, and not in a positive way. Several studies demonstrated that teachers rated students with an ADHD-label significantly less favorably than students without (Anderson et al. 2012; Batzle et al. 2010; Ohan et al. 2011). The ADHD-label elicited a decrease in teachers' confidence about teaching the student and this effect was not countered by teachers' experience with or knowledge about ADHD, on the contrary, as teachers gained experience and knowledge, they developed less favorable emotion regarding the instruction of students with an ADHD-diagnosis or label (Anderson et al. 2012; Ohan et al. 2008). Overall, students with ADHD encounter significantly more difficulties in their educational career than other students (DuPaul and Stoner 2003), which leads them to repeat a grade more often (Fried et al. 2016) and which finally results in a higher chance of school dropout (Fredriksen et al. 2014; Kent et al. 2011).



# **Current study**

The above presented research results have denoted that teachers label students with ADHD, but that this labeling process is selective with regard to student characteristics like gender, age, and socioeconomic status. This study suggests that students' cognitive capacities could be another basis for teacher selectivity in suspicion of ADHD. Research on teacher perception of student cognitive capacities as a relevant antecedent for suspicion of ADHD, is, to the authors' knowledge, non-existent, however, a hypothesis was formulated based on research regarding apparent effects of and intentions behind ADHD-labeling by teachers.

This study hypothesizes that negative teacher perception of cognitive capacities in students who, according to their teacher, also exhibit higher levels of ADHD-related behaviors, will yield a higher probability of these students being suspected of ADHD by their teacher. Two possible explanations support this hypothesis. A first explanation follows from research findings regarding the influence of an ADHD-label on teacher expectations of student academic achievement (cf. Batzle et al. 2010; Eisenberg and Schneider 2007; Metzger 2016; Ohan et al. 2011). Several studies reported a negative association between the ADHD-label and teacher expectations (Ghanizadeh, Bahredar, and Moeini 2006; Ohan et al. 2011), even when researchers controlled for actual academic achievement (Eisenberg and Schneider 2007; Metzger 2016). Furthermore, teachers rated the Intelligence Quotient (IQ) of a student with an ADHD-label significantly lower than when presented with a description of a student without a label (Batzle et al. 2010). This study argues that this relation might be bi-directional: Not only causes the presence of an ADHD-label negative teacher perception of student cognitive capacities, but also vice-versa: When teachers perceive students to be cognitively weak, they will be more inclined to suspect ADHD in case they observe ADHD-related behaviors in these students.

A second explanation is based on the notion of 'blame removal' by labeling a student with ADHD (cf. Pfiffner, Barkley, and DuPaul 2006; Stinnett et al. 2001; Tait 2003; Wienen et al. 2019). Through interviews, Wienen et al. (2019) demonstrated that most teachers mainly see advantages in an ADHD-classification. Teachers labeled students with ADHD in an attempt to explain undesirable behaviors and disappointing academic achievement. They found that the label was helpful, since it removed blame for behavior from students, parents, and teachers and put it with a pathological condition (Tait 2003). When the different actors involved—student, parents, teachers—have dispelled notions of blame, according to researchers, only then there is the possibility of collaboration (Pfiffner, Barkley, and DuPaul 2006; Wienen et al. 2019). This study argues that teachers might be more inclined to alleviate their own blame in teaching students who exhibit ADHD-related behaviors and are cognitively less strong by labeling them with ADHD.

# **Data and methods**

# Data

The data for this study were derived from an international comparative project titled 'Attention-Deficit/Hyperactivity Disorder (ADHD) and psychostimulants intake: The role of school environments in student identification'. The project's main objective was to understand the school, teacher, and student characteristics associated with the

identification of ADHD in students by school actors and the use of pharmacological treatments for ADHD in two distinct school systems in Flanders and Québec. The differences regarding ADHD and schools' student composition between these two regions are noticeable: between-school inequality and school segregation are more prevalent in Flanders than in Québec (Page et al. 1999; Dumay and Dupriez 2008), and, in Flanders, children are diagnosed outside of school settings, while, in Québec, a psychologist with the authority to diagnose children with ADHD is present on school grounds.

Before advancing with the data collection, the research project was approved by the Ethics Committees of the faculty of Political and Social Sciences of Ghent University and the University of Québec in Chicoutimi. Quantitative surveys were filled out on paper or online by parents, teachers, and principals of students in the first, second, and third years of 18 Flemish and 17 Québec primary schools (equivalent to respectively the first, second, and third grade in the US system). The participating schools were randomly selected based on a list of stratified characteristics, such as their socioeconomic composition, location, and size.

An important strength of these data is the information on teacher perception for each student individually. In total, 61 Flemish and 53 Québec teachers filled out the survey, corresponding to a participation rate of respectively 70.11% and 73.61%. The response rate for parents in Flanders was 45.24%, while in Québec response rates were higher, with 66.99% for parents. Finally, the researchers collected information about 1046 students (534 Flemish and 512 Québec) from both the teacher and the parents. For this study and analyses specifically, the data of 939 students (520 Flemish and 419 Québec) were used, namely the data of the students who had a valid, non-missing value on suspicion for ADHD. This subsample of the data consisted of 15 Flemish and 16 Québec schools with 57 Flemish and 51 Québec teachers.

#### Design

The most fitting statistical method for this study was multilevel modeling methods (HLM7), since the data were clustered: Firstly, students belonged to a certain class group and thus to a certain teacher and secondly, they were nested within schools. Ignoring the hierarchical nature of the data would result in atomistic fallacy (Diez-Roux 1998). Concretely, to account for the hierarchical nature of the data, a three-level model was created with students at the first level, teachers at the second level, and schools at the third level. Furthermore, given the dichotomy of the outcome variable, Bernoulli models (with robust standard errors) were used.

Only variables at the student and school level were included, as teacher effects were beyond the scope of the current objectives. Information on student characteristics was reported by their parents and teacher. Schools were located within a specific region, Flanders or Québec. The main interest of this paper was not in differences between regions but rather in the process that leads teachers to suspect ADHD in one student and not in another. However, since several studies have demonstrated the existence of regional differences in ADHD-suspicion by teachers (Malacrida 2004; Phillips 2006; Sax and Kautz 2003), the researchers included regional context as a dichotomous control variable at the school level.

The very first step in conducting a multilevel analysis is to estimate the unconditional model to determine the amount of variance that occurs on each level with regard to the

dependent variable. It is not customary to disperse the variance of the outcome into its between and within components when working with Bernoulli models. However, the p-value of the variance components estimated in an unconditional model can give us an indication of the significance of the between-school and between-teacher differences (Frost 2007).

The first model contained student characteristics, obtained via the parents, that have been shown to be related to an ADHD-label: Sex, ethnicity, relative age, educational return, and socioeconomic status (Coles et al. 2012; de Ramírez and Shapiro 2005; DuPaul et al. 2014; Elder 2010; Epstein et al. 2005; Isaksson, Ruchkin, and Lindblad 2020; Sciutto, Nolfi, and Bluhm 2004). The second model included a variable that measures teacher perception of the presence of ADHD-related behaviors in the individual student. The third model tested the hypothesis by examining the influence of perceived cognitive capacities in students on the strength of the association between perceived levels of ADHD-related behaviors and suspicion of ADHD. Hence, the third model included perceived cognitive capacities alongside the interaction between perceived levels of ADHD-related behaviors and perceived cognitive capacities. Furthermore, throughout the analyses, all variables except the dichotomous ones were grand mean centered to increase model stability (Raudenbush and Bryk 2002).

#### **Variables**

# Dependent variable: ADHD-suspicion

Teachers indicated for each student in their class who, to the teacher's knowledge, did not have an official ADHD-diagnosis, if they suspected that this student had ADHD or not. Hence, the dependent variable is a dichotomous variable, where the value 0 stands for the absence of suspicion of ADHD for that student and the value 1 stands for the presence of suspicion of ADHD for that student. Teachers suspected ADHD in 13.1% of their students. In absolute numbers, this means that teachers suspected ADHD in 123 out of 939 students. Descriptive information for each variable is shown in Table 1.

# **Independent variables**

ADHD-related behaviors. To measure the teachers' perception of ADHD-related behaviors in their students, teachers were asked to score on a scale going from 1 (very low) to

Table 1. ADHD-suspicion: descriptives

	Frequency (%) or mean (SD)	N		
Student level variables				
ADHD-suspicion	13.1	939		
ADHD-related behaviors	5.05 (1.93)	938		
Cognitive capacities	3.65 (1.07)	938		
Gender: female students	53.8	935		
Immigrant background	11	907		
Relative age: youngest	27.4	881		
Relative age: other	46.7	881		
Relative age: oldest	26	881		
Low educational return	10.7	863		
Socioeconomic status	23.3 (8.03)	911		
School level variables				
Region: Flanders	48.39	31		

5 (very high) each student on inattention and agitation. Since there were only missings for one student on these variables, for all other students both scores were summed to arrive at one variable that measures ADHD-related behaviors. The highest possible value for this variable was 10. On average, students were assigned a score of 5.05 (SD = 1.93).

Cognitive capacities. Teachers were asked to indicate per student how they evaluated the cognitive capacities of this student. The lowest score a teacher could assign a student regarding his/her cognitive capacities was a score of 1. The highest score of 5 was given to students who were evaluated by their teacher as being among the cognitively strongest students. On average, the cognitive capacities of students were rated 3.65 (SD = 1.07) by their teachers.

Gender. Students' gender was reported by the parents. The sample for this study consisted of 53.8% female students. The female students formed the reference category for this variable. For four students this information was missing.

Immigrant background. Parents were asked to indicate to which ethnic or cultural group(s) they belonged. As is common in Flemish research, only students with roots in non-Western European countries were considered to be of foreign descent (Duquet et al. 2006; Sierens et al. 2006). For Québec, all students whose parents had not indicated that they considered themselves to be Canadian, were counted as having an immigrant background. A dichotomous variable was created (0 = no immigrant background, 1 = immigrant background). Of the students in the sample, 11% had an immigrant background. Information about membership of ethnic or cultural group(s) was missing for 32 students.

Relative age. To control for a possible relative age effect, a categorical variable was created by means of students' birth month as reported by their parents. The youngest students were the students who were born within three months before the cutoff date, which differed for Flanders (December 31) and Québec (September 30). Of the students in the sample, 27.4% were in this category. The oldest students were the students who were born within three months after the cutoff date. This category contained 26% of students. They formed the reference category for this variable. Finally, the students who were born in between these two groups of youngest and oldest students were placed in a residual category. This category had 46.7% of students in the sample. For 58 students, information on the birth month was missing.

**Low educational return.** Parents were asked to indicate if they would say their child was behind, on time, or ahead of the normal curriculum and if they would describe the academic achievement of their child as lower, average, or higher than the other children in the classroom. These two questions were combined into a variable measuring educational return. All children who were said by their parents to achieve below average or to be behind on the normal curriculum were considered to have a low educational return and were assigned a value of 1. Students with an average or high educational return had a value of 0. For 76 students, information for this variable was missing. Of the students in this sample, 10.7% were indicated by their parents as having a low educational return.

Socioeconomic status. Student socioeconomic status was measured by means of a score that was composed of three indicators reported by the parents. The first indicator encompassed the family wealth, which was established according to the number of some home objects (such as televisions, cars, books, etc.). The second indicator was a variable measuring the highest educational level obtained by at least one of the student's parents, from high school to university studies. A third indicator represented the parents' occupation which was measured by the highest score of either parent on the International Standard Classification of Occupations (ISCO), and then converted into the International Socio-Economic Index (ISEI) that measures the socioeconomic status and prestige of occupations (Ganzeboom 2010). For this variable 28 students had a missing value. On average, students had a score of 23.3 (SD = 8.03).

**Region**. The students in this study went to school in the region of Flanders (Belgium) or the region of Québec (Canada). Since it is not appropriate to include the regional context as a separate level because of the low number of regions in this study (Kreft and De Leeuw 1998; Maas and Hox 2005), the region a student went to school in was included as a dichotomous variable at the school level. The Flemish schools in these analyses were assigned a value of 0, while the Québec schools had a value of 1.

### **Results**

The unconditional model (not shown) indicated that it was useful to estimate a model taking into account the variance at the school level ( $\tau_0 = 0.536$ , p < 0.001). At the teacher level, the variance appeared not to be significant ( $\tau_0 = 0.122$ , p = 0.287), however, since keeping this level into the analyses does not entail any statistical violation, the three-level research design was retained. Results of the multilevel models are shown in Table 2. Variables at the student level were added stepwise, as was explained in the design section. The variable at the school level, namely the schools' region, was included in all three models and proved to be significantly related to ADHD-suspicion throughout the analyses: In Québec schools, teachers suspected ADHD in their students significantly more often than in Flemish schools, even when controlled for the variables at the student level included in this study.

In Model 1, student and school control variables were examined. Unsurprisingly and in line with previous research, teachers suspected ADHD more often in boys than in girls (OR = 2.162, p = 0.005, Model 1, Table 2). Students who were said by their parents to achieve below average or to be behind on the regular curriculum had a higher probability of being suspected of ADHD by their teachers (OR = 1.928, p = 0.037) than students with an average or high educational return. Furthermore, student socioeconomic status was negatively related to suspicion of ADHD (OR = 0.966, p = 0.027). Compared to the three-month oldest students, the three-month youngest students and the students who were born in between these two groups had a higher probability of being suspected of ADHD by their teachers (respectively OR = 2.084, p = 0.008 and OR = 2.231, p = 0.047). Finally, there was no significant difference between students with and without an immigrant background (OR = 0.386, p = 0.156).

Model 2 included the perception of teachers of the presence of ADHD-related behaviors in an individual student. Not one student characteristic that was significant in the first model remained significantly related to ADHD-suspicion once the variable for ADHD-related behaviors was included in the analysis. In other words, the introduction of this variable erased all significant effects that were previously observed for the control variables in the first model. Teachers' perception of ADHD-related behaviors in students

Table 2. Correlates of ADHD-suspicion. Results of multilevel analysis, Bernoulli (HLM7).

	Model 1	Model 2	Model 3
Intercept	-3.899 (0.342)	-5.210 (0.439)	-5.235 (0.476)
	0.020***	0.005***	0.005***
	School level		
Region	1.533 (0.266)	2.643 (0.383)	2.599 (0.376)
	4.631***	14.059***	13.451***
	Student level		
Gender	0.771 (0.273)	0.108 (0.329)	0.153 (0.328)
	2.162**	1.114	1.166
lmmigrant background	-0.951 (0.670)	-1.094 (0.626)	-0.970 (0.600)
	0.386	0.334	0.379
Relative age: young (ref: Oldest)	0.734 (0.275)	0.196 (0.274)	0.156 (0.281)
	2.084**	1.216	1.168
Relative age: other (ref: Oldest)	0.802 (0.404)	0.495 (0.417)	0.438 (0.447)
	2.231*	1.640	1.550
Low educational return	0.657 (0.315)	0.231 (0.313)	0.129 (0.209)
	1.928*	1.260	1.138
Socioeconomic status	-0.035 (0.016)	-0.013 (0.020)	-0.008 (0.023)
	0.966*	0.987	0.992
ADHD-related behaviors		1.213 (0.120)	1.255 (0.150)
		3.364***	3.508***
Cognitive capacities			-0.420 (0.238)
			0.657
ADHD-related behaviors*			0.408 (0.175)
Cognitive capacities			1.503*

Note: presented are the (unstandardized) gamma coefficients and odds ratios with the standard errors appearing in parentheses.

had a strong positive relationship with suspicion of ADHD by teachers (OR = 3.364, p <0.001, Model 2, Table 2).

Model 3 included the interaction of teacher perception of students' cognitive capacities with teacher perception of ADHD-related behaviors in students, as well as the main effect of teacher perception of students' cognitive capacities. This model shows a statistically significant interaction effect (OR = 1.503, p = 0.020, Model 3, Table 2). When teachers perceive students as posing ADHD-related behaviors, they are more inclined to suspect ADHD in these students who they also perceive as cognitively stronger. Simple slope analyses in SAS (not shown, but available upon request) showed that, indeed, for every value of teacher perception of cognitive capacities higher than the last value, the coefficient of the slope that represented the relationship between the perception of ADHD-related behaviors and suspicion of ADHD, increased. These findings are in contradiction with the hypothesis. In this third model as well, teacher perceptions of ADHD-related behaviors in individual students had a strong positive relationship with suspicion of ADHD by teachers (OR = 3.508, p < 0.001).

# **Discussion**

Research has highlighted the selectivity with which teachers suspect ADHD in some students, but not in others (Bokhari and Schneider 2011; DuPaul et al. 2014; Glass and Wegar 2000; Mashburn et al. 2006; Schneider and Eisenberg 2006). This study aimed to show that, not only do students' demographic characteristics play a role in the labeling process by teachers, but teacher perception of students' cognitive capacities also has an influence on teacher suspicion of ADHD in their students. This study hypothesized

<sup>\*\*\*</sup> *p* < 0.001; \*\* *p* < 0.01; \* *p* < 0.05.

that negative teacher perception of cognitive capacities in students who, according to their teacher, also exhibit higher levels of ADHD-related behaviors, would yield a higher probability of these students being suspected of ADHD by their teacher. However, an opposite effect was found: When teachers perceive higher levels of ADHD-related behaviors in a student with higher levels of cognitive ability, they are more inclined to suspect ADHD in this student. A process of blame removal may also be at work here. The pathological ADHD-label can be regarded as a way for teachers to discharge brighter students from the blame of ADHD-related behaviors. When teachers perceive a combination of higher levels of ADHD-related behaviors and higher levels of cognitive ability in a student, they will consider this combination to be an incongruence, an irregularity (Pečjak et al. 2009). ADHD then may be perceived by teachers as a logical explanation for the non-conform behavior of a student they otherwise perceive as clever.

This process of 'blame removal' by labeling a student with ADHD has been heavily criticized in philosophical and sociological debates. Researchers have claimed that the reconfiguring of human behavior as a pathology erodes the notions of moral responsibility (Tait 2003; Vehmas 2011). Opponents of the view of ADHD as a purely medical condition have represented the ADHD-label as disengagement from the social responsibility of raising well-behaved children by parents, teachers, and clinicians (Atkinson and Shute 1999; Smelter et al. 1996; Timimi and Taylor 2004). Furthermore, despite removal from blame, research has shown that an ADHD-label does not increase teacher's willingness to implement educational treatment interventions (Huhnstock 2019; Stinnett et al. 2001; Rinka and Axelrod 2015), although not all studies reached similar results (Ohan et al. 2011). Finally, even if in the first place the ADHD-label is handed to a student by a teacher with the best intentions - in trying to find an explanation for certain behaviors without putting blame on the student - research has shown that an ADHD-label does not favor the student who carries it around in the long term with regard to educational outcomes (DuPaul and Stoner 2003; Fredriksen et al. 2014; Fried et al. 2016; Kent et al. 2011).

#### Limitations

Limitations of this study must be discussed. The findings show that a school's region was significantly related to ADHD-suspicion throughout the analyses. This particular result suggests that the mechanism of selective labeling by teachers with regard to their perception of students' cognitive capacities significantly differs from one educational context to another. As such, contextual variables that we have not been able to take into account in this study might nevertheless play a substantial role in teacher suspicion of ADHD in students. For example, research has shown that teachers' understandings of ADHD are important factors in the ADHD-labeling process, since they can be linked to teachers' willingness to label children with ADHD or to refer them for medical assessment (Kos, Richdale, and Hay 2006; McMahon 2012). Furthermore, research in Iceland and the US has demonstrated the role of school funding: When schools get extra funding for children with special educational needs, the pressure to label and diagnose more children increases (Einarsdottir 2008; Morrill 2018). Finally, as a last example of the importance of educational contexts, teacher



management strategies in the classroom have been shown to affect teacher suspicion of ADHD in students: Comparative research has indicated that teachers who are stimulated to and feel comfortable to implement pedagogical management strategies are less inclined to suggest medical treatment to parents when they suspect a child has ADHD (Brault, Degroote, and Van Houtte 2022).

# Implications for research and practice

Future research should further examine the interplay between our findings and different educational contexts as mentioned in the Limitations section. Furthermore, the focus of this study was specifically on the relationship between teacher perception of ADHD-related behaviors and suspicion of ADHD. Although the negative outcomes of carrying around an ADHD-label in school are in no way marginal or negligible, teachers' selectivity in the ADHD-labeling process might generate even bigger consequences for students when teachers decide to signal their observations and suspicion to parents. It is possible that, when teachers perceive a combination of higher levels of ADHD-related behaviors and higher levels of cognitive ability in a student, they will be more inclined to steer parents in the direction of initiating a diagnosis process and maybe even suggest medication, since they will be invested in 'getting the most' out of cognitive strong students and this by eliminating behaviors that do not fit within the idea of an ideal student. Future research should consider the influence of student characteristics in different steps and stages of the ADHD-labeling and diagnostic process.

Finally, we recommend that educational policymakers reflect on opportunities to raise awareness among teachers, parents, and medical practitioners concerning teacher selectivity in suspicion of ADHD. Not only should school staff training address teachers' misperceptions and knowledge of ADHD on the causes, symptoms, and treatments of ADHD, as is advocated by international studies (Ghanizadeh, Bahredar, and Moeini 2006; Perold, Louw, and Kleynhans 2010), teachers should also be made aware of and reflect on the mechanisms behind their labeling practices that were revealed in this study.

#### Conclusion

In conclusion, this study has demonstrated that teacher selectivity in the process of labeling children with ADHD persists and is not only influenced by students' demographic characteristics but also by their cognitive capacities as perceived by their teacher. Concretely, the results showed that, when teachers perceive higher levels of ADHD-related behaviors in a student with higher levels of cognitive ability, they are more inclined to suspect ADHD in this student. These findings underline the importance of insight in the ADHD-labeling process and the role of teachers in this process.

#### Disclosure statement

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# References

American Psychiatric Association. 2013. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Arlington: American Psychiatric Publishing.

Anastopoulos, A. D., K. K. Beal, R. J. Reid, R. Reid, T. J. Power, and G. J. DuPaul. 2018. "Impact of Child and Informant Gender on Parent and Teacher Ratings of Attention-Deficit/Hyperactivity Disorder." *Psychological Assessment* 30 (10): 1390–1394. doi:10.1037/pas0000627

Anderson, D. L., S. E. Watt, W. Noble, and D. C. Shanley. 2012. "Knowledge of Attention Deficit Hyperactivity Disorder (ADHD) and Attitudes Toward Teaching Children with ADHD: The Role of Teaching Experience." *Psychology in the Schools* 49 (6): 511–525. doi:10.1002/pits.21617

Antrop, I., H. Roeyers, J. Oosterlaan, and P. Van Oost. 2002. "Agreement Between Parent and Teacher Ratings of Disruptive Behavior Disorders in Children with Clinically Diagnosed ADHD." *Journal of Psychopathology and Behavioral Assessment* 24 (1): 67–73. doi:10.1023/A:1014057325752



- Atkinson, I., and R. Shute. 1999. "Managing ADHD: Issues in Developing Multidisciplinary Guidelines." Australian Journal of Guidance and Counselling 9 (2): 119-128. doi:10.1017/ S1037291100003976
- Batzle, C. S., L. L. Weyandt, G. M. Janusis, and T. L. DeVietti. 2010. "Potential Impact of ADHD with Stimulant Medication Label on Teacher Expectations," Journal of Attention Disorders 14 (2): 157-166. doi:10.1177/1087054709347178
- Bokhari, F. A., and H. Schneider. 2011. "School Accountability Laws and the Consumption of Psychostimulants." Journal of Health Economics 30 (2): 355–372. doi:10.1016/j.jhealeco.2011. 01.007
- Brault, M. C., E. Degroote, and M. Van Houtte. 2022. "Disparities in the Prevalence of ADHD Diagnoses, Suspicion, and Medication Use between Flanders and Québec from the Lens of the Medicalization Process." PhD diss., Ghent University.
- Coles, E. K., J. Slavec, M. Bernstein, and E. Baroni. 2012. "Exploring the Gender gap in Referrals for Children with ADHD and Other Disruptive Behavior Disorders." Journal of Attention Disorders 16 (2): 101-108. doi:10.1177/1087054710381481
- de Ramírez, R. D., and E. S. Shapiro. 2005. "Effects of Student Ethnicity on Judgments of ADHD Symptoms among Hispanic and White Teachers." School Psychology Quarterly 20 (3): 268-287. doi:10.1521/scpq.2005.20.3.268
- Diez-Roux, A. V. 1998. "Bringing Context Back Into Epidemiology: Variables and Fallacies in Multilevel Analysis." American Journal of Public Health 88 (2): 216-222. doi:10.2105/AJPH.
- Dumay, X., and V. Dupriez. 2008. "Does the School Composition Effect Matter? Evidence from Belgian Data." British Journal of Educational Studies 56 (4): 440-477. doi:10.1111/j.1467-8527.2008.00418.x
- DuPaul, G. J., R. Reid, A. D. Anastopoulos, and T. J. Power. 2014. "Assessing ADHD Symptomatic Behaviors and Functional Impairment in School Settings: Impact of Student and Teacher Characteristics." School Psychology Quarterly 29 (4): 409-421. doi:10.1037/spq0000095
- DuPaul, G. J., and G. Stoner. 2003. ADHD in the Schools: Assessment and Intervention Strategies. 2nd ed. New York: Guilford Press.
- Duquet, N., I. Glorieux, I. Laurijssen, and Y. Van Dorsselaer. 2006. Wit Krijt Schrijft Beter. Schoolloopbanen van Allochtone Jongeren in Beeld. Leuven: Garant.
- Einarsdottir, J. 2008. "Teaching Children with ADHD: Icelandic Early Childhood Teachers' Perspectives." Early Child Development and Care 178 (4): 375-397. doi:10.1080/ 03004430701321696
- Eisenberg, D., and H. Schneider. 2007. "Perceptions of Academic Skills of Children Diagnosed with ADHD." Journal of Attention Disorders 10 (4): 390-397. doi:10.1177/1087054706292105
- Elder, T. E. 2010. "The Importance of Relative Standards in ADHD Diagnoses: Evidence Based on Exact Birth Dates." Journal of Health Economics 29 (5): 641-656. doi:10.1016/j.jhealeco.2010.06.003
- Epstein, J. N., M. Willoughby, E. Y. Valencia, S. T. Tonev, H. B. Abikoff, L. E. Arnold, and S. P. Hinshaw. 2005. "The Role of Children's Ethnicity in the Relationship Between Teacher Ratings of Attention-Deficit/Hyperactivity Disorder and Observed Classroom Behavior." Journal of Consulting and Clinical Psychology 73 (3): 424-434. doi:10.1037/0022-006X.73.3.424
- Fabiano, G. A., W. E. Pelham, A. Majumdar, S. W. Evans, M. J. Manos, D. Caserta, E. L. Girio-Herrera, S. Pisecco, J. N. Hannah, and R. L. Carter. 2013. "Elementary and Middle School Teacher Perceptions of Attention-Deficit/Hyperactivity Disorder Prevalence." Child & Youth Care Forum 42 (2): 87-99. doi:10.1007/s10566-013-9194-1
- Fredriksen, M., A. A. Dahl, E. W. Martinsen, O. Klungsoyr, S. V. Faraone, and D. E. Peleikis. 2014. "Childhood and Persistent ADHD Symptoms Associated with Educational Failure and Long-Term Occupational Disability in Adult ADHD." ADHD Attention Deficit and Hyperactivity Disorders 6 (2): 87–99. doi:10.1007/s12402-014-0126-1
- Fried, R., C. Petty, S. V. Faraone, L. L. Hyder, H. Day, and J. Biederman. 2016. "Is ADHD a Risk Factor for High School Dropout? A Controlled Study." Journal of Attention Disorders 20 (5): 383-389. doi:10.1177/1087054712473180



- Frost, B. F. 2007. "Texas Students' College Expectations: Does High School Racial Composition Matter?" Sociology of Education 80 (1): 43-65. doi:10.1177/003804070708000103
- Ganzeboom, H. B. 2010. "A new International Socio-Economic Index (ISEI) of Occupational Status for the International Standard Classification of Occupation 2008 (ISCO-08) Constructed with Data from the ISSP 2002-2007." Paper presented at the annual conference of the International Social survey programme, Lisbon, May.
- Gershon, J. 2002. "A Meta-Analytic Review of Gender Differences in ADHD." Journal of Attention Disorders 5 (3): 143–154. doi:10.1177/108705470200500302
- Ghanizadeh, A., M. J. Bahredar, and S. R. Moeini. 2006. "Knowledge and Attitudes Towards Attention Deficit Hyperactivity Disorder among Elementary School Teachers." Patient Education and Counseling 63 (1-2): 84-88. doi:10.1016/j.pec.2005.09.002
- Glass, C. S., and K. Wegar. 2000. "Teacher Perceptions of the Incidence and Management of Attention Deficit Hyperactivity Disorder." Education 121 (2): 412-421.
- Gomez, R. 2007. "Australian Parent and Teacher Ratings of the DSM-IV ADHD Symptoms." Journal of Attention Disorders 11 (1): 17-27. doi:10.1177/1087054706295665
- Groenewald, C., A. Emond, and K. Sayal. 2009. "Recognition and Referral of Girls with Attention Deficit Hyperactivity Disorder: Case Vignette Study." Child: Care, Health and Development 35 (6): 767–772. doi:10.1111/j.1365-2214.2009.00984.x
- Gualtieri, C. T., and L. G. Johnson. 2005. "ADHD: Is Objective Diagnosis Possible?" Psychiatry (Edgmont) 2 (11): 44-53.
- Hartman, C. A., S. H. Rhee, E. G. Willcutt, and B. F. Pennington. 2007. "Modeling Rater Disagreement for ADHD: Are Parents or Teachers Biased?" Journal of Abnormal Child Psychology 35 (4): 536-542. doi:10.1007/s10802-007-9110-y
- Huhnstock, S. R. 2019. "Do Labels Matter? Pre-Service Teachers' Acceptability of the Daily Report Card for Students with and Without Attention Deficit/Hyperactivity Disorder." (PhD diss.). University of Wisconsin.
- Isaksson, J., V. Ruchkin, and F. Lindblad. 2020. "Unseen and Stressed? Gender Differences in Parent and Teacher Ratings of ADHD Symptoms and Associations with Perceived Stress in Children with ADHD." Journal of Attention Disorders 24 (11): 1565-1569. doi:10.1177/ 1087054716658381.
- Kent, K. M., W. E. Pelham, B. S. Molina, M. H. Sibley, D. A. Waschbusch, J. Yu, E. M. Gnagy, A. Biswas, D. E. Babinski, and K. M. Karch. 2011. "The Academic Experience of Male High School Students with ADHD." Journal of Abnormal Child Psychology 39 (3): 451-462. doi:10.1007/ s10802-010-9472-4
- Kos, J. M., A. L. Richdale, and D. A. Hay. 2006. "Children with Attention Deficit Hyperactivity Disorder and Their Teachers: A Review of the Literature." International Journal of Disability, Development and Education 53 (2): 147–160. doi:10.1080/10349120600716125
- Kreft, I. G., and J. De Leeuw. 1998. Introducing Multilevel Modeling. London: Sage.
- Lawson, G. M., J. Nissley-Tsiopinis, A. Nahmias, S. H. McConaughy, and R. Eiraldi. 2017. "Do Parent and Teacher Report of ADHD Symptoms in Children Differ by SES and Racial Status?" Journal of Psychopathology and Behavioral Assessment 39 (3): 426-440. doi:10.1007/ s10862-017-9591-0
- Maas, C. J., and J. J. Hox. 2005. "Sufficient Sample Sizes for Multilevel Modeling." Methodology 1 (3): 86-92. doi:10.1027/1614-2241.1.3.86
- Malacrida, C. 2004. "Medicalization, Ambivalence and Social Control: Mothers' Descriptions of Educators and ADD/ADHD." Health: An Interdisciplinary Journal for the Social Study of Health, Illness and Medicine 8 (1): 61-80. doi:10.1177/1363459304038795
- Mashburn, A. J., B. K. Hamre, J. T. Downer, and R. C. Pianta. 2006. "Teacher and Classroom Characteristics Associated with Teachers' Ratings of Prekindergartners' Relationships and Behaviors." Journal of Psychoeducational Assessment 24 (4): 367-380. doi:10.1177/ 0734282906290594
- McMahon, S. E. 2012. "Doctors Diagnose, Teachers Label: The Unexpected in pre-Service Teachers' Talk About Labelling Children with ADHD." International Journal of Inclusive Education 16 (3): 249-264. doi:10.1080/13603116.2010.481799



- Metzger, A. 2016. "The Influence of the ADHD Label on Teacher's Expectations of Academic Achievement." (PhD diss.). University of California Merced.
- Morrill, M. S. 2018. "Special Education Financing and ADHD Medications: A Bitter Pill to Swallow." Journal of Policy Analysis and Management 37 (2): 384-402. doi:10.1002/pam.22055
- Murray, D. W., S. H. Kollins, K. K. Hardy, H. B. Abikoff, I. M. Swanson, C. Cunningham, B. Vitiello, et al. 2007. "Parent Versus Teacher Ratings of Attention-Deficit/Hyperactivity Disorder Symptoms in the Preschoolers with Attention-Deficit/Hyperactivity Disorder Treatment Study (PATS)." Journal of Child and Adolescent Psychopharmacology 17 (5): 605-619. doi:10.1089/cap.2007.0060
- Narad, M. E., A. A. Garner, J. L. Peugh, L. Tamm, T. N. Antonini, K. M. Kingery, J. O. Simon, and J. N. Epstein. 2015. "Parent-Teacher Agreement on ADHD Symptoms Across Development." Psychological Assessment 27 (1): 239-248. doi:10.1037/a0037864
- Ohan, J. L., N. Cormier, S. L. Hepp, T. A. Visser, and M. C. Strain. 2008. "Does Knowledge About Attention-Deficit/Hyperactivity Disorder Impact Teachers' Reported Behaviors and Perceptions?" School Psychology Quarterly 23 (3): 436-449. doi:10.1037/1045-3830.23.3.436
- Ohan, J. L., T. A. Visser, M. C. Strain, and L. Allen. 2011. "Teachers' and Education Students' Perceptions of and Reactions to Children with and Without the Diagnostic Label "ADHD"." Journal of School Psychology 49 (1): 81–105. doi:10.1016/j.jsp.2010.10.001
- Page, M., M. McAndrew, M. Jodoin, and F. Lemire. 1999. "Densite Ethnique et Integration Sociale des Eleves D'origine Immigrante au Quebec." Canadian Ethnic Studies 31 (1): 5-25.
- Pečjak, S., M. Puklek Levpušček, M. Valenčič Zuljan, J. Kalin, and C. Peklaj. 2009. "Students' Social Behaviour in Relation to Their Academic Achievement in Primary and Secondary School: Teacher's Perspective." Psihologijske Teme 18 (1): 55-74.
- Perold, H., C. Louw, and S. Kleynhans. 2010. "Primary School Teachers' Knowledge and Misperceptions of Attention Deficit Hyperactivity Disorder (ADHD)." South African Journal of Education 30 (3): 457-473. doi:10.15700/saje.v30n3a364.
- Pfiffner, L. J., R. A. Barkley, and G. J. DuPaul. 2006. "Treatment of ADHD in School Settings." In Attention Deficit Hyperactivity Disorder: A Handbook for Diagnosis and Treatment. 3rd ed., edited by R. A. Barkley, 547-589. New York: The Guilford Press.
- Phillips, C. B. 2006. "Medicine Goes to School: Teachers as Sickness Brokers for ADHD." PLoS Medicine 3 (April): 182. doi:10.1371/journal.pmed.0030182.
- Raudenbush, S. W., and A. S. Bryk. 2002. Hierarchical Lineair Models. Applications and Data Analysis Methods. 2nd ed. Thousand Oaks: Sage Publications.
- Rinka, S., and M. Axelrod. 2015. "Do Labels Affect Teachers' Acceptability of Intervention for Children with ADHD?" Poster presented at the annual meeting for the student research Day, Wisconsin, April.
- Russell, G., T. Ford, R. Rosenberg, and S. Kelly. 2014. "The Association of Attention Deficit Hyperactivity Disorder with Socioeconomic Disadvantage: Alternative Explanations and Evidence." Journal of Child Psychology and Psychiatry 55 (5): 436-445. doi:10.1111/jcpp.12170
- Salmon, G., and A. Kirby. 2009. "The Role of Teachers in the Assessment of Children Suspected of Having AD/HD." British Journal of Special Education 36 (3): 147-154. doi:10.1111/j.1467-8578. 2009.00439.x
- Sax, L., and K. J. Kautz. 2003. "Who First Suggests the Diagnosis of Attention-Deficit/ Hyperactivity Disorder?" The Annals of Family Medicine 1 (3): 171-174. doi:10.1370/afm.3
- Saval, K., H. Hornsey, S. Warren, F. MacDiarmid, and E. Taylor. 2006. "Identification of Children at Risk of Attention Deficit/Hyperactivity Disorder." Social Psychiatry and Psychiatric Epidemiology 41 (10): 806-813. doi:10.1007/s00127-006-0100-0
- Sayal, K., N. Letch, and S. E. Abd. 2008. "Evaluation of Screening in Children Referred for an ADHD Assessment." Child and Adolescent Mental Health 13 (1): 41-46. doi:10.1111/j.1475-3588.2007.00463.x
- Schneider, H., and D. Eisenberg. 2006. "Who Receives a Diagnosis of Attention-Deficit/ Hyperactivity Disorder in the United States Elementary School Population?" Pediatrics 117 (4): e601–e609. doi:10.1542/peds.2005-1308



- Sciutto, M. J., C. J. Nolfi, and C. Bluhm. 2004. "Effects of Child Gender and Symptom Type on Referrals for ADHD by Elementary School Teachers." Journal of Emotional and Behavioral Disorders 12 (4): 247-253. doi:10.1177/10634266040120040501
- Sierens, S., M. Van Houtte, P. Loobuyck, K. Delrue, and K. Pelleriaux. 2006. Onderwijs onderweg in de immigratiesamenleving. Gent: Academia Press.
- Singh, I. 2006. "A Framework for Understanding Trends in ADHD Diagnoses and Stimulant Drug Treatment: Schools and Schooling as a Case Study." BioSocieties 1 (4): 439-452. doi:10.1017/ S1745855206004054
- Smelter, R. W., B. W. Rasch, J. Fleming, P. Nazos, and S. Baranowski. 1996. "Is Attention Deficit Disorder Becoming a Desired Diagnosis?" Phi Delta Kappan 77 (6): 1-4. https://search. proquest.com/docview/218511240?accountid=11077.
- Snider, V. E., T. Busch, and L. Arrowood. 2003. "Teacher Knowledge of Stimulant Medication and ADHD." Remedial and Special Education 24 (1): 46-56. doi:10.1177/074193250302400105
- Stinnett, T. A., S. A. Crawford, M. D. Gillespie, M. K. Cruce, and C. A. Langford. 2001. "Factors Affecting Treatment Acceptability for Psychostimulant Medication Versus Psychoeducational Intervention." Psychology in the Schools 38 (6): 585–591. doi:10.1002/pits.1045
- Tait, G. 2003. "Free Will, Moral Responsibility and ADHD." International Journal of Inclusive Education 7 (4): 429-449. doi:10.1080/1360311032000122483
- Timimi, S., and E. Taylor. 2004. "ADHD is Best Understood as a Cultural Construct." British Journal of Psychiatry 184 (1): 8-9. doi:10.1192/bjp.184.1.8
- Vehmas, S. 2011. "Disability and Moral Responsibility." Trames. Journal of the Humanities and Social Sciences 15 (2): 156-167. doi:10.3176/tr.2011.2.04
- Wienen, A. W., M. N. Sluiter, E. Thoutenhoofd, P. de Jonge, and L. Batstra. 2019. "The Advantages of an ADHD Classification from the Perspective of Teachers." European Journal of Special Needs Education 34 (5): 649-662. doi:10.1080/08856257.2019.1580838
- Wolraich, M. L., E. W. Lambert, L. Bickman, T. Simmons, M. A. Doffing, and K. A. Worley. 2004. "Assessing the Impact of Parent and Teacher Agreement on Diagnosing Attention-Deficit Hyperactivity Disorder." Journal of Developmental & Behavioral Pediatrics 25 (1): 41-47. doi:10.1097/00004703-200402000-00007